

Request for Reconsideration after Final Action

The table below presents the data as entered.

Input Field	Entered
SERIAL NUMBER	88255234
LAW OFFICE ASSIGNED	LAW OFFICE 103
MARK SECTION	
MARK	mark
LITERAL ELEMENT	BEAUTY SG
STANDARD CHARACTERS	YES
USPTO-GENERATED IMAGE	YES
MARK STATEMENT	The mark consists of standard characters, without claim to any particular font style, size or color.
ARGUMENT(S)	
Applicant respectfully submits that BEAUTY SG is not primarily geographically descriptive. Applicant submits further evidence showing that the purchasing public is not likely to consider BEAUTY SG to mean "Beauty Singapore" because consumers often encounter SG in a wide variety of contexts that do not stand for Singapore.	
EVIDENCE SECTION	
EVIDENCE FILE NAME(S)	
ORIGINAL PDF FILE	evi_1-7016620135-20200922_133621493341_.http-_sgd.oyen.com_business-consulting_sec-ab.pdf
CONVERTED PDF FILE(S) (7 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0002.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0003.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0004.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0005.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0006.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0007.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0008.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.formulas.com_calculate-specific-gravity-sg-in-oilfield-unit_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0009.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0010.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.http-_.www.s-gandpartners.com_Product.aspx.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0011.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0012.JPG

ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.http- www.s-g-chicago.com_about_1_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0013.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0014.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.http- www.s-g-chicago.com_about.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0015.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0016.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.http- www.harongoldreich.com_.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0017.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https en.wikipedia.org_wiki_SG.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0018.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0019.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.en-herbicides_harmony-sg-herbicide-to-talsol-soluble-granules.pdf
CONVERTED PDF FILE(S) (4 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0020.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0021.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0022.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0023.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.s-apps.apple.com_us_app_sg-project-pro-5_id826964482_mt_12.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0024.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0025.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- arxiv.org_abs_1908.05147.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0026.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0027.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.SG-DA51600-User-Installation-Manual.pdf
CONVERTED PDF FILE(S) (12 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0028.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0029.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0030.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0031.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0032.JPG

	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0033.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0034.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0035.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0036.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0037.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0038.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0039.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.dipl.oma.sgacademy.edu.my_.pdf
CONVERTED PDF FILE(S) (6 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0040.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0041.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0042.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0043.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0044.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0045.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.en.w.ikipedia.org_wiki_SG_Auto motive.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0046.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0047.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0048.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.en.w.ikipedia.org_wiki_SG_Sonn enhof_Gro_C3_9Faspach.pdf
CONVERTED PDF FILE(S) (4 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0049.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0050.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0051.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0052.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.en.w.ikipedia.org_wiki_Shootin g_guard.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0053.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0054.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.en.w.ikipedia.org_wiki_SIG_SG_550.pdf
CONVERTED PDF FILE(S) (12 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0055.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0056.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0057.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0058.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0059.JPG

	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0060.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0061.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0062.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0063.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0064.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0065.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0066.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-.en.wikipedia.org_wiki_Sight_glass.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0067.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0068.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0069.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-.en.wikipedia.org_wiki_Stargate_SG-1.pdf
CONVERTED PDF FILE(S) (18 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0070.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0071.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0072.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0073.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0074.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0075.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0076.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0077.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0078.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0079.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0080.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0081.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0082.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0083.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0084.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0085.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0086.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0087.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.ps-.forum.ordreference.com_threads_sg-arrangement.2512169_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0088.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0089.JPG

ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- gith ub.com xiaomengyc SG-One.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0090.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0091.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- grup o-sg.com .pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0092.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0093.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- help .surveygizmo.com_help_webinars.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0094.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0095.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0096.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.s.com_SGDigital_743999712505175-content-operations-executive.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0097.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0098.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- liquipedia.net dota2_SG_esports.pdf
CONVERTED PDF FILE(S) (5 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0099.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0100.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0101.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0102.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0103.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- open .spotify.com_artist_0GG2cWaonE4JPrjCCQ1EG.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0104.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https- pubchem.ncbi.nlm.nih.gov_element_Seaborgium.pdf
CONVERTED PDF FILE(S) (10 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0105.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0106.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0107.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0108.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0109.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0110.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0111.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\RFR0112.JPG

	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0113.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0114.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-sec.report_CIK_0001261467.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0115.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0116.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0117.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-sg.ufl.edu_about_sg-finance_.pdf
CONVERTED PDF FILE(S) (4 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0118.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0119.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0120.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0121.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-sgco nsultant.com_services_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0122.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0123.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-sgco smetics.shop_.pdf
CONVERTED PDF FILE(S) (14 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0124.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0125.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0126.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0127.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0128.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0129.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0130.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0131.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0132.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0133.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0134.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0135.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0136.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0137.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-sgho tbox.com_.pdf
CONVERTED PDF FILE(S) (10 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0138.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0139.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0140.JPG

	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0141.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0142.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0143.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0144.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0145.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0146.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0147.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.soli_dguitar.fandom.com_wiki_The_22SG_22_Firebrand.pdf
CONVERTED PDF FILE(S) (4 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0148.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0149.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0150.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0151.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.step_haniegottlieb.com_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0152.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0153.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.www.airlive.com_product_SG-10_1.pdf
CONVERTED PDF FILE(S) (6 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0154.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0155.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0156.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0157.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0158.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0159.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.imshaw-to-Cr_eate-Pre-Fabricated-Modul ar-Education-Facilities.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0160.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0161.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.www.cto.int_about-the-cto_our_-organisation_sg-news_.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0162.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0163.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_.https-_.www.epiphone.com_Guitars_Coll ection_Modern-SG.pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0164.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0165.JPG

ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_what-is-the-sg-553-and-why-is-everyon-e-complaining-about-it_.pdf
CONVERTED PDF FILE(S) (7 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0166.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0167.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0168.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0169.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0170.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0171.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0172.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_ww.jbc.org_content_early_2016_11_11_jbc.M116.738989.full.pdf
CONVERTED PDF FILE(S) (27 pages)	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0173.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0174.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0175.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0176.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0177.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0178.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0179.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0180.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0181.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0182.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0183.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0184.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0185.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0186.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0187.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0188.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0189.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0190.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0191.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0192.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0193.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0194.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0195.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0196.JPG
	\\TICRS\EXPORT18\IMAGEOUT_18\882\552\88255234\xml3\RFR0197.JPG

	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0198.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0199.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. www.labce.com_spg506391_measuring_specific_gravity_sg.aspx.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0200.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. https- www.linkedin.com_company_sgroup .pdf
CONVERTED PDF FILE(S) (2 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0201.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0202.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. ps_shipid-188955_mmsi-235011790_imo-9041265_vessel-PHAROS_SG.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0203.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0204.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0205.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. www.materiale.com_en_software_magics_modules_23sg-module.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0206.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. p_sg-project-pro-5_9nblggh30wp3_activetab_pivot-overviewtab.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0207.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0208.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0209.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_. ww.reddit.com_r_zoemains_comments_cx35h5_awesome_sg_zoe_art_.pdf
CONVERTED PDF FILE(S) (12 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0210.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0211.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0212.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0213.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0214.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0215.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0216.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0217.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0218.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0219.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0220.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0221.JPG
	evi_7016620135-2020092213_3621493341_.ited_SOP_20_

ORIGINAL PDF FILE	P_20069A_20SG_20Palm_200il_20Procedure_20V_2002.pdf
CONVERTED PDF FILE(S) (3 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0222.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0223.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0224.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_._https-_.www.sgcreditpartners.com_team_.pdf
CONVERTED PDF FILE(S) (13 pages)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0225.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0226.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0227.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0228.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0229.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0230.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0231.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0232.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0233.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0234.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0235.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0236.JPG
	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0237.JPG
ORIGINAL PDF FILE	evi_7016620135-2020092213_3621493341_._https-_.www.sgfoundation.org_.pdf
CONVERTED PDF FILE(S) (1 page)	\\TICRS\EXPORT18\IMAGEOUT 18\882\552\88255234\xml3\ RFR0238.JPG
DESCRIPTION OF EVIDENCE FILE	Internet examples of the use of SG in a wide variety of contexts that are unrelated to Singapore and that do not refer to or emanate from Singapore
ATTORNEY INFORMATION (new)	
NAME	Maria Crimi Speth
ATTORNEY BAR MEMBERSHIP NUMBER	XXX
YEAR OF ADMISSION	XXXX
U.S. STATE/ COMMONWEALTH/ TERRITORY	XX
FIRM NAME	Jaburg & Wilk, P.C.
INTERNAL ADDRESS	Suite 2000
STREET	3200 North Central Avenue
CITY	Phoenix
STATE	Arizona
POSTAL CODE	85012
COUNTRY/REGION/JURISDICTION/U.S. TERRITORY	United States
PHONE	602-248-1089

EMAIL	mcs@jaburgwilk.com
CORRESPONDENCE INFORMATION (current)	
NAME	MARIA CRIMI SPETH
PRIMARY EMAIL ADDRESS FOR CORRESPONDENCE	mcs@jaburgwilk.com
SECONDARY EMAIL ADDRESS(ES) (COURTESY COPIES)	NOT PROVIDED
CORRESPONDENCE INFORMATION (proposed)	
NAME	Maria Crimi Speth
PRIMARY EMAIL ADDRESS FOR CORRESPONDENCE	mcs@jaburgwilk.com
SECONDARY EMAIL ADDRESS(ES) (COURTESY COPIES)	NOT PROVIDED
SIGNATURE SECTION	
RESPONSE SIGNATURE	/mariacrimispeth/
SIGNATORY'S NAME	Maria Crimi Speth
SIGNATORY'S POSITION	Attorney of Record, Arizona bar member
SIGNATORY'S PHONE NUMBER	602-248-1089
DATE SIGNED	09/22/2020
AUTHORIZED SIGNATORY	YES
CONCURRENT APPEAL NOTICE FILED	NO
FILING INFORMATION SECTION	
SUBMIT DATE	Tue Sep 22 16:33:23 ET 2020
TEAS STAMP	USPTO/RFR-XX.XXX.XXX.XX-2 0200922163323116740-88255 234-750d075e65b8ab79fc71b 817417d6625fb8946063d0b61 8256f8cc6aa3cd48a-N/A-N/A -20200922133621493341

Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTO Form 1960 (Rev 10/2011)

OMB No. 0651-0050 (Exp 09/20/2020)

Request for Reconsideration after Final Action

To the Commissioner for Trademarks:

Application serial no. **88255234** BEAUTY SG(Standard Characters, see <https://tmng-al.uspto.gov/resting2/api/img/88255234/large>) has been amended as follows:

ARGUMENT(S)

In response to the substantive refusal(s), please note the following:

Applicant respectfully submits that BEAUTY SG is not primarily geographically descriptive. Applicant submits further evidence showing that the purchasing public is not likely to consider BEAUTY SG to mean "Beauty Singapore" because consumers often encounter SG in a wide variety of contexts that do not stand for Singapore.

EVIDENCE

Evidence has been attached: Internet examples of the use of SG in a wide variety of contexts that are unrelated to Singapore and that do not refer

to or emanate from Singapore

Original PDF file:

[evi-1-7016620135-20200922133621493341 . http- sgdoyen.com/business-consulting/sec-ab.pdf](http://evi-1-7016620135-20200922133621493341.sgdoyen.com/business-consulting/sec-ab.pdf)

Converted PDF file(s) (7 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6Evidence-7](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . formulas.com/calculate-specific-gravity-sg-in-oilfield-unit .pdf](http://evi_7016620135-20200922133621493341.formulas.com/calculate-specific-gravity-sg-in-oilfield-unit.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . http- www.s-gandpartners.com/Product.aspx.pdf](http://evi_7016620135-20200922133621493341.www.s-gandpartners.com/Product.aspx.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . http- www.s-g-chicago.com/about_1 .pdf](http://evi_7016620135-20200922133621493341.www.s-g-chicago.com/about_1.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . http- www.s-g-chicago.com/about.pdf](http://evi_7016620135-20200922133621493341.www.s-g-chicago.com/about.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . http- www.s-harongoldreich.com .pdf](http://evi_7016620135-20200922133621493341.www.s-harongoldreich.com.pdf)

Converted PDF file(s) (1 page) [Evidence-1](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https_ en.wikipedia.org/wiki/SG.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/SG.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . en-herbicides-harmony-sg-herbicide-to-talsol-soluble-granules.pdf](http://evi_7016620135-20200922133621493341.en-herbicides-harmony-sg-herbicide-to-talsol-soluble-granules.pdf)

Converted PDF file(s) (4 pages) [Evidence-1Evidence-2Evidence-3Evidence-4](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . s-apps.apple.com/us_app_sg-project-pro-5_id826964482_mt_12.pdf](http://evi_7016620135-20200922133621493341.s-apps.apple.com/us_app_sg-project-pro-5_id826964482_mt_12.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- arxiv.org/abs/1908.05147.pdf](https://evi_7016620135-20200922133621493341.arxiv.org/abs/1908.05147.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . SG-DA51600-User-Installation-Manual.pdf](http://evi_7016620135-20200922133621493341.SG-DA51600-User-Installation-Manual.pdf)

Converted PDF file(s) (12 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- diploma.sgacademy.edu.my .pdf](https://evi_7016620135-20200922133621493341.diploma.sgacademy.edu.my.pdf)

Converted PDF file(s) (6 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/SG_Automotive.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/SG_Automotive.pdf)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/SG_Sonnenhof_Gro_C3_9Faspach.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/SG_Sonnenhof_Gro_C3_9Faspach.pdf)

Converted PDF file(s) (4 pages) [Evidence-1Evidence-2Evidence-3Evidence-4](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/Shooting_guard.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/Shooting_guard.pdf)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/SIG_SG_550.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/SIG_SG_550.pdf)

Converted PDF file(s) (12 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/Sighting_glass.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/Sighting_glass.pdf)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-20200922133621493341 . https- en.wikipedia.org/wiki/Stargate_SG-1.pdf](https://evi_7016620135-20200922133621493341.en.wikipedia.org/wiki/Stargate_SG-1.pdf)

Converted PDF file(s) (18 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12Evidence-13Evidence-14Evidence-15Evidence-16Evidence-17Evidence-18](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.ps_forum.w ordreference.com_threads_sg-arrangement.2512169_.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-gith ub.com_xiaomengyc_SG-One.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-grup o-sg.com_.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-help .surveygizmo.com_help_web inars.pdf](#)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.s.com_SGDigi tal_743999712505175-conte nt-operations-executive.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-liqu ipedia.net_dota2_SG_e-spo rts.pdf](#)

Converted PDF file(s) (5 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-open .spotify.com_artist_0GG2c WaonE4JPrjcCCQ1EG.pdf](#)

Converted PDF file(s) (1 page) [Evidence-1](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-pubc hem.ncbi.nlm.nih.gov_elem ent_Seaborgium.pdf](#)

Converted PDF file(s) (10 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-sec. report_CIK_0001261467.pdf](#)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-sg.u fl.edu_about_sg-finance_.pdf](#)

Converted PDF file(s) (4 pages) [Evidence-1Evidence-2Evidence-3Evidence-4](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-sgco nsultant.com_services_.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-sgco smetics.shop_.pdf](#)

Converted PDF file(s) (14 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12Evidence-13Evidence-14](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-sgho tbox.com_.pdf](#)

Converted PDF file(s) (10 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-soli dguitar.fandom.com_wiki_T he_22SG_22_Firebrand.pdf](#)

Converted PDF file(s) (4 pages) [Evidence-1Evidence-2Evidence-3Evidence-4](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-step haniegottlieb.com_.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-www. airlive.com_product_SG-10 1.pdf](#)

Converted PDF file(s) (6 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.imshaw-to-Cr eate-Pre-Fabricated-Modul ar-Education-Facilities.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-www. cto.int_about-the-cto_our -organisation_sg-news_.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_.https-www. epiphone.com_Guitars_Coll ection_Modern-SG.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_what-is-the-sg-553-and-why-is-everyone-complaining-about-it.pdf](#)

Converted PDF file(s) (7 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6Evidence-7](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_www.jbc.org_content_early_2016_11_11_jbc.M116.738989.full.pdf](#)

Converted PDF file(s) (27 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12Evidence-13Evidence-14](#)

[Evidence-15Evidence-16Evidence-17Evidence-18Evidence-19Evidence-20Evidence-21Evidence-22](#)

[Evidence-23Evidence-24Evidence-25Evidence-26Evidence-27](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_www.labce.com_spg506391_measuring_specific_gravity_sg.aspx.pdf](#)

Converted PDF file(s) (1 page) [Evidence-1](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_https_www.linkedin.com_company_sggroup.pdf](#)

Converted PDF file(s) (2 pages) [Evidence-1Evidence-2](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_ps_shipid-18_8955_mmsi-235011790_imo-9_041265_vessel-PHAROS_SG.pdf](#)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_www.materialise.com_en_software_magics_modules_23sg-module.pdf](#)

Converted PDF file(s) (1 page) [Evidence-1](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_p_sg-project-pro-5_9nblggh30wp3_activetab_pivot-overviewtab.pdf](#)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_www.reddit.com_r_zoemains_comments_cx35h5_awesome_sg_zoe_art.pdf](#)

Converted PDF file(s) (12 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_ited_SOP_20_P_20069A_20SG_20Palm_20Oil_20Procedure_20V_2002.pdf](#)

Converted PDF file(s) (3 pages) [Evidence-1Evidence-2Evidence-3](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_https_www.sgcreditpartners.com_team.pdf](#)

Converted PDF file(s) (13 pages) [Evidence-1Evidence-2Evidence-3Evidence-4Evidence-5Evidence-6](#)

[Evidence-7Evidence-8Evidence-9Evidence-10Evidence-11Evidence-12Evidence-13](#)

Original PDF file:

[evi_7016620135-2020092213_3621493341_https_www.sgfoundation.org.pdf](#)

Converted PDF file(s) (1 page) [Evidence-1](#)

The owner's/holder's proposed attorney information: Maria Crimi Speth. Maria Crimi Speth of Jaburg & Wilk, P.C., is a member of the XX bar, admitted to the bar in XXXX, bar membership no. XXX, is located at

Suite 2000
3200 North Central Avenue
Phoenix, Arizona 85012
United States

is appointed to submit this Request for Reconsideration after Final Action on behalf of the applicant.

The phone number is 602-248-1089.

The email address is mcs@jaburgwilk.com

Maria Crimi Speth submitted the following statement: The attorney of record is an active member in good standing of the bar of the highest court of a U.S. state, the District of Columbia, or any U.S. Commonwealth or territory.

Correspondence Information (current):

MARIA CRIMI SPETH
PRIMARY EMAIL FOR CORRESPONDENCE: mcs@jaburgwilk.com
SECONDARY EMAIL ADDRESS(ES) (COURTESY COPIES): NOT PROVIDED

Correspondence Information (proposed):

Maria Crimi Speth
PRIMARY EMAIL FOR CORRESPONDENCE: mcs@jaburgwilk.com

SECONDARY EMAIL ADDRESS(ES) (COURTESY COPIES): NOT PROVIDED

Requirement for Email and Electronic Filing: I understand that a valid email address must be maintained by the owner/holder and the owner's/holder's attorney, if appointed, and that all official trademark correspondence must be submitted via the Trademark Electronic Application System (TEAS).

SIGNATURE(S)

Request for Reconsideration Signature

Signature: /mariacrimispeth/ Date: 09/22/2020

Signatory's Name: Maria Crimi Speth

Signatory's Position: Attorney of Record, Arizona bar member

Signatory's Phone Number: 602-248-1089

The signatory has confirmed that he/she is a U.S.-licensed attorney who is an active member in good standing of the bar of the highest court of a U.S. state (including the District of Columbia and any U.S. Commonwealth or territory); and he/she is currently the owner's/holder's attorney or an associate thereof; and to the best of his/her knowledge, if prior to his/her appointment another U.S.-licensed attorney not currently associated with his/her company/firm previously represented the owner/holder in this matter: the owner/holder has revoked their power of attorney by a signed revocation or substitute power of attorney with the USPTO; the USPTO has granted that attorney's withdrawal request; the owner/holder has filed a power of attorney appointing him/her in this matter; or the owner's/holder's appointed U.S.-licensed attorney has filed a power of attorney appointing him/her as an associate attorney in this matter.

The applicant is not filing a Notice of Appeal in conjunction with this Request for Reconsideration.

Mailing Address: MARIA CRIMI SPETH
JABURG & WILK PC

3200 NORTH CENTRAL AVE STE 2000
PHOENIX, Arizona 85012

Mailing Address: Maria Crimi Speth
Jaburg & Wilk, P.C.
Suite 2000
3200 North Central Avenue
Phoenix, Arizona 85012

Serial Number: 88255234

Internet Transmission Date: Tue Sep 22 16:33:23 ET 2020

TEAS Stamp: USPTO/RFR-XX.XXX.XXX.XX-2020092216332311

6740-88255234-750d075e65b8ab79fc71b81741

7d6625fb8946063d0b618256f8cc6aa3cd48a-N/

A-N/A-20200922133621493341

BUSINESS CONSULTING

FOR OVER 20 YEARS, SG*DOYEN HAS PROVIDED BUSINESS CONSULTING SERVICES TO A BROAD RANGE OF US BASED AND INTERNATIONAL CLIENTS.

ABOUT

SG DOYEN

LED BY PAWEL GASIOR AND MARIUS GEBSKI, THEY DRAW ON THEIR EXTENSIVE EXPERIENCE IN INTERNATIONAL BUSINESS AND SPORTS MANAGEMENT TO OFFER STRATEGIC PRODUCT PLACEMENT AND INTERNATIONAL BUSINESS RESOLUTIONS.

THROUGH IMPLEMENTATION OF CUSTOM SOLUTIONS AND STRATEGIES SPECIFICALLY TAILORED TO CLIENT'S UNIQUE NEEDS THEY ARE ABLE TO ACHIEVE SUPERB RESULTS FOR THEIR CLIENTS.

OUR SERVICES CONSIST OF R&D OF NEW MARKETS, PRODUCT PLACEMENT, LOGISTICS, LEGAL AND FINANCIAL START UP AND NEW MARKET CONSULTANCY, CORPORATE GOVERNANCE, M&A.

OUR SERVICES CONSIST OF



R&D of New Markets

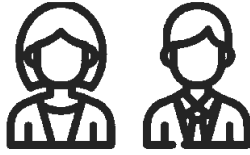


Product Placement



Logistics





Legal and Financial New Market Consultancy



Start Ups Guidance



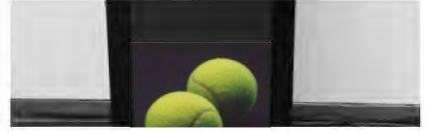
Corporate Governance, M&A

GALLERY











ahalife



INGLOT



BMW of Manhattan

monde
Design Store

Board

USA

21/09/2020

BUSINESS CONSULTING – SG Doyen

*One Wall Street Plaza
110 Maiden Lane
33rd Floor
New York, NY 10005
Telephone:
212-308-0509*

POLAND

*ul. Bernardyńska 16a, lok. U6
02-904 Warszawa*

*ul. Słowackiego 1
85-008 Bydgoszcz*

UK

*4-8 Church Street
Second Floor
Pontypridd CF37 2TH*

Paweł Gasiór

■ pg@sgdoyen.com

■ mg@sgdoyen.com

© 2017 SG*Doyen. ALL RIGHTS RESERVED.

powered by Monde



☰ MENU

SPONSORED SEARCHES

specific gravity 🔍

textile calculation app 🔍

unit converter 🔍

bar chart 🔍

weight unit conversion chart 🔍

drilling fluid calculations 🔍

Calculate Specific Gravity (SG) in oilfield unit

By [DrillingFormulas.Com](#) | April 9, 2009 - 9:00 pm | [Basic Drilling Formulas](#)

📊 Post Views: 13,720



Let WordPress run faster

Fast servers, powerful caching, image & 1 optimizations and more. Sign up today!

[SiteGround.com](#)

Se

This article demonstrates how to calculate Specific Gravity (SG) from different density or pressure gradient in both oilfield and metric unit.

Calculate Specific Gravity from Mud Weight In Oilfield Unit

Calculate Specific Gravity from Mud Weight in Oilfield Unit

1. Calculate specific gravity using mud weight in PPG

$$\text{Specific Gravity (SG)} = \text{mud weight in ppg} \div 8.33$$

Example:

Mud weight = 13.0 ppg

Specific Gravity (SG) = 13.0 ppg \div 8.33

Specific Gravity (SG) = 1.56

2. Calculate specific gravity using pressure gradient in psi/ft

$$\text{Specific Gravity (SG)} = \text{pressure gradient in psi/ft} \div 0.433$$

Example:

Pressure gradient = 0.50 psi/ft

Specific Gravity (SG) = 0.50 psi/ft \div 0.433

Specific Gravity (SG) = 1.15

3. Calculate specific gravity using mud weight in lb/ft³

$$\text{Specific Gravity (SG)} = \text{mud weight in lb/ft}^3 \div 62.4$$

Example:

Mud weight = 90 lb/ft³

Specific Gravity (SG) = 90 lb/ft³ \div 62.4

Specific Gravity (SG) = 1.44

Calculate Specific Gravity from Mud Weight In Metric Unit

4. Calculate specific gravity using mud weight in kg/m³

$$\text{Specific Gravity (SG)} = \text{mud weight in kg/m}^3 \div 1000$$

Example:

Mud density = 1200 kg/m³

Specific Gravity (SG) = 1200 kg/m³ ÷ 1000

Specific Gravity (SG) = 1.2



Let WordPress
faster

SiteGround.com

Fast servers, powerful caching, ir
front-end optimizations and more
today!

5. Calculate specific gravity using mud weight in g/cc

Specific Gravity (SG) = mud weight in g/cc ÷ 1.0

Example:

Mud density = 1.2 g/cc

Specific Gravity (SG) = 1.2 g/cc ÷ 1000

Specific Gravity (SG) = 1.2

6. Calculate specific gravity using pressure gradient in kPa/m

Specific Gravity (SG) = pressure gradient in kPa/m ÷ 9.81

Example:

Pressure gradient = 10 kPa/m

Specific Gravity (SG) = 10 kPa/m ÷ 9.81

Specific Gravity (SG) = 1.02

Please also find the Excel sheet for this topic – [Specific Gravity Calculation Sheet](#)

S-G & PARTNERS
(default.aspx)

HAPPINESS THROUGH FULFILLMENT

AROUND 330BC THERE WAS A VERY FORWARD THINKING GREEK BRAND DIRECTOR. HE WAS SON OF NIC, A RENOWNED DOCTOR, AND STUDENT OF PLAT, A PRETTY TOP LECTURER. HIS NAME WAS ARISTOTLE.

Aristotle, a digital native, posted a pretty interesting paper explaining the fact that people, organisations and brands are at their best when they are fulfilled.

This paper delivered the inspiration and motivation on how S-G & Partners would behave. In the belief that fulfilled people and organisations deliver correctly, and with virtue, to the challenges laid in front of them. Benefitting the individuals and the companies alike through enduring relationships.

This resulting Happiness through Fulfillment is what we aim to deliver.

[contact](#) | [login](#)



[home](#) [about](#) [projects](#) [resource](#)

about

Uplift the success of your next project

Chicago's architectural community has long counted on us to bring their metal and glass projects to life. Established in 1959 as the Schaaf Glass Company, we have uplifted the success of thousands of architectural projects. Our new identity as SG Metal & Glass continues this legacy, with a full-service approach to enhance the design of your systems, while managing costs and timelines. Count on us to support you at every step –

from recommending the most cost-effective components and system refinements, to our turnkey provision of system fabrication, assembly and installation.



Design assistance

Bring your project ideas to us. Whether it's a new building or a renovation, we will show you ways to refine the design of your metal and glass system, to cut costs without cutting corners on quality and performance.



In-house fabrication

Proactive design goes hand-in-hand with our skilled and efficient fabrication process. Your metal and glass systems are proudly crafted in our quality-controlled facilities to assure they perform to your highest expectations.



Skilled installation

Well-designed and fabricated systems come to life in the hands of our experienced installers, each averaging 20 years in the field. Turnkey fabrication and installation planning enables us to anticipate and adjust to schedule changes.

Chicago's full-service architectural metal and glass fabrication experts

SG Metal & Glass
7212 West 90th Street
Bridgeview, IL 60455
Phone: 708-598-0200
© 2020 Schaaf Glass Co.

[home](#) [projects](#) [resource](#) [contact](#) [login](#) [sitemap](#)



[contact](#) | [login](#)

[home](#) [about](#) [projects](#)
[resource](#) ●

about

Uplift the success of your next project

Chicago's architectural community has long counted on us to bring their metal and glass projects to life. Established in 1959 --

glass projects to life. Established in 1959 as the Schaaf Glass Company, we have uplifted the success of thousands of architectural projects. Our new identity as SG Metal & Glass continues this legacy, with a full-service approach to enhance the design of your systems, while managing costs and timelines. Count on us to support you at every step – from recommending the most cost-effective components and system refinements, to our turnkey provision of system fabrication, assembly and installation.



● **Design assistance**

Bring your project ideas to us. Whether it's a new building or a renovation, we will show you ways to refine the design of your metal and glass system, to cut costs without cutting corners on quality and performance.

● **In-house fabrication**

Proactive design goes hand-in-hand with our skilled and efficient fabrication process. Your metal and glass systems are proudly crafted in our quality-controlled facilities to assure they perform to your highest expectations.

● **Skilled installation**

Well-designed and fabricated systems come to life in the hands of our experienced installers, each averaging 20 years in the field. Turnkey fabrication and installation planning enables us to anticipate and adjust to schedule changes.

Chicago's full-service architectural metal and glass

fabrication experts

SG Metal & Glass
7212 West 90th Street
Bridgeview, IL 60455
Phone: 708-598-0200
© 2020 Schaaf Glass
Co.

[home](#) [projects](#) [resource](#) [contact](#) [login](#) [sitemap](#)





SG GALLERY MILANO © 2017.

[email](#)

WIKIPEDIA

SG

SG, **Sg** or **sg** may refer to:

Arts and entertainment

Music

- Gibson SG, an electric guitar manufactured by Gibson Guitar Corporation
- SG Wannabe, a South Korean music group

Other media

- *Spy Groove*, an American animated television series stylized on screen and in promotional materials as *SG*
- *Stargate*, a Canadian-American military science fiction media franchise running from 1994, 1997–2011
- SuicideGirls, a softcore pornographic website
- *Steins;Gate* (S;G), a science fiction visual novel game developed by 5pb. and Nitroplus
- *Sabado Gigante*, a Spanish-language weekly variety show with Don Francisco airing from 1962-2015

Businesses and organizations

- SG Automotive, a Chinese vehicle and component manufacturer
- SG (cigarette), a Portuguese cigarette brand produced by Tabaqueira, an Altria subsidiary
- Jetsgo (IATA airline code SG, from 2001 to 2005)
- Saint Gabriel's College, a private school in Bangkok, Thailand
- Santa Gerarda, a British Army Regiment

Contents

Arts and entertainment

Music

Other media

Businesses and organizations

Places

Science and technology

Sport

Other uses

- Scots Guards, a British Army Regiment
- Société Générale, a European financial services company
- Special Group (India), a confidential special forces unit of India
- SpiceJet (IATA airline code SG, since 2005)
- Straż Graniczna, a Polish border guard formation
- System Group, an Iranian software development company

Places

- Singapore (ISO 3166-1 country code SG)
- Canton of St. Gallen, a canton in Switzerland

Science and technology

- Samsung Galaxy, series of mobile computing devices
- .sg, the top-level domain of Singapore
- SG-43 Goryunov, Stankovyi Goryunova Model 1943, a Soviet medium machine gun
- Seaborgium, chemical element 106 on the periodic table
- Sega Genesis, a game console
- Specific gravity, the weight of a volume of fluid or solution as compared to the weight of the same volume of water
- Stress granule

Sport

- Shooting guard, a basketball position
- Sanspareils Greenlands, a cricket equipment manufacturer

Other uses

- Sango language (ISO 639-1 code "sg")

- Shotgun, often in the context of buckshot size
- Star of Gallantry, an Australian gallantry decoration

Retrieved from "<https://en.wikipedia.org/w/index.php?title=SG&oldid=970822458>"

This page was last edited on 2 August 2020, at 16:39 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

/ PRODUCTS



GROUP 2

HARMONY® SG HERBICIDE WITH TOTALSOL® SOLUBLE GRANULES

Ease the transition between soybeans and rotational crops by tank mixing Harmony® SG herbicide with TotalSol® soluble granules for cleaner fields at harvest and planting.

LABELS AND SDS

1 Labels Available

We use cookies to deliver the best possible web experience. By continuing and using the site, including by remaining on the landing page, you consent to the use of cookies. If you wish to disable them, please take a look at our [Cookies Policy](#). Please note that parts of the site may not function correctly if you disable all cookies.

ACCEPT COOKIES & CLOSE

QUICK FACTS

Cleaner fields for rotational crops and at harvest.

Broad-spectrum control of key problem weeds for corn and soybeans, including common lambsquarters, velvetleaf and annual smartweed.

ACTIVE INGREDIENT

Thifensulfuron-methyl

**APPROVED FMC TANK MIX PRODUCTS FOR SELECT
HERBICIDES**

[Overview](#) | [Labels](#) | [Crops](#) | [Registered States](#)

PRODUCT OVERVIEW

When soybeans are rotated with other crops such as sugar beets, dry edible beans, wheat and corn, the level of weed control directly impacts the profitability of the subsequent crop. Harmony SG herbicide can be tank mixed with many soybean herbicides, including glyphosate, to enhance the performance on hard to

including glyphosate, to enhance the performance on hard-to-control weeds.

LABELS AND SDS

SDS
07/10/2015

CROPS

We use cookies to deliver the best possible web experience. By continuing and using the site, including by remaining on the landing page, you consent to the use of cookies. If you wish to disable them, please take a look at our [Cookies Policy](#). Please note that parts of the site may not function correctly if you disable all cookies.

ACCEPT COOKIES & CLOSE



SAFFLOWER



BURNDOWN

Always refer to the product label for an official listing of crop usage, restrictions and precautions.

FULL CROP LISTING

STATE REGISTRATION

Alaska

Alabama

Arkansas

Arizona

Montana

North Carolina

North Dakota

Nebraska

- | | |
|--------------------|-----------------------|
| Colorado | New Hampshire |
| Connecticut | New Jersey |
| Delaware | New Mexico |
| Florida | Nevada |
| Georgia | New York |
| Hawaii | Ohio |
| Iowa | Oklahoma |
| Idaho | Oregon |
| Illinois | Pennsylvania |
| Indiana | Rhode Island |
| Kansas | South Carolina |

We use cookies to deliver the best possible web experience. By continuing and using the site, including by remaining on the landing page, you consent to the use of cookies. If you wish to disable them, please take a look at our [Cookies Policy](#). Please note that parts of the site may not function correctly if you disable all cookies.

ACCEPT COOKIES & CLOSE

Wyoming

Always read and follow all label directions, precautions and restrictions for use. Some products may not be registered for sale or use in all states. FMC, the FMC logo, Harmony and TotalSol are trademarks of FMC Corporation or an affiliate. ©2020 FMC Corporation. All rights reserved. 20-FMC-0556 03/20

GET IN TOUCH

Learn more about how to use our products and sign up to receive more information.

SUBSCRIBE

PRODUCTS

CROPS

PROGRAMS

INSIGHTS

ABOUT

FOLLOW US

Copyright 2020 FMC Corporation
[Privacy Policy](#) | [Terms & Conditions](#) | [Trademarks](#)

We use cookies to deliver the best possible web experience. By continuing and using the site, including by remaining on the landing page, you consent to the use of cookies. If you wish to disable them, please take a look at our [Cookies Policy](#). Please note that parts of the site may not function correctly if you disable all cookies.

ACCEPT COOKIES & CLOSE

Mac App Store Preview

To edit your review of this app, use an iPhone or iPad to view the app on the App Store.



SG Project Pro 5 (4.3)
Professional Project Planning
Simple Genius Software

4.3 + 3 Ratings

~~\$99.99~~

[View in Mac App Store ↗](#)

Screenshots

The Simple Genius brand means fresh design thinking for practical project management apps. Designed and refined by a veteran Project and Program Manager, the SG apps address real-world

needs for managers. And with over 100,000 apps sold in 100 countries, SG is proven and trusted on Mac, iPad, and iPhone.

SG Project Pro is the flagship of the SG suite and is the only Mac app that provides a complete project management solution including task-based planning, management of issues, risks, action items, and costs, as well as powerful and beautiful reporting. It excels at managing multiple concurrent projects and team members in ways that no other project management app does. [more](#)

What's New

Version 5.16

Fixed issue with Task Selection on Catalina

[Version History](#)

Ratings and Reviews

[See All](#)

4.3

out of 5

3 Ratings

Project Task Master, 07/09/2014

Fatal Flaw Update

The preferences for all projects defaults to "unlocked" tasks which are soft dependencies. Changing task durations causes a disconnect. When the tasks are changed to "locked", either through double clicking/the

ergeusa, 12/21/2018

MISSING SOME BASIC FEATURES

For \$200 we should be able to:

[more](#)

Developer Response,
Thanks for the comments!

[more](#)

td3k, 03/21/2014

Excellent Project Management Software

I've been using SG Project Pro on both the Mac and on my iPad for sometime now and recently upgraded both platforms to the new 5 versions. These are both great upgrades and adds further enhancements and

[more](#)

Information

Seller	Simple Genius Software, LLC
Size	6.9 MB
Category	Business
Compatibility	macOS 10.13 or later, 64-bit processor
Languages	English
Age Rating	4+
Copyright	Copyright © 2013-2020 Simple Genius Software
Price	\$99.99

[Developer Website](#) ↗

[App Support](#) ↗

[Privacy Policy](#) ↗

<https://apps.apple.com/us/app/sg-project-pro-5/id826964482?mt=12>

1/2

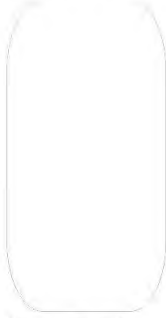
Supports



Family Sharing

With Family Sharing set up, up to six family members can use this app.

More By This Developer



SG Project Go Pro 5
Business

More ways to shop: Find an Apple Store or other retailer near you. Or call 1-800-MY-APPLE.

Copyright © 2020 Apple Inc. All rights reserved.

[Privacy Policy](#)

[Terms of Use](#)

[Sales and Refunds](#)

[Legal](#)

[Site Map](#)

[Choose your country or region](#)

<https://apps.apple.com/us/app/sg-project-pro-5/id826964482?mt=12>

2/2

[Skip to main content](#)

[arXiv.org](#) > [cs](#) > arXiv:1908.05147

Search...

quick links

- [Login](#)
- [Help Pages](#)
- [About](#)

Computer Science > Computation and Language

arXiv:1908.05147 (cs)

[Submitted on 14 Aug 2019 ([v1](#)), last revised 20 Nov 2019 (this version, v3)]

SG-Net: Syntax-Guided Machine Reading Comprehension

SG-Net: Syntax-Guided Machine Reading Comprehension

Zhuosheng Zhang, Yuwei Wu, Junru Zhou, Sufeng Duan, Hai Zhao, Rui Wang

[Download PDF](#)

For machine reading comprehension, the capacity of effectively modeling the linguistic knowledge from the detail-riddled and lengthy passages and getting ride of the noises is essential to improve its performance. Traditional attentive models attend to all words without explicit constraint, which results in inaccurate concentration on some dispensable words. In this work, we propose using syntax to guide the text modeling by incorporating explicit syntactic constraints into attention mechanism for better linguistically motivated word representations. In detail, for self-attention network (SAN) sponsored Transformer-based encoder, we introduce syntactic dependency of interest (SDOI) design into the SAN to form an SDOI-SAN with syntax-guided self-attention. Syntax-guided network (SG-Net) is then composed of this extra SDOI-SAN and the SAN from the original Transformer encoder through a dual contextual architecture for better linguistics inspired representation. To verify its effectiveness, the proposed SG-Net is applied to typical pre-trained language model BERT which is right based on a Transformer encoder. Extensive experiments on popular benchmarks including SQuAD 2.0 and RACE show that the proposed SG-Net design helps achieve substantial performance improvement over strong baselines.

Comments: Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-2020)

Subjects: **Computation and Language (cs.CL)**

Cite as: [arXiv:1908.05147](https://arxiv.org/abs/1908.05147) [cs.CL]

(or [arXiv:1908.05147v3](https://arxiv.org/abs/1908.05147v3) [cs.CL] for this version)

Bibliographic data

[\[Enable Bibex \(What is Bibex?\)\]](#)

Submission history

<https://arxiv.org/abs/1908.05147>

1/2

21/09/2020

[1908.05147] SG-Net: Syntax-Guided Machine Reading Comprehension

From: Zhuosheng Zhang [\[view email\]](#)

[\[v1\]](#) Wed, 14 Aug 2019 14:28:07 UTC (6,790 KB)

[\[v2\]](#) Tue, 3 Sep 2019 10:50:46 UTC (1,564 KB)

[\[v3\]](#) Wed, 20 Nov 2019 10:21:30 UTC (1,513 KB)

[Which authors of this paper are endorsers?](#) | [Disable MathJax](#) ([What is MathJax?](#)) [Browse v0.3.2.5 released 2020-07-27](#)

[Feedback?](#)

FUSION® SG-DA51600

Class-D Marine Amplifier

User/Installation Manual



FUSION®

FUSIONENTERTAINMENT.COM

AMPLIFIER SPECIFICATIONS

Peak Power (Watts)	1600
Frequency Response	10Hz -50kHz
Dimensions (mm)	300(l) x 210(w) x 50(h) 11-13/16 x 8-1/4 x 2"
Power Ratings	80W RMS x 4 + 250W RMS x 1 @ 4Ω 1% THD+N
	130W RMS x 4 + 330W RMS x 1 @ 2Ω 1% THD+N
	250W RMS x 2 @ 4Ω Bridged 1% THD+N + 250W RMS x 1 @ 4Ω 1% THD+N

INSTALLATION

GUIDELINES

1. Ensure the +12V lead is disconnected from the battery before you connect any new equipment.
2. Ensure the mounting location will not interfere with the gas tank or electrical wiring.
3. Ensure the Amplifier is securely fastened to the vessel to prevent injury in the event of an accident.
4. Ensure all wiring is protected to avoid pinching or crushing which could result in damage to the audio system.
5. Ensure the mounting location has sufficient air flow around the amplifier. If the amplifier is mounted in an enclosed space a 3" fan with ducting should be used to aid in air flow.
6. Ensure you use the recommended gauge wire/cable for all amplifier connections.
7. Note: we do not recommend mounting your amplifier in close proximity to other bridge-mounted equipment critical to safe navigation of your vessel, in close proximity to receiving antennas, or near radio-communications equipment mounted on your vessel.

+12V CONNECTION

FUSION amplifiers should be connected directly to the +12V battery terminal via a 4 gauge cable with an inline fuse or circuit breaker as close to the battery as possible.

GROUND CONNECTION

Connect directly to the vessel's earth system via a 4 gauge cable. **NOTE:** This is the first wire to connect up during the installation.

REMOTE TURN-ON CONNECTION

This connection turns the amplifier on & should be connected to the remote turn on wire from the Head Unit. If one is not available a switched 12v source must be used.

WIRING

Ensure the audio system is turned off before making any connections to the amplifier, speakers or source unit, failure to do so could result in permanent damage to the audio system.

When wiring the FUSION amplifier ensure that the cable is protected from sharp objects and always use rubber grommets when wiring through metal panels.

Ensure all terminals and connections are protected from the vessel chassis and from each other as failure to do so could result in permanent damage to the audio system.

RCA INPUTS

Choose the correct length RCA cable & run them to the RCA outputs of the source/head unit, avoiding running beside other looms & or power cable.

LEVEL CONTROL

This control is used to match the input level of the amplifier to the output level of the head unit. We recommend the following method. NOTE: Remove screws and the top cover of amplifier to access controls.

1. Turn the amplifier level to zero
2. Turn the volume of the head unit to 3/4 and the tone settings to zero
3. Adjust the level control until the desired maximum volume is achieved without distortion.
4. Failure to follow these steps may cause permanent damage to the audio system.

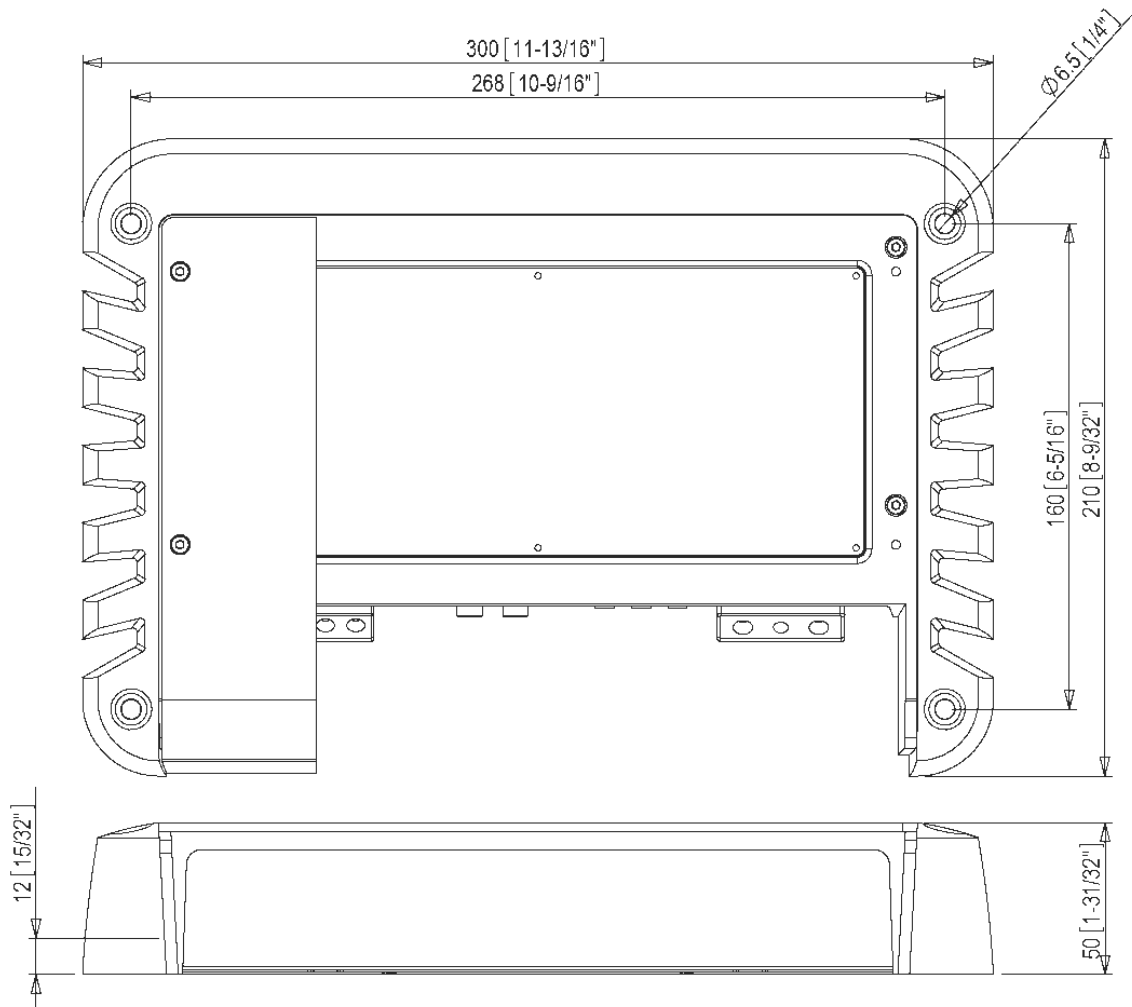
CROSSOVER TABLE

	Crossover Type	Crossover Frequency	Bass Boost
Zone 1	Selectable - LPF, HPF, or FULL	LPF or HPF Tunable - 32Hz - 320Hz	
Zone 2	Selectable - LPF, HPF, or FULL	LPF or HPF Tunable - 32Hz - 320Hz	
Sub	Fixed LPF and Fixed Subsonic	LPF Tunable - 32Hz - 320Hz HPF Tunable - 10Hz - 80Hz	Tunable - 0dB-12dB

TROUBLE SHOOTING

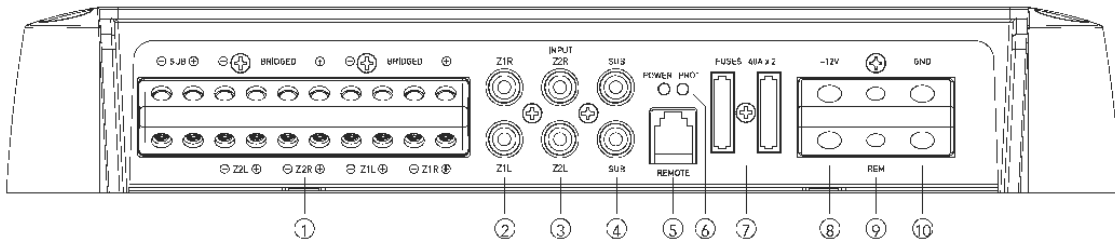
Problem	Possible Reason	Solution
Amplifier not switching on. Power LED not 'on'.	No +12v to power wire No power to remote wire Fuse broken Fuse on amplifier blown	Check fuses and connections to battery Check remote on connections to head unit Replace fuse with correct type and amperage Replace fuse with correct type and amperage
Amplifier not working, but Power LED is 'on'	Amplifier too hot Speaker wires shorted	Move amplifier to vented area Turn head unit down Check that there are no speaker wires shorted to other wires
No Sound	No RCA Signal Gain control not set up Head Unit off or low vol Amplifier Speakers	Check RCA connection to head unit Ensure you have set up the amplifier gain level control Check head unit volume level Check all power, remote on and ground Check connections Check speaker connections

AMPLIFIER DIMENSIONS



All dimensions provided are in millimeters (mm) unless indicated

CONTROL DESCRIPTIONS



1. SPEAKER OUTPUT:

Connect your speakers to these terminals.

2. ZONE 1 RCA INPUT:

Connect these RCA connectors to a head unit with a zone 1 low level output connection.

3. ZONE 2 RCA INPUT:

Connect these RCA connectors to a head unit with a zone 2 low level output connection.

4. SUBWOOFER RCA INPUT:

Connect these RCA connectors to a head unit with a subwoofer low level output connection.

5. REMOTE SUBWOOFER LEVEL CONTROL CONNECTION:

Connect the optional (supplied) Remote Level Controller to this socket.

6. POWER AND STATUS LED'S:

This displays "green" if the amplifier has been correctly powered up and 'red' if any faults are present.

7. FUSES:

Please ensure the correct type of fuse is fitted. For SG-DA51600 2 x 40A fuses.

8. +12V CONNECTION:

Connect directly to the vessel battery positive (+) terminal via a 4 gauge cable, with an inline fuse or circuit breaker at the battery end. **NOTE:** This is the last wire to connect up during installation. Damage could result if this is not done.

9. REMOTE TURN-ON CONNECTION:

This terminal is for turning the amplifier on & off. The remote input requires a switched positive (+12V) to power 'ON' the amplifier. This can usually be found on the rear of the head unit in the form of a remote output.

10. GROUND CONNECTION:

Connect directly to the vessel's earth system via a 4 gauge cable. **NOTE:** This is the first wire to connect up during the installation.

11. SUBWOOFER LP FILTER FREQUENCY:

This sets the crossover frequency point for the subwoofer channels' low pass filter between 32Hz and 320Hz.

12. ZONE 2 LEVEL:

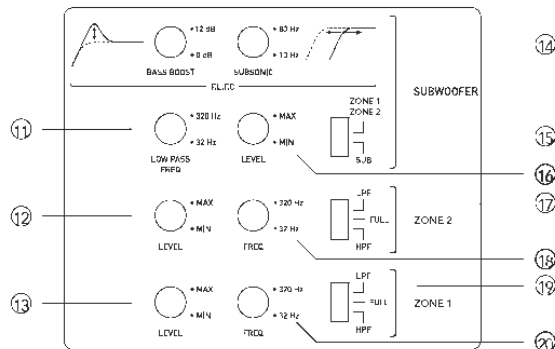
This allows level adjustment of the zone 2 input signal. Use this control to directly match the head unit to the amplifier. To set this control correctly, turn the amplifier level to MIN and the head unit to 3/4 volume, with the tone settings on zero, then slowly turn up the level control towards the MAX end of the control. **NOTE:** If the sound becomes distorted, turn this control down.

13. ZONE 1 LEVEL:

This allows level adjustment of the zone 1 input signal. Use this control to directly match the head unit to the amplifier. To set this control correctly, turn the amplifier level to MIN and the head unit to 3/4 volume, with the tone settings on zero, then slowly turn up the level control towards the MAX end of the control. **NOTE:** If the sound becomes distorted, turn this control down.

14. FUSION LOW FREQUENCY CONTROL:

The FUSION Low Frequency Control (F.L.F.C.) is a dual stage control interface. The combination of a Subsonic filter & a Bass Boost control allows precise shaping of the audio signal for your subwoofer(s). The Subsonic filter is essentially a high-pass crossover which blocks the frequency signal from 10Hz - 80Hz. This signal often contains no music & its removal will improve subwoofer control. The Bass Boost is a variable control to increase the level at 45Hz from 0 - +12dB of gain. Adjust these controls with extreme care.



15. SUBWOOFER AUDIO SOURCE:

This switch selects the audio source for the subwoofer channel. Audio can be sourced from the SUB input RCA connectors or from the Zone 1 & Zone 2 input RCA connectors.

16. SUBWOOFER LEVEL:

This allows level adjustment of the subwoofer input signal. Use this control to directly match the head unit to the amplifier. To set this control correctly, turn the amplifier level to MIN & the head unit to 3/4 volume, with the tone settings on zero, then slowly turn up the level control towards the MAX end of the control. **NOTE:** If the sound becomes distorted, turn this control down.

17. ZONE 2 FILTER FREQUENCY:

This sets the crossover frequency point for the zone 2 filter between 32Hz and 320Hz. **NOTE:** Failure to correctly set could result in speaker damage.

18. ZONE 2 FILTER SELECTION:

This switch selects the type of filter used for the zone 2 audio signal. Either Low Pass, High Pass or Full Range can be selected. The Low Pass filter is designed to filter out all mid to high frequencies that only full range speakers should produce. The High Pass filter is designed to filter out all low frequencies that only subwoofers should produce. Full Range allows all frequencies.

19. ZONE 1 FILTER SELECTION:

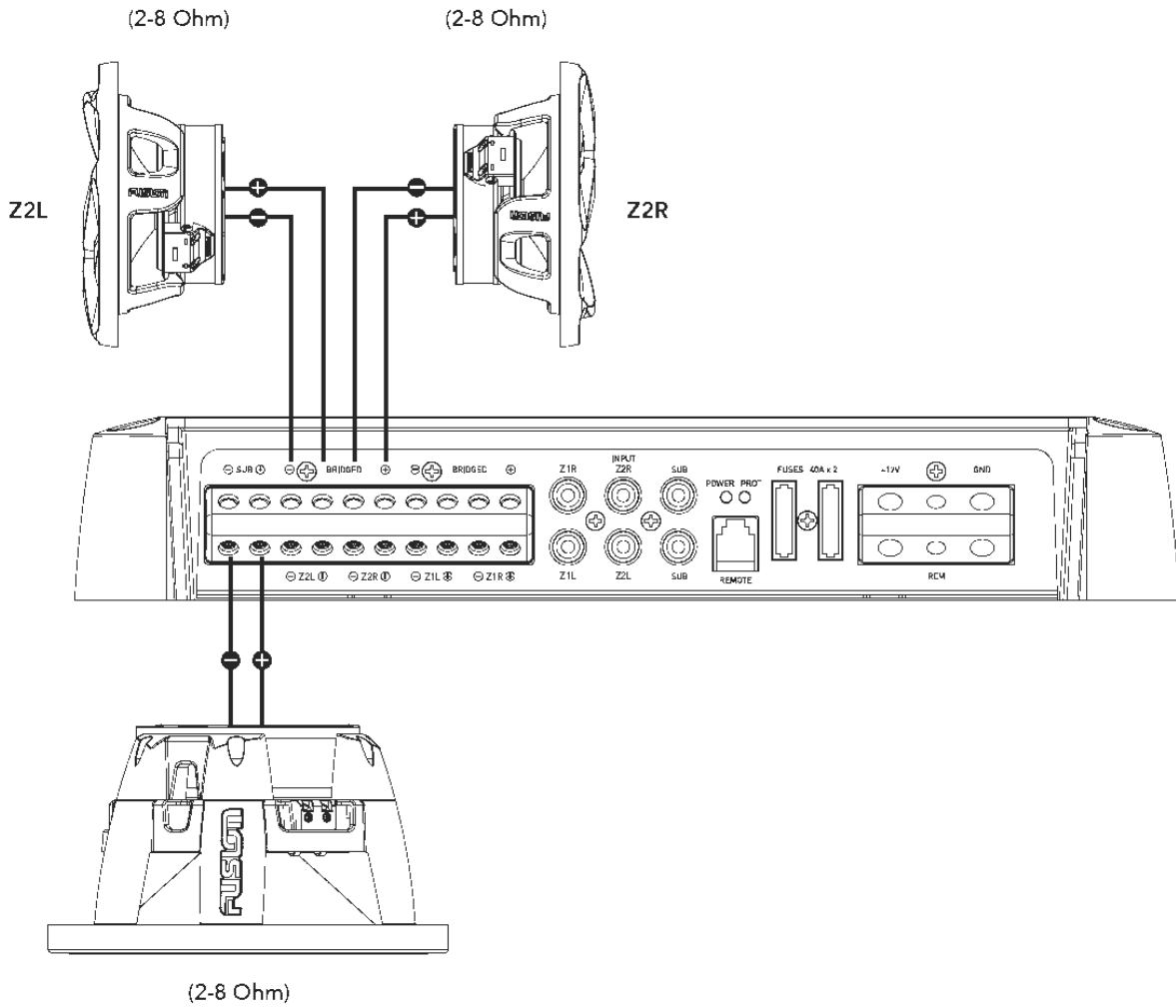
This switch selects the type of filter used for the zone 1 audio signal. Either Low Pass, High Pass or Full Range can be selected. The Low Pass filter is designed to filter out all mid to high frequencies that only full range speakers should produce. The High Pass filter is designed to filter out all low frequencies that only subwoofers should produce. Full Range allows all frequencies.

20. ZONE 1 FILTER FREQUENCY:

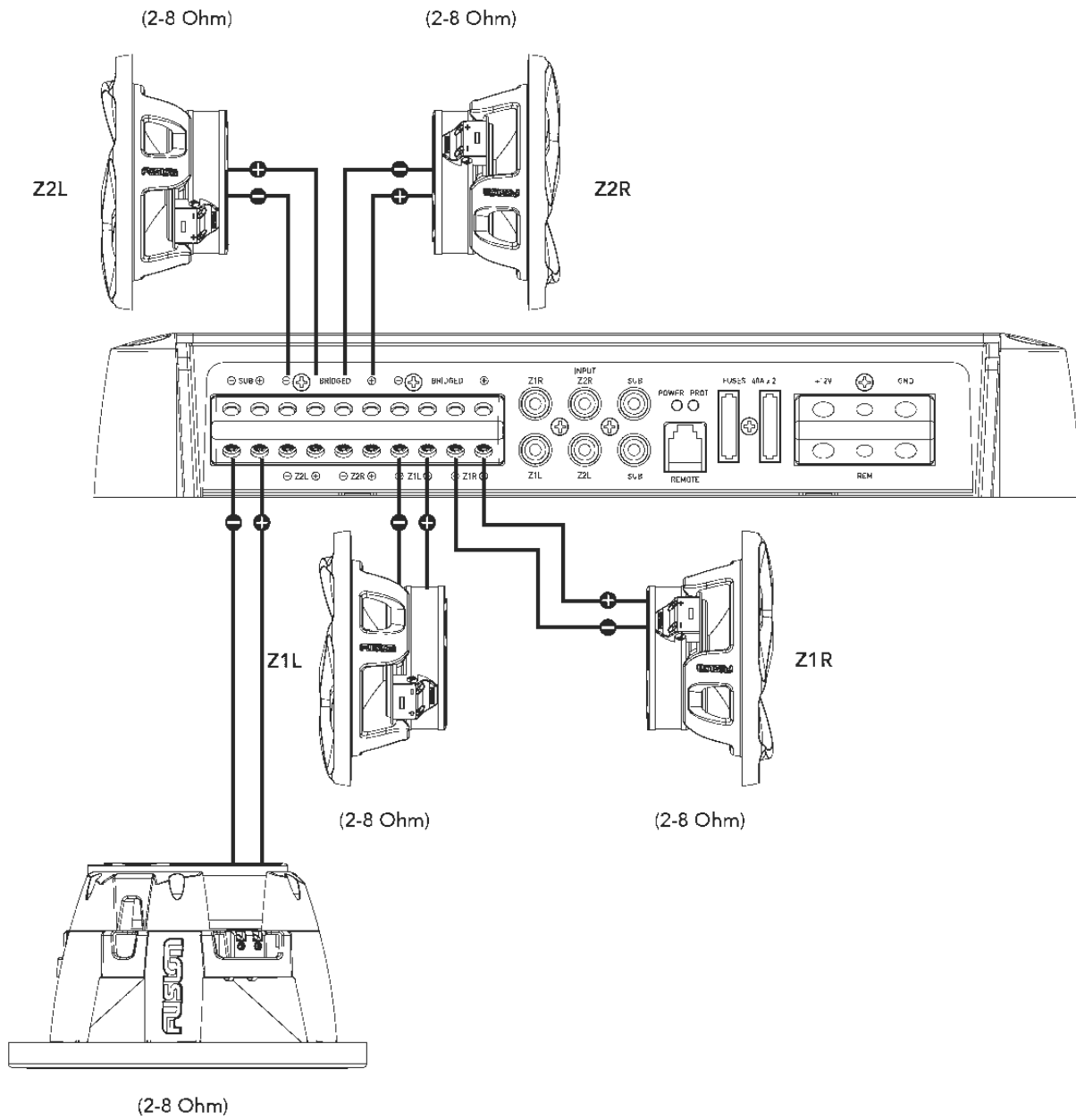
This sets the crossover frequency point for the zone 1 filter between 32Hz and 320Hz. **NOTE:** Failure to correctly set could result in speaker damage.

INSTALLATION INSTRUCTIONS

3 CHANNEL INSTALLATION



5 CHANNEL INSTALLATION



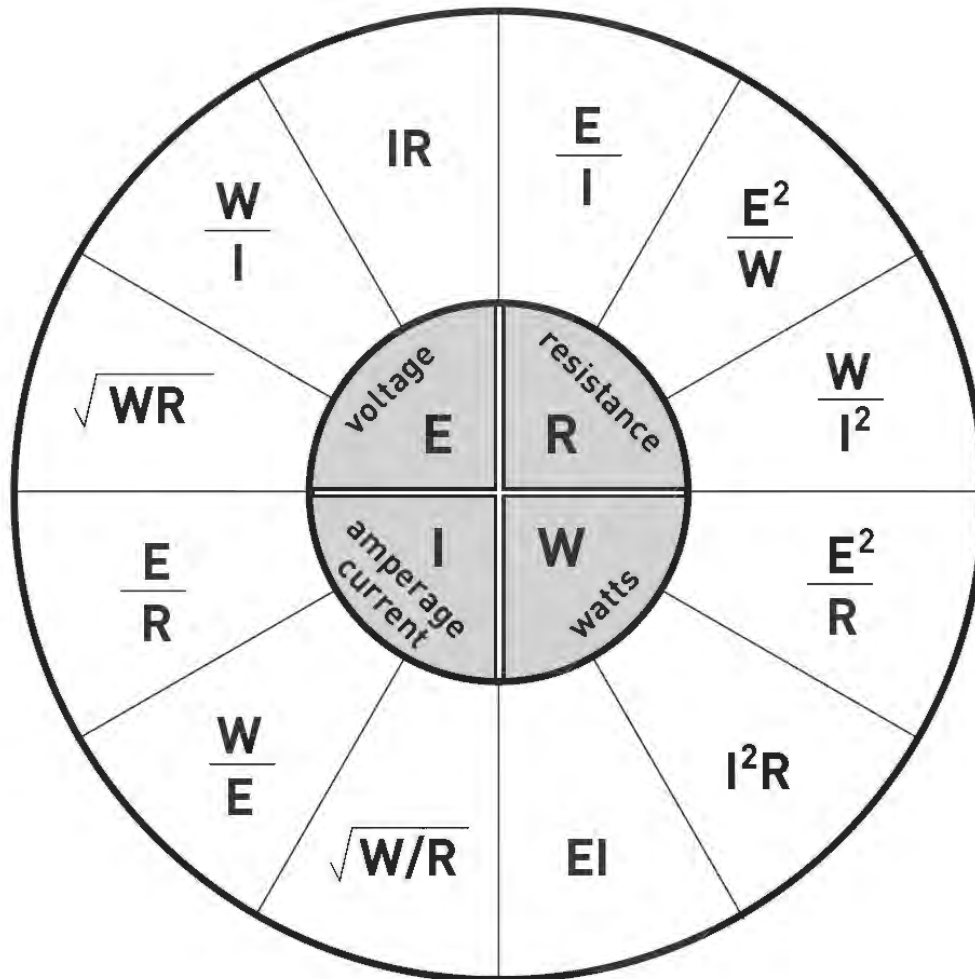
TECH TIPS

BASIC TOOLS

In any installation these basic tools may be required. For custom type installations, additional tools may be necessary.

- Electric drill
- Crimping tool
- Allen key set
- Wire strippers
- Utility knife, sabre saw, jigsaw, nibbler
- Flat blade screwdriver
- Electrical tape
- Phillips screwdriver
- Silicon sealant

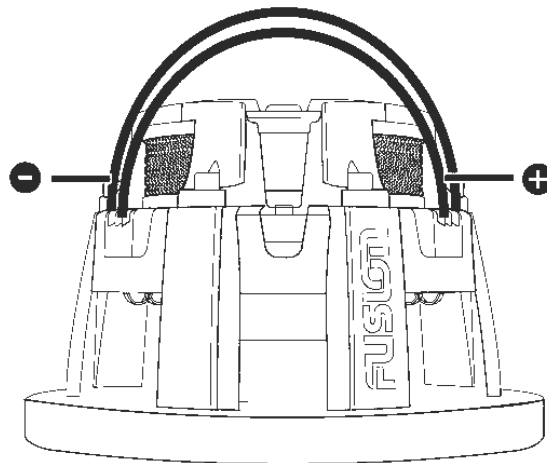
OHMS LAW SIMPLIFIED



SERIES AND PARALLEL SUBWOOFER WIRING FOR DUAL VOICE COIL SUBWOOFERS

PARALLEL VOICE COIL WIRING (2 OHM OPERATION)

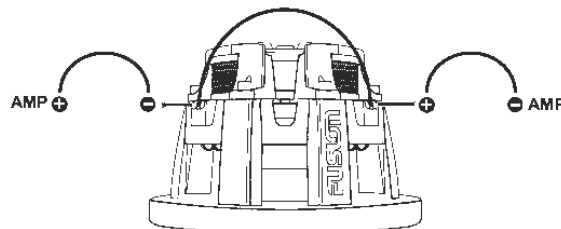
To wire a 4 Ohm DVC subwoofer in parallel to get 2 Ohm, use two short pieces of speaker wire and link the positive from one coil to the positive of the second coil, and do the same for the negative as shown below. Then wire the amplifier to opposite sides of the subwoofer in order to equalise any connection resistance.



2 Ohm operation

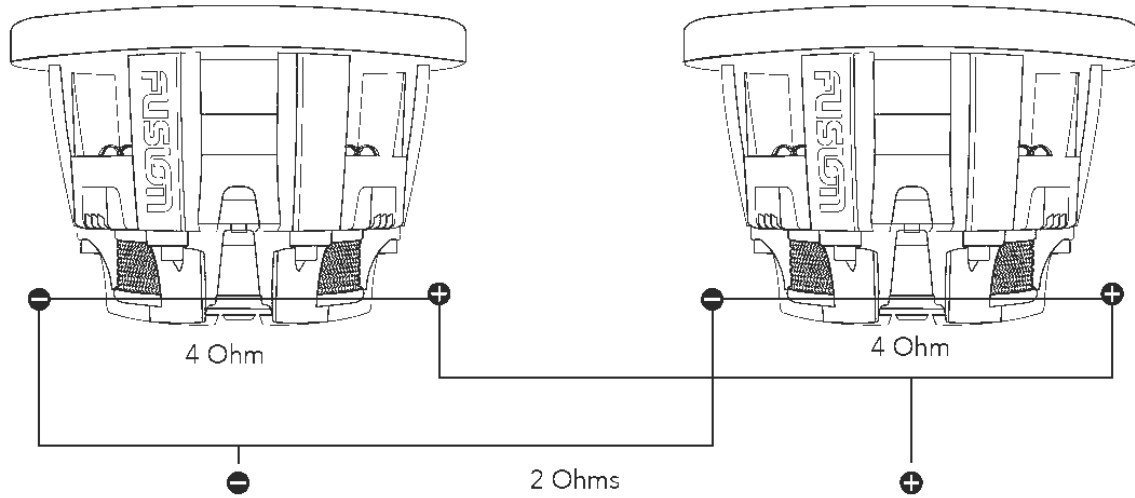
SERIES VOICE COIL WIRING (8 OHM OPERATION)

To wire a 4 Ohm DVC subwoofer in series to get 8 Ohms, use one short piece of speaker wire and link the positive from one voice coil to the negative of the second coil as shown below. Then wire the amplifier to opposite sides of the subwoofer.



8 Ohm operation

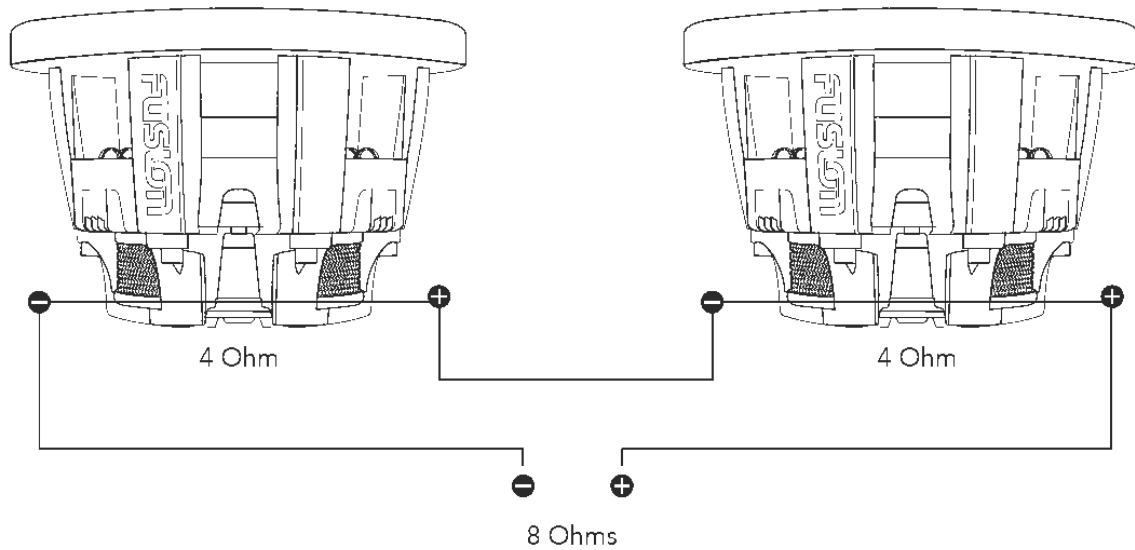
PARALLEL WIRING FORMULA FOR 2 SPEAKERS



$$\frac{R1 \times R2}{R1 + R2} = \text{LOAD IMPEDANCE}$$

$$\frac{4 \text{ Ohms} \times 4 \text{ Ohms}}{4 \text{ Ohms} + 4 \text{ Ohms}} = \frac{16}{8} = 2 \text{ Ohms}$$

SERIES WIRING FORMULA FOR 2 SPEAKERS



$$R1 + R2 = \text{LOAD IMPEDANCE}$$

RECORD YOUR PURCHASE DETAILS HERE:

SERIAL NUMBER

DATE OF PURCHASE

AFFIX RECEIPT HERE

REGISTER YOUR PRODUCT ONLINE:

For your own peace of mind, register your product purchase
online at **FUSIONENTERTAINMENT.COM**

This product is backed by a 3 Year Limited Consumer Warranty

FUSION[®]

FUSIONENTERTAINMENT.COM

For further product and installation information, please visit FUSIONENTERTAINMENT.COM
Pour plus d'informations sur les produits et l'installation, rendez-vous sur FUSIONENTERTAINMENT.COM
Para obtener más información acerca de los productos y de su instalación, visite el sitio web FUSIONENTERTAINMENT.COM
Bezoek www.fusionelectronics.com voor meer product- en installatie-informatie.
Weitere Produkt- und Installationsinformationen finden Sie unter FUSIONENTERTAINMENT.COM
Per ulteriori informazioni sui prodotti e la loro installazione, potete visitare FUSIONENTERTAINMENT.COM
Для получения дополнительной информации о продуктах и установке зайдите, пожалуйста, на:
FUSIONENTERTAINMENT.COM

WARNING: Audio Systems can produce sound levels over 135dB. Continuous exposure to sound pressure levels over 100dB may cause permanent hearing loss! USE COMMON SENSE!

FUSION SUPPORT

New Zealand	09 369 2900
Australia	1300 736 012
Europe	+44 (0)370 850 1244
USA	623 580 9000
Pacific	+64 9 369 2900

© 2015 Garmin Ltd. or its subsidiaries



Garmin®, the Garmin logo, and the FUSION® logo are trademarks of Garmin Ltd. or its subsidiaries, registered in the USA and other countries.

FUSION is a trademarks of Garmin Ltd. or its subsidiaries. These trademarks may not be used without the express permission of Garmin. Other trademarks and trade names are those of their respective owners.

All rights reserved. Specifications and design are subject to change without notice.

YOU CAN HELP PROTECT THE ENVIRONMENT! Please remember to respect the local regulations: Hand in the non-working electrical equipment to an appropriate waste disposal center.

FUSION®

FUSIONENTERTAINMENT.COM

190-02019-00 Rev A
OCTOBER 2015

Printed in China

21/09/2020

Pendaftaran Diploma Kemahiran Malaysia | SG Education Group (SG Akademi KL | SG Akademi Sarawak | Mini Technology College)



(index.html)

[Peluang Pekerjaan ?](#)

[Program Khas PKP & pasca COVID-19](#)

[Pendaftaran](#)

[Tahukah Anda](#)

[Mengapa SG Academy](#)

[Program](#)

[Testimoni](#)

[Hubungi Kami](#)

Program Diploma Kemahiran Malaysia

Program Khas PKP & pasca COVID-19

Elaun Sara hidup RM 4800 dan pelan internet data

Khas untuk lepasan PT3/SPM dan juga terbuka kepada pelajar yang tidak mendapat tempat di institusi awam.

[Daftar Sekarang](#)

Keperluan Asas



Umur Pelajar:
15 hingga 35 tahun.



Kelulusan Akademik:
UPSR Untuk Program-program Hospitaliti
(Makanan & Minuman dan Kulineri)
PMR/ PT3 Untuk Program-program IT dan Kejuruteraan



Lain-lain:
Sihat dari segi kesihatan

PENDAFTARAN SESI KAUNSELING PERCUMA

Ada soalan? Tanya kami dalam FB Messenger

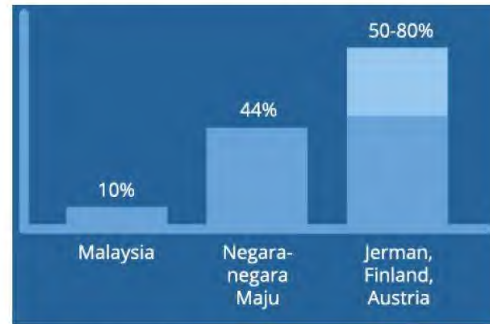
Nama
Kursus
Emel Ex: abcd@gmail.com
Nombor telefon
Saya Berasal Dari
<input type="submit" value="Submit"/>

Tahukah Anda?



12 juta tenaga kerja Malaysia

Malaysia memerlukan sekurang-kurangnya 3.3 juta pekerja mahir dalam tempoh 10 tahun akan datang bagi memenuhi permintaan perkembangan ekonomi negara.



Pelajar dalam kursus teknikal dan vokasional

Negara-negara seperti Jerman memberi tumpuan dalam menjadikan para pelajar sekolah menengah graduan yang setara dengan ijazah teknikal dari salah satu kolej komuniti mereka supaya mereka bersedia untuk pekerjaan.

Sukatan pelajaran kursus yang ditawarkan melalui Diploma Kemahiran Malaysia DKM telah direka bentuk dan dibangunkan untuk mematuhi Standard Kemahiran Pekerjaan Kebangsaan (NOSS), Jabatan Pembangunan Kemahiran (DSD) dengan kriteria berikut:

- Berdasarkan keperluan semasa oleh Industri.
- Berkaitan secara langsung dengan struktur kerjaya pekerjaan.
- Dibangunkan oleh pengamal industri dan pekerja mahir yang terlibat secara langsung dalam pekerjaan.

Mengapa SG Academy?





- Kolej TVET beroperasi sejak tahun 1999
- Dianugerahkan 5 bintang oleh • Jabatan Pembangunan Kemahiran (JPK), Kementerian Sumber Manusia
- Sijil Kemahiran diiktiraf oleh industri dan kerajaan Malaysia
- Fasiliti dan bahan pembelajaran berasaskan kepada keperluan industri
- Kerjasama antara universiti tempatan dan antarabangsa
- Pakar industri berpengalaman sebagai tenaga pengajar
- Syarat Kemasukan Minima - Iulusan PMR
- Yuran pembelajaran Fleksibel serta rebat khas sehingga 40%
- Latihan insentif iaitu 80% praktikal, 10% teori dan 10% latihan perindustrian
- Belajar Sambil bekerja - Jadual latihan fleksibel 3 hari pembelajaran dan 4 hari bekerja sambilan
- Peluang pekerjaan semasa mengikuti program dan selepas tamat program!

Daftar Sekarang

Apakah program Diploma Kemahiran Malaysia yang ditawarkan?



Diploma Teknologi Mekanik

Bidang "Smart Manufacturing dan Industri 4.0" bagi menjamin peluang pekerjaan di masa depan.

- Penggubalan kejuruteraan automasi perindustrian
- Reka bentuk dan penggubalan dibantu-komputer automasi perindustrian
- Fabrikasi dan sub-pemasangan automasi perindustrian

Prospek Kerjaya

- Gas dan minyak
- Pengurusan Projek Kejuruteraan
- Teknologi Robotik

Daftar

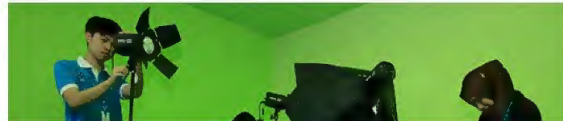
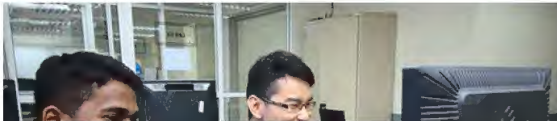


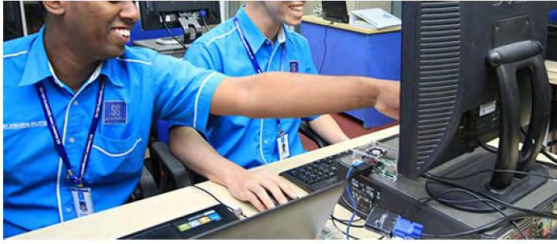
Diploma Kemahiran Teknologi Dron (Drone Technology)

SKM tahap 2 dan 3 + Diploma Teknologi Dron , UK

SG Akademi merupakan kolej TVET pertama yang mempunyai kelulusan program SKM dron yang dibangunkan oleh pakar industri ditauliah oleh Kementerian Sumber Manusia. Peluang Pekerjaan Terjamin ! Peluang pekerjaan dalam Industri teknologi drone merentasi pelbagai industri sedang melonjak dari peringkat asas ke peringkat mega-trend dengan cepat kerana semakin banyak industri telah mula menyedari potensi, skop, dan skala capaian global melalui penggunaan teknologi drone.

Daftar





Diploma Sistem Komputer

Bidang teknologi digital dan kejuruteraan untuk mencapai status golongan berpendapatan tinggi di era ekonomi digital.

- Penyelenggaraan peralatan dan perisian komputer
- Konfigurasi Pelayan (server)
- Pengatucaraan (Coding)

Prospek Kerjaya

- Pengurus IT
- Pakar komputer
- Teknologi Komputer

Daftar



Diploma Multimedia Kreatif

Bidang animasi dan visual yang penting untuk kemajuan era ekonomi digital.

- Pengurusan Penerbitan Multimedia
- Reka Bentuk Pengajaran Multimedia
- Pengarahan Seni Multimedia

Prospek Kerjaya

- Pendidikan
- Latihan
- Pengiklanan

Daftar

Ingin maklumat lebih lanjut?



Hubungi kami sekarang.

Hubungi kaunselor kami untuk mengetahui lebih lanjut tentang peluang
kareer anda.

[Hubungi Kami](#)

Diploma Seni Kulineri (culinary arts)

Bidang kemahiran yang mempunyai permintaan tertinggi di Asia dan di dunia.

- Kebersihan, Keselamatan Dapur dan Pengendalian Makanan
- Teknik memasak
- Stok, Sup dan Penghasilan Sos Panas

Prospek Kerjaya

- Chef Eksekutif
- Usahawan
- Katerer

[Daftar](#)

Testimoni

Menerusi aplikasi Internet of Things (IoT) saya mendapat peluang perkerjaan di Malaysia, saya mampu menguasai kemahiran penguasaan elemen 4C iaitu Critical Thinking & Prolem Solving, Communication, Collaboration dan Creativity.



Kuganeswari A/P Vigneswaran,
Tahap Empat Sistem Komputer

Skim Khas Program TVET

Program Khas Diploma Kemahiran Malaysia semasa PKP dan pasca COVID-19

- Terbuka khas kepada lepasan PT3/SPM yang tidak mempunyai keputusan yang memuaskan.
- Terbuka kepada pelajar yang tidak mendapat tempat di Institusi Awam.
- Pelajar yang tidak mempunyai kredit layak untuk memohon.
- Program khas ini akan dijalankan atas talian (Online) dengan bimbingan Pegawai Penilai / Pengajar disusuli dengan latihan praktikal.
- Setiap pelajar akan menerima elaun sara hidup RM 4800 setahun.

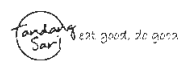
Program yang ditawarkan

- Diploma Teknologi Mekatronik
- Diploma Sistem Komputer
- Diploma Kreatif Multimedia
- Diploma Seni Kulinari

[Daftar Sekarang](#)

Dimanakah graduan kemahiran kita sedang bekerja ?

HOSPITALITY



ENGINEERING MECHATRONIC MECHANICAL ELECTRIC AND ELECTRONIC



INFORMATION TECHNOLOGY



CREATIVE MULTIMEDIA



Diploma in Creative Multimedia - student experience



SG Education Group

Lot D-00-03A, Putra Majestik Business Centre
Jalan Kasipillay, Off Jalan Sultan Azlan Shah, 51200
Kuala Lumpur, Malaysia.

Tel: +6012-260 2524
Email: leads@sgacademy.edu.my
(<mailto:leads@sgacademy.edu.my>)





(<https://wa.me/60122544066>)



(<https://www.facebook.com/sgacademy>)

(<https://www.linkedin.com/company/sg>)

 (<https://www.linkedin.com/company/sg-education-group/>)
 (https://www.youtube.com/results?search_query=sg+academy)

Copyright 2020 © SG Education Group

SG Automotive

SG Automotive Group Co Ltd (officially **Liaoning Shuguang Automotive Group, Ltd**) is a Chinese vehicle and component manufacturer headquartered in Dandong, Liaoning province.^[2] The company makes buses,^[3] light trucks, semi-trailer trucks, SUVs^[4] and automotive components.^[3] Auto parts made by SG are used by other Chinese car makers including Brilliance Auto, Chery, and JAC Motors.^[5]

Light trucks and buses are sold under the *Huanghai* (黄海, lit. "Yellow Sea") brand name,^[6] whilst the *Shuguang* brand was used for SUVs in the early 2000s.^[7] Some SUVs sold under this brand may utilize Mitsubishi engines as of 2011.^[8] The company makes fleet sales, and some products are purchased by the Chinese State.^[9]

Contents

History

Operations

Products

Current

Former

Export sales

References

External links

History

SG Automotive Group Co., Ltd.



曙光汽车集团
SG AUTOMOTIVE GROUP

Type	Public
Traded as	SSE: 600303 (http://english.sse.com.cn/markets/equities/list/overview/?COMPANY_CODE=600303&STOCK_CODE=600303) ^[1]
Industry	Automotive
Headquarters	Dandong, Liaoning, China
Products	Passenger cars, buses, automotive components ^[1]
Subsidiaries	Huanghai Bus
Website	http://en.sgautomotive.com (http://en.sgautomotive.com/default.aspx)

SG Automotive

Simplified Chinese	辽宁曙光汽车集团
Traditional Chinese	遼寧曙光汽車集團

SG was founded in Liaoning in 1984 with RMB 70,000 as a manufacturer of axles for off-road vehicles.^[10]

In August 2012, SG agreed to acquire a 56.19% stake in a Dandong-based special vehicle company from a Liaoning-based group company for RMB 80.9 million.^[11]

Literal meaning	SG Automotive Group Co., Ltd.
Transcriptions	
Standard Mandarin	
Hanyu	Liáoníng shǔguāng
Pinyin	qìchē jítuán

Operations

SG has component manufacturing facilities in Wuhu, Anhui, and Shenyang, Liaoning.^[5] Other facilities include a bus-making factory in Changzhou, Changzhou Changjiang Bus, which became operational in early 2010^[12] and a location-unknown component-making facility 113,220 square meters in size that should have become operational in late 2012.^[13]

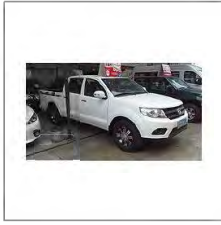
Products

Current

- Huanghai Major (DD 1023) - pickup truck - Copy of the Toyota Tacoma
- Huanghai Raytour (DD 504)- van - Copy of the Volkswagen Crafter
- Huanghai N1
- Huanghai N1S
- Huanghai N2
- Huanghai N2S
- Huanghai N3



Huanghai Raytour



Huanghai N1



Huanghai N1S



Huanghai N2



Huanghai N3A

Former

- DG 6471 B
- DG 6400
- Huanghai Challenger (DD 6490P/DD 6491A/Shuguang Challenger) - SUV - rebadged Gonow Jetstar/Dadi Shuttle
- Huanghai Faster NCV - CUV - Concept based on the Landscape V3 with the front end copied from the Pontiac Torrent previewing the Huanghai Landscape V3.
- Huanghai Landscape F1 (DD 6460D/DD 6460K/DD 6461A/DD 6470E) - CUV - Copy of Kia Sorento with a front fascia similar to the Mercedes-Benz M-Class
- Huanghai Landscape V3 (DD 6472A/DD 6472B) - CUV - Copy of the Toyota Harrier
- DG 6480 "Navigator" or "Dawn" or "Falcon"
- Huanghai Aurora (DD 6470/DD 6470H) - CUV - Copy of the SsangYong Rexton
- DG 1020 "Antilope" or "Aolin"
- Huanghai Plutus (DD 1022) - pickup truck - Copy of the Chevrolet Colorado^[14]
- Huanghai Steed (DD 1020) - pickup truck - Variant of the Plutus
- Shuguang Conqueror (DG6472) - an updated luxury Huanghai Challenger
- Shuguang Runway - a three-door Shuguang Conqueror^[15]





Huanghai
Landscape F1



Huanghai
Landscape V3



SG 6480 "Dawn" in
the Taklamakan



Huanghai Aurora



Huanghai
Challenger



Huanghai DD1023

Export sales

SG has exported light trucks and buses to countries including Saudi Arabia, South Africa, and Brazil.^[16] Some products, including the Plutus and the Steed, are assembled by Effa Motors in Uruguay.

Some of its production has been sold in Malaysia, where the Plutus pick-up was on sale as of late 2012.

References

1. "Profile: Liaoning SG Automotive Group Co Ltd" (<https://www.reuters.com/finance/stocks/companyProfile?symbol=600303>.

https://en.wikipedia.org/wiki/SG_Automotive

- SS). Reuters. Retrieved 1 December 2012.
2. "Headquarter of The Group" (<http://en.sgautomotive.com/lx.aspx?c=E3032D36D319A667>). *Contact Us*. SG Automotive Group. Retrieved November 16, 2012.
 3. "SG Overview" (<http://en.sgautomotive.com/infoclass.aspx?c=4C26F8901DC98154>). *About SG*. SG Automotive Group. Retrieved November 16, 2012.
 4. "Huanghai Auto" (<http://en.huanghaimotors.com/>). *splash page*. SG Automotive Group. Retrieved November 16, 2012.
 5. "SG Group Wuhu suspension module project is launching officially" (<http://en.sgautomotive.com/infoclass.aspx?id=831FE0CDD91AC4AA&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2009-12-28. Retrieved November 21, 2012.
 6. For cars sold under the brand name Huanghai, see "Huanghai Auto" (<http://en.huanghaimotors.com/>). *splash page*. SG Automotive Group. Retrieved November 16, 2012.
 - For buses sold under the brand name Huanghai, see "Huanghai Bus" (<http://www.huanghaibus.com/?action-channel-name-en>). SG Automotive Group. Retrieved November 16, 2012.
 7. <http://chinacarhistory.com/2020/08/08/chinese-car-brands-that-time-forgot-shuguang-auto/>
 8. "First time breaking through 100000 Yuan selling price, Huanghai Landscape V3 CUV shining in Changchun International Automobile Expo" (<http://en.sgautomotive.com/infoclass.aspx?id=9AE6E165BB36D344&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011. Retrieved November 21, 2012.
 9. For lot of light trucks sold to a government department of Liaoning province, see "31 Huanghai Landscape F1 Delivered to Provincial Public Security Bureau for Police Service" (<http://en.sgautomotive.com/infoclass.aspx?id=4A54B71795D78C29&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2012-09-10. Retrieved November 16, 2012.
 - For lot of buses sold to city of Shijiazhuang, see "Huanghai Won Big Order of 400 Natural Gas Buses" (<http://en.sgautomotive.com/infoclass.aspx?id=5BEB8430C39EF752&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011-07-21. Retrieved November 16, 2012.
 - For lot of buses sold to city of Changzhou, see "380 Huanghai CNG Buses are to Run in Changzhou" (<http://en.sgautomotive.com/infoclass.aspx?id=25A1540FBF137D9C&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011-07-01. Retrieved November 16, 2012.
 10. "Auto heavyweight SG continues winning streak" (http://www.chinadaily.com.cn/cndy/2007-10/23/content_6197581.htm). China Daily. 23 October 2007. Retrieved 1 December 2012.
 11. "Liaoning SG Automotive Group Co Ltd to Acquire Equity Shares" (<https://www.reuters.com/finance/stocks/600303.SS/key-developments/article/2592947>). Reuters. 17 August 2012. Retrieved 1 December 2012.
 12. "The Facility Launch Ceremony of Changzhou Huanghai Bus Base Held" (<http://en.sgautomotive.com/infoclass.aspx?id=516761ECD93FE245&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2010-01-21. Retrieved

November 21, 2012.

13. "Substantial Progress for SG Gear" (<http://en.sgautomotive.com/infoclass.aspx?id=6FE066179DD0C8A8&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2012-09-10. Retrieved November 21, 2012.
14. "Beijing Auto Show Live: Huanghai Landscape V3" (<https://carnewschina.com/2010/04/26/beijing-auto-show-live-huanghai-landscape-v3/>).
15. <http://chinacarhistory.com/2020/08/08/chinese-car-brands-that-time-forgot-shuguang-auto/>
16. For small lot of light trucks sold in South Africa, see "Passenger Vehicle Division Won S. African Order of 164 Pick-up Trucks" (<http://en.sgautomotive.com/infoclass.aspx?id=E42AAF858B1268DC&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011-09-03. Retrieved November 16, 2012.
 - For small lot of light trucks sold in Brazil, see "Passenger Vehicle Division Won Brazilian Order of 200 Pick-up trucks" (<http://en.sgautomotive.com/infoclass.aspx?id=B8C1718971F0813E&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011-07-21. Retrieved November 16, 2012.
 - For small lots of buses sold in Saudi Arabia, see "Saudi Arabian Customer Purchased 66 Deluxe Buses in 3 Years" (<http://en.sgautomotive.com/infoclass.aspx?id=C4A2B59F519066C1&c=7A9DCA13C7CCB44A&a=s>). *Press release*. SG Automotive Group. 2011-07-21. Retrieved November 16, 2012.

External links

- **SG Automotive Group** website (<http://www.sgautomotive.com/>)
-

Retrieved from "https://en.wikipedia.org/w/index.php?title=SG_Automotive&oldid=979389407"

This page was last edited on 20 September 2020, at 13:13 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

SG Sonnenhof Großaspach

SG Sonnenhof Großaspach (German: *Sportgemeinschaft Sonnenhof Großaspach e.V.*), commonly known as **Sonnenhof Großaspach**, is a German professional football club based in Aspach, Baden-Württemberg. The club play in the Regionalliga Südwest, which is the fourth tier of football in the country.

Contents

History

Honours

Players

Current squad

Personnel

Current technical staff

List of managers

Statistics

Recent seasons

References

External links

History

The club was formed in 1994 through the union of *Spvvg Großaspach* and *FC Sonnenhof Kleinaspach*. The sports club has 1,300 members and, in addition to its football side, has

SG Sonnenhof Großaspach



Full name	Sportgemeinschaft Sonnenhof Großaspach e.V.
Short name	SG
Founded	25 August 1994
Ground	<u>Mechatronik Arena</u>
Capacity	10,001
Chairman	Werner Benignus
Interim manager	<u>Hans-Jürgen Boysen</u>
League	<u>Regionalliga Südwest</u>

departments for bowling, gymnastics, and table tennis. The term *Sonnenhof* in the club name comes from the local hotel Sonnenhof in which the meeting was held that resulted in the FC Sonnenhof Kleinaspach was formed.^[1]

The footballers have been twice promoted in recent years and reached the Oberliga Baden-Württemberg (IV) in 2005, playing there as a lower table side. In 2008–09, the club achieved its greatest success yet, winning the league and earning the right for promotion to the Regionalliga Süd, where they played until 2012, when the club entered the new Regionalliga Südwest. In 2009, the club qualified for the first time for the first round of the German Cup but was knocked out by VfB Stuttgart after a 1–4 loss, leading 1–0 until the 55th minute.^[2]

In 2012–13, the club qualified again for the first round of the German Cup but was knocked out by FSV Frankfurt after a 1–2 loss.^[3] The club celebrated its greatest success in 2014 when it won the Regionalliga Südwest and qualified for the promotion round to the 3. Liga, where it overcame VfL Wolfsburg II and earned promotion to the league.

2019–20	3. Liga, 19th (relegated)
Website	Club website (http://www.sg94.de/)
	
Home colours	Away colours

Honours

SG Sonnenhof Großaspach honours

Type	Competition	Titles	Seasons/Years
Domestic	<u>Regionalliga Südwest</u>	1	2013–14
	<u>Oberliga Baden-Württemberg</u>		2008–09
	<u>Württemberg Cup</u>		2008–09
	<u>Verbandsliga Württemberg</u>		2004–05
	<u>Landesliga Württemberg</u>		2001–02



Historical chart of Sonnenhof Großaspach's league performance

Players

Current squad

As of 22 January 2020^[d]

Note: Flags indicate national team as defined under [FIFA eligibility rules](#). Players may hold more than one non-FIFA nationality.

No.	Pos.	Nation	Player	No.	Pos.	Nation	Player
1	GK	 GER	Maximilian Reule	18	FW	 GER	Timo Röttger
2	DF	 GER	Niklas Sommer	19	MF	 GER	Marco Hingerl
3	DF	 GER	Ken Gipson	20	FW	 GER	Matthias Morys
4	DF	 GER	Korbinian Burger	21	DF	 GER	Jonas Behounek
5	DF	 GER	Julian Leist (<i>captain</i>)	22	FW	 CRO	Dominik Martinović
6	MF	 GER	Sebastian Bösel	23	DF	 CRO	Marin Šverko (<i>on loan from Mainz 05 II</i>)
8	MF	 GER	Onur Ünlüçifçi	24	MF	 GER	Charmaine Häusl
9	FW	 GER	Eric Hottmann (<i>on loan from VfB Stuttgart II</i>)	25	DF	 GER	Kai Gehring
10	MF	 ERI	Joel Gerezgiher	26	MF	 GER	Jamil Dem
11	MF	 USA	McKinze Gaines	27	DF	 GER	Michael Vitzthum
13	FW	 GER	Kai Brünker	29	GK	 GER	Constantin Frommann (<i>on loan from SC Freiburg</i>)
14	MF	 KVX	Kamer Krasniqi	30	DF	 GER	Dan-Patrick Poggenberg
15	DF	 GER	Dennis Slamar	34	MF	 GER	Nicolas Jüllich
17	FW	 GER	Jonas Meiser	35	GK	 KVX	David Nreca-Bisinger

Personnel

Current technical staff

As of 26 February 2020^[4]

Position	Name
Head coach	 Hans-Jürgen Boysen
Assistant coach(es)	 Markus Lang
	  Zlatko Blaškić
Athletic coach	 Axel Mäder
Goalkeeping coach	 Rouven Sattelmanier
Physiotherapist(s)	 Alice Pfitzer
	 Florian Ziegler
	 Jonas Halder
	 Sissi Stättmayer
Doctor(s)	 Heiko Kachel
	 Karsten Reichmann
	 Rainer Michelfelder
Kit manager	 Andreas Jung
Team manager	  Nebih Azemi
Team official	 Harry Anders

List of managers

This is the list of coaches of SG Sonnenhof Großaspach since 2006:^[5]

No.	Name	From	To	Stint
1.	 <u>Alexander Malchow</u>	1 July 2006	30 June 2007	N/A
2.	 <u>Markus Gisdol</u>	1 July 2007	10 November 2007	
3.	 <u>Hans-Jürgen Boysen</u>	22 November 2007	5 January 2008	
4.	 <u>Thomas Letsch</u>	6 January 2008	30 June 2009	
5.	 <u>Jürgen Hartmann</u>	1 July 2009	15 April 2010	
6.	 <u>Norbert Gundelsweiler</u>	1 May 2010	30 June 2010	
7.	 <u>Alexander Zorniger</u>	1 July 2010	30 June 2012	
8.	 <u>Rüdiger Rehm</u>	1 July 2012	28 October 2014	1st
9.	 <u>Uwe Rapolder</u>	28 October 2014	25 February 2015	N/A
10.	 <u>Rüdiger Rehm</u>	25 February 2015	27 June 2016	2nd
11.	 <u>Oliver Zapel</u>	27 June 2016	30 June 2017	1st
12.	 <u>Sascha Hildmann</u>	1 July 2017	5 October 2018	N/A
13.	 <u>Zlatko Blaškić</u>	5 October 2018	17 October 2018	<u>Caretaker</u>
14.	 <u>Florian Schnorrenberg</u>	17 October 2018	6 May 2019	N/A
15.	 <u>Markus Lang</u>	6 May 2019	30 June 2019	
16.	 <u>Oliver Zapel</u>	1 July 2019	16 December 2019	2nd
17.	 <u>Markus Lang</u>	16 December 2019	3 January 2020	<u>Caretaker</u>
18.	 <u>Mike Sadlo</u>  <u>Heiner Backhaus</u>	3 January 2020	26 February 2020	<u>Caretaker</u>
19.	 <u>Hans-Jürgen Boysen</u>	26 February 2020	<i>present</i>	

Statistics

Recent seasons

This is the list of recent season-by-season performance of the club since 2001–02 season:^{[6][7]}

Season	Division	Tier	Position
2001–02	Landesliga Württemberg	VI	↑
2002–03	Verbandsliga Württemberg	V	8th
2003–04			8th
2004–05			1st ↑
2005–06	Oberliga Baden-Württemberg	IV	14th
2006–07			13th
2007–08			10th
2008–09			V
2009–10	Regionalliga Süd	IV	12th
2010–11			14th

Season	Division	Tier	Position
2011–12	Regionalliga Süd	IV	2nd
2012–13	Regionalliga Südwest		4th
2013–14			1st ↑
2014–15	3. Liga	III	15th
2015–16			7th
2016–17			10th
2017–18			14th
2018–19			15th
2019–20			19th ↓
2020–21			Regionalliga Südwest

- With the introduction of the Regionalligas in 1994 and the 3. Liga in 2008 as the new third tier, below the 2. Bundesliga, all leagues below dropped one tier. In 2012, the number of Regionalligas was increased from three to five with all Regionalliga Süd clubs except the Bavarian ones entering the new Regionalliga Südwest.

References

1. "Warum heißen die so? Heute: SG Sonnenhof Großaspach" (https://web.archive.org/web/20140122225044/http://www.fussball.de/warum-heissen-die-so-heute-sg-sonnenhof-grossaspach/id_56225772/index) [Where does their name mean? Today: SG Sonnenhof Großaspach]. *Fussball.de* (in German). 26 May 2012. Archived from the original (http://www.fussball.de/warum-heissen-die-so-heute-sg-sonnenhof-grossaspach/id_56225772/index) on 22 January 2014.
2. "DFB-Pokal 2009/2010 "1. Runde" SG Sonnenhof Großaspach – VfB Stuttgart 1:4" (<https://www.weltfussball.de/spielbericht/dfb-pokal-2009-2010-1-runde-sg-sonnenhof-grossaspach-vfb-stuttgart/>) [DFB-Pokal 2009/2010 "1. Round" SG Sonnenhof Großaspach – VfB Stuttgart 1:4]. *Weltfussball.de* (in German). 1 August 2009.
3. "DFB-Pokal 2012/2013 "1. Runde" SG Sonnenhof Großaspach – FSV Frankfurt 1:2" (<https://www.weltfussball.de/spielbericht/dfb-pokal-2012-2013-1-runde-sg-sonnenhof-grossaspach-fsv-frankfurt/>) [DFB-Pokal 2012/2013 "1. Round" SG Sonnenhof Großaspach – FSV Frankfurt 1:2]. *Weltfussball.de* (in German). 17 August 2012.
4. "Team" (<https://www.sg94.de/mannschaften/1-mannschaft/team/>) (in German). SG Sonnenhof Großaspach.
5. "SG Sonnenhof Großaspach "Trainerhistorie" (<https://www.weltfussball.de/teams/sg-sonnenhof-grossaspach/9/>) [SG Sonnenhof Großaspach" Coach history]. *Weltfussball.de* (in German).
6. "Das deutsche Fußballarchiv (1900–heute)" (<http://www.f-archiv.de>) [The German football archive (1900–today)]. *F-archiv.de* (in German).
7. "FUSSBALL.DE – Die Heimat des Amateurfußballs" (<http://www.fussball.de/homepage>) [FUSSBALL.DE – The home of amateur football]. *Fussball.de* (in German).

External links

- Official website (<https://www.sg94.de/>) (in German)
 - SG Sonnenhof Großaspach (<http://www.weltfussball.de/teams/sg-sonnenhof-grossaspach/>) at Weltfussball.de
-

Retrieved from "https://en.wikipedia.org/w/index.php?title=SG_Sonnenhof_Großaspach&oldid=972132018"

This page was last edited on 10 August 2020, at 10:01 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

WIKIPEDIA

Shooting guard

The **shooting guard** (**SG**), also known as the **two, two guard** or **off guard**,^[1] is one of the five traditional positions in a regulated basketball game. A shooting guard's main objective is to score points for their team and steal the ball on defense.^[1] Some teams ask their shooting guards to bring up the ball as well; these players are known colloquially as combo guards.^[2] A player who can switch between playing shooting guard and small forward is known as a swingman.^[3] In the NBA, shooting guards usually range from 6' 3" (1.90 m) to 6' 6" (1.98 m), and from 5' 8" (1.73 m) to 5' 11" (1.80 m) in the WNBA.

Contents

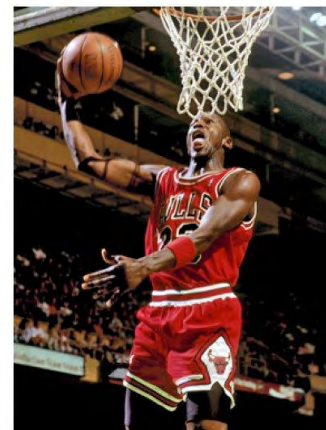
[Characteristics and styles of play](#)

[Notable shooting guards](#)

[Notes](#)

[References](#)

[External links](#)



Michael Jordan, a well-known shooting guard who played in the NBA.

Characteristics and styles of play

The Basketball Handbook by Lee Rose describes a shooting guard as a player whose primary role is to score points. As the name suggests, most shooting guards are good long-range shooters, typically averaging 35–40 percent from three-point range. Many shooting guards are also strong and athletic, and have the ability to get inside the paint and drive to the basket.

Typically, shooting guards are taller than point guards. Height at the position varies; many bigger shooting guards also play small forward. Shooting guards should be good ball handlers and be able to pass reasonably well, though passing is not their main priority. Since good shooting guards may attract double-teams, they are frequently the team's back-up ball handlers to the

point guard and typically get a fair number of assists.^[4]

Shooting guards must be able to score in various ways, especially late in a close game when defenses are tighter. They need to have a good free throw percentage too, to be reliable in close games and to discourage opposing players from fouling. Because of the high level of offensive skills shooting guards need, they are often a team's primary scoring option, and sometimes the offense is built around them.

In the NBA, there are some shooting guards referred to as "3 and D" players. The term 3 and D implies that the player is a good 3 point shooter who can also play solid (sometimes elite) defense. The 3 and D player has become very important as the game sways to be perimeter oriented.^[5]

Good shooting guards can often play point guard to a certain extent. It is usually accepted that point guards should have the ball in their hands at most times in the game, but sometimes the shooting guard has a significant enough influence on the team where he or she handles the ball extremely often, to the point where the point guard may be reduced to a backup ball handler or spot-up shooter.

Notable shooting guards

Notable NBA and WNBA shooting guards include some of the greatest players of all time, including Michael Jordan, Kobe Bryant, DeMar DeRozan, Jimmy Butler, Joe Johnson, Dwyane Wade, Manu Ginóbili, Allen Iverson, Cynthia Cooper, James Harden, Tracy McGrady, Ray Allen, Clyde Drexler, George Gervin, Reggie Miller, Diana Taurasi, Klay Thompson, Paul George, and Donovan Mitchell.

Notes


1. Shooting guards are 6'3"–6'7". BBC Sports academy (http://news.bbc.co.uk/sportacademy/hi/sa/basketball/rules/players/newsid_3954000/3954583.stm). URL last accessed 2006-09-09.
2. Greg Haefner (October 18, 2008). "NBA Analysis: The Rise of the "Hybrid" Player" (<https://bleacherreport.com/articles/70284-nba-analysis-the-rise-of-the-hybrid-player>). Bleacher Report. Retrieved May 13, 2020.
3. "Basketball Swingman" (<https://www.rookieroad.com/basketball/player-positions/swingman/>). *Rookie Road*. Retrieved May 13, 2020.
4. "NBA.com - Players and Positions" (http://www.nba.com/canada/Basketball_U_Players_and_Pos-Canada_Generic_Article-18037.html). *Nba.com*. Retrieved 3 February 2018.

5. "'3-and-D': The specialist's path to a long NBA career" (<https://www.usatoday.com/story/sports/nba/2014/11/26/three-and-d-specialists-kyle-korver-garrett-temple-martell-webster-willie-green-the-next-bruce-bowen/70123886/>). *Usatoday.com*. Retrieved 3 February 2018.

References

- *The Basketball Handbook* (pg 15) (2004). Lee H. Rose ISBN 0-7360-4906-1

External links

 Media related to Shooting guards at Wikimedia Commons

Retrieved from "https://en.wikipedia.org/w/index.php?title=Shooting_guard&oldid=979330292"

This page was last edited on 20 September 2020, at 04:28 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

WIKIPEDIA

SIG SG 550

The **SG 550** is an assault rifle manufactured by Swiss Arms AG (formerly a division of Schweizerische Industrie Gesellschaft, now known as SIG Holding AG) in Switzerland. "SG" is an abbreviation for *Sturmgewehr*, or "assault rifle". The rifle is based on the earlier 5.56mm SG 540.

Contents

History

[Development](#)

[Production](#)

Design details

[Operating mechanism](#)

[Features](#)

[Sights](#)

[Accessories](#)

Variants

[SG 551](#)

[SG 552 Commando](#)

[SG 553](#)

[SG 552-A1](#)

[SG 550 Sniper](#)

[Civilian variants](#)

[Regulation in Canada](#)

Gallery

SG 550	
	
<p>The SIG SG 550, designated Stgw-90 (German) or Fass-90 (French) in the Swiss Army</p>	
Type	Assault rifle
Place of origin	Switzerland
Service history	
In service	1990–present
Used by	See Users
Production history	
Designer	Schweizerische Industrie Gesellschaft
Designed	1970s–1980s
Manufacturer	Swiss Arms AG (formerly Schweizerische Industrie Gesellschaft)
Produced	1986–present

[Users](#)
[See also](#)
[References](#)
[Bibliography](#)
[External links](#)

History

Development

In 1978, the Swiss armed forces formulated requirements for a successor to the Stgw 57 battle rifle (known commercially as the SG 510) using the 7.5×55mm Schmidt–Rubin cartridge. Emphasis was placed on modularity; the weapon family was to include several variants of the base design, including a compact carbine that would be issued to rear-echelon and support troops, command staff, vehicle crews, special forces personnel and paratroopers. Another aim was to reduce the overall weight of the rifle while retaining comparable or improved accuracy out to 300 m. The solicitation was narrowed down to two designs: the W+F C42 (developed by the state-owned Waffenfabrik Bern, using both 6.45×48mm and 5.6×45mm cartridges) and the SG 541 (developed by SIG). In 1981, the experimental 6.45mm GP 80 cartridge was rejected in favor of the more conventional 5.6×45mm GP 90 round (with a 4.1 g, tombac-jacketed, lead core projectile) that is the Swiss equivalent to NATO's standard 5.56×45mm cartridge.

No. built	600,000+
Variants	See Variants
Specifications	
Mass	SG 550: 4.1 kg (9.04 lb) SG 551: 3.40 kg (7.5 lb) SG 552 Commando: 3.2 kg (7.1 lb) SG 553: 3.2 kg (7.1 lb) SG 550 Sniper: 7.02 kg (15.5 lb)
Length	SG 550 (stock extended): 998 mm (39.3 in) SG 550 (stock folded): 772 mm (30.4 in) SG 551 (stock extended): 833 mm (32.8 in) SG 551 (stock folded): 607 mm (23.9 in) SG 552 Commando (stock extended): 730 mm (28.7 in) SG 552 Commando

	(stock folded): 504 mm (19.8 in) SG 553 (stock extended): 730 mm (28.7 in) SG 553 (stock folded): 501 mm (19.7 in) SG 550 Sniper (stock extended): 1,130 mm (44.5 in) SG 550 Sniper (stock folded): 905 mm (35.6 in)
Barrel length	SG 550: 528 mm (20.8 in) SG 551: 363 mm (14.3 in) SG 552 Commando: 226 mm (8.9 in) SG 553: 227 mm (8.9 in) SG 550 Sniper: 650 mm (25.6 in)
Cartridge	<ul style="list-style-type: none">▪ <u>5.56x45mm NATO</u> (Known as 5,6mm Gw Pat 90 in Switzerland)▪ <u>7.62x39mm</u> (Used

	in SG 553 R variant)
Action	Gas operated, rotating bolt
Rate of fire	~700 rounds/min
Muzzle velocity	SG 550: 911 m/s (2,989 ft/s) SG 551: 850 m/s (2,788.7 ft/s) SG 552 Commando: 725 m/s (2,378.6 ft/s) SG 550 Sniper: 940 m/s (3,084.0 ft/s)
Effective firing range	100–400 m sight adjustments
Feed system	<ul style="list-style-type: none"> ▪ 5-, 20-, or 30-round detachable box magazine ▪ STANAG magazines (SIG 556 series) ▪ AK-47 magazines (SG 553 R, SIG 556 R)
Sights	Rear: rotating diopter drum with tritium night inserts; front: hooded post with folding night

post
540 mm (21.3 in)
sight radius (SG 550)
466 mm (18.3 in)
sight radius (SG 551)

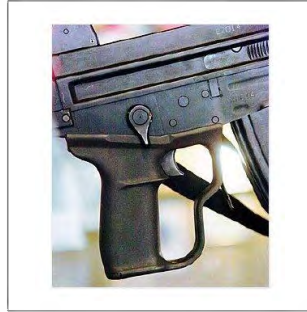
Forerunners of the Sig 550



The C42 by Waffenfabrik Bern (here the 6.45mm Rifle version)



The C42 by Waffenfabrik Bern (here the 6.45mm Carbine version)



Detail of the distinctive integral handguard of the C42



Detail of the top-mounted arming lever of the C42



The SIG 541 (here the 6.45mm Carbine version)

Production

In February 1983, the decision to adopt the SG 541 was publicly announced (the designation of the rifle was changed in October of the following year to SG 550, while the carbine version became known as the **SG 551**). Production began in 1986 and four years later the rifle was officially accepted into service in 1990, hence the military designation Stgw 90. Over 600,000 rifles have been delivered since then and production for the military has now ceased.^[1]

Design details

Operating mechanism



SG 550 disassembled into its main constituent groups

The SG 550 is a selective-fire 5.56×45mm NATO assault rifle firing from a closed bolt. It has a gas-actuated piston-driven long-stroke operating system derived from the SIG SG 540 series of rifles, which uses burnt powder gases vented through a port in the barrel to power the weapon's moving parts. Once inside the gas cylinder, propellant gases pass through an L-shaped channel machined in the piston head and are directed forward towards the gas valve. The pressure build-up in front of the piston head pushes the piston and bolt carrier rearward. As the piston is driven back, the gas port and the L-shaped channel move out of alignment, cutting off the supply of gas to the cylinder. Surplus gas and powder residues are evacuated through an exhaust port in the gas cylinder. The manually adjustable gas valve has two settings, one for normal operation, and the second

setting for use in the presence of heavy fouling or icing.

The rotary bolt locking mechanism consists of two steel locking lugs that engage locking recesses in the breech, and is identical to that used in the SG 540. A spring-loaded extractor is incorporated into the bolt while a fixed protrusion on one of the receiver's internal guide rails ejects the spent cartridge casings.

Features



The rifle controls, including fire selector/safety.

The rifle is hammer-fired and has a trigger mechanism with an ambidextrous safety and fire selector switch that has 4 settings: "S"—safe, "1"—single fire, "3"—3-round burst and "20"—fully automatic fire. The 3-round burst mode "3" and the fully automatic "20" position can be disabled by a rotating safety guard to avert accidentally activating the continuous fire mode. The trigger is enclosed in a pivoting trigger guard which can be folded down to the left or right side allowing for unhindered operation with winter gloves. The trigger pull is approximately 35 N (7.9 lbf)

The firearm is fed by lightweight 20-round box magazines, 30-, 10- and 5-round magazines are also available. The magazines are molded from a translucent polymer and can be locked together using studs in order to facilitate quicker reloading (Jungle style). The empty weight of a 20-round magazine is 95 g (3.4 oz) and 110 g (3.9 oz) for a 30-round magazine.

A bolt hold-open device locks the bolt carrier assembly open after expending the last cartridge from the magazine and is released by lifting the bolt catch lever located on the left side of the receiver. Alternatively, a left-handed shooter may release the bolt by pulling the rubber-coated charging handle to rear a short distance.

The SG 550 has a side-folding skeletonized buttstock (folds to the right side of the receiver) and a lightweight aluminium bipod that folds into grooves in the lower handguard. The hinged stock is firmly locked in the folded position by a socket in the butt which clips into a plastic stud on the handguard; a firm pull will release the stock which is then swung into the closed position and locked by a button catch. A collapsible side-folding stock is also available. The stock, pistol grip, and handguards are made of a high-strength polymer, and are produced in either green or black colour options. The steel receiver housing and several other components are manufactured using stamping and welding; external steel surfaces are finished with a ceramic-reinforced enamel coat known as Ilaflon.^[2]

The heavy, cold hammer-forged barrel is screwed into the receiver and is equipped with a slotted "bird cage" type flash suppressor that is also used to launch rifle grenades (using standard, live ammunition) or attach a knife bayonet (the bayonet is supported by a lug located at the base of the gas block). The rifled barrel has 6 right-hand grooves and the Swiss Army

specification 254 mm (1:10 in) rifling twist rate is optimized for Swiss military GP 90 ammunition. An export-oriented barrel with a 178 mm (1:7 in) twist rate is also available, designed to stabilize 5.56×45mm NATO rounds with the heavier SS109 and tracer projectiles.

All rifles are test fired for accuracy and function prior to leaving the factory at the manufacturer's underground 300 m test range. Random new rifles out of production were tested on a machine rest. In a 24 single shot string starting with a cold weapon and using GP 90 ammunition, the R_{50} or 50% windage and elevation dispersion of any individual weapon must have been within an 11 cm (4.3 in) group at 300 m, the 50% windage and elevation dispersion must have averaged 7 cm (2.8 in).^[3] The employed circular error probable method cannot be converted and is not comparable to US military methods for determining rifle accuracy. When the R_{50} results are doubled the hit probability increases to 93.7%.

The gas system's components are made of stainless steel. The barrel, bolt, bolt carrier, and firing pin are all made with steel that has been gas nitrided, hardened and tempered. The bolt and carrier, along with most other components internal to the receiver undergo a phosphating process.

Sights



Rotating diopter drum rear sight.

The SG 550 series rifles have a 540 mm (21.3 in) long sight radius and are equipped with iron sights adjustable for both windage and elevation. The sights are similar to those on some Heckler & Koch weapons, such as the HK G3 or HK MP5. The sights consist of a rear, rotating diopter drum soldered to the receiver and a hooded front post installed in the gas block. The rear sight has an open notch setting marked "1" designed for immediate firing up to 100 m but also contains apertures with settings "2", "3" and "4" corresponding to 200, 300 and 400 m firing ranges. The 400 m setting has a removable iris for sportive



Tritium-illuminated night sights.

shooting. The sights are adjustable via micrometer screws with windage and elevation increments of 0.15 mil (≈ 0.52 moa), or 15 mm (0.6 in) at 100 m. For night use, the dedicated "1" notch setting in the rear sight drum is provided with two self-luminous tritium-powered inserts fitted laterally on each side of the notch and additionally in a flip-up post attached to the

foresight. When firing rifle grenades the front sight hood is aligned with the uppermost edge of the grenade's warhead, this provides an estimated point of impact up to 75 m. The rifle grenades intended for this purpose were FN/Luchaire Type 58-N bullet-though anti-tank grenades.

For designated marksman use, the SG 550 is equipped with a Kern 4x24 telescopic sight on a quick-detachable mount. The sight weighs 730 g (26 oz) and includes a variety of features, such as STANAG 2324/MIL-STD-1913 compliant mounting components, a Bullet Drop Compensation (BDC) elevation adjustment knob for ranges from 100 to 600 m, a tritium-illuminated reticle that enables target acquisition in low-light conditions and a diopter eyesight correction adjustment. Included with the sight is a lens hood for mounting on the ocular that reduces image quality-impairing stray light and a gray filter for glare reduction.^[4] The basic model of this optical sight was already used on the Stgw 57.^[5]



An SG 550 equipped with the Kern 4x24 telescopic sight

The upper receiver can accept quick-detachable rails and adapters used to mount optics (STANAG 2324 compliant). The scope mounting system consists of a centering hole located on the front face of the rear sight assembly and a dovetail-like mounting point at the front end of the receiver. Swiss Arms (respectively Brügger & Thomet) offer several types of quick-release scope mounts and Picatinny rails. A version of the rifle with an integral receiver-mounted Picatinny rail is also offered; in this configuration the weapon is fitted with flip-up emergency battle sights—a rear aperture sight which folds down into a recess in the rail and a folding front blade.

Accessories

Both the rifle and carbine come standard with a spare magazine, sling, cleaning kit and a loading aid for rapid magazine filling.

The full-sized SG 550/551 will accept SIG's 40 mm GL 5040/5140 grenade launcher (Swiss military designation: 40 mm *Gewehraufsatz* 97), which is mounted under the barrel via an eccentric latch and replaces the lower handguard. The grenade launcher is a single-shot breech-loaded weapon that is supplied with a leaf sight that attaches to the rifle's rear sight base and enables accurate firing out to 200 m. The lightweight aluminium launcher weighs 1.7 kg (3.7 lb) unloaded, and is operated independently of the rifle. It can use a wide array of 40×46mm grenades, including extended range high-pressure types and non-lethal baton or anti-riot projectiles. The compact SG 552/553 can be fitted with smaller GL 5340 underbarrel grenade launcher.



Stgw 90 bayonet made by Wenger

An Stgw 90 bayonet can also be mounted to the rifle. The bayonet has an overall length of 310 mm and a muzzle ring diameter of 22 mm. The 177 mm long blade is single-edged and it has no fuller. The bayonets are manufactured exclusively for the Swiss Army by Victorinox and in the past by Wenger until Victorinox acquired Wenger in 2005. With a proper lug adaptor, the rifle will also accept a NATO-pattern KCB-77 (made originally by Carl Eickhorn of Solingen, West Germany) or the American M9.

Variants

SG 551

The SG 551 carbine has a short pattern 363 mm (14.3 in) barrel, gas tube and piston compared to the SG 550. The SG 551 series rifles have a 466 mm (18.3 in) long sight radius. The handguards were also changed and the bipod removed. The SG 551 cannot be used with a bayonet or fire rifle grenades. The SG 551 comes in several specialized variants designed for use with security and special forces. Among those variants are the **SG 551-1P** police carbine (designed to engage point targets out to 300 m; equipped with a Hensoldt 6x42 BL telescopic sight and detachable cheek riser), the **SG 551 SWAT** carbine (coated with a corrosion-resistant finish and equipped with an optical sight mount used with a wide array of sights, and can also accept mission-critical accessories such as a bipod, laser pointer or tactical light) and the **SG 551 LB** carbine with an extended 454 mm (17.9 in) barrel that enables the use of rifle grenades and a bayonet.^[1]



SG 551 carbine

SG 552 Commando



The compact SG 552 Commando carbine with 30-round magazine

The compact **SG 552 Commando** (full designation as the 552-2P^[6]) carbine was released in July 1998. It has a shorter 226 mm (8.9 in) barrel (with an open, 3-prong flash suppressor) and gas tube, ventilated handguards and a redesigned bolt carrier group that was integrated with the piston rod to form a single moving assembly. The SG 552 series rifles have a 360 mm (14.2 in) long sight radius. The return mechanism has been moved to the rear of the receiver housing and its recoil spring is guided in a way analogous to that of the AK-47: on a steel guide rod (later models feature a polymer guide rod) resting against the lower receiver's rear surface under tension of the compressed recoil spring. Like the SG

550/551, this model can accept rails and accessories enabling the use of optics. A long barrel version of the SG 552 known as the

https://en.wikipedia.org/wiki/SIG_SG_550

SG 552 LB incorporates a 346 mm (13.6 in) barrel with provision to fire rifle grenades and support a bayonet. The SG 552 models were discontinued in 2008 and replaced by the SG 553. Upgrade part kits are available to convert a SG 552 in to a SG 553.

SG 553

The **SG 553** is an improved version of the SG 552 and was released in 2008. Even though it mostly resembles the SG 552, the SG 553 has one key advantage, the recoil spring is now wrapped around the piston rod as in the SG 550/551 models, which address several reliability issues encountered in the SG 552 and also allows the usage of the standard SG 550/551 charging handle. The SG 553 series rifles have a 339 mm (13.3 in) long sight radius. A long barrel version of the SG 553 known as the **SG 553 LB** incorporates a 347 mm (13.7 in) barrel with provision to fire rifle grenades and support a bayonet. Further factory options for the SG 553 rifle series are an integrated receiver Picatinny rail and an adjustable butt stock.^[7] The **SG 553 R** is a variant chambered for the 7.62×39mm cartridge fed from AK family box magazines.^[8]



SG 553 in the hands of Malaysian Air Force PASKAU commando during LIMA 2009

SG 552-A1

The SG 552-A1 is a SG 552 rifle that has been modified to function like the SG 553. The modifications are available as a conversion kit that includes a new bolt carrier, charging handle, recoil spring and gas tube.

SG 550 Sniper

Another member of the SG 550 family is the **SG 550 Sniper** variant (also designated SG 550-1) designed specifically for Swiss security forces. introduced in 1988, This accurized rifle has a refined two-stage trigger (the pull force was reduced from 35 N (7.9 lb_f) to 15 N (3.4 lb_f), a heavy, hammer-forged 650 mm (25.6 in) long barrel with a 254 mm (1:10 in) rifling twist rate (it has no flash hider) and is used exclusively with telescopic sights. The new folding stock has an adjustable cheek piece and a spacer system on the butt, the ergonomic pistol grip's angle of inclination can be regulated, the forend was shortened, and the bipod features a height and cant adjustment mechanism. This model is no longer in production.

Civilian variants

The SG 550/551/552/553 are also available in semi-automatic only configurations, intended for the civilian shooting market. Among these variants are the **SG 550/551/552 SP**, **PE 90** and **SIG Sport** rifles. The SG 550 series is available with either 178 mm or 254 mm (1:7 and 1:10 in) twist rate barrels. Rifles designated SG 55x-1 have a 254 mm (1:10 in) twist rate, while models marked SG 55x-2 have a 178 mm (1:7 in) twist rate. The ordinance GP 90 ammunition is optimized for use with the original Swiss 254 mm (1:10 in) rifling twist rate.

Due to import restrictions, the American civilian market required a partially American-made version assembled by SIG SAUER, Inc. in Exeter, New Hampshire. The **SIG556** is designed to meet these requirements. The 556 lacks full-auto capability and the overall length is 940 mm (37.0 in). One difference is a new aluminum lower receiver that accepts M16 STANAG magazines and an M4 telescoping buttstock. The barrel's twist rate is 178 mm (1:7 in).^[9]

There are many variants of this rifle offered for sale. The first variant was sold with an aluminum Picatinny rail on the upper receiver and a series of plastic rails on the handguard. The market pushed SIG to produce the rifle with the slimmer profile 551-type handguards and a hooded front sight; this version is marketed as the **SIG556 Classic**.^[10] Several folding stock models have been released as well as variants with railed forend combinations. Another major variant is a **SIG556 DMR**. This features a 21 in (533.4 mm) long barrel without flash suppressor, upgraded, a match type trigger, Magpul PRS stock and older style plastic handguards. **SIGP556** pistol variants with 10 in barrels are also available. In 2012 the **SIG556R** or SIG556 Russian chambered for the 7.62×39mm cartridge and using AK-pattern box magazines was introduced.^[11] The first generation of SIG556R rifles had a number of performance issues that were later resolved in later production runs of the SIG556R.

In January 2014, SIG introduced the 556xi series rifles as an improvement to the 556 and 556R series rifles.

As of May 2017, SIG has discontinued the SIG556, SIG556R, and 556xi series of rifles and no longer displays those models on the products section of their website.^[12]

The **SIG 522LR** is a .22-caliber sporting rifle styled after the SG 551. It uses a simple blowback semi-automatic operating system and its barrel has a 406 mm (1:16 in) twist rate. Due to its operating principle, the rifle has no mechanical commonality with other SG 550 variants. The SIG522 accepts commonly available AR-style .22-caliber conversion magazines.



A SIG556 Classic equipped with an EOTech 512 holographic weapon sight and STANAG magazine.

In the U.S, a variety of semi-automatic SwissArms firearms are available for sale. Due to U.S. import regulations, they are imported as a pistol.^[13]

Regulation in Canada

On 27 February 2014, the Canadian semi-automatic "Classic Green" sporting rifle, also known as the *Swiss Arms PE 90*, was re-classified as a "prohibited weapon".^[14] The rifle had been popular with hunters and gun enthusiasts, who until February 2014, only required a possession and acquisition licence to obtain the rifle. However, late in 2013, a gun dealer had imported some PE 90 rifles from Switzerland and brought them to Canada for sale. After some were sold, it was alleged by another retailer that they had previously been full-auto variants, converted to semi-auto. Upon investigation and examination by the RCMP, this was proven not to be the case as the rifles were purpose-built semi-automatic versions. However, they did determine that a sample rifle provided by the complainant had been assembled with a receiver that had once been used in a fully automatic version of the rifle and declared the entire model line prohibited, with possible confiscation for destruction. This caused outrage among gun owners, firearms lobbyists and some civil right advocates, who felt the RCMP over-stepped their authority, and that such policy changes should be enacted by legislation. The National Firearms Association of Canada considered pursuit of the matter through the legal system.^[15] On 31 July 2015, the Canadian government overturned the reclassification and returned the Swiss rifles to the original non-restricted and restricted classifications.^[16]

As of June 2019, with the passage of Bill C71, it appears that all SIG550 rifles in Canada are prohibited, and no further imports of these rifles will be permitted.

Gallery



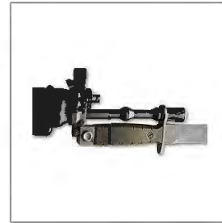
With

bipod With bayonet.

Stock folded.



Flash suppressor



The gas block

extended.











and gas regulator.










integrates an adjustable gas regulator, the front sight with a flip-up night sight post, and the bayonet lug on the flash suppressor.




The SG 552 Commando version with integral Picatinny rail and accessories. The Swiss Grenadier carrying a Stgw 90 whilst taking part in the Swiss raid commando 2007 competition.

Users

Country	Organization name	Model	Quantity	Date	Reference
 Argentina	<u>GEOF, Federal Police</u>				[17]
	<u>Grupo de Especial de Seguridad, Policia de Mendoza</u>	SG 553 SOW SG 556	–	–	[18]
 Brazil	<u>Brazilian Federal Police, Brazilian Air Force PARA-SAR</u>	SG 550 SG 551	–	–	[19]
 Canada	<u>Lethbridge Police Service</u>	SIG 553	–	–	
	<u>CN Police</u>		–	–	
 Denmark	<u>PET Close Protection Teams</u>	SG 552	–	–	
 Egypt	<u>Sa'ka Forces and Unit 777</u>	SG 552	–	–	–
 Finland	<u>Helsinki Police Department, Karhu Team</u>	SG 552	–	–	[20]
 France	<u>Special Operations Command of the French Army</u>	SG 551 SG 551 LB	–	–	[21]
	<u>National Gendarmerie Intervention Group (GIGN) of the National Gendarmerie</u>	SG 553 SOW	–	–	[17]
 Germany	<u>GSG 9 of the German Federal Police</u>	SIG 553 SOW	–	–	[17][22]
	<u>Spezialeinsatzkommando groups of some Landespolizei</u>		–	–	
 India	<u>National Security Guard</u>	SG 551	675	~2010	[23][24]
 Indonesia	<u>Komando Pasukan Khusus (Kopassus) special forces group of the Indonesian Army</u>	SG 550 SG 552	–	–	[25]
	<u>Komando Pasukan Katak (Kopaska) tactical diver group of the Indonesian Navy</u>		–	–	

 Italy	<u>Carabinieri</u>	SG 552	-	-	
 Macau	<u>Grupo de Operações Especiais (Macau)</u>	SG 552	-	-	
 Malaysia	<u>Kor Risik DiRaja (KRD) counter-intelligence team of the Malaysian Army</u>	SG 552			
	<u>Grup Gerak Khas (GGK) Counter-Terrorism Forces of the Malaysian Army</u>				
	<u>JMF Elite Forces Counter-Terrorism Forces of the Royal Johor Military Force</u>	SG 553 LB	-	-	[26][27]
	<u>Pasukan Khas Udara (PASKAU) Counter-Terrorism Forces of the Royal Malaysian Air Force</u>	SG 553 SB			[28]
	<u>Special Task and Rescue (STAR) Maritime Counter-Terrorism Forces of the Malaysian Maritime Enforcement Agency</u>				
 Malta	<u>Armed Forces of Malta</u>	SG 550	-	-	[1]
 Netherlands	<u>Dutch Caribbean Coast Guard</u>	SG 552	-	-	
 Pakistan	<u>Special Service Group Counter-Terrorism Forces of the Pakistan Army</u>		-	-	[29]
 Poland	<u>GROM special forces of the Polish Armed Forces</u>		-	-	[17][30][31]
 Romania	<u>Detasamentul Cautare Salvare in Lupta (DCSL) special forces Combat Search and Rescue of the Romanian Air Force</u>	SG 553	-	-	[32]
 Saudi Arabia	<u>Royal Saudi Navy Special Forces Units</u>	SG 556 SWAT SG 552 SG 556 SBR	-	-	[33][34][35]
	<u>Specijalna Antiteroristicka Jedinica ("Special</u>	SIG SG	-	-	

 Serbia	<u>Antiterrorist Unit</u>) of the <u>Serbian Police</u>	552			[36]
 Slovakia	<u>Útvar Osobitného Určenia</u> ("special assignments unit") of the <u>Slovak Police</u>	SG 551 SWAT	–	–	[37]
 South Korea	<u>Special Sea Attack Team (SSAT)</u> of the <u>Korea Coast Guard</u>	SG 556	–	–	[38]
 Spain	<u>Grupo Especial de Operaciones</u> of the <u>Spanish National Police</u>	SG 551 SWAT SG 552	–	–	[39][40]
 Switzerland	<u>Swiss Armed Forces</u>	SG 550 SG 552 SG 553	450,000 ^[41]	–	[42]
 Taiwan	<u>Wei-An Police Special Services Commando</u> .	SG 551-1P	–	1994	[43]
 Turkey	<u>Karşı Atak Timi</u> , special forces of the <u>General Directorate of Security</u> .	SG 553	–	–	[44]
 Tunisia	<u>Groupe d'Intervention Présidentielle</u> , special forces of the <u>Presidential Guard</u> .	SG 552			[45]
 United Kingdom	<u>West Mercia Police</u>	SG 551 SWAT			[46]
	<u>Derbyshire Police</u>	SG 552			[47]
	<u>West Yorkshire Police</u>	SG 553 SOW			[48][49]
	<u>Staffordshire Police</u>				
 United States	<u>Drug Enforcement Administration</u>	SG 551 SG 553 SOW	–	–	[17][50]
	<u>Federal Bureau of Investigation</u>	SG 551	–	–	[50]
	<u>Special Weapons And Tactics (SWAT) counter-</u>	SG 550			[51]

	terrorism forces of the <u>United States Capitol Police</u>		–	–	
 Vatican City	<u>Pontifical Swiss Guard</u>	SG 550 SG 552	–	–	[52]
 Venezuela	<u>Venezuelan Marine Corps</u>	SG 550 SG 552	–	–	[53]

See also

- SIG SG 530
- SIG SG 540
- SIG Sauer SIG516
- Gun politics in Switzerland
- List of assault rifles
- List of carbines
- List of sniper rifles

References

1. "SIG SG 550 (Sturmgewehr Model 550) / Stgw 90 Assault Rifle / Carbine (1990)" (http://www.militaryfactory.com/smallarms/detail.asp?smallarms_id=616). Military Factory. 22 June 2014. Archived (https://web.archive.org/web/20170706024926/http://www.militaryfactory.com/smallarms/detail.asp?smallarms_id=616) from the original on 6 July 2017. Retrieved 24 December 2014.
2. "ILAG Industrielack AG – Swiss quality coatings" (https://web.archive.org/web/20090516014752/http://www.ilag-ag.com/cms2/site/user/index.php?page_id=252). ilag-ag.com. Archived from the original (http://www.ilag-ag.com/cms2/site/user/index.php?page_id=252) on 16 May 2009. Retrieved 9 July 2009.
3. "SIG 550 / 551 Technical Data and Test Documentation" (<http://www.biggerhammer.net/sigamt/550/550techinspection/>). Archived (<https://web.archive.org/web/20141231210358/http://www.biggerhammer.net/sigamt/550/550techinspection/>) from the original on 31 December 2014. Retrieved 25 December 2014.
4. "[www.snipercountry.de] - Scharfschützen Community" (<http://home.arcor.de/snipercountry/waffen/artikel/waffen12.html>). Archived (<https://web.archive.org/web/20140714200755/http://home.arcor.de/snipercountry/waffen/artikel/waffen12.html>) from the original on 14 July 2014. Retrieved 25 December 2014.

5. biggerhammer.net (<http://www.biggerhammer.net/sigamt/kern/>) Archived (<https://web.archive.org/web/20070822151929/http://www.biggerhammer.net/sigamt/kern/>) 22 August 2007 at the [Wayback Machine](#) Kern 4x24 telescopic sight of the Swiss Army.
6. David Crane (28 November 2001). "SIG 552 Commando Mini-Assault Rifle for Special Operations" (<http://www.defensereview.com/sig-552-commando-mini-assault-rifle-for-special-operations>). *DefenseReview.com (DR): An online tactical technology and military defense technology magazine with particular focus on the latest and greatest tactical firearms news (tactical gun news), tactical gear news and tactical shooting news*. Archived (<https://web.archive.org/web/20141021192143/http://www.defensereview.com/sig-552-commando-mini-assault-rifle-for-special-operations/>) from the original on 21 October 2014. Retrieved 25 December 2014.
7. Preisliste_2009 (http://swissarms2.ath.cx/fileadmin/editor/downloads/infomaterial/Preisliste_2009.pdf)
8. Jürgen Kapella. "Swiss Arms: SG 553 R" (http://www.swissarms.ch/en/SG_553_R.html). Archived (https://web.archive.org/web/20141024081544/http://www.swissarms.ch/en/SG_553_R.html) from the original on 24 October 2014. Retrieved 25 December 2014.
9. SIG SAUER website (<https://www.sigarms.com/Products/ShowCatalogProductDetails.aspx?categoryid=35&productid=114>) Archived (<https://web.archive.org/web/20070711003756/http://www.sigarms.com/Products/ShowCatalogProductDetails.aspx?categoryid=35&productid=114>) 11 July 2007 at the [Wayback Machine](#)
10. "American Rifleman - An Official Journal of the NRA" (<https://web.archive.org/web/20160118004704/http://www.americanriflemag.org/ArticlePage.aspx?id=1661&cid=0>). Archived from the original (<http://www.americanriflemag.org/ArticlePage.aspx?id=1661&cid=0>) on 18 January 2016. Retrieved 25 December 2014.
11. "SIG556R" (<http://www.sigsauer.com/CatalogProductDetails/sig556r.aspx>). Archived (<https://web.archive.org/web/20141225190557/http://www.sigsauer.com/CatalogProductDetails/sig556r.aspx>) from the original on 25 December 2014. Retrieved 25 December 2014.
12. "All Rifles | Sig Sauer" (<https://www.sigsauer.com/full-product-catalog/all-rifles/>). *Sig Sauer*. Archived (<https://web.archive.org/web/20170131030316/https://www.sigsauer.com/full-product-catalog/all-rifles/>) from the original on 31 January 2017. Retrieved 8 May 2017.
13. <https://www.sanswissarms.com/news.html>
14. "Gun debate reignites with rumored ban of Classic Green rifle" (<http://www.cbc.ca/news/politics/gun-debate-reignites-with-rumoured-ban-of-classic-green-rifle-1.2554372>). 28 February 2014. Archived (<https://web.archive.org/web/20150108180539/http://www.cbc.ca/news/politics/gun-debate-reignites-with-rumoured-ban-of-classic-green-rifle-1.2554372>) from the original on 8 January 2015. Retrieved 25 December 2014.
15. "Mounties trample Canadian gun owners" (<http://vancouver.24hrs.ca/2014/03/18/mounties-trample-canadian-gun-owners>). *Vancouver 24 hrs*. Archived (<https://web.archive.org/web/20141225181426/http://vancouver.24hrs.ca/2014/03/18/mounties-trample-canadian-gun-owners>) from the original on 25 December 2014. Retrieved 25 December 2014.
16. "Harper Government amends firearms classifications regulations" (<http://news.ac.ca/web/article-en.do?nid=1014559>).

- news.gc.ca. Archived (<https://web.archive.org/web/20150807182324/http://news.gc.ca/web/article-en.do?nid=1014559>) from the original on 7 August 2015. Retrieved 1 August 2015.
17. "Swiss Arms (Sig) SG 553 SOW Commando" (<http://www.gunsite.co.za/content/articles/swiss-arms-sig-sg-553-sow-commando/>). GunSite South Africa. 13 December 2007. Archived (<https://web.archive.org/web/20120424153247/http://www.gunsite.co.za/content/articles/swiss-arms-sig-sg-553-sow-commando/>) from the original on 24 April 2012. Retrieved 25 March 2012.
 18. GES with SIGs (http://www.fuerzasaeronavales.com/wp-content/uploads/www.fuerzasaeronavales.com_002061.jpg) Archived (https://web.archive.org/web/20150924015947/http://www.fuerzasaeronavales.com/wp-content/uploads/www.fuerzasaeronavales.com_002061.jpg) 24 September 2015 at the Wayback Machine
 19. Jones, Richard D. *Jane's Infantry Weapons 2009/2010*. Jane's Information Group; 35 edition (27 January 2009). ISBN 978-0-7106-2869-5.
 20. Suomen sotilas 3/2006
 21. "Terre – SIG 551" (<https://web.archive.org/web/20160920000829/https://www.defense.gouv.fr/terre/equipements/materiels-forces-speciales/sig-551>) (in French). Defense.gouv.fr. 5 June 2013. Archived from the original (http://www.defense.gouv.fr/terre/decouverte/materiels/materiels_specifiques/sig_551) on 20 September 2016.
 22. "Archived copy" (https://web.archive.org/web/20110716171700/http://www.swatseries.com/Images/C_7-8_06_Suenkler.pdf) (PDF). Archived from the original (http://www.swatseries.com/Images/C_7-8_06_Suenkler.pdf) (PDF) on 16 July 2011. Retrieved 6 October 2012.
 23. "Post 26/11, NSG aims for corner shot weapons, through-the-wall radars" (<http://www.indianexpress.com/news/post-26-11-nsg-aims-for-corner-shot-weapons-throughthewall-radars/537983>). Archived (<https://web.archive.org/web/20091111105300/http://www.indianexpress.com/news/post-26-11-nsg-aims-for-corner-shot-weapons-throughthewall-radars/537983>) from the original on 11 November 2009. Retrieved 25 December 2014.
 24. Karp, Aaron; Rajagopalan, Rajesh (January 2014). "Small Arms of the Indian State: A Century of Procurement and Production" (<https://www.files.ethz.ch/isn/176291/IAVA-IB4-small-arms-of-indian-state.pdf>) (PDF). *Issue Brief. Small Arms Survey* (4): 5–7. JSTOR resrep10661 (<https://www.jstor.org/stable/resrep10661>). Archived (<https://web.archive.org/web/20190102193406/https://www.files.ethz.ch/isn/176291/IAVA-IB4-small-arms-of-indian-state.pdf>) (PDF) from the original on 2 January 2019. Retrieved 2 January 2019.
 25. "Kopassus & Kopaska – Specijalne Postrojbe Republike Indonezije" (<https://web.archive.org/web/20100822145526/http://www.hrvatski-vojniki.hr/hrvatski-vojniki/1612007/ind.asp>) (in Croatian). Hrvatski Vojnik Magazine. Archived from the original (<http://www.hrvatski-vojniki.hr/hrvatski-vojniki/1612007/ind.asp>) on 22 August 2010. Retrieved 12 June 2010.
 26. Thompson, Leroy (December 2008). "Malaysian Special Forces" (<http://www.tactical-life.com/online/special-weapons/malaysian-special-forces/>) from the original on 2 April 2012. Retrieved 28 November 2009.

27. Zabry Mohamad Madzlan (10 December 2008). "*Sig SG 553 is a new rifle for PASKAU*" (https://web.archive.org/web/20090603211834/http://www.utusan.com.my/utusan/info.asp?y=2008&dt=1210&pub=utusan_malaysia&sec=Polis_%26_Tentera&pg=te_01.htm&arc=hive). Utusan Malaysia. Archived from the original (http://www.utusan.com.my/utusan/info.asp?y=2008&dt=1210&pub=utusan_malaysia&sec=Polis_%26_Tentera&pg=te_01.htm&arc=hive) on 3 June 2009. Retrieved 28 November 2009.
28. MalaysiaDefender. "DSA2012 - SIG SG 553 Pilihan Pasukan Elit" (<http://malaysiadefender.blogspot.com/2012/04/dsa2012-ssg-553-pilihan-pasukan-ELIT.html>) (in Malay). Archived (<https://web.archive.org/web/20130801045610/http://malaysiadefender.blogspot.com/2012/04/dsa2012-ssg-553-pilihan-pasukan-ELIT.html>) from the original on 1 August 2013. Retrieved 17 January 2012.
29. Dan Alex. "Pakistan Special Service Group" (<http://www.militaryfactory.com/smallarms/pakistan-special-service-group-weapons.asp>). Archived (<https://web.archive.org/web/20160613141325/http://www.militaryfactory.com/smallarms/pakistan-special-service-group-weapons.asp>) from the original on 13 June 2016. Retrieved 8 June 2016.
30. Wilk (REMOV), Remigiusz. "Nowe gromy GROM" (<https://web.archive.org/web/20100326120026/http://www.altair.com.pl/cz-art-1660>). Archived from the original (<http://www.altair.com.pl/cz-art-1660>) on 26 March 2010.
31. "GROM Utility and Equipment" (https://web.archive.org/web/20120208072009/http://www.grom.mil.pl/uzbrojenie_pliki/UZBR OJENIE.HTM). Archived from the original (http://grom.mil.pl/uzbrojenie_pliki/UZBROJENIE.HTM) on 8 February 2012. Retrieved 2 August 2009.
32. "Arhanghel pe Borcea" (<http://www.resboiu.ro/arhanghel-pe-borcea/>). 8 October 2016. Archived (<https://web.archive.org/web/20161014152601/http://www.resboiu.ro/arhanghel-pe-borcea/>) from the original on 14 October 2016. Retrieved 16 October 2016.
33. <https://i.imgur.com/beTshQN.jpg>
34. <https://i.imgur.com/AGObXCc.jpg>
35. <https://i.imgur.com/27xpuHL.jpg>
36. "SAJ-Specialna Anti-teroristička Jedinica" (http://www.rtbot.net/saj_jedinica). rtbot.net. Archived (https://web.archive.org/web/20150924092519/http://www.rtbot.net/saj_jedinica) from the original on 24 September 2015.
37. "Špeciálne jednotky Slovenskej republiky" (https://web.archive.org/web/20090715090813/http://www.specialunits.sk/uou_svk.htm). Specialunits.sk. Archived from the original (http://www.specialunits.sk/uou_svk.htm) on 15 July 2009. Retrieved 9 July 2009.
38. "Adrenaline:Burn Out [Part1]" (<https://www.youtube.com/watch?v=klhV8ANrd8I>). INSITE TV. 11 January 2013. Archived (<https://web.archive.org/web/20160527174238/https://www.youtube.com/watch?v=klhV8ANrd8I>) from the original on 27 May 2016. Retrieved 10 October 2013.
39. "Web Del Grupo Especial De Operaciones (G.E.O.)" (https://web.archive.org/web/20090606025613/http://www.policia.es/geo/material.htm?reload_coolmenus). Policia.es. Archived from the original (http://www.policia.es/geo/material.htm?reload_coolmenus) on 6 June 2009. Retrieved 9 July 2009.

- comenus) on 3 June 2008. Retrieved 9 July 2009.
40. "Web Del Grupo Especial De Operaciones (G.E.O.)" (https://web.archive.org/web/20081213203751/http://www.policia.es/geo/fusiles_asalto.htm?reload_coolmenus). Policia.es. Archived from the original (http://www.policia.es/geo/fusiles_asalto.htm?reload_coolmenus) on 13 December 2008. Retrieved 9 July 2009.
 41. Small Arms Survey (2015). "Red Flags and Buicks: Global Firearms Stockpiles" (<http://www.smallarmssurvey.org/fileadmin/docs/A-Yearbook/2002/en/Small-Arms-Survey-2002-Chapter-02-EN.pdf>) (PDF). *Small Arms Survey 2002: Counting the Human Cost* (<http://www.smallarmssurvey.org/publications/by-type/yearbook/small-arms-survey-2002.html>). Oxford University Press. p. 78. Archived (<https://web.archive.org/web/20180829175556/http://www.smallarmssurvey.org/publications/by-type/yearbook/small-arms-survey-2002.html>) from the original on 29 August 2018. Retrieved 29 August 2018.
 42. "Sturmgewehr 90 (Stgw 90)" (<https://web.archive.org/web/20090203065917/http://www.lba.admin.ch/internet/lba/de/home/themen/ausrue/pers0/bewaffnung/stgw90.html>). Lba.admin.ch. 20 November 2008. Archived from the original (<http://www.lba.admin.ch/internet/lba/de/home/themen/ausrue/pers0/bewaffnung/stgw90.html>) on 3 February 2009. Retrieved 9 July 2009.
 43. <http://www.wargamehk.com/SG551.htm> Archived (<https://web.archive.org/web/20170929031729/http://www.wargamehk.com/SG551.htm>) 29 September 2017 at the [Wayback Machine](#) / 台灣的維安特勤隊是世界上少數使用 SG550-1P 的反恐怖特警隊 (Traditional Chinese)
 44. [1] (<http://www.haberturk.com/gundem/haber/662480-cat-timine-100-yeni-tabanca>) Archived (<https://web.archive.org/web/20120116091108/http://www.haberturk.com/gundem/haber/662480-cat-timine-100-yeni-tabanca>) 16 January 2012 at the [Wayback Machine](#) (Turkish)
 45. https://fbcdn-sphotos-c-a.akamaihd.net/hphotos-ak-prn1/t1/1560770_658196010886458_2135580448_n.jpg Archived (https://web.archive.org/web/20140222195322/https://fbcdn-sphotos-c-a.akamaihd.net/hphotos-ak-prn1/t1/1560770_658196010886458_2135580448_n.jpg) 22 February 2014 at the [Wayback Machine](#) (GIP Operator with SIG 552)
 46. "Photograph" (<http://oi55.tinypic.com/10x8sq8.jpg>) (JPG). Oi55.tinypic.com. Archived (<https://web.archive.org/web/20140914202248/http://oi55.tinypic.com/10x8sq8.jpg>) from the original on 14 September 2014. Retrieved 30 April 2015.
 47. "British Armed Response Unit" (<http://www.eliteukforces.info/police/uk-armed-police/>). Elite UK Forces. Archived (<https://web.archive.org/web/20160209220731/http://www.eliteukforces.info/police/uk-armed-police/>) from the original on 9 February 2016. Retrieved 23 January 2016.
 48. [2] (<http://www.yorkshirearmycadets.co.uk/cadets/ecoy/ereport3.htm>) Archived (<https://web.archive.org/web/20140201194128/http://www.yorkshirearmycadets.co.uk/cadets/ecoy/ereport3.htm>) 1 February 2014 at the [Wayback Machine](#)
 49. "Photograph" (<https://web.archive.org/web/20150924105549/http://www.staffordshire-pcc.gov.uk/wp-content/uploads/2013/09/1PaulPickard-042.jpg>). Staffordshire-pcc.gov.uk. Archived from the original (<http://www.staffordshire-pcc.gov.uk/wp-content/uploads/2013/09/1PaulPickard-042.jpg>) (JPG) on 24 September 2015. Retrieved 30 April 2015.

50. "Exeter's Sigarms gets \$115 million federal rifle contract" (https://web.archive.org/web/20110711021332/http://premium1.fosters.com/2003/news/jul_03/july_11/news/bu_0711k.asp). Premium1.fosters.com. 11 July 2003. Archived from the original (http://premium1.fosters.com/2003/news/jul_03/july_11/news/bu_0711k.asp) on 11 July 2011. Retrieved 17 November 2009.
51. "SWAT Weapons" (<http://www.militaryfactory.com/smallarms/swat-team-weapons.asp>). Military Factory. 30 December 2015. Archived (<https://web.archive.org/web/20160125125415/http://www.militaryfactory.com/smallarms/swat-team-weapons.asp>) from the original on 25 January 2016. Retrieved 1 February 2016.
52. <http://www.guns.com/2014/04/13/guns-swiss-guard/> Archived (<https://web.archive.org/web/20140729061922/http://www.guns.com/2014/04/13/guns-swiss-guard/>) 29 July 2014 at the Wayback Machine Guns of the Swiss Guard
53. O'Grady, Mary Anastasia (6 August 2017). "The Guns of Venezuela" (<https://www.wsj.com/articles/the-guns-of-venezuela-1502053005>). *The Wall Street Journal*. Archived (<https://web.archive.org/web/20180306161008/https://www.wsj.com/articles/the-guns-of-venezuela-1502053005>) from the original on 6 March 2018. Retrieved 31 March 2018.

Bibliography

- *Règlement 53.96 Fusil d'assaut 5,6 mm 1990*

External links

- Swiss Arms AG—manufacturer's site (<http://www.swissarms.ch/>)
- Swiss Arms brochure (http://www.swissarms.ch/fileadmin/editor/downloads/infomaterial/SAN_LE_Katalog_E.pdf)
- Swiss Arms PE 90 brochure (https://web.archive.org/web/20090422004200/http://www.peelclub.com/downloads/manuals/flyer_pe90_e.pdf)
- Modern Firearms (<http://world.guns.ru/assault/switch/sig-550--551--552-e.html>)
- Biggerhammer.net—portal for articles, information and manuals, etc. on the SIG Stgw 57/SG 510/AMT and SG 550 rifle series (<http://www.biggerhammer.net/sigamt/>)
- SG 550/551 technical data and test documentation (<http://www.biggerhammer.net/sigamt/550/550techinspection/>)
- The SIG SG 550 series—information, manuals and links (<http://www.swissrifles.com/sig550/>)
- SG 550/551 instruction manual (<https://web.archive.org/web/20110705041016/http://sigsauer.com/upFiles/CmsContent/documents/OwnerManual/SG550551OM.pdf>)
- SG 552 instruction manual (https://web.archive.org/web/20080414141931/http://swissarms2.ath.cx/fileadmin/editor/downloads/manuals/SG552_manual_GB.pdf)
- Swiss Armed Forces Stgw 90 manual (in German) (http://www.rettung-bs.ch/fileadmin/militaer/schiessplatz_kurse/stgw90/st)

[gw90.pdf](#)

- [\[3\] \(https://www.wsj.com/articles/the-guns-of-venezuela-1502053005\)](https://www.wsj.com/articles/the-guns-of-venezuela-1502053005)

Retrieved from "https://en.wikipedia.org/w/index.php?title=SIG_SG_550&oldid=975909025"

This page was last edited on 31 August 2020, at 02:49 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

Sight glass

A **sight glass** or **water gauge** is a type of level sensor, a transparent tube through which the operator of a tank or boiler can observe the level of liquid contained within.

Contents

[Liquid in tanks](#)

[Steam boilers](#)

[Failure](#)

[Reflex gauges](#)

[Bi-colour gauges](#)

[Magnetic indicator](#)

[History](#)

[Modern industrial sight glass](#)

[See also](#)

[References](#)

[External links](#)



Water gauge on a steam locomotive. Here the water is at the "top nut", the maximum working level. Note the patterned backplate to help reading and toughened glass shroud.

Liquid in tanks

Simple sight glasses may be just a plastic or glass tube connected to the bottom of the tank at one end and the top of the tank at the other. The level of liquid in the sight glass will be the same as the level of liquid in the tank. Today, however, sophisticated float switches have replaced sight glasses in many such applications.

Steam boilers

If the liquid is hazardous or under pressure, more sophisticated arrangements must be made. In the case of a boiler, the pressure of the water below and the steam above is equal, so any change in the water level will be seen in the gauge. The transparent tube (the “glass” itself) may be mostly enclosed within a metal or toughened glass shroud to prevent it from being damaged through scratching or impact and offering protection to the operators in the case of breakage. This usually has a patterned backplate to make the magnifying effect of the water in the tube more obvious and so allow for easier reading. In some locomotives where the boiler is operated at very high pressures, the tube itself would be made of metal-reinforced toughened glass.^[1] It is important to keep the water at the specified level, otherwise the top of the firebox will be exposed, creating an overheat hazard and causing damage and possibly catastrophic failure.

To check that the device is offering a correct reading and the connecting pipes to the boiler are not blocked by scale, the water level needs to be “bobbed” by quickly opening the taps in turn and allowing a brief spurt of water through the drain cock.^[2]

The National Board of Boiler and Pressure Vessel Inspectors recommends a daily testing procedure described by the American National Standards Institute, chapter 2 part I-204.3 water level gauge. While not strictly required, this procedure is designed to allow an operator to safely verify that all parts of the sight glass are operating correctly and have free flowing connections to the boiler necessary for proper operation.

Failure

The gauge glass on a boiler needs to be inspected periodically and replaced if it is seen to have worn thin in the vicinity of the gland nuts, but a failure in service can still occur. Drivers are expected to carry two or three glass tubes, pre-cut to the required length, together with hemp or rubber seals, to replace the tubes on the road.^[1] Familiarity with this disquieting occurrence was considered so important that a glass would often be smashed deliberately while a trainee driver was on the footplate, to give him practice in fitting a new tube.^[3] Although automatic ball valves are fitted in the mounts to limit the release of steam and scalding water, these can fail through accumulation of limescale. It was standard procedure to hold the coal scoop in front of the face while the other hand, holding the cap for protection, reached to turn off the valves at both ends of the glass.

Reflex gauges

A reflex gauge is more complex in construction but can give a clearer distinction between gas (steam) and liquid (water). Instead of containing the media in a glass tube, the gauge consists of a vertically oriented slotted metal body with a strong glass plate mounted on the open side of the slot facing the operator. The rear of the glass, in contact with the media, has grooves moulded into its surface, running vertically. The grooves form a zig-zag pattern with 90° angles. Incident light entering the glass is refracted at the rear surface in contact with the media. In the region that is contact with the gas, most of the light is reflected from the surface of one groove to the next and back towards the operator, appearing silvery white. In the region that is in contact with the liquid, most of the light is refracted into the liquid causing this region to appear almost black to the operator. Well-known makes of reflex gauge are Clark-Reliance, IGEMA, TGI Ilmadur, Penberthy, Jerguson, Klinger, Cesare-Bonetti and Kenco. Due to the caustic nature of boiler anti-scaling treatments ("water softeners"), reflex gauges tend to become relatively rapidly etched by the water and lose their effectiveness at displaying the liquid level. Therefore, bi-colour gauges are recommended for certain types of boiler, particularly those operating at pressure above 60 bar.

Bi-colour gauges

A bi-colour gauge is generally preferred for caustic media in order to afford protection to the glass. The gauge consists of a vertically oriented slotted metal body with a strong plain glass to the front and the rear. The front and rear body surfaces are in non-parallel vertical planes. Behind the gauge body are light sources with two quite different wavelengths, typically red and green. Due to the different refraction of the red and green light, the liquid region appears green to the operator, while the gas region appears red. Unlike the reflex gauge, the glass has a plane surface which it does not need to be in direct contact with the media and can be protected with a layer of a caustic-resistant transparent material such as silica. Well-known manufacturers of the highest quality Bi-Colour Level Gauges are Clark-Reliance, Klinger, FPS-Aquarian, IGEMA and Quest-Tec

Magnetic indicator

In a magnetic indicator is a float on the surface of the liquid contains a permanent magnet. The liquid is contained in a chamber of strong, non-magnetic material, avoiding the use of glass. The level indicator consists of a number of pivoting magnetic vanes arranged one above the other and placed close to the chamber containing the float. The two faces of the vanes are differently coloured. As the magnet passes up and down behind the vanes it cause them to rotate, displaying one colour for the region containing the liquid and another for the region containing gas. Magnetic indicators are stated in various manufacturers' literature to be most suitable for very high pressure and / or temperature and for aggressive liquids.

History

The first locomotive to be fitted with the device was built in 1829 by John Rastrick at his Stourbridge works.^[4]

Modern industrial sight glass

Industrial observational instruments have changed with industry itself. More structurally sophisticated than the water gauge, the contemporary sight glass — also called the sight window or sight port — can be found on the media vessel at chemical plants and in other industrial settings, including pharmaceutical, food, beverage and bio gas plants.^[5] Sight glasses enable operators to visually observe processes inside tanks, pipes, reactors and vessels.

The modern industrial sight glass is a glass disk held between two metal frames, which are secured by bolts and gaskets, or the glass disc is fused to the metal frame during manufacture. The glass used for this purpose is either soda lime glass or borosilicate glass, and the metal, usually a type of stainless steel, is chosen for desired properties of strength. Borosilicate glass is superior to other formulations in terms of chemical corrosion resistance and temperature tolerance, as well as transparency.^[6]

Fused sight glasses are also called mechanically prestressed glass, because the glass is strengthened by compression of the metal ring. Heat is applied to a glass disc and its surrounding steel ring, causing a fusion of the materials.^[7] As the steel cools, it contracts, compressing the glass and making it resistant to tension. Because glass typically breaks under tension, mechanically prestressed glass is unlikely to break and endanger workers. The strongest sight glasses are made with borosilicate glass, because of the greater difference in its coefficient of expansions.

See also

- Fuel gauge
- Fusible plug

References

1. Bell, A.M. (1950). *Locomotives*. London: Virtue and Company Limited. pp. 38, 284.
2. Unidentified author (1957). *Handbook for steam locomotive enginemmen*. London: British Transport Commission.
3. Gasson, Harold (1973). *Firing Days*. Oxford: Oxford Publishing Company. p. 20. ISBN 0-902888-25-0.

4. Snell, John B (1971). *Mechanical Engineering: Railways*. London: Longman.
5. Papailias, George. "Sight Glass" (<http://www.papailias.com/index.html>). *www.papailias.com*. Retrieved 2017-12-21.
6. University of Delaware, Department of Chemistry and Biochemistry. "Glass Physical Properties" (<http://www1.udel.edu/chem/GlassShop/PhysicalProperties.htm>). *www1.udel.edu*. Retrieved 2017-12-21.
7. Lehman, Richard. "The Mechanical Properties of Glass" (<http://glassproperties.com/references/MechPropHandouts.pdf>) (PDF). *Glass Engineering*. Rutgers State University of New Jersey. 150:312.

External links

- Reflex Gauge, Flat Glass or Transparent Gauge, and Ported Gauge, FPS-Aquarian [1] (<http://www.fossil.ca/waterlevel/3000visual.asp>)
-

Retrieved from "https://en.wikipedia.org/w/index.php?title=Sight_glass&oldid=957512666"

This page was last edited on 19 May 2020, at 06:36 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.

Stargate SG-1

Stargate SG-1 (often abbreviated ***SG-1***) is a Canadian-American military science fiction adventure television series and part of Metro-Goldwyn-Mayer's *Stargate* franchise. The show, created by Brad Wright and Jonathan Glassner, is based on the 1994 science fiction film *Stargate* by Dean Devlin and Roland Emmerich. The television series was filmed in and around the city of Vancouver, British Columbia, Canada. The series premiered on Showtime on July 27, 1997 and moved to the Sci Fi Channel on June 7, 2002; the final episode first aired on Sky1 on March 13, 2007.

The story of *Stargate SG-1* begins about a year after the events of the feature film when the United States government learns that an ancient alien device called the *Stargate* can access a network of such devices on a multitude of planets and in space. SG-1 is an elite United States Air Force special operations team, one of about 20 teams from Earth who explore the galaxy and defend against alien threats such as the Goa'uld, the Replicators and the Ori. The series draws upon Egyptian mythology, Greek mythology, Norse mythology and Arthurian legend.

The series was a ratings success for its first-run broadcasters and in syndication, and was particularly popular in Europe and Australia. *Stargate SG-1* was honored with numerous awards and award nominations in its ten-season run. It also spawned the animated television series *Stargate Infinity*, the live-action spin-off TV series *Stargate Atlantis*, *Stargate Universe*, and *Stargate Origins* and the direct-to-DVD films *Stargate: The Ark of Truth* and *Stargate: Continuum*. Merchandise for *Stargate SG-1* includes games and toys, print media and an original audio series.

Contents

Series overview

<i>Stargate SG-1</i>	
STARGATE	
SG·1	
Genre	Action/Adventure Science fiction ^[1]
Created by	Brad Wright Jonathan Glassner
Based on	<i>Stargate</i> by Roland Emmerich Dean Devlin
Starring	Richard Dean Anderson Michael Shanks Amanda Tapping Christopher Judge Don S. Davis Corin Nemec Ben Browder Beau Bridges Claudia Black

[Goatoid Arc](#)

[Anubis Arc](#)

[Ori Arc](#)

Main cast and characters

Production

[Conception](#)

[Casting and cast changes](#)

[Crew](#)

[Filming](#)

[Production design](#)

[Make-up and costumes](#)

[Visual effects](#)

[Music](#)

[Opening title sequence](#)

[Collaboration with the military](#)

Themes and allusions

Broadcast and release

[Showtime and US syndication \(1997–2002\)](#)

[Sci Fi Channel and US syndication \(2002–2007\)](#)

[International broadcast](#)

[Cancellation and future](#)

[Home media](#)

[Online distribution](#)

Impact

[Critical reception](#)

[Awards and nominations](#)

[Fandom](#)

[Merchandise](#)

[Legacy](#)

Theme music composer	Joel Goldsmith
Country of origin	Canada United States
Original language(s)	English
No. of seasons	10
No. of episodes	214 + 2 DVD films (list of episodes)
Production	
Executive producer(s)	Jonathan Glassner (1–8) Brad Wright (1–10) Robert C. Cooper (5–10) Joseph Mallozzi (8–10) Paul Mullie (8–10) Richard Dean Anderson (1–8) Michael Greenburg (1–8)
Running time	44 minutes
Production company(s)	MGM Television Double Secret Productions

[References](#)

[Bibliography](#)

[External links](#)

Series overview



The series' main cast

The plot of *Stargate SG-1* picks up a year after the conclusion of the events recounted in the [original feature film](#). It follows the present-day adventures of SG-1, a military team from Earth. SG-1 and a dozen other SG teams venture to distant planets using an alien portal known as a [Stargate](#), which in the series is housed in a top-secret [United States Air Force](#) military base known as [Stargate Command](#) (SGC) in the underground [Cheyenne Mountain](#)

[Complex](#) in [Colorado Springs, Colorado](#). In the first eight seasons, the mission of the SG teams is to explore the [galaxy](#) and search for alien technology and allies to defend Earth against the [Goa'uld](#), a snake-like parasitic alien race from planet P3X-888 that takes humans as unwilling hosts. As explained in the series' backstory, the Goa'uld had transported human slaves from [Earth](#) to other habitable planets across the galaxy thousands of years ago and now pose as gods of old Earth mythologies, particularly [Ancient Egypt](#). SG-1 eventually learns that highly evolved human-like beings, known as the [Ancients](#), had originally built the Stargate network millions of years earlier, before [ascending to a higher plane of existence](#), after which they pledged not to interfere in the lives of other species. The Ori, a faction of the same race as the Ancients who instead use their powers to subjugate other species by religious indoctrination, assume the role of the main antagonists in [Season 9](#) and [Season 10](#).

Goa'uld Arc

The pilot episode ("Children of the Gods"), set one year after the events of the original feature film, introduces the [Goa'uld System Lord](#) and main villain [Anubis](#) (Peter

[Gekko Film Corp.](#)
(1997–2005)
(seasons 1–8)
[Sony Pictures Television](#)
(2005–2006)
(season 9)
[Showtime Networks](#)
(1997-2002)
(seasons 1-5)
[Sci-Fi Originals](#)
(2002-2007)
(seasons 6-10)

Distributor [MGM Domestic Television Distribution](#)

Release

Original network [Showtime](#) (Seasons 1–5)
[Sci Fi](#) (Seasons 6–10)

Original release July 27, 1997 –
March 13, 2007

Chronology

Preceded by [Stargate](#)

Followed by [Stargate: The Ark of Truth](#)
[Stargate Atlantis](#)

Related shows [Stargate Universe](#)

feature him, introduces the Goa'uld System Lord and main villain Apophis (Peter Williams) as he attacks Earth's mothballed SGC military base through the Stargate and kidnaps an airman. The SGC is brought back into action when the Stargate is revealed to be part of an interplanetary network connecting countless planets. SG teams are created to help defend Earth against the Goa'uld, who have interstellar pyramid warships and vast armies of Jaffa (hereditary slaves and human incubators to the Goa'uld) at their disposal. Earth's flagship team SG-1, which includes Apophis's defected First Prime (lead Jaffa soldier) Teal'c, initiates several alliances with other cultures in the galaxy, such as the Goa'uld-like but truly symbiotic Tok'ra, the advanced human Tollan, the pacifist Nox, the benevolent Roswell-alien Asgard and remnants of the powerful Ancients. Another alien threat arises in the Season 3 finale ("Nemesis") in the form of sentient machines called Replicators. Meanwhile, rogue agents of a shadowy intelligence agency on Earth, the NID, repeatedly attempt to take control of the Stargate and other alien technology. Despite Apophis's death in the beginning of Season 5, the Goa'uld Empire remains a major foe in *Stargate SG-1* until the end of Season 8. The only influential Goa'uld in the last two seasons of *Stargate SG-1* is the System Lord Ba'al (Cliff Simon), who is defeated in the direct-to-DVD film *Stargate: Continuum*.

External links

MGM Stargate Command (<https://www.stargatecommand.co>)



The Cheyenne Mountain Complex in Colorado, United States is home to Earth's fictional Stargate Command in the *Stargate* universe.

Anubis Arc

After Apophis's defeat in the Season 5 premiere ("Enemies"), the half-Ascended Goa'uld System Lord Anubis (David Palffy) assumes the role of the primary antagonist of the show. This new villain possesses much of the knowledge of the Ancients and their technology. While Earth builds its first interstellar spaceship (the *Prometheus*) in seasons Season 6 and Season 7, Anubis creates an army of almost invincible Kull Warriors and wipes out or subordinates most of his adversaries amongst the System Lords. In the Season 7 finale ("Lost City"), SG-1 discovers a powerful weapon in an Ancient outpost in Antarctica that annihilates Anubis's entire fleet and also sets the stage for the spin-off series *Stargate Atlantis*. Ba'al subsumes much of Anubis's power in Season 8, while Anubis, who survived the destruction of his fleet in a disembodied form, quietly begins to re-assert his influence. Human-form Replicators begin to conquer the System Lords, but SG-1 finds and adjusts an Ancient weapon to destroy all Replicators throughout the galaxy. Near the end of Season 8 ("Threads"), it is revealed that the benevolent Ascended being Oma Desala (Mel Harris) is responsible for Anubis's original ascension. When she engages Anubis in an eternal stalemated battle on the Ascended plane to prevent his acting on the mortal plane, the Replicators and most System Lords have already been annihilated and the Jaffa win their freedom from Goa'uld rule.

Ori Arc

The original SG-1 team disbands after the events of Season 8, but slowly reunites under new team leader Lt Col. Cameron Mitchell after the SGC inadvertently draws the attention of the Ori to the existence of sentient life in the Milky Way; the Ori are revealed to be a faction of ascended Ancients residing in another galaxy that are diametrically opposed to the Ancients' belief in strict noninterference in the lower planes of existence, sapping the energy from untold billions of "lower beings" (non-ascended sentient beings) by means of their worship in a religion called Origin. While the Ori send enhanced human beings named Priors to the Milky Way to convert the galaxy to Origin, Ba'al and some minor Goa'uld infiltrate Earth through *The Trust* (a coalition of rogue NID operatives) to rebuild their power. At the end of Season 9 ("Camelot (Part 1)"), the Ori begin an evangelistic crusade with their warships and effortlessly wipe out the combined fleet of Earth and its allies. The leader of the Ori, Adria (Morena Baccarin), is introduced in the premiere of Season 10 ("Flesh and Blood (Part 2)"). SG-1 searches for the Sangraal, an Ancient weapon that might defeat the Ori, while Ba'al and his clones attempt to find the weapon for their own purposes. With the help of the powerful Ancient Merlin (Matthew Walker), SG-1 finds the construction plans of the Sangraal and sends a working version to the Ori galaxy. Shortly thereafter, Adria ascends. The direct-to-DVD film *Stargate: The Ark of Truth* ends the Ori Arc.

Main cast and characters

Character	Portrayed by	Seasons										Movies		
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>The Ark of Truth</u>	<u>Continuum</u>	
<u>Jack O'Neill</u>	<u>Richard Dean Anderson</u>	Main							Guest				Main	
<u>Daniel Jackson</u>	<u>Michael Shanks</u>	Main				Recurring		Main						
<u>Samantha Carter</u>	<u>Amanda Tapping</u>	Main												
<u>Teal'c</u>	<u>Christopher Judge</u>	Main												
<u>George</u>	<u>Don S.</u>	Main					Recurring		Guest				Appeared	

Hammond	Davis	main			recurring	guest	appeared
<u>Jonas Quinn</u>	<u>Corin Nemec</u>		Guest	Main	Recurring		
<u>Cameron Mitchell</u>	<u>Ben Browder</u>					Main	
<u>Hank Landry</u>	<u>Beau Bridges</u>					Main	Appeared
<u>Vala Mal Doran</u>	<u>Claudia Black</u>				Guest	Recurring	Main

- Richard Dean Anderson as Jonathan "Jack" O'Neill (Seasons 1–8 main, Seasons 9–10 guest) – A United States Air Force Colonel and an Air Force Special Operations veteran who led the original mission through the Stargate in *Stargate* (where he was played by Kurt Russell). He is coaxed out of retirement in the pilot episode and serves as the leader of the SG-1 team in the first seven seasons. He takes charge of Stargate Command (SGC) after his promotion to Brigadier General at the beginning of Season 8. The series repeatedly alludes to romantic feelings between O'Neill and his second-in-command, Carter, but the relationship is never shown as consummated outside alternate reality scenarios. O'Neill is reassigned to Washington, D.C. before Season 9 and receives a promotion to Major General. He appears in a recurring role in Seasons 9 and 10 of *Stargate SG-1*, as well as in *Stargate: Continuum* and in Seasons 1 and 3 of *Stargate Atlantis*. O'Neill appears as a Lieutenant General in multiple episodes of *Stargate Universe* where he is in command of the Department of Homeworld Security.
- Michael Shanks as Daniel Jackson (Seasons 1–5 and 7–10 main, Season 6 recurring) – A brilliant Egyptologist whose far-fetched theories about Egyptian pyramids having been built by aliens led to his participation in the original Stargate mission in the feature film (where he was played by James Spader). He joins the SG-1 team to facilitate his search for his wife, who was kidnapped by Apophis in the pilot episode, but his naïveté and curiosity regularly create obstacles for the team.^[2] He gradually evolves from being an archaeologist and translator, into the moral conscience for the team,^[3] and remains part of SG-1 until he ascends to a higher plane of existence at the end of Season 5. Following his forced de-ascension at the beginning of Season 7, he rejoins SG-1 for the remainder of the series. The last three seasons show his flirty, yet antagonistic relationship with Vala Mal Doran.^[2] Daniel also appears in both direct-to-DVD films, in Seasons 1 and 5 of *Stargate Atlantis* and in three *Stargate Universe* episodes.
- Amanda Tapping as Samantha "Sam" Carter (Seasons 1–10 main) – A brilliant young astrophysicist^[4] and United States Air Force Captain who joins SG-1 under the command of Col. O'Neill in the pilot episode. Following her promotion to Major in Season 3, she is promoted to Lieutenant Colonel early in Season 8 and assumes command of SG-1. Carter assists Lieutenant Colonel Cameron Mitchell in Seasons 9 and 10. After her appearance in *Stargate: The Ark of Truth*, she is promoted to Colonel and becomes the new commander of the Atlantis expedition in Season 4 of *Stargate Atlantis*, before

joining SG-1 again for *Stargate: Continuum*. Carter appears in a recurring role in all seasons of *Stargate Atlantis* (and as a regular in Season 4) and in the first episode of *Stargate Universe* as commander of the starship *George Hammond*.

- Christopher Judge as Teal'c (Seasons 1–10 main) – A quiet and strong Jaffa alien who defects from his position as the First Prime of the Goa'uld Apophis. He joins SG-1 after the first episode, in hopes of leading his race to freedom. Despite achieving this goal at the end of Season 8, he remains a member of SG-1 until the end of the series. He also appears in both direct-to-DVD films and in Season 4 of *Stargate Atlantis* as a mentor for Ronon Dex during an interview for the IOA.
- Don S. Davis as George Hammond (Seasons 1–7 main, Seasons 8–10 recurring) – A United States Air Force Major General (later Lieutenant General) who commands Stargate Command in the first seven seasons. Besides recurring in Seasons 8 through 10 of *Stargate SG-1*, he appears in Season 1 of *Stargate Atlantis*. Davis died from a heart attack in June 2008, making his appearance in *Stargate: Continuum* his last.^[5]
- Corin Nemec as Jonas Quinn (Season 6 main, Seasons 5 and 7 recurring) – A humanoid alien and scientist from the country of Kelowna on the planet Langara. Daniel sacrifices his life (leading to his ascension) at the end of Season 5 in an attempt to save Kelowna, but the following gleeful reaction of the Kelownan leaders causes Jonas to turn his back on Langara. Jonas is a fast learner and fills Daniel's empty spot on SG-1 in Season 6. Following Daniel's return, Jonas returns to his planet and remains a recurring character in Season 7.
- Ben Browder as Cameron "Cam" Mitchell (Seasons 9–10 main) – A United States Air Force lieutenant colonel who is assigned as the new commanding officer of SG-1 at the beginning of Season 9. He struggles to reunite its former members under his command and commands SG-1 (with Lieutenant Colonel Carter's assistance) until the end of Season 10. He is promoted to colonel between his appearances in *Stargate: The Ark of Truth* and *Stargate: Continuum*.
- Beau Bridges as Henry "Hank" Landry (Seasons 9–10 main) – A United States Air Force Major General and the commander of Stargate Command in Seasons 9 and 10. He is the estranged father of the SGC's medical officer Carolyn Lam and appears in both direct-to-DVD films and in Seasons 2 and 3 of *Stargate Atlantis*. In Season 10, Episode 13 Hank Landry was President Of The United States, as well as Major General Hank Landry.
- Claudia Black as Vala Mal Doran (Season 10 main, Seasons 8–9 recurring) – A con artist from an unnamed planet and a former human host to the Goa'uld Qetesh. Her first appearance in Season 8's "Prometheus Unbound" is the beginning of her flirty yet antagonistic relationship with Daniel.^[2] In her recurring role in Season 9, she and Daniel unintentionally set off the new Ori threat. She is unwillingly impregnated by the Ori, gives birth to Adria and watches helplessly as Adria grows to adulthood in a few days time. She joins SG-1 after giving birth to the new leader of the Ori at the beginning of Season 10 and appears in both direct-to-DVD films.

Production

Conception

Brad Wright and Jonathan Glassner had worked together on the MGM television series *The Outer Limits* since 1995. Upon hearing of MGM's plan to create a television spin-off series of the feature film *Stargate*, Wright and Glassner independently and unbeknownst to each other approached MGM and proposed their concept for the television series. MGM president John Symes greenlit the project on the condition that Wright and Glassner work together as executive producers of the new show.^[3] The show was named *Stargate SG-1* after Wright flightily agreed to Symes's pitch question of whether the team should be called "SG-1". MGM released posters titled *Stargate SG-1* within the next week without the knowledge of Wright or Glassner.^[6]

John Symes approached Michael Greenburg and Richard Dean Anderson, former star of the long-running *MacGyver*.^[3] Anderson agreed to become involved if his character Jack O'Neill were allowed more comedic leeway than Kurt Russell's character in the feature film. He also requested that *Stargate SG-1* be an ensemble show, so that he would not be carrying most of the plot alone as he had on *MacGyver*.^[7] The American subscription channel Showtime made a two-season commitment for 44 episodes in 1996.^[3] Principal photography began in Vancouver in February 1997.^[8]



Brad Wright created *Stargate SG-1* with Jonathan Glassner.

Casting and cast changes

After Anderson accepted the part, Brad Wright and Jonathan Glassner reviewed several thousand taped auditions and invited approximately 25 promising actors to screen tests in Los Angeles.^[9] Michael Shanks, Amanda Tapping and Christopher Judge are said to have gravitated towards each other during the casting process before they knew that they would ultimately be cast.^[10] The producers found Judge the easiest to cast due to his muscular presence.^[3] Shanks was cast because he did "the perfect imitation of James Spader", according to Wright.^[3] The producers knew Don S. Davis from his work as a stand-in and stunt-double for Dana Elcar in *MacGyver* and approached him to read for the role of George Hammond.^{[11][12]}

Showtime's announcement that it would not renew *Stargate SG-1* after Season 5 coincided with Michael Shanks's decision to leave the show over concerns of being underutilized.^[13] The Sci Fi Channel picked up the show^[14] and substituted a new character, played by Corin Nemec. Casting agents had met Nemec in the courtyard of MGM's Santa Monica offices by chance and had offered him the role of Jonas Quinn.^[15] Addressing rumors that it had forced Shanks's departure, Sci Fi said in February 2002 that the network had "absolutely never requested that any cast changes be made... and although we regret the

loss of Michael Shanks, we think that Corin Nemec will be a great new presence in the cast."^[16] Nemec's early appearances, beginning with the penultimate episode of Season 5 "Meridian", failed to win over some of the show's fans.^[13] Nemec was willing to continue playing the character after Season 6 or in a feature film or a spin-off series.^[15] However, the producers reached an agreement with Shanks to return full-time in Season 7, leaving Nemec with a recurring role.^[17] Don S. Davis left *Stargate SG-1* after Season 7 for health reasons,^[18] but appeared in a recurring capacity until his death on June 29, 2008.

Due to prior engagements, Claudia Black of *Farscape* fame could not accept the offers to guest-star on *Stargate SG-1* until the Season 8 episode "Prometheus Unbound".^[19] The producers liked the on-screen chemistry between Black's Vala Mal Doran and Shanks's Daniel so much that they re-introduced her in a six-episode story Arc to cover for the maternity leave of Amanda Tapping at the beginning of Season 9.^[20] At the same time, Richard Dean Anderson left the show to spend more time with his daughter (his schedule had been reduced incrementally since Season 6).^[21] The role of the leading man was filled with Ben Browder (also of *Farscape* fame), who had met with the *Stargate* producers as soon as the introduction of new main characters for Season 9 was discussed.^[22] The producers had met him during sci-fi conventions and had previously discussed casting him in other *Stargate* roles.^[23] The producers approached Emmy Award-winning actor Beau Bridges directly to play the role of Hank Landry.^[24] Claudia Black's guest appearances were so popular with the cast, crew and audience^{[20][25]} that the actress returned for the last two Season 9 episodes (with her pregnancy worked into the plot) and she joined the cast full-time in Season 10.

Crew

Most of the producers, crew members and guest actors involved in *Stargate SG-1* were Canadian.^[26] Creators Brad Wright and Jonathan Glassner were executive producers and show runners of *Stargate SG-1* in the first three seasons, having the final say (besides MGM and the network) on stories, designs, effects, casting, editing and episode budgets.^[27] After Glassner's departure, Wright ran *Stargate SG-1* alone for three seasons. Executive producer Robert C. Cooper took over as show-runner in Season 7 when Brad Wright took time off to develop the spin-off series *Stargate Atlantis*.^[28] Cooper and Wright remained show-runners of their respective shows until the end of *SG-1*.^[29] Also serving as executive and co-executive producers were Michael Greenburg and Richard Dean Anderson (Seasons 1–8), N. John Smith (Seasons 4–10) and the writer team Joseph Mallozzi & Paul Mullie (Seasons 7–10).



Robert C. Cooper became *SG-1*'s show runner in Season 7.

Although *Stargate SG-1* employed freelance writers, most of the 214 *Stargate SG-1* episodes were written by Brad Wright

(Seasons 1–10), Jonathan Glassner (Seasons 1–3), Katharyn Powers (Seasons 1–6), Robert C. Cooper (Seasons 1–10), Peter DeLuise (Seasons 4–8), Joseph Mallozzi & Paul Mullie (Seasons 4–10), Damian Kindler (Seasons 6–10) and Alan McCullough (Seasons 9–10). Martin Wood and Peter DeLuise directed the most episodes, with 46 episodes (Seasons 1–10) and 57 episodes (Seasons 2–10), respectively. Wood and DeLuise regularly made cameo appearances in their episodes and notably played the show-within-a-show directors in the cameo-heavy milestone episodes "Wormhole X-Treme!" and "200". Andy Mikita had been an assistant director since the pilot episode and directed 29 episodes from Season 3–10. *SG-1* director of photography Peter Woeste and camera operator William Waring directed 13 episodes each. Most staff writers and staff directors held producer positions. Several cast members also contributed story ideas and directed *SG-1* episodes.

Filming

Stargate SG-1 was filmed in and around Vancouver, British Columbia, mainly at The Bridge Studios and NORCO Studios,^{[30][31]} which offered *Stargate SG-1* tax breaks throughout its run.^[26] The cost of an *SG-1* episode increased from US\$1.3 million^[32] in the first seasons to an estimated US\$2 million per episode in Season 10, partly due to unfavorable exchange rates.^{[26][33]} Many Vancouver area landmarks were incorporated into the episodes, such as the campus of Simon Fraser University, which became the setting of the capital of the Tollan, an alien civilization.^[34] Production faced many weather problems because of the moderate oceanic climate of Vancouver, although rain could be eliminated from film. The Season 3 episode "Crystal Skull" was the first episode to be filmed on a virtual set.^[30]



Stargate SG-1 was filmed at The Bridge Studios in Burnaby, British Columbia, Canada.

The main setting of *Stargate SG-1*, the fictional Stargate Command (SGC) at the (real) Cheyenne Mountain Air Force Station near Colorado Springs, Colorado, was filmed at stage 5 of The Bridge Studios.^[31] Martin Wood filmed half a dozen stock shots of the real Cheyenne Mountain complex for use in the series approximately ten days before the premiere of the pilot episode. Although these shots wore out over the years, the producers did not film new shots until the beginning of Season 9, thinking that *Stargate SG-1* would be cancelled after each current year.^{[35][36]} By then, visitor questions and fan theories about the existence of a Stargate at the real Cheyenne Mountain complex had become so common that Cheyenne Mountain had installed a seemingly high-security door labeled "Stargate Command" for one of their storage rooms holding brooms and detergent.^[37]

The first seven seasons had 22 episodes each, which was reduced to 20 episodes for the last three seasons. Episodes of the first seasons were filmed over a period of 7.5 working days, which decreased to a targeted average of six working days in the last seasons.^[38] All episodes were filmed in 16:9 wide-screen, although *Stargate SG-1* was broadcast in 4:3 aspect ratio in its first years.^[39] The transition to the broadcast of episodes in the wider 16:9 ratio gave directors more freedom in frame composition.^[40] The first three seasons of *Stargate SG-1* were filmed on 16 mm film, notwithstanding scenes involving visual effects that had always been shot on 35 mm film for various technical reasons. After a test run with the Season 3 finale, "Nemesis", *Stargate SG-1* switched to 35 mm film for all purposes at the beginning of Season 4.^[41] Digital HD cameras were used for filming beginning with Season 8.^[38]

Production design

The art department generated all of the concepts and drawing for the prop department, the set decoration department, the construction department, the paint department and the model shop. They also collaborated with the visual effects department.^[30] *Stargate SG-1* employed about 200 Canadian union workers, although that number could exceed 300 when new sets were built.^[26] Lead production designer Richard Hudolin joined the project in October 1996. Bridget McGuire, *SG-1*'s art director since the pilot episode, took over as lead production designer in Season 6.^{[8][42]}

Hudolin flew to Los Angeles in 1996 to gather material from the feature film as reference and found the original Stargate prop stored outside in the Californian desert. Although the prop had severely deteriorated, he was able to take a detailed mold for *Stargate SG-1* production to build its own prop. The new Stargate was engineered to turn, to lock the chevrons and to be computer-controlled to dial specific gate addresses. A portable Stargate prop was built for on-location shoots and required six workers and one full day to set up.^{[3][8]} Since visual effects are sometimes faster and cheaper,^[8] a computer-generated Stargate was occasionally used in on-location shoots in later seasons.^[43]

The SGC set had to be twice as high for shooting as the 22-foot-tall (6.7 m) Stargate prop,^[9] but one of Hudolin's original plans of a three-level set was rejected in favor of a two-level set.^[8] The gateroom was the biggest room on set and could be redesigned for other scenes.^[43] Two multi-purpose rooms were frequently redecorated into the infirmary, Daniel's lab, the cafeteria or the gym.^{[8][44]} The SGC set and all other sets from the pilot episode were constructed within six weeks in January and February 1997, incorporating some original set pieces from the feature film.^[8] The SGC set would be largely dismantled in late 2008 to make room for the Icarus Base set of *Stargate Universe*.^[45]

Make-up and costumes

Most of the main *SG-1* characters are US airmen and wear authentic United States Air Force uniforms. During missions, the members of the SG-1 team normally wear olive green Battle Dress Uniforms.^[46] Richard Dean Anderson and Don S. Davis received a regular military-style haircut on set.^{[47][48]} Amanda Tapping had her hair comparably short until the filming of the direct-to-DVD films. Playing a civilian, Michael Shanks adopted James Spader's hairstyle from the feature film but cut it short for the Season 2 finale and subsequent seasons. The Jaffa alien Teal'c (Christopher Judge) was the only main character whose look required more than basic make-up. His Egyptian look was reflective of the Goa'uld Ra from the feature film and was complemented with a forehead symbol and a gold skin tone, although his make-up process was simplified over the years.^[49] Judge shaved his head at home each day until the producers allowed him to let his hair grow in Season 8.^[47] As a trained nurse, key make-up artist Jan Newman could make burns, cuts, bruises and the SG-1 team's other wounds look authentic.^[49]

For the look of aliens, the make-up department collaborated with prosthetics companies from Vancouver and Los Angeles, including Todd Masters. While the human origins of many alien races and human civilizations were left recognizable, the recurring characters who were members of the Unas race required elaborate prosthetics and make-up work.^[49] To convey the cultural origins of the various fictional human civilizations living on different planets after their displacement from Earth, the costume designers combined elements of their respective Earth cultures with modern fabrics, elaborate trims and chains to produce a historically rooted yet otherworldly appearance.^[50] The look of the Goa'uld such as Apophis was initially based on the look of Ra in the feature film.^[49] For the design of the Ori and the Priors in Season 9, the art department looked at Japanese and Samurai garments for costume design. Art director James Robbins found the face painting, scarification and burns of remote jungle tribes mystical and these served as inspiration for the face scarification of the Priors and the Doci. Early ideas to include finger extensions and scarification on these characters' hands were discarded as impracticable.^[51]

Visual effects

Stargate SG-1 was one of the biggest employers in the Vancouver visual effects market,^[52] spending \$400,000 per episode.^[53] The largest role was played by Rainmaker Digital Effects,^[52] whose senior digital compositing artist, Bruce Woloshyn, worked approximately 10 months a year in close collaboration with *SG-1*'s visual effects supervisor/producer James Tichenor and visual effects supervisor Michelle Comens.^[54] Many companies were hired to create the Stargate's water-like event horizon in the beginning, but Rainmaker eventually became the only company to create those visual effects.^[39] Rainmaker's regular effects shots included the activation and use of the Stargate itself (with well over 300 event horizon shots in the first few years), the transport rings and the blast shots of the staff weapons and zat guns. They created the visual effects for Goa'uld cargo ships and death gliders on a less regular basis.^[54]

Lost Boys Studios provided visual effects for *SG-1* from the very beginning of the series up to the end of Season 5,^[55] and Image Engine worked on the show from Season 2. *Stargate SG-1* and *Stargate Atlantis* were responsible for an estimated 30% to 40% of the business of Atmosphere Visual Effects.^[52] James Tichenor considered the few episodes with big visual effects budgets the most likely works to contain visual cues that would impress award judges.^[56] *Stargate SG-1* helped win the local post production shops industry recognition, with Season 4's "Small Victories", Season 5's "Revelations" and Season 7's "Lost City" receiving the most visual effects awards and nominations (see List of awards and nominations received by Stargate SG-1).

Music

According to composer Joel Goldsmith, *Stargate SG-1* had a traditional action-adventure score, "with a sci-fi, fantasy flair" that goes "from comedy to drama to wondrous to suspense to heavy action to ethereal".^[57] Brad Wright and Jonathan Glassner had known Goldsmith since the second season of *The Outer Limits* before they approached him to work on the pilot episode of *Stargate SG-1*. Goldsmith and David Arnold, the composer of the original feature film score, discussed themes for a television adaptation. The main titles of *Stargate SG-1* were a medley of several themes from the feature film, although Goldsmith also wrote a unique end title for *SG-1* to establish the show as its own entity.^[58] MGM eventually insisted on using Arnold's score in the pilot episode instead of Goldsmith's, but Brad Wright's 2009 direct-to-DVD recut of *Children of the Gods* uses Goldsmith's original score.^[59]

For each episode's score, Goldsmith simulated a real orchestra with a synthesizer palette of an eighty-piece symphony orchestra for budgetary reasons,^[58] although he occasionally used two or three musicians for added orchestral authenticity.^[60] Goldsmith's long-time assistant Neal Acree started composing additional music for *Stargate SG-1* in Season 8.^[61] The amount of composed music varied between 12 and 33 minutes out of a 44-minute episode, with an average of around 22 to 26 minutes,^[61] making the full symphonic score of *SG-1* more time-consuming to create than for general TV shows.^[58] Since Goldsmith lived a thousand miles away from Vancouver, he and the producers discussed ideas over the phone^[60] and exchanged tapes via Federal Express for several years until the show switched to Internet file transfers.^[62]

Goldsmith's reliance on Arnold's score decreased over the seasons when *Stargate SG-1* departed from the Goa'uld theme and introduced new characters and races. Goldsmith had a thematic approach to races and spaceships.^[58] For example, he wanted a mechanical, repetitive musical motif for the Replicators;^[62] Gothic, Gregorian and Christian themes were the inspiration for the Ori motif.^[58] The Ancient theme was deliberately carried over to *Stargate Atlantis*. The end of "Lost City" has a basic melody that would become part of the main title of *Atlantis* per a suggestion by Goldsmith's assistant.^[62] Non-original music was rarely used on *SG-1*, although Goldsmith chose the aria "Vesti la giubba" from Leoncavallo's *Pagliacci* for season 3's "Shades of Grey".^[27] Additionally, Lily Frost's song "Who am I" played in Season 7's "Fragile Balance" and CCR's song "Have

"You Ever Seen the Rain?" played in the series finale "Unending". A television soundtrack with Goldsmith's adapted score was released in 1997,^[63] followed by a best-of release in 2001.^[64] In Season 1 Episode 7, "The Nox", the music that played when The Nox appeared was Spinning The Silk from the album Chrysalis by 2002.

Opening title sequence

Stargate SG-1 has had several opening title sequences, which are generally preceded by a teaser act. The credits are normally sixty seconds long. Richard Dean Anderson was the only *SG-1* actor whose name appeared before the show's title. Michael Shanks' name was moved near the end of the opening credits with the appendage "as Daniel Jackson" after his return to the show in Season 7. Some DVD versions of early *SG-1* seasons have different opening credits from the television versions, as do the direct-to-DVD films. Composer Joel Goldsmith adapted David Arnold's *Stargate* feature film score for *SG-1*'s opening title theme, which remained the same during the run of *Stargate SG-1* and its direct-to-DVD films.

The first opening title sequence, used in the first five seasons, shows a slow-pan camera move over Ra's mask. The *Stargate SG-1* producers had run out of time before the premiere of Season 1 and simply re-used the accelerated opening title sequence of the feature film.^[65] Ra's mask had been created in the feature film's model shop and had originally been filmed with a motion-control camera.^[66] Partly because Ra's mask looked cross-eyed, Brad Wright approached the art department in the following years to produce a new opening title sequence; however, the sequence remained the same until the show's move to the Sci-Fi Channel. During the first five seasons when the show was syndicated, a separate introduction was used; this intro is still used by Sci-Fi for Seasons 1–5. This version uses action shots of the original cast.^{[65][67]}

The opening title sequence of the first two Season 6 episodes shows a turning Stargate, for which a Frazier lens was put as close as $\frac{1}{8}$ inch (3 mm) to the Stargate prop.^[67] The opening credits of the following episodes intercut this material with live-action shots of the characters from previous seasons and ended with the SG-1 team stepping through the Stargate. The opening credits stayed the same in the next two seasons except for minor clip and cast changes. The opening credits of Season 9 intercut shots of the Stargate with action sequences similar to the previous opening credits, although the Stargate was visibly computer-generated. The Sci Fi Channel cut the opening credits from sixty to ten seconds in their original broadcast of the first half of Season 9, but re-instated the full opening credits after strongly negative fan reactions.^[68] The



The opening credits of *Stargate SG-1*'s first five seasons show Ra's mask in close-up, which is similar to Tutankhamun's golden mask (pictured).

writers poked fun at this move in *SG-1*'s milestone episode "200" in Season 10, showing a five-second clip instead of the full titles.^[69] Beginning with Season 10's "Company of Thieves", the last clip of the opening credits shows Vala Mal Doran almost missing *SG-1*'s trip through the Stargate.

Collaboration with the military



Generals Michael E. Ryan and John P. Jumper, USAF Chiefs of Staff, appeared as themselves in "Prodigy" (2001) and "Lost City" (2004).

The U.S. Department of the Air Force, through the Air Force Office of Public Affairs, Entertainment Liaison in Los Angeles (<http://www.airforcehollywood.af.mil/>), co-operated closely with the *Stargate SG-1* producers. Before the beginning of the series, the Air Force granted production access to the Cheyenne Mountain complex to film stock shots. They also read every script for mistakes and provided help with plausible background stories for all characters, ribbons, uniform regulations, hair advice, plot lines and military relationships & decorum on an active military base.^[70] The USAF flew up several T-38 Talon, F-15 and F-16 fighter jets to Vancouver for various episodes and direct-to-DVD films.^{[37][71][72]} Many of the extras portraying USAF personnel were real USAF staff.^[73]

Two successive Chiefs of Staff of the Air Force, Generals Michael E. Ryan and John P. Jumper, appeared as themselves in Season 4's "Prodigy" and Season 7's "Lost City", respectively. General Jumper's second scheduled appearance in Season 9's "The Fourth Horseman" was cancelled due to ongoing real-world conflicts in the Middle East.^[72] The Air Force Association recognized Richard Dean Anderson at its 57th annual dinner on September 14, 2004 for his work as actor and executive producer of the show and for the show's positive depiction of the United States Air Force.^[73]

Several scenes of Season 4's "Small Victories" were filmed aboard and outside a decommissioned Russian *Foxtrot*-class submarine, which had been brought from Vladivostok to Vancouver by a private owner.^[8] The United States Navy invited the cast and producers to film aboard the nuclear submarine *USS Alexandria* (SSN-757) and at their Applied Physics Laboratory Ice Station in the Arctic for the direct-to-DVD sequel *Stargate: Continuum*.^[74]

Themes and allusions

Stargate SG-1 takes place in a military science fiction environment and employs the common science fiction concepts of strongly differentiated characters fighting an unequivocally evil enemy (the Goa'uld). However, it links alien races with well-known Earth mythologies, by use of the central Stargate device. Near-instantaneous interplanetary travel allows quick narrative shifts between the politics on Earth and the realities of fighting an interstellar war.^[75] *Stargate SG-1* gradually evolves the basic premise of the *Stargate* film into its own unique mythological superstructure,^[76] expanding upon Egyptian mythology (notably the gods Apep/Apophis and Anubis as Goa'uld villains), Norse mythology (notably the god Thor as an Asgard ally) and Arthurian legend (notably Merlin as an Ancient ally against the god-like Ori), among others. *SG-1* introduces new alien races (as opposed to alien human civilizations) less often than other science fiction television series and integrates newly encountered races or visited planets in stand-alone episodes into its established mythology while leaving the plotlines accessible for new audience members.^[77] Despite the show's extensive intergalactic mythology and science fiction elements, scholar M. Keith Booker considered *SG-1* ultimately character-driven and heavily dependent on the camaraderie among the SG-1 members.^[4]

The producers embraced humor and wanted *SG-1* to be a fun show that did not take itself too seriously.^[26] Brad Wright regarded *SG-1* as a family show with adequate violence as opposed to random or gratuitous violence.^[78] Christopher Judge did not consider *SG-1* as a "message show by any stretch of the imagination, but occasionally there are messages there".^[79] Aimed at a popular audience, *Stargate SG-1* emphasized its present-day-Earth story frame by frequently referencing popular culture, like *The X-Files* and *Buffy the Vampire Slayer* had done before.^[80] Jonathan Glassner had written *The Wizard of Oz* references into his own scripts since the first season, which the other writers imitated after Richard Dean Anderson began referencing the film on his own.^[81] O'Neill references Richard Dean Anderson's favorite television series, *The Simpsons*, throughout the show.^[82] *SG-1* makes meta-textual references to the



Many *SG-1* stories are built around Egyptian gods, such as (from left to right) Osiris, Anubis and Horus.

process of writing and filming a science fiction TV series in several episodes^[83] and alludes to the main actors' previous TV roles in the pilot episode (Carter: "It took us fifteen years and three supercomputers to MacGyver a system for the gate on Earth") and in a *Farscape* vignette in the milestone episode "200".

Broadcast and release

Showtime and US syndication (1997–2002)

The American subscription channel Showtime ordered the first two seasons of *Stargate SG-1* with 44 episodes total in 1996.^[3] The two-hour pilot episode received Showtime's highest-ever ratings for a series premiere with an audience of approximately 1.5 million households in the 8 p.m. Sunday slot of July 27, 1997.^{[84][85]} According to the *SG-1* producers, a broadcast network would have cancelled *SG-1* after a few episodes, but Showtime put no pressure on the show to "deliver the meteoric ratings the way network shows do".^[86] The show was consistently the channel's most-watched program (including theatrical movies),^{[87][88]} so Showtime ordered a third and fourth season of 22 episodes each in July 1998.^[89]

Since *Stargate SG-1* was expensive to produce, MGM arranged an agreement with Showtime that *SG-1* could air in syndication six months after their premiere on Showtime.^[90] All 22 Fox stations aired the first seasons after their Showtime debut, providing a clearance of 41% of the United States.^{[91][92]} The Sci Fi Channel made its largest single programming acquisition of \$150 million in 1998 by buying the exclusive basic cable rights to the MGM package *Stargate SG-1*, *The Outer Limits* and *Poltergeist: The Legacy*.^[93] Showtime decided to end its association with *Stargate SG-1* at the end of Season 5, saying that the show still had a sizeable viewership but could no longer draw new subscribers due to its availability in syndication.^[33]

Sci Fi Channel and US syndication (2002–2007)

Since *SG-1*'s ratings were good from a financial standpoint, the Sci Fi Channel picked up MGM's offer to continue the show into a sixth season, yet with a slightly reduced budget.^[71] Sci Fi aired new episodes of *Stargate SG-1* in the 9 p.m. Friday slot between *The Dead Zone* and *Farscape*, while it aired older *SG-1* episodes in a four-hour block every Monday at 7 p.m. Episodes were broadcast in US syndication six months after their premiere on Sci Fi.^[32] The sixth season was supposed to be the show's last,^[7] but Sci Fi renewed *SG-1* at the last minute.^[94] The sixth and seventh seasons made *Stargate SG-1* Sci Fi's highest-rated original series with an average of 2 million viewers in over 1.3 million households,^[95] elevating Sci Fi into the top 10 cable networks in the United States.^[96] For the next few years, the producers believed each current season to be the show's last and

repeatedly wrote big series finales,^[96] but the success of *Stargate SG-1* put off their plans of ending the show to write a new *Stargate* feature film.^[97] Sci Fi cut the length of an *SG-1* season from 22 to 20 episodes from Season 8 onwards.

Originally envisioned as a replacement for *SG-1*, the spin-off series *Stargate Atlantis* began airing in tandem with *SG-1*'s eighth season in summer 2004, setting a series record of 3.2 million viewers for *SG-1* and a Sci Fi record as most-watched episode of a regular series ever (at the time) for *Atlantis* with 4.2 million viewers.^[97] *Battlestar Galactica* joined the two *Stargate* series in January 2005, making Sci Fi the leader among basic cabling on Friday nights over the summer of 2005.^{[98][99]} The producers considered replacing *Stargate SG-1* with a new show named *Stargate Command* after *SG-1*'s eighth season,^[100] but the Sci Fi Channel decided to continue *SG-1* with a slightly changed cast for a ninth season instead. Season 9's average slipped from 2.4 million viewers in late 2005^[98] to 2.1 million viewers with 1.8 household rating during early 2006, which Sci Fi's Mark Stern attributed to the "tech-savvy, toy-loving, time-shifting audience" whose use of digital video recorders excluded them in ratings compilations.^[33] Meanwhile, the decline of *SG-1*'s 2005–2006 syndication household ratings was consistent with the overall decline in syndicated sci-fi action hours.^[101] Sci Fi ordered a record-breaking tenth season of *SG-1* in 2005, but announced it would not renew the show for an eleventh season in summer 2006 (see *#Cancellation and future*). The final *SG-1* episode, "*Unending*", premiered on Sky1 in the UK on March 13, 2007 and attracted approximately 2.2 million viewers on the Sci Fi Channel on June 22, 2007.^[102]

International broadcast

According to Wright and Cooper, the worldwide popularity of science fiction was a factor in *SG-1*'s success and the good international reception helped keep the series on the air in the beginning.^[103] Several newspapers reported in 2005–2006 that *Stargate SG-1* aired in over 100 countries with a weekly worldwide viewership of around 10 million,^{[26][86][103]} but *The New York Times* gave different numbers in 2004, saying that the show was broadcast in sixty-four countries with more than 17 million viewers a week.^[104] *Stargate SG-1* had a particularly fervent response in the United Kingdom, Germany, France and Australia.^{[97][104]}

Stargate SG-1 aired in the United Kingdom on Sky One with repeats on Sky Two, Sky Three and Channel 4. Sky One broadcast new episodes of the second half of most seasons before their American premiere. Brad Wright found it "almost embarrassing" that *Stargate SG-1* was much more popular in the United Kingdom than in Canada,^[26] where the show aired on Space, Citytv, A-Channel, Movie Central and French-language channels TQS and Zitélé.^[96] *Stargate SG-1* aired in Australia on Sci Fi Australia and Channel Seven. It aired in India on STAR World India and in Israel on Channel 1.

Cancellation and future

On August 21, 2006, a few days after the premiere of *SG-1*'s milestone episode "200", the Sci Fi Channel confirmed that *Stargate SG-1* was not being renewed for an eleventh season.^[105] While news outlets cited declining ratings, expensive production and lack of promotion as possible reasons for the cancellation,^{[101][106]} the Sci Fi Channel's Mark Stern merely stated the decision was not ratings-based.^[101] Instead, he said the production staff was given enough time to tie up all the loose ends of the story and *SG-1* cast members were planned to be incorporated into the renewed *Stargate Atlantis*.^[101] Meanwhile, the *SG-1* producers and rights-holder MGM expressed a desire to continue *SG-1* as a movie, mini-series, or an eleventh season on another network.^{[107][108]} Brad Wright confirmed the production of two direct-to-DVD films in October 2006,^[109] and Amanda Tapping joined the *Atlantis* cast for their fourth season. The first film, *Stargate: The Ark of Truth*, was released in March 2008 and wraps up the Ori storyline. The second film, *Stargate: Continuum*, is an alternate time-line time travel story and was released in July 2008. A special edition of the two-hour pilot episode "Children of the Gods" with re-edited scenes and a different score has also been produced.^[78]

In April 2009, MGM confirmed a third new *SG-1* film that Brad Wright had first announced in May 2008.^{[110][111]} Joseph Mallozzi revealed the working title as *Stargate: Revolution*.^[112] The film was planned to be written by Wright and former *Stargate Atlantis* executive producer Carl Binder.^[113] Martin Wood would serve as director.^[114] The premise of the film would have been the "possibility of the Stargate program going public".^[115] According to Wright, the film would center on the Jack O'Neill character and would reunite as many of the *SG-1* cast as possible, depending on the cost of the film and actor availability.^[110] The character of Vala Mal Doran would not appear in the film.^[114] Amanda Tapping confirmed her appearance in this *SG-1* film and the first *Atlantis* movie in September 2008,^[116] and Michael Shanks (Daniel Jackson) confirmed his and Richard Dean Anderson's participation in January 2009.^[117] No contracts had been signed by April 2009,^[118] but Wright stated that he "can almost guarantee we are proceeding with the *SG-1* movie this year [2009]".^[119] Nevertheless, production was put on hold. Wright explained that the late-2000s recession made DVD premieres less lucrative for MGM than in the years before,^[120] and he also pointed to the financial crisis of MGM as reason for the delay.^[121] Wright and Joe Mallozzi expressed optimism that production would eventually start,^{[121][122]} until Wright announced in April 2011 that the *SG-1* film project was permanently shelved, along with plans for future *Atlantis* and *Stargate Universe* films and a cross-over film incorporating elements from all three series.^{[123][124]} By then, neither the *Atlantis* nor *Universe* television series were produced anymore. Still, Wright did not rule out future *Stargate* films, saying; "It's a franchise. *Stargate* is not over. Somebody smart from MGM is going to figure it out and something will happen."^[123]

Home media

Stargate SG-1 was first released on DVD in some European nations in volumes of typically four episodes each, beginning with "The Best of Season 1" as Volume 1 in the United Kingdom in 2000. Each following season was released as six individual volumes (except Season 10 with five volumes), beginning with the first four episodes of Season 2. In 2000, the series was first released in the United States on DVD with only three episodes. The following year, Seasons 1–8 were released in five-disc amary box sets in the United States. MGM Home Entertainment (Europe) began releasing complete season box sets (including Season 1) alongside the individual volumes in 2002. The British season box sets were usually released half a year after a season's last volume release in the UK. *Stargate SG-1* was also released in DVD season box sets in Australia.

Most DVDs contain behind-the-scenes features, audio commentaries for nearly all episodes beginning with Season 4 and production galleries. The box sets of the first eight seasons were re-released with slim packaging in all regions, beginning in the United States in summer 2006.^[125] A complete series set was first released in the United States in October 2007, containing 50 discs from the ten seasons of *Stargate SG-1* and four bonus discs with content not part of the original sets.^[126] More than 30 million copies of DVDs had been sold by 2006.^[26]

On June 15, 2020, Visual Entertainment re-released the complete series on DVD without the films.^[127]

Online distribution

New episodes of *Stargate SG-1* were first released on iTunes in the US in August 2006, each time one day after their premiere on the Sci Fi Channel. The commercial-free episodes were priced \$1.99 each, while a season pass with twenty episodes cost \$37.99.^{[101][128]} A release on iTunes UK followed in October 2007.^[129] All ten seasons of *SG-1* were available on iTunes and Amazon Unbox by January 2008.^[130] *Stargate SG-1* made its debut on hulu.com in March 2009, starting with the first season. At first, viewers in the United States could only watch episodes of the first seasons, but as of December 2009 all episodes of Seasons 1–10 were available free of charge with a small number of commercials on Hulu, through January 31, 2011.^[131] Free access to all SG-1 episodes continued until July 31, 2011, when the episodes were finally removed. As of February 1, 2011, all episodes of the entire Stargate franchise were available on Netflix's subscription-based online video streaming service in the US.^[132] As of August 15, 2012 Netflix removed *Stargate SG-1* from its online video streaming service. As of May 2013, Amazon Video has *Stargate SG-1* available for online streaming.^[133] As of August 2014 *SG-1* is available on Netflix UK. The pilot episode "Children Of The Gods" though has been replaced with the 2009 updated final cut with updated CGI and the full frontal nudity removed. As of July 2015, Hoopla Digital, an online library media database, has all ten seasons of *Stargate SG-1* available to watch free without commercials, for those who have cards with a participating library. The first two episodes are the edited

versions, in which full frontal nudity has been removed.^[134] In September 2017, MGM launched its own online streaming service called Stargate Command, making available all episodes of Stargate SG-1 along with Stargate Atlantis and Stargate Universe.^[135]

Impact

Critical reception

In his review for the pilot episode "Children of the Gods" in 1997, Will Joyner of *The New York Times* considered *Stargate SG-1* a "challenging, if derivative, mix" that is "more than a *Stargate* [feature film] fan might expect but certainly less than one would hope for." He had a mixed opinion about the cast and was disturbed by *SG-1*'s use of visual shock tactics to make up for its lower television budget.^[84] Reviewing the same episode, *Variety*'s Tony Scott criticized that "superficial characters wander through their roles without stirring a modicum of conviction" in a show that is "essentially for young people". He mocked that the wooden acting, "pedestrian writing, pulp-mag plotting, shopworn characters, hackneyed dialogue [...] and Mario Azzopardi's broad direction will all undoubtedly delight billions and billions."^[136] Many critics responded negatively to the gratuitous use of sexual implication and female nudity in the pilot episode, which according to Wright had been filmed on Showtime's insistence despite his vocal opposition and was cut from the pilot's 2009 direct-to-DVD version.^[78]

According to Sharon Ebersson of the Pittsburgh Post-Gazette, "Stargate SG-1's" place in the sci-fi universe can be measured in longevity, spot-on cast chemistry, rabid fans and tough subject it has tackled although she argued that the show was rarely a critical darling.^[137] Although the show was the most-watched program on Showtime, it received almost no media mention outside hard-core science fiction circles in its first seasons.^[87] *Stargate SG-1* gained media attention when *Stargate Atlantis* was greenlit (the cover of the July 26, 2003 *TV Guide* issue notably called to "Forget *Trek*! *Stargate SG-1* is now sci-fi's biggest hit!"), but the *Toronto Star* noted in 2006 that "Nobody seemed to like [*Stargate SG-1*] but the fans; it somehow always slipped under the radar of most TV critics".^[138] According to Melanie McFarland of the *Seattle Post-Intelligencer*, *SG-1*'s records did not earn it "the kind of wide-ranging respect a successful series with a 200-episode run deserves"; *SG-1* rarely occupied a slot on 'best show' lists because the show remained "relegated to the back of the bus in terms of popularity" behind the glory of *Battlestar Galactica*, although every week, the show attracts an average of 10 million viewers worldwide. It has also been pointed out by Cooper that "By the way, neither did the original 'Star Trek' in its time, It wasn't until 30 years later that people started looking back at it and realizing it was a milestone. I think we secretly hope that 10, 15, 20 years from now, that 'Stargate' will be considered in the same way."^[86] Scott D. Pierce from *Deseret News* said that the series never made a "sort of cultural impact" as *Star Trek* because the show was "pretty derivative" which he further stated it became "more so over the years."^[139] Robert White from the British newspaper *The Independent* said that the series "Died the death" during its second season of

Robert Rank from the British newspaper *The Independent* said that the series did the job during its second season of broadcasting.^[140]

In 2019, *Popular Mechanics* ranked *Stargate: SG-1* the 14th best science fiction television show ever.^[141]

Awards and nominations

Stargate SG-1 was nominated for numerous awards during its ten-season run. Its nominations for seven Emmys in the "Outstanding Special Visual Effects for a Series" category and one Emmy for "Outstanding Music Composition for a Series (Dramatic Underscore)" did not result in a win.^[142] *SG-1* won two Gemini Awards,^[143] twelve Leo Awards^[144] and five Saturn Awards^[145] out of over thirty nominations each. *Stargate SG-1* was also nominated for two VES Awards in 2003 and 2005^{[146][147]} and for two Hugo Awards in 2005 and 2007.^{[148][149]}

Fandom

Brad Wright used the term "Gaters" to refer to fans of *Stargate SG-1* in 2001,^[70] but the term did not become widespread. Some fans' belief that there was a real Stargate device under Cheyenne Mountain inspired writers Joseph Mallozzi and Paul Mullie to come up with their own conspiracy story for Season 4's "Point of No Return".^[70] The fansite GateWorld became a major franchise news site with special arrangements with MGM; GateWorld's founder Darren Sumner was later hired to serve as a news editor for the official *Stargate SG-1* magazine and to check *Stargate* comic books for continuity errors with the TV shows before publication.^[150] *Late Night with Conan O'Brien* graphic designer Pierre Bernard gained notoriety among *Stargate* fans for devoting several of his "Recliner of Rage" *Late Night* segments to *SG-1*. The producers invited him to make cameo appearances in the episodes "Zero Hour" and "200".^[151]



Fans costuming as SG teams at Dragon Con in 2008

Until 2005, Gatecon was the main *SG-1* fan convention. It was held in the Vancouver area, with more actor and crew member participation than other conventions. *SG-1* conventions by Creation Entertainment were also marketed as "The Official *Stargate SG-1* and *Stargate Atlantis* Tour", which mostly took place in the United States until Creation Entertainment acquired the license for Vancouver conventions in 2005. Wolf Events organized many *SG-1* conventions in Europe, particularly in the UK and Germany.^[152]

Merchandise

Stargate SG-1 spawned an industry of spin-off products. From 1999 to 2001, ROC published four *Stargate SG-1* novels written by Ashley McConnell.^[153] In 2004, UK-based Fandemonium Press launched a new series of licensed tie-in novels based on *Stargate SG-1*, although these books were unavailable in North America until 2006 when the license conflict with ROC expired.^[154] Titan Publishing publishes the official *Stargate Magazine*,^[26] while Avatar Press published a series of *Stargate SG-1* comics.^[26] British company Big Finish Productions began to produce *Stargate SG-1* audio adventures in early 2008, voiced by members of the *SG-1* cast.^[155] A *Stargate SG-1* roleplaying game and a *Stargate* trading card game were released in 2003 and 2007. Diamond Select Toys and Hasbro launched a series of toys in 2005 and 2006, respectively.^[156]^[157] The planned video game *Stargate SG-1: The Alliance* was cancelled in 2005 and the futures of the MMORPG *Stargate Worlds* and the Third Person Shooter from the same studio (Cheyenne Mountain Entertainment) named *Stargate Resistance* were made clear in November 2010 following MGM's decision not to renew CME's *Stargate* license. Four amusement rides are based on *Stargate* – the *Stargate SG-3000* theme park ride operating at Space Park Bremen in Germany and at Six Flags theme parks in Chicago, San Francisco and Louisville.^[26]

Legacy

Stargate SG-1 spawned the animated *Stargate Infinity*, and the live-action spin-off TV series' *Stargate Atlantis* and *Stargate Universe*. By *SG-1*'s tenth season in 2006, *Stargate SG-1* and *Stargate Atlantis* were said to have brought US\$500 million in production to British Columbia.^[26] MGM executive vice president Charles Cohen described *Stargate SG-1* and its spinoff series as the television counterpart of their *James Bond* franchise, being very profitable and improving their image.^[33]

According to Stan Beeler and Lisa Dickson in their 2005 book *Reading Stargate SG-1*, the only science fiction shows to exceed the staying power of *SG-1* are *Doctor Who* and the *Star Trek* franchise, although *The X-Files* and *Buffy/Angel* might have comparable longevity.^[76] Brad Wright cited continuity in the creative team and fan loyalty as reasons for the show's longevity.^[26] With its 202nd episode, "Company of Thieves", *Stargate SG-1* surpassed *The X-Files* as the longest-running North American science fiction series on television, until passed by the final season of *Smallville* in 2011, which was in turn passed by the eleventh season revival of *The X-Files* in 2018.^[158] *Doctor Who* fans dispute *SG-1*'s listing in the 2007 *Guinness World Records* as the "longest-running science fiction show (consecutive)", as 695 episodes of the British show were produced but not shown consecutively between 1963 and 1989.^[159]^[160]

We were off the radar for so long. [...] We were like the slowly burning candle. We're not a huge hit by any means. We're a nice little show that does well and makes MGM a lot of money.

Creator Brad Wright in 2006^[26]

Stargate SG-1 ranked #28 on *TV Guide*'s Top Cult Shows Ever.^[161] In 2005, *SG-1* and *Atlantis* shared the number four spot in a poll about the "most popular cult TV shows" on the British *Cult TV* website.^[162] *SG-1* was also included in the list of "17 All-Time Great Cult TV Shows You Say We Missed" by *Entertainment Weekly* in 2009.^[163] The astronomers David J. Tholen and Roy A. Tucker enjoyed the *SG-1* arch villain Apophis so much that they named their discovered near-Earth asteroid "99942 Apophis".^[164]

References

- Brenner, Paul. "Stargate: Overview" (<https://www.allmovie.com/work/stargate-132284>). *Allmovie*. Retrieved January 4, 2010.
- Eramo, Steven (July 2005). "Michael Shanks – Curious Mind". *TV Zone* (Special 64): 40–42.
- Wright, Brad; Glassner, Jonathan; Greenburg, Michael; Anderson, Richard Dean; Shanks, Michael (2001). *Stargate SG-1: Season 3 – Timeline To The Future – Part 1: Legacy Of The Gate* (DVD). *MGM Home Entertainment*.
- Booker 2004, pp. 181–182.
- Sumner, David (June 30, 2008). "Don S. Davis: 1942–2008" (https://web.archive.org/web/20110806213248/http://gateworld.net/news/2008/06/don_s._davis_1942-2008.shtml). *GateWorld*. Archived from the original (http://gateworld.net/news/2008/06/don_s._davis_1942-2008.shtml) on August 6, 2011. Retrieved November 20, 2008.
- Wright, Brad (2006). *Stargate SG-1: Season 9 – Profile On: Brad Wright* (DVD). *MGM Home Entertainment*.
- Eramo, Steven (July 2002). "Richard Dean Anderson – Mr Anderson – Colonel O'Neill". *TV Zone* (Special 46): 4–9.
- Hudolin, Richard (2001). *Stargate SG-1: Season 3 – Production Design: Richard Hudolin* (DVD). *MGM Home Entertainment*.
- Wright, Brad and Glassner, Jonathan (2001). *Stargate SG-1: Season 3 – Producing Stargate* (DVD). *MGM Home Entertainment*.
- Shanks, Michael (2001). *Stargate SG-1: Season 3 – Profile On Daniel Jackson* (DVD). *MGM Home Entertainment*.
- Davis, Don. S (2001). *Stargate SG-1: Season 3 – Profile On General Hammond* (DVD). *MGM Home Entertainment*.
- Read, David (September 2006). "Intimate Portrait – GateWorld talks with Don S. Davis (Part 1)" (https://web.archive.org/web/20090101091032/http://www.gateworld.net/interviews/intimate_portrait_part_1_o.shtml). *GateWorld*. Archived from the original (http://www.gateworld.net/interviews/intimate_portrait_part_1_o.shtml) on January 1, 2009. Retrieved December 29, 2008.
- Storm 2005, pp. 61–63.
- "Wright: Stargate SG-1 Fits SCI FI" (<https://web.archive.org/web/20020606114305/http://www.scifi.com/scifiwire/art-sfc.html?2002-05%2F20%2F14.00.sfc>). *Sci Fi Wire*, (Sci Fi Channel). May 30, 2002. Archived from the original (<http://www.scifi.com/scifiwire/art-sfc.html?2002-05/20/14.00.sfc>) on June 6, 2002.
- Eramo, Steven (July 2002). "Corin Nemec – Jonas Quinn". *TV Zone* (Special 46): 22–26.

16. "SCI FI Clarifies SG-1 Casting" (<https://web.archive.org/web/20020413072034/http://www.scifi.com/scifiwire/art-sfc.html?2002-02%2F11%2F10.00.sfc>). Sci Fi Wire, (Sci Fi Channel). February 11, 2002. Archived from the original (<http://www.scifi.com/scifiwire/art-sfc.html?2002-02/11/10.00.sfc>) on April 13, 2002.
17. "Stargate Cast Returning" (<https://web.archive.org/web/20060325043143/http://www.scifi.com/scifiwire/art-main.html?2002-11%2F15%2F13.00.sfc>). Sci Fi Wire, (Sci Fi Channel). November 15, 2002. Archived from the original (<http://www.scifi.com/scifiwire/art-main.html?2002-11/15/13.00.sfc>) on March 25, 2006. Retrieved November 1, 2008.
18. Read, David (September 2006). "Intimate Portrait – GateWorld talks with Don S. Davis (Part 2)" (https://web.archive.org/web/20110921020308/http://www.gateworld.net/interviews/intimate_portrait_part_2_o.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/intimate_portrait_part_2_o.shtml) on September 21, 2011. Retrieved December 29, 2008.
19. "Vala Unveiled". *Official Stargate Magazine*: 20–21. April 2006.
20. Rudolph, Illeana (February 27, 2006). "Black Is Back". *TV Guide* (February 27 – March 5, 2006): 41.
21. Gibson 2003, p. 66, p. 117.
22. Eramo, Steven (July 2005). "Ben Browder – Work in progress". *TV Zone* (Special 64): 12–16.
23. Mallozzi, Joseph (July 2005). "In the Making – Avalon Part 1" (<https://web.archive.org/web/20110921072901/http://www.gateworld.net/sg1/s9/making/901.shtml>). GateWorld. Archived from the original (<http://www.gateworld.net/sg1/s9/making/901.shtml>) on September 21, 2011. Retrieved March 7, 2009.
24. Eramo, Steven (July 2005). "Beau Bridges – Helping Bridge the Gap". *TV Zone* (Special 64): 50–52.
30. Hudolin, Richard; Greenburg, Michael; Smith, N. John (2001). *Stargate SG-1: Season 3 – Timeline To The Future – Part 2: Secrets Of The Gate* (DVD). MGM Home Entertainment.
31. Sumner, Darren & Read, David (February 18, 2009). "Stargate Universe begins principal photography" (<http://www.gateworld.net/news/2009/02/stargate-universe-begins-principal-photography/>). GateWorld. Retrieved February 18, 2009.
32. Dempsey, John (August 26, 2002). "'Stargate' levitates" (<https://www.variety.com/article/VR1117871914.html?categoryid=1236&cs=1>). *Variety*. Retrieved March 26, 2009.
33. McNamara, Mary (May 7, 2006). "Science-Fiction Series 'SG-1' Is Cable's First to Reach Historic Milestone" (http://www.multichannel.com/article/123363-Stargate_200.php). *Multichannel News*. Retrieved March 30, 2009.
34. Heckman, Candace & Chansanchai, Athima (December 12, 2005). "Vancouver: A sci-fi film and TV fan's paradise" (http://www.seattlepi.com/movies/251525_hollywoodnorthact3.html). *Seattle Post-Intelligencer*. Retrieved March 21, 2009.
35. Mallozzi, Joseph, Gero, Martin (2006). *Audio Commentary for "The Ties That Bind"* (DVD). MGM Home Entertainment.
36. Wood, Martin (2004). *Stargate SG-1: Season 7 – Audio Commentary for "Fallen"* (DVD). MGM Home Entertainment.
37. Wood, Martin; Tapping, Amanda (2008). *Stargate: The Ark of Truth – Stargate at Comic-Con* (DVD). MGM Home Entertainment.
38. Waring, Will and Menard, Jim (2005). *Stargate SG-1 Season 8 – Audio Commentary for "Lockdown"* (DVD). MGM Home Entertainment. Event occurs at 1 and 8 min.
39. Woloshyn, Bruce (February 2005). "*A Day At Rainmaker –*

25. Sumner, Darren (July 2006). "I, Claudia – GateWorld talks with Claudia Black" (https://web.archive.org/web/20110920083833/http://www.gateworld.net/interviews/i_claudia.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/i_claudia.shtml) on September 20, 2011. Retrieved January 14, 2008.
26. Andrews, Marke (April 8, 2006). "Stargate's success is out of this world" (<https://web.archive.org/web/20090528222127/http://www2.canada.com/vancouversun/news/business/story.html?id=8cadeca7-c0a8-403f-b6d6-7c1f728a9aa7&k=25558>). *The Vancouver Sun*. Archived from the original (<http://www2.canada.com/vancouversun/news/business/story.html?id=8cadeca7-c0a8-403f-b6d6-7c1f728a9aa7&k=25558>) on May 28, 2009. Retrieved March 21, 2009.
27. Sumner, Darren (July 2002). "Interviews – Brad Wright" (https://web.archive.org/web/20090319011631/http://www.gateworld.net/interviews/brad_wright.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/brad_wright.shtml) on March 19, 2009. Retrieved March 24, 2009.
28. "Will SG-1 gate to Season Nine?" (<https://web.archive.org/web/20090519065345/http://www.gateworld.net/news/2004/08/willsg-1gatetoseasonnine.shtml>). GateWorld. August 8, 2004. Archived from the original (<http://www.gateworld.net/news/2004/08/willsg-1gatetoseasonnine.shtml>) on May 19, 2009. Retrieved March 25, 2009.
29. Sumner, Darren (February 28, 2005). "New seasons begin filming in Vancouver" (https://web.archive.org/web/20090519065351/http://www.gateworld.net/news/2005/02/new_seasons_begin_filming_in_van.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2005/02/new_seasons_begin_filming_in_van.shtml) on May 19, 2009. Retrieved March 25, 2009.
- GateWorld talks with Bruce Woloshyn* (https://web.archive.org/web/20090725054047/http://www.gateworld.net/interviews/a_day_at_rainmaker.shtml). Event occurs at 13 min. Archived from the original (http://www.gateworld.net/interviews/a_day_at_rainmaker.shtml) on July 25, 2009. Retrieved March 26, 2009.
40. Waring, Will and McCullough, Alan (2007). *Stargate SG-1 Season 10 – Audio Commentary for "Dominion"* (DVD). MGM Home Entertainment. Event occurs at 7 min.
41. Tichenor, James (2001). *Stargate SG-1: Season 4 – Audio Commentary for "Small Victories"* (DVD). MGM Home Entertainment.
42. Gibson 2003, p. 130.
43. Wood, Martin and Tichenor, James (2001). *Stargate SG-1: Season 4 – Audio Commentary for "Upgrades"* (DVD). MGM Home Entertainment.
44. Wood, Martin (2003). *Stargate SG-1: Season 6 – Audio Commentary for "Redemption (Part 1)"* (DVD). MGM Home Entertainment.
45. Mallozzi, Joseph (January 20, 2009). "January 20, 2009: The Return of Norman Shuttlecock Junior" (<http://josephmallozzi.wordpress.com/2009/01/20/january-20-2009-the-return-of-norman-shuttlecock-junior/>). Retrieved January 21, 2009.
46. *Science Fiction in the Cinema – Stargate* (<https://web.archive.org/web/20090418013915/https://www.discoverychannel.co.uk/sci-files/cinema/stargate/index.shtml>). Discovery Channel. 2006. Event occurs at 29 min. Archived from the original (<http://www.discoverychannel.co.uk/sci-files/cinema/stargate/index.shtml>) on April 18, 2009.
47. Eramo, Steven (July 2004). "Christopher Judge – Judge For Yourself". *TV Zone* (Special 58): 28–32.
48. Gibson 2003, p. 144.

49. Eramo, Steven (July 2002). "Jan Newman – Born With It – Make-up". *TV Zone* (Special 46): 62–65.
50. McQuarrie, Christina (2001). *Stargate SG-1: Season 3 – Costume Design: Christina McQuarrie* (DVD). **MGM Home Entertainment**.
51. Eramo, Steven (July 2005). "Stargate SG-1 Season 9 preview – Nine Lives". *TV Zone* (Special 64): 24–30, 44–48 56–60.
52. Careless, James (May 1, 2006). "B.C. post shops create series' alien worlds" (http://playbackonline.ca/2006/05/01/s_g1post-20060501/). *Playback*. Retrieved March 31, 2012.
53. Gibson 2003, p. 8.
54. Sumner, Darren (December 2002). "GateWorld talks with Bruce Woloshyn" (https://web.archive.org/web/20110827060854/http://www.gateworld.net/interviews/bruce_woloshyn.shtml). *GateWorld*. Archived from the original (http://www.gateworld.net/interviews/bruce_woloshyn.shtml) on August 27, 2011. Retrieved March 31, 2009.
55. "Lostboys Studios: Digital Effects For Film & Television" (<https://web.archive.org/web/20090807091630/http://www.lostboys-studios.com/tv/stargate.php>). Lost Boys Studios. Archived from the original (<http://www.lostboys-studios.com/tv/stargate.php>) on August 7, 2009. Retrieved May 22, 2009.
56. Zahed, Ramin (August 8, 2001). "Emmys nominees: Sci-fiers impress with innovative effects" (<https://www.variety.com/article/VR1117850978.html?categoryid=14&cs=1>). *Variety*. Retrieved March 14, 2008.
57. Burlingame, Jon (July 29, 2002). "Sci-fi series: a musical odyssey" (<https://www.variety.com/article/VR1117870437.html?categoryid=1329&cs=1>). *Variety*. Retrieved March 26, 2009.
58. Read, David (November 2006). "Gate Harmonics – GateWorld talks with Joel Goldsmith (Part 1)" (https://web.archive.org/web/20061101000000/http://www.gateworld.net/news/2006/11/gate_harmonics.html). *GateWorld*. Archived from the original (https://web.archive.org/web/20061101000000/http://www.gateworld.net/news/2006/11/gate_harmonics.html) on November 1, 2006. Retrieved March 31, 2009.
59. DeLuise, Peter and Tichenor, James (2001). *Stargate SG-1: Season 4 – Audio Commentary for "The Other Side"* (DVD). **MGM Home Entertainment**.
60. Devlin, Dean and Emmerich, Roland (2001). *Audio Commentary for Stargate* (DVD). **MGM Home Entertainment**.
61. Mikita, Andy; Kindler, Damien; Menard, Jim (2001). *Stargate SG-1: Season 6 – Audio Commentary for "Cure"* (DVD). **MGM Home Entertainment**.
62. Sumner, Darren (September 1, 2005). "SCI FI to reinstate full-length openings" (https://web.archive.org/web/20120427143054/http://www.gateworld.net/news/2005/09/sci_fi_to_reinstate_full-length_.shtml). *GateWorld*. Archived from the original (http://www.gateworld.net/news/2005/09/sci_fi_to_reinstate_full-length_.shtml) on April 27, 2012. Retrieved July 20, 2007.
63. Cooper, Robert C. and Wright, Brad (2007). *Stargate SG-1: Season 10 – Audio Commentary for "200"* (DVD). **MGM Home Entertainment**.
64. Wright, Brad; Glassner, John; Mullie, Paul; Smith, Stuart T.; Giannazzo, Tom (2001). *Stargate SG-1: Season 3 – Timeline To The Future – Part 3: Beyond The Gate* (DVD). **MGM Home Entertainment**.
65. Eramo, Steven (July 2002). "Season Six Preview – Coming up, on SG-1...". *TV Zone* (Special 46): 66–76.
66. Mikita, Andy and Kindler, Damian (2006). *Stargate SG-1: Season 9 – Audio Commentary for "The Fourth Horseman (Part 1)"* (DVD). **MGM Home Entertainment**.
67. Thar, Doug (September 9, 2004). "Air Force to honor actor, producer" (<https://archive.today/20121212202328/http://www.af.mil/news/story.asp?storyID=123008593>). Air Force Link. Archived from the original (<http://www.af.mil/news/story.asp?storyID=123008593>) on December 12, 2012. Retrieved March 17, 2009.

- [archive.org/web/20081224102503/http://www.gateworld.net/interviews/gate_harmonics_part_1_of_2.shtml](http://www.gateworld.net/interviews/gate_harmonics_part_1_of_2.shtml)). GateWorld. Archived from the original (http://www.gateworld.net/interviews/gate_harmonics_part_1_of_2.shtml) on December 24, 2008. Retrieved March 24, 2009.
59. Sumner, Daren & Read, David (May 2008). "Breaking The Ice – GateWorld talks with Brad Wright (Part 2)" (https://web.archive.org/web/20090321121703/http://gateworld.net/interviews/breaking_the_ice_part_22.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/breaking_the_ice_part_22.shtml) on March 21, 2009. Retrieved March 24, 2009.
 60. Gibson 2003, pp. 150–151.
 61. Read, Darren (March 2009). "The Language of Emotion – GateWorld talks with Neal Acree" (https://web.archive.org/web/20090401014536/http://www.gateworld.net/interviews/the_language_of_emotion.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/the_language_of_emotion.shtml) on April 1, 2009. Retrieved March 31, 2009.
 62. Read, David (November 2006). "Gate Harmonics – GateWorld talks with Joel Goldsmith (Part 2)" (https://web.archive.org/web/20081205005016/http://gateworld.net/interviews/gate_harmonics_part_2_of_2.shtml). GateWorld. Archived from the original (http://www.gateworld.net/interviews/gate_harmonics_part_2_of_2.shtml) on December 5, 2008. Retrieved March 24, 2009.
 63. "Stargate SG-1 Soundtrack" (<http://www.soundtrack.net/albums/database/?id=1044>). SoundtrackNet. Retrieved May 29, 2010.
 64. Goldwasser, Dan (August 29, 2001). "The Best of Stargate SG-1 Soundtrack" (<http://www.soundtrack.net/albums/database/?id=2844>). SoundtrackNet. Retrieved May 29, 2010.
 74. "SG-1 headed to the Arctic" (http://stargate.mgm.com/news_detail.php?id=5). MGM. March 14, 2007. Retrieved May 17, 2009.
 75. Beeler 2008, pp. 267–269.
 76. Beeler and Dickson 2005. "Introduction", pp. 1–5.
 77. Beeler 2008, pp. 273–277.
 78. Sumner, Darren (April 4, 2008). "Special edition of SG-1 pilot episode in the works" (https://web.archive.org/web/20090402062604/http://gateworld.net/news/2008/04/special_edition_of_isg-1i_pilot_.shtml). GateWorld. Archived from the original (http://gateworld.net/news/2008/04/special_edition_of_isg-1i_pilot_.shtml) on April 2, 2009. Retrieved March 30, 2009.
 79. Gibson 2003, p. 92.
 80. Hipple, Dave, "Stargate SG-1: Self-possessed Science Fiction". In Beeler and Dickson 2005, p. 27–28.
 81. Glassner, Jonathan (2002). *Stargate SG-1: Season 4 – The Stargate Universe* (DVD). MGM Home Entertainment.
 82. Sumner, Darren (June 20, 2005). "Anderson to guest star on The Simpsons" (https://web.archive.org/web/20090519054140/http://www.gateworld.net/news/2005/06/anderson_to_guest_star_on_ithes.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2005/06/anderson_to_guest_star_on_ithes.shtml) on May 19, 2009. Retrieved April 3, 2009.
 83. Beeler 2008, pp. 277–278.
 84. Joyner, Will (July 26, 1997). "Through a Gate to the Far Side of the Universe: A TV Series" (<https://www.nytimes.com/1997/07/26/arts/through-a-gate-to-the-far-side-of-the-universe-a-tv-series.html>). *The New York Times*. Retrieved April 3, 2009.

85. Richmond, Ray (August 1, 1997). "'Stargate' Showtime's home run" (<https://www.variety.com/article/VR1116678643.html?categoryid=14&cs=1>). *Variety*. Retrieved March 26, 2009.
86. McFarland, Melanie (April 21, 2006). "On TV: 'Stargate SG-1' keeps cruising, despite the light years" (http://www.seattlepi.com/tv/267484_tv21.html). *Seattle Post-Intelligencer*. Retrieved March 21, 2009.
87. Meisler, Andy (October 4, 1998). "Television/Radio: Not Even Trying to Appeal to the Masses" (<https://www.nytimes.com/1998/10/04/arts/television-radio-not-even-trying-to-appeal-to-the-masses.html>). *The New York Times*.
88. Dempsey, John (December 13, 2000). "TV biz's gay pride parade" (<https://www.variety.com/article/VR1117790288.html?categoryid=14&cs=1>). *Variety*. Retrieved March 26, 2009.
89. Morgan, Richard (July 27, 1998). "MGM posts larger loss" (<https://www.variety.com/article/VR1117478828.html?categoryid=18&cs=1>). *Variety*. Retrieved March 18, 2009.
90. Dempsey, John (September 14, 2003). "Cablars raise syndie stakes" (<https://www.variety.com/article/VR1117790288.html?categoryid=10&cs=1>). *Variety*. Retrieved March 26, 2009.
91. Moss, Linda (August 18, 1997). "Showtime's 'Stargate' going to Fox in syndication". *Multichannel News*.
92. Pursell, Chris (November 17, 1999). "'Stargate' fences in Fox" (<https://www.variety.com/article/VR1117758132.html?categoryid=14&cs=1>). *Variety*. Retrieved March 27, 2009.
93. Richmond, Ray (March 31, 1998). "Sci-fi aiming high" (<https://www.variety.com/article/VR1117469302.html?categoryid=18&cs=1>). *Variety*. Retrieved March 27, 2009.
94. Storm 2005, p. 64.
95. "Sci Fi Channel Renews Stargate SG-1 For Eighth Season" (https://web.archive.org/web/20070813043054/http://www.gateworld.net/news/2006/08/mgm_considers_isg-1s_future.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/08/mgm_considers_isg-1s_future.shtml) on July 28, 2011. Retrieved August 27, 2006.
103. Brennan, Steve (June 27, 2006). "'Stargate' on global trek that spans 200 episodes" (https://web.archive.org/web/20090512235728/http://www.hollywoodreporter.com/hr/search/article_display.jsp?vnu_content_id=1002728447). *The Hollywood Reporter*. Archived from the original (https://www.hollywoodreporter.com/hr/search/article_display.jsp?vnu_content_id=1002728447) on May 12, 2009. Retrieved March 21, 2009.
104. Gates, Anita (July 4, 2004). "Cover Story: Between the Wraith and the Deep Blue Sea" (<https://www.nytimes.com/2004/07/04/tv/cover-story-between-the-wraith-and-the-deep-blue-sea.html>). *The New York Times*. Retrieved April 3, 2009.
105. "SG-1 Ends Run; Atlantis Back" (<https://web.archive.org/web/20060825081141/http://www.scifi.com/scifiwire/index.php?category=2&id=37607>). scifi.com. August 22, 2006. Archived from the original (<http://www.scifi.com/scifiwire/index.php?category=2&id=37607>) on August 25, 2006. Retrieved August 27, 2006.
106. McNamara, Mary (August 21, 2006). "Sci Fi's Stargate SG-1 Said to Be Axed" (http://www.multichannel.com/article/124883-Sci_Fi_s_Stargate_SG_1_Said_to_Be_Axed.php). *Multichannel News*. Retrieved May 26, 2009.
107. Sumner, Darren (August 26, 2006). "MGM considers SG-1's future" (https://web.archive.org/web/20110728035131/http://www.gateworld.net/news/2006/08/mgm_considers_isg-1is_future.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/08/mgm_considers_isg-1is_future.shtml) on July 28, 2011. Retrieved August 27, 2006.
108. Sumner, Darren (August 21, 2006). "Cooper: SG-1 will go on" (https://web.archive.org/web/20110727232614/http://www.gateworld.net/news/2006/08/cooper_isg-1i_will_go_on.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/08/cooper_isg-1i_will_go_on.shtml) on July 28, 2011. Retrieved August 27, 2006.

- p://www.scifi.com/stargate/press/press_02.html). scifi.com. July 23, 2003. Archived from the original (http://www.scifi.com/stargate/press/press_02.html) on August 13, 2007. Retrieved March 24, 2009.
96. "Canadian Produced TV Series "Stargate SG-1" Films Landmark 200th Original Episode" (<https://web.archive.org/web/20110721190013/http://www.reelwest.com/happening/wire/2006/april/stargate.htm>). reelwest.com. April 2006. Archived from the original (<http://www.reelwest.com/happening/wire/2006/april/stargate.htm>) on July 21, 2011. Retrieved March 25, 2009.
 97. Littleton, Cynthia (August 9, 2004). "Duo found portal to sci-fi efficiency" (<https://www.allbusiness.com/services/amusement-recreation-services/4735235-1.html>). Entertainment News Wire. Retrieved March 25, 2009.
 98. Martin, Denise (October 24, 2005). "Sci Fi picks up 'Stargate' pair" (<https://www.variety.com/article/VR1117931513.html?categoryid=1417&cs=1>). *Variety*. Retrieved March 26, 2009.
 99. "Sci Fi Opens The 'Gates' To More Adventures" (<http://www.thefutoncritic.com/news/2004/11/15/sci-fi-opens-the-gates-to-more-adventures/20041115scifi01/>). *The Futon Critic*. November 15, 2004. Retrieved September 26, 2010.
 00. Cooper, Robert C., Mikita, Andy (2006). *Audio Commentary for "Avalon, Part 1"* (DVD). MGM Home Entertainment.
 01. John Dempsey; Ben Fritz (August 21, 2006). "Sci Fi's 'Stargate' swinging closed" (<https://www.variety.com/article/VR1117948764.html?categoryid=1417&cs=1>). *Variety*. Retrieved August 27, 2006.
 02. "Stargate SG-1's series finale triumphs" (<http://www.thefutoncritic.com/news.aspx?id=20070626scifi01>). *The Futon Critic*. June 26, 2007. Retrieved September 26, 2010.
 109. Sumner, Darren (October 11, 2006). "Stargate SG-1 movies coming to DVD" (https://web.archive.org/web/20110728234347/http://www.gateworld.net/news/2006/10/stargate_sg-1i_movies_coming_to.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/10/stargate_sg-1i_movies_coming_to.shtml) on July 28, 2011. Retrieved March 18, 2009.
 110. Read, David (May 12, 2008). "Wright: Stargate movies need O'Neill" (https://web.archive.org/web/20110803221553/http://www.gateworld.net/news/2008/05/wright_stargate_movies_need_onei.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2008/05/wright_stargate_movies_need_onei.shtml) on August 3, 2011. Retrieved March 16, 2009.
 111. Sumner, Darren (April 6, 2009). "Anderson confirms SGU appearances" (<http://www.gateworld.net/news/2009/04/anderson-confirms-sgu-appearances/>). GateWorld. Retrieved April 8, 2009.
 112. Joseph Malozzi (November 11, 2009). "Tech Troubles x 2! Get your questions in for Adam-Troy Castro! Mailbag!" (<https://web.archive.org/web/20091117145118/http://josephmalozzi.wordpress.com/2009/11/11/november-11-2009-tech-troubles-x-2-get-your-questions-in-for-adam-troy-castro-mailbag/>). Archived from the original (<http://josephmalozzi.wordpress.com/2009/11/11/november-11-2009-tech-troubles-x-2-get-your-questions-in-for-adam-troy-castro-mailbag/>) on November 17, 2009. Retrieved November 23, 2009.

13. Mallozzi, Joseph (October 9, 2008). "October 9, 2008: Actor Tyler McClendon Answers Your Questions" (<https://web.archive.org/web/20090129203403/http://josephmallozzi.wordpress.com/2008/10/09/october-9-2008-actor-tyler-mcclendon-answers-your-questions/>). Archived from the original (<http://josephmallozzi.wordpress.com/2008/10/09/october-9-2008-actor-tyler-mcclendon-answers-your-questions/>) on January 29, 2009. Retrieved March 18, 2009.
14. Mallozzi, Joseph (January 2, 2009). "Brad Wright Answers Your Questions" (<http://josephmallozzi.wordpress.com/2009/01/02/january-2-2009-brad-wright-answers-your-questions/>). Retrieved January 27, 2009.
15. Mallozzi, Joseph (May 15, 2011). "May 15, 2011: The Apocalypse Approacheth! More SG-1 Season 6 Memories! Another Monster Mailbag!" (<http://josephmallozzi.wordpress.com/2011/05/15/may-14-2011-the-apocalypse-approacheth-more-sg-1-season-6-memories-another-monster-mailbag/>). Retrieved May 16, 2011.
16. West, Kelly (September 28, 2008). "Amanda Tapping Talks About Sanctuary" (<https://web.archive.org/web/20081001074132/http://www.cinemablend.com/television/Amanda-Tapping-Talks-About-Sanctuary-12460.html>). cinemablend.com. Archived from the original (<https://www.cinemablend.com/television/Amanda-Tapping-Talks-About-Sanctuary-12460.html>) on October 1, 2008. Retrieved October 10, 2008.
17. Spelling, Ian (January 26, 2009). "Michael Shanks has a surprise about Stargate Universe" (<http://scifiwire.com/2009/01/michael-shanks-has-a-surprise-about-stargate-universe.php>). scifi.com. Retrieved January 27, 2009.
18. Sumner, Darren (April 2009). "An Expanding Universe – GateWorld talks with Brad Wright & Robert Cooper" (http://www.gateworld.net/interviews/an_expanding_universe.shtml). GateWorld. Retrieved April 22, 2009.
19. Sumner, Darren (April 8, 2009). "Third SG-1 movie has a
125. Sumner, Darren (April 3, 2006). "Sony switching to slim-line SG-1 DVD sets" (https://web.archive.org/web/20090714012544/http://gateworld.net/news/2006/04/sony_switching_to_slim-line_isg-.shtml). GateWorld. Archived from the original (http://gateworld.net/news/2006/04/sony_switching_to_slim-line_isg-.shtml) on July 14, 2009. Retrieved May 17, 2009.
126. Sumner, Darren (August 3, 2007). "Bonus features for SG-1: Complete Series DVDs" (https://web.archive.org/web/20070811202523/http://www.gateworld.net/news/2007/08/bonus_features_for_isg-1_complet.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2007/08/bonus_features_for_isg-1_complet.shtml) on August 11, 2007. Retrieved August 8, 2007.
127. TVShowsonDVD (June 12, 2020). "***** TV SHOWS ON DVD ROUNDUP ***** OUTLANDER! STARGATE SG-1! BLUE BLOODS! CHICAGO FIRE! CHICAGO MED! SEAL TEAM! THE GOOD DOCTOR! BELGRAVIA! STRIKE BACK! ROYAL PAINS! DOCTOR WHO! THE FLINTSTONES! THE BOB NEWHART SHOW! ARE YOU AFRAID OF THE DARK?!" (https://www.facebook.com/tvshowsondvd/posts/10158202717021063?_tn_=_K-R). Facebook. Retrieved June 15, 2020.
128. Sumner, Darren (August 20, 2006). "Stargate arrives on iTunes" (https://web.archive.org/web/20110616093342/http://www.gateworld.net/news/2006/08/istargatei_arrives_on_itunes.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/08/istargatei_arrives_on_itunes.shtml) on June 16, 2011. Retrieved March 26, 2009.
129. Read, David (August 31, 2007). "Stargate comes to UK iTunes" (https://web.archive.org/web/20110616093358/http://www.gateworld.net/news/2007/08/istargatei_comes_to_uk_itunes.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2007/08/istargatei_comes_to_uk_itunes.shtml) on June 16, 2011. Retrieved

- go!" (<https://web.archive.org/web/20091012012056/http://www.gateworld.net/news/2009/04/third-sg-1-movie-has-a-go/>). GateWorld. Archived from the original (<http://www.gateworld.net/news/2009/04/third-sg-1-movie-has-a-go/>) on October 12, 2009. Retrieved October 30, 2009.
20. "New SG-1, Atlantis films due, just not yet" (<http://blastr.com/2009/08/new-sg-1-atlantis-films-d.php>). Sci Fi Wire. August 12, 2009. Retrieved September 30, 2010.
 21. Moody, Mike (September 27, 2010). "Interview: 'Stargate Universe' Co-Creator Brad Wright Previews Season 2" (<https://web.archive.org/web/20101001085140/http://tvdeathray.com/2010/09/27/interview-stargate-universe-co-creator-brad-wright-previews-season-2/>). tvdeathray.com. Archived from the original (<http://tvdeathray.com/2010/09/27/interview-stargate-universe-co-creator-brad-wright-previews-season-2/>) on October 1, 2010. Retrieved September 30, 2010.
 22. Joseph Malozzi (November 6, 2010). "November 6, 2010: Stargate ratings, fandom and my picky aunt!" (<http://josephmalozzi.wordpress.com/2010/11/06/november-6-2010-stargate-ratings-fandom-and-my-picky-aunt/>). Retrieved November 22, 2010.
 23. Colvin, Chad (April 17, 2011). "SGU continuation, other movies dead — for now" (<http://www.gateworld.net/news/2011/04/wright-sgu-continuation-other-movies-dead-for-now/>). GateWorld. Retrieved April 18, 2011.
 24. Joseph Malozzi (April 17, 2011). "until we meet again" (<http://josephmalozzi.wordpress.com/2011/04/17/april-17-2011-until-we-meet-again/>). Retrieved April 21, 2011.
 130. Sumner, Darren (January 11, 2008). "Stargate expands iTunes, Amazon presence" (https://web.archive.org/web/20110616093448/http://www.gateworld.net/news/2008/01/isstargatei_expands_itunes_amazon.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2008/01/isstargatei_expands_itunes_amazon.shtml) on June 16, 2011. Retrieved March 26, 2009.
 131. Sumner, Darren (March 19, 2009). "Stargate SG-1 arrives on Hulu" (<http://www.gateworld.net/news/2009/03/stargate-sg-1-arrives-on-hulu/>). GateWorld. Retrieved March 26, 2009.
 132. Colvin, Chad (August 16, 2010). "Entire Stargate television library now streaming on Netflix" (<http://www.gateworld.net/news/2010/08/entire-stargate-library-streaming/>). GateWorld. Retrieved February 2, 2011.
 133. Tyler, Josh (August 24, 2013). "Netflix Has Dropped Stargate, Find Out How You Can Get It Back" (<http://www.giantfreakinrobot.com/scifi/netflix-dropped-stargate-find.html>). *Giant Freakin Robot*. Retrieved July 5, 2015.
 134. "Hoopla Stargate SG-1" (<https://www.hoopladigital.com/series/1247849110>). *Hoopla Digital*. Retrieved July 5, 2015.
 135. Spangler, Todd (September 21, 2017). "MGM Launch of 'Stargate Command' Streaming Service Hits Technical Turbulence" (<https://variety.com/2017/digital/news/mgm-stargate-command-subscription-streaming-technical-glitch-1202565794/>). *Variety*. Retrieved July 16, 2018.
 136. Scott, Tony (July 28, 1997). "Stargate SG-1" (<https://www.variety.com/review/VE1117911984.html?categoryid=32&cs=1>). *Variety*. Retrieved March 26, 2009.

37. Ebersson, Sharon (June 21, 2007). "Stargate: SG-1 signs off, but we haven't seen the last of it" (<http://www.post-gazette.com/pg/07172/795812-237.stm>). *Pittsburgh Post-Gazette*. Retrieved May 1, 2009.
38. "Best Bets" (<https://www.thestar.com/entertainment/article/227758>). *Toronto Star*. June 21, 2007. Retrieved March 25, 2009.
39. D. Pierce, Scott (June 22, 2007). "'Stargate' signs off" (http://web.archive.org/web/20151105025458/http://findarticles.com/p/articles/mi_qn4188/is_20070622/ai_n19326904/?tag=content%3Bcol1). *Deseret News*. Archived from the original (http://findarticles.com/p/articles/mi_qn4188/is_20070622/ai_n19326904/?tag=content;col1) on November 5, 2015. Retrieved May 25, 2009.
40. Hanks, Robert (August 2, 1999). "Television Review" (<http://www.independent.co.uk/arts-entertainment/television-review-1110317.html>). *The Independent*. Retrieved June 12, 2009.
41. Hoffman, Jordan; Wakeman, Gregory (July 12, 2019). "The 50 Best Sci-Fi TV Shows Ever" (<https://www.popularmechanics.com/technology/digital/home-entertainment/the-50-greatest-sci-fi-tv-shows>). *Popular Mechanics*. Retrieved July 20, 2019.
42. "Primetime Awards" (<http://www.emmys.org/awards/2007pt/history.php>). Emmy. Retrieved March 24, 2009.
43. "Canada's Awards Database" (http://academy.ca/hist/history.cfm?stitle=stargate+sg-1&awyear=0&winonly=1&award_s=2&rtype=2&curstep=4&submit.x=0&submit.y=0). The Academy of Canadian Cinema & Television. Retrieved March 31, 2009.
44. "Past Winners" (https://web.archive.org/web/20090407031849/http://www.leoawards.com/past_winners.html). Leo Awards. Archived from the original (http://www.leoawards.com/past_winners.html) on April 7, 2009. Retrieved March 24, 2009.
152. Storm 2005, pp. 93–95.
153. "Publisher cancels SG-1 novel series" (https://web.archive.org/web/20110616093509/http://www.gateworld.net/news/archive/001014_2.shtml). GateWorld. October 14, 2000. Archived from the original (http://www.gateworld.net/news/archive/001014_2.shtml) on June 16, 2011. Retrieved March 21, 2009.
154. Sumner, Darren (June 6, 2006). "Fandemonium novels coming to U.S." (https://web.archive.org/web/20120113070534/http://www.gateworld.net/news/2006/06/fandemonium_novels_coming_to_u.s.shtml) GateWorld. Archived from the original (http://www.gateworld.net/news/2006/06/fandemonium_novels_coming_to_u.s.shtml) on January 13, 2012. Retrieved March 21, 2009.
155. "Stargate SG-1 and Stargate Atlantis: The Gate is still open, the missions continue" (<http://www.bigfinish.com/news/STARGATE-SG-1-AND-STARGATE-ATLANTIS>). bigfinish.com. February 25, 2008. Retrieved March 21, 2008.
156. Sumner, Darren (October 12, 2005). "SG-1, Atlantis action figures in the works" (https://web.archive.org/web/20110616093543/http://www.gateworld.net/news/2005/10/sg-1_atlantis_action_figures_in_.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2005/10/sg-1_atlantis_action_figures_in_.shtml) on June 16, 2011. Retrieved March 21, 2009.
157. "Hasbro's Plans For 2006" (http://www.theforce.net/latestnews/story/Hasbro%E2%80%99s_Plans_For_2006_95314.asp). theforce.net. October 18, 2005. Retrieved March 21, 2009.
158. Sumner, Darren (May 10, 2011). "Smallville bows this week — with Stargate's world record" (<http://www.gateworld.net/news/2011/05/smallville-bows-this-week-with-stargates-world-record/>). GateWorld. Retrieved May 11, 2011.
159. "Record breaker?" (<https://web.archive.org/web/20070319>

- March 27, 2009.
45. "Saturn Awards – Past Award Winners" (<https://web.archive.org/web/20070502112545/http://www.saturnawards.org/past.html>). Saturn Awards. Archived from the original (<http://www.saturnawards.org/past.html>) on May 2, 2007. Retrieved March 24, 2009.
 46. "1st Annual VES Awards Nominees and Recipients" (<http://web.archive.org/web/20090225100306/http://vesawards.com/awards/history/1.html>). VES Awards. Archived from the original (<http://www.vesawards.com/awards/history/1.html>) on February 25, 2009. Retrieved March 24, 2009.
 47. "3rd Annual VES Awards Nominees and Recipients" (<http://web.archive.org/web/20090124193716/http://vesawards.com/awards/history/3.html>). VES Awards. Archived from the original (<http://www.vesawards.com/awards/history/3.html>) on January 24, 2009. Retrieved March 24, 2009.
 48. "2005 Hugo Awards" (http://www.thehugoawards.org/?page_id=12). Hugo Awards. Retrieved March 24, 2009.
 49. "2007 Hugo Awards" (http://www.thehugoawards.org/?page_id=127). Hugo Awards. Retrieved March 24, 2009.
 50. Storm 2005, pp. 81–86.
 51. Sumner, Darren (September 9, 2006). "Conan O'Brien notes Stargate cancellation" (https://web.archive.org/web/20090519052236/http://www.gateworld.net/news/2006/09/iconan_obrieni_notes_istargatei_.shtml). GateWorld. Archived from the original (http://www.gateworld.net/news/2006/09/iconan_obrieni_notes_istargatei_.shtml) on May 19, 2009. Retrieved April 19, 2009.
 100. "Doctor Who" (<http://www.bbc.co.uk/doctorwho/news/cult/news/drwho/2006/09/23/36558.shtml>). *BBC News*. Archived from the original on March 19, 2007. Retrieved November 22, 2016.
 160. "Dr Who 'longest-running sci-fi'" (<http://news.bbc.co.uk/1/hi/entertainment/5390372.stm>). *BBC News*. September 28, 2006. Retrieved September 29, 2006.
 161. "TV Guide Names the Top Cult Shows Ever" (<https://www.tvguide.com/news/top-cult-shows-40239.aspx>). *TV Guide*. June 29, 2007. Retrieved November 25, 2008.
 162. "Doctor Who named 'top cult show'" (http://news.bbc.co.uk/1/hi/entertainment/tv_and_radio/4102754.stm). *BBC News*. June 17, 2005. Retrieved April 25, 2009.
 163. "17 All-Time Great Cult TV Shows You Say We Missed" (<https://web.archive.org/web/20110508042620/http://www.ew.com/ew/gallery/0%2C%2C20311716%2C00.html>). *Entertainment Weekly*. October 19, 2009. Archived from the original (https://www.ew.com/ew/gallery/0,,20311716_6,00.html) on May 8, 2011.
 164. Cooke, Bill (August 18, 2005). "Asteroid Apophis set for a makeover" (<http://www.astronomy.com/asy/default.aspx?c=a&id=3434>). *Astronomy Magazine*. Retrieved April 4, 2009.

Bibliography

- Beeler, Stan (May 2008). "Stargate SG-1 and The Quest For The Perfect Science Fiction Premise". In Telotte, J.P (ed.). *The Essential Science Fiction Television Reader* (<https://books.google.com/books?id=cFQicvXd5bwC&printsec=frontcover>). United States: University Press of Kentucky. p. 370. ISBN 0-8131-2492-1.

- Beeler, Stanley W.; Dickson, Lisa, eds. (2006). *Reading Stargate SG-1* (https://books.google.com/books?id=MO30KAZbBb_MC&printsec=frontcover). London: I.B. Tauris. p. 308. ISBN 978-1-84511-183-0.
- Booker, M. Keith (2004). *Science Fiction Television* (<https://books.google.com/books?id=WyJf3m1G0ksC&printsec=frontcover>). Praeger Publishing. p. 238. ISBN 0-275-98164-9.
- Gibson, Thomasina (2003). *Stargate SG-1: The Illustrated Companion Seasons 5 and 6* (<https://archive.org/details/stargatesg1illus00gibs>). London: Titan Books. ISBN 978-1-84023-606-4.
- Storm, Jo (December 6, 2005). *Approaching the Possible: The World of Stargate SG-1* (<https://books.google.com/books?id=T196IU-jXl8C>). Toronto, Ontario, Canada: ECW Press. p. 534. ISBN 1-55022-705-X.

External links

- Official *Stargate* site (<http://www.stargatecommand.co>) at MGM Stargate Command
 - "*Stargate SG-1*" (<https://web.archive.org/web/20030401143748/http://www.scifi.com/stargate/index.html>). (Sci Fi Channel) official site, original version. Archived from the original (<http://www.scifi.com/stargate/index.html>) on April 1, 2003. Contains episode guide through Season 6 and other deleted content.
 - *Stargate SG-1* (<https://www.imdb.com/title/tt0118480/>) on IMDb
 - *Stargate SG-1* episode guide (<http://www.gateworld.net/sg1/>) at GateWorld
-

Retrieved from "https://en.wikipedia.org/w/index.php?title=Stargate_SG-1&oldid=978126733"

This page was last edited on 13 September 2020, at 02:14 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.



SG Arrangement

MaryamSeresht · Oct 20, 2012

< Previous | Next >



MaryamSeresht

Senior Member

Tehran/Iran
Persian

Oct 20, 2012

#1

Hello,

I would thankful if you could tell what does **SG arrangement** mean in George Saunders Story?

In front of house, on sweeping lawn, largest **SG arrangement** ever seen, all in white, white smocks blowing in breeze, and Lilly says, Can we go closer?

http://www.newyorker.com/fiction/features/2012/10/15/121015fi_fiction_saunders

Thank you so much.



Copyright
Senior Member
Penang
American English

Oct 20, 2012

#2

I think if you had given us the title of the story -- *The Semplica-Girls Diary* -- it might have been easier to surmise that SG is short for Semplica-Girls.

Please remember to include the title and author of any source -- a link is welcome, but it is not enough by itself. Thank you.



MaryamSeresht
Senior Member
Tehran/Iran
Persian

Oct 20, 2012

#3

Sorry that I forgot that. Yes, as you've said it's "The Semplica-Girl Diaries", by George Saunders. Thanks a lot.




Apr 9, 2013

#4

And forgive my ignorance, but what does semplica-girl mean. What's a semplica girl arrangement, please?


zorbarina
Member
Milano
Italian

Thank you.



gramman
Senior Member
North Kingstown,
Rhode Island
American English

Apr 9, 2013 #5

This may be useful:


When the dad splurges on a "*Semplica Girl*" *arrangement* to surprise his surly teenage daughter, we find out that Semplica Girls (or SGs) are poor young women from places like Moldova and Laos, who've sold themselves as tableau vivant garden ornaments. At "installation," a wire is threaded through their brains and they're "hoisted up" as on a clothesline. — [George Saunders Lives Up To The Hype](#)

from National Public Radio's mobile site


Parla
Member Emeritus
New York City
English - US

Apr 9, 2013 #6

I found, using Google to visit some of the many discussions and critiques of this piece of science fiction, that "semplica girl" was a term made up by the author; it has a meaning only within the context of his story.



Apr 9, 2013 #7

Thank you gramman and Parla!

zorbarina

Member
Milano
Italian

You must log in or register to reply here.

< Previous | Next >

Share:      

Top speed, security and performance
Recommended by WordPress.org.



Forums > English Only > **English Only** >

 WR style  English (EN-us)


[Log in](#) [Contact us](#) [Terms and rules](#) [Privacy policy](#) [Help](#) 

Forum software by XenForo® © 2010-2020 XenForo Ltd.

 [xiaomengyc / SG-One](#)

SG-One: Similarity Guidance Network for One-Shot Semantic Segmentation

 arxiv.org/abs/1810.09091

☆ 77 stars  12 forks



-  Code
-  Issues 4
-  Pull requests
-  Actions
-  Projects
-  Security
-  Insights

Dismiss

Join GitHub today

GitHub is home to over 50 million developers working together to host and review code, manage projects, and build software together.

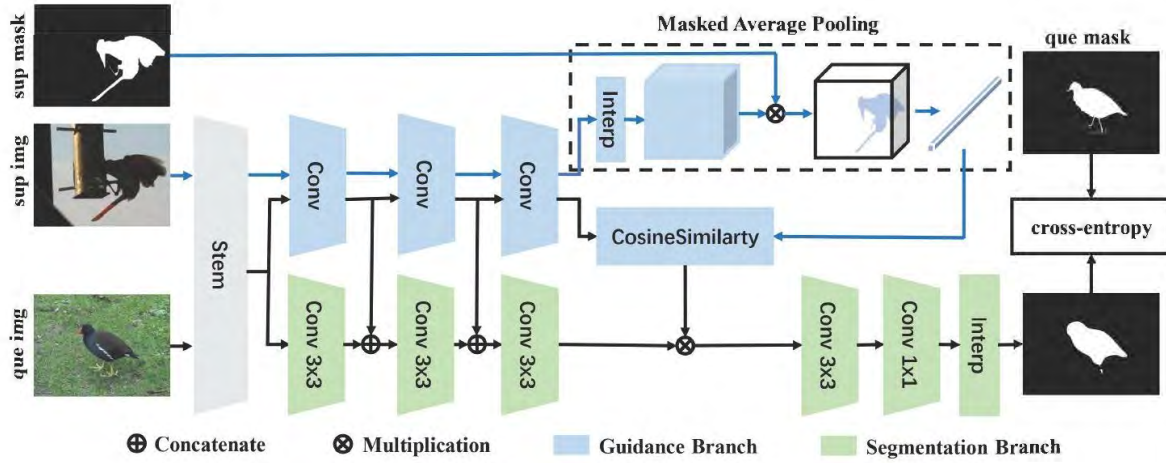
 master ▾

 [xiaomengyc](#) Update README.md ... on 18 Jun  7

[View code](#)

SG-One: Similarity Guidance Network for One-Shot Semantic Segmentation

Overview of SG-One



Train

You can use the scripts in `scripts` to train your model on different splits of the VOC2012 dataset. For example,

```
cd scripts
base train_group0.sh
```

Test

You can use `val_frame_all_mlclasses.py` to test your trained models.

Citation

If you find this code helpful, please consider to cite this paper:

```
@inproceedings{zhang2020sgone,
  title={Self-produced Guidance for Weakly-supervised Object Localization},
  author={Zhang, Xiaolin and Wei, Yunchao and Yang, Yi and Huang, Thomas},
  journal={IEEE Transactions on Cybernetics},
  year={2020},
}
```

Releases

No releases published

Packages

No packages published

Languages

● Python 99.6% ● Shell 0.4%

SG Group: More than 40 years innovating the graphic arts industry.

are Grupo SG, a multinational family business with offices in Central America, Mexico, Venezuela and the Caribbean. Our prestige and reputation are based on our commitment to constantly innovate, providing cutting-edge technological solutions tailored to the requirements of our clients in the 2D and 3D graphic business.

SG GROUP: IMAGINE • CREATE • PRINT

We have been innovating the Graphic Arts industry in the region for more than 40 years. Since our beginnings, our commitment has been to provide the latest technology and the widest range of products to companies dedicated to graphic and 3D printing. Enhancing their businesses.

strategy, and the management of processes to companies interested in graphic and 3D printing, maintaining their resources
flow and improve their productivity according to the demands of national and international markets. We currently have 3 cat
ea:

2D

Printing

3D printing • Textile printing

Nuestro prestigio ha sido reconocido durante décadas por representar a las marcas de renombre a nivel mundial y cubrir un
servicios: desde asesoría en la compra de maquinarias y materiales para la impresión, hasta la instalación de los equipos y un
especializado, con personal capacitado directamente por el fabricante. Además, tenemos un amplio stock de repuestos y co
de esta manera poder suplir los requerimientos de nuestros clientes de manera inmediata.

En Grupo SG contamos con representaciones en 13 países de Latinoamérica: México, Guatemala, Honduras, El Salvador, Nic
aragua, Venezuela, Cuba, República Dominicana, Trinidad y Tobago, Puerto Rico y Jamaica.

For all these reasons, we are the most reliable and innovative One-Stop-Partner of the graphic industry in the region, creating
alliances with partners and clients.

MISSION

Bringing innovation and constant progress to the 2D and 3D graphic arts industry in the region of Central America, Mexico, Vene
ways guaranteeing customer satisfaction through a proactive and unique human team in its capacity.

VIEW

To be the leading One-Stop-Partner for the 2D and 3D graphic industry, offering an excellent service and cutting-edge techn
the development of society in the region.

IX ADVANTAGES THAT DISTINGUISH US

One-Stop-Partner

We provide consulting, orders, Technical Service, supplies and spare parts in stock, to ensure the highest standards of quality and effectiveness for our customers.

Service Técnico especializado

Bringing a specialized Technical Service, trained by the manufacturers. With direct assistance in the field and a professional approach to each product.

Complete portfolio of brands

We offer a complete portfolio of brands of world reputation for any area of printing and finishing: digital, 3D and textile.

Large stock of spare parts and consumables

We supply our customers with spare parts and consumables immediately, because we have a large stock.

40 years of experience

Thanks to our long trajectory in the industry of the Latin American market, we offer our attention and experience in the region.

Always one step ahead

We are always one step ahead, offering the latest trends and bringing innovations to the region.

<https://grupo-sg.com/la-compania/>

[Privacy](#) - [Terms](#)

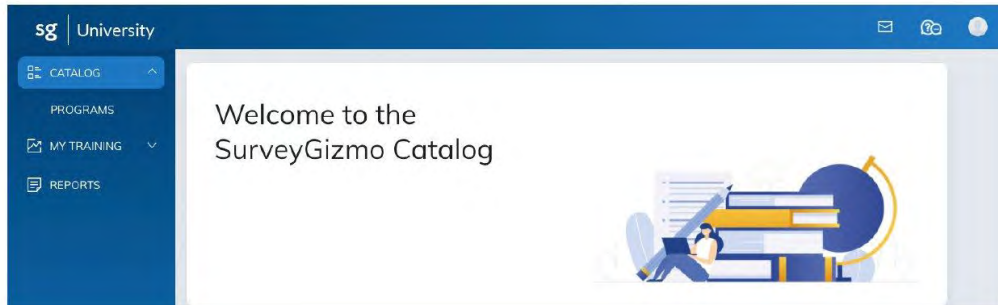
2/2

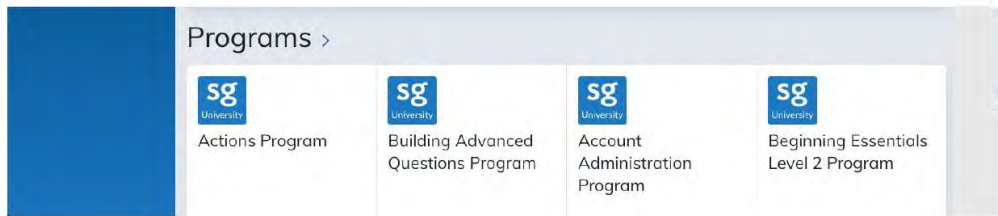
SG University

Webinar Content has been migrated to SG University!

SurveyGizmo University (<https://help.surveygizmo.com/help/sg-university-getting-started>) hosts a variety of self-paced courses, providing users with the opportunity to increase their SurveyGizmo knowledge and build out surveys, projects, and solutions swiftly. Within SG University, SurveyGizmo users are walked through various features step-by-step, and be tested on what they learn to ensure knowledge retention.

New courses are available quarterly to assist in becoming a SurveyGizmo power user!





Accessing SG University

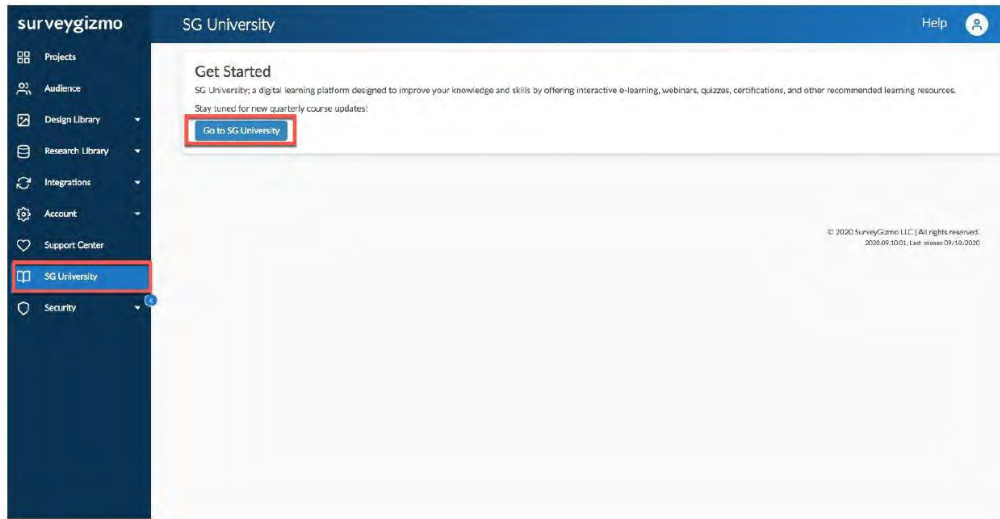
SG University is accessible via the Link below:

<https://app.surveygizmo.com/sguniversity> (<https://app.surveygizmo.com/sguniversity>)

Log into SG university using the same credentials used to access the main application

Accessing SG University within the Application

To access SG University from within application, select **SG University** from the *Left hand Navigation Menu* when using the *Enterprise Experience Theme*:



Interested in SurveyGizmo Training Events?

Learn more about SurveyGizmo Training Events (<https://www.surveygizmo.com/training/>)

START A TRIAL (https://www.surveygizmo.com/plans-pricing/?utm_source=Documentation&utm_medium=TrialCta&utm_campaign=StartTrial#)

Author: Share This Article: [Download \(/help/pdfexport/id/5c7eb5e88e121c71308e65f3\)](#) | [Email](#)
Last updated: 09/11/2020 2:46 pm MDT

How helpful was this article?

[Search Help \(//community.surveygizmo.com/search/\)](https://community.surveygizmo.com/search/)

[What's New \(//community.surveygizmo.com/questions/category/new/\)](https://community.surveygizmo.com/questions/category/new/)

[Community Questions \(//community.surveygizmo.com/questions/\)](https://community.surveygizmo.com/questions/)

[Documentation \(//help.surveygizmo.com\)](https://help.surveygizmo.com)

[Developer Resources \(//developer.surveygizmo.com/help\)](https://developer.surveygizmo.com/help)

COMPANY

[About \(https://www.surveygizmo.com/company/about/\)](https://www.surveygizmo.com/company/about/)

[Press \(https://www.surveygizmo.com/company/press/\)](https://www.surveygizmo.com/company/press/)

[Partners \(https://www.surveygizmo.com/partners/\)](https://www.surveygizmo.com/partners/)

[Careers \(https://www.surveygizmo.com/jobs/\)](https://www.surveygizmo.com/jobs/)

CONTACT

<https://help.surveygizmo.com/help/webinars>

21/09/2020

SG University | SurveyGizmo Help

Call: 800-609-6480 (tel:+1-800-609-6480)

Sales (<https://www.surveygizmo.com/contact/>)

Support (<https://help.surveygizmo.com/help/surveygizmo-support-hours>)

Billing (<mailto:billing@surveygizmo.com>)



(<http://www.linkedin.com/company/survey-gizmo>)



(<https://twitter.com/SurveyGizmo>)



(<https://www.youtube.com/user/SurveyGizmo/playlists>)

RESOURCES

Help & Docs (<https://help.surveygizmo.com/help>)

Survey Examples (<https://www.surveygizmo.com/survey-examples/>)

Report Examples (<https://www.surveygizmo.com/report-examples/>)

Training (<https://www.surveygizmo.com/training/>)

[TERMS OF USE \(HTTPS://WWW.SURVEYGIZMO.COM/TERMS/\)](https://www.surveygizmo.com/terms/) [PRIVACY POLICY \(HTTPS://WWW.SURVEYGIZMO.COM/PRIVACY/\)](https://www.surveygizmo.com/privacy/)

[ACCEPTABLE USE POLICY \(HTTPS://WWW.SURVEYGIZMO.COM/ACCEPTABLE-USE-POLICY\)](https://www.surveygizmo.com/acceptable-use-policy/)

[GDPR \(HTTPS://WWW.SURVEYGIZMO.COM/PRIVACY/GDPR/\)](https://www.surveygizmo.com/privacy/gdpr/) [FAQ \(HTTPS://HELP.SURVEYGIZMO.COM/HELP\)](https://help.surveygizmo.com/help/)

© 2005-2019 SurveyGizmo LLC | All rights reserved.



Content Operations Executive

Bristol, UK

Full-time

Company Description

SG Digital (part of Scientific Games Corp. NASDAQ:SGMS) leads the global gaming market, providing innovative software that powers the world's most successful operators and online gaming providers.

We pride ourselves on product innovation and technical excellence and are constantly adding new applications and new functionality to our product suite, used by billions of end users. Having recently become the Digital, online Division of the \$4bn Scientific Games, we are now in a period of dramatic growth that will see us grow headcount by 30% this year alone.

Want to be part of our story?

We are a group of distributed, multidisciplinary engineers, passionate about casino gaming, focused on a few

we are a group of distributed multidisciplinary engineers, passionate about casino gaming, focused on a few highly scalable distributed platforms on a hybrid technology stack running in public and private clouds.

The teams are small and move fast -- all members are expected to be able to achieve maximum results with minimal direction.

Job Description

Reporting into the Content Operations Team Manager you will be responsible for ensuring we get our content partners' games live on our customers' sites on time and error free. We are looking for a team member who is detailed oriented and can work directly with internal and external teams to make sure new game launches are successful.

- Executing game deployments across our Casino Platform Instances
- Troubleshoot environment issues and blockers, working with the various internal operational and development teams to find resolutions
- Continuous involvement in improvements and documentation of the game deployment process to include but not limited to suggesting measures and working across various teams
- Manage the flow of materials (marketing assets, jurisdictional certificates etc) between customers and partners
- Maintain knowledge of regulatory support (such as keeping required records up to date and supporting audits with bodies such as eCogra)
- Work with the Gaming Products team to define and prioritize the development of a new product suite to automate and improve Casino Operations
- Communicate and maintain game portfolio based on road-mapped releases
- Demo Site management/Operational maintenance (end user)

Qualifications

Essential Experience:

- Working with diverse teams delivering online operational processes in time critical scenarios with an eye for detail
- Working within multiple projects in parallel, contributing to successful planning, scoping and implementation (together with technology teams) for casino games area
- Working with regulated products across multiple jurisdictions
- Working with commercial contracts and SLAs
- Setting expectations with multiple external stakeholders
- Training and communication to team members of current processes.

It would be beneficial to have:

- Online operational experience with an emphasis on delivery
- A passion for content
- A technical and analytical background
- Experience within the gaming industry a very strong plus
- Demonstrable strong oral and written communication skills
- Experience working with cross-functional teams in a technology domain

Additional Information

Why would you enjoy working with us at SG Digital?

- Competitive benefits, an open and supportive environment as well as a modern and exciting workplace
- The opportunity to interact with global teams on a regular basis and the possibility to switch teams and projects as you and our business continues to develop and grow
- Tangible and genuine development - at SG Digital, you can take your career where you want it to go!

[Privacy Policy](#)



Posted by
Michael Whale

Powered by

SmartRecruiters (Data Processor)

[Privacy Policy](#) and [Terms of Use](#)

Top WordPress Hosting

Managed WP hosting trusted by experts and loved by clients. 97.63%

REPORT AD

SG e-sports



This article is a Team (/dota2/Team) stub (/dota2/Category:Stubs). You can help Liquipedia by expanding it (https://liquipedia.net/dota2/index.php?title=SG_e-sports&action=edit).

Overview	Results (/dota2/SG_e-sports/Results)	Matches (/dota2/SG_e-sports/Played_Matches)
----------	--------------------------------------	---

Overview

SG e-sports is a Brazilian professional gaming organization. By winning the South American qualifiers (/dota2/Kiev_Major/2017/South_America) for the Kiev Major (/dota2/Kiev_Major/2017) in 2017, they became the first Brazilian team to participate in a Major tournament organized by Valve. They also ended a 2-year drought of South American teams not appearing at Majors.^[1]

[e (https://liquipedia.net/dota2/index.php?title=SG_e-sports&action=edit§ion=0)] [h (/dota2/Template:Infobox_team)]

SG e-sports



Timeline

2019	2018	2017	2016	Show All
------	------	------	------	----------

- March 16th - Luci (/dota2/index.php?)

title=Luci_(brazilian_player)&action=edit&redlink=1) is replaced by Nauges (/dota2/index.php?title=Nauges&action=edit&redlink=1).[2]

- June 29th - mini (/dota2/index.php?title=Mini_(brazilian_player)&action=edit&redlink=1) leaves to join FURIA Esports (/dota2/FURIA_Esports)
- July 3st - Nuages (/dota2/index.php?title=Nuages&action=edit&redlink=1) leaves, 4nalog (/dota2/index.php?title=4nalog&action=edit&redlink=1) and C4t (/dota2/C4t) join the team.[3]
- July 23th - The team disbands.[4]
- November 14th - SG e-sports ceases operation.[5]

Player Roster

Former

2019 | 2018 | 2017 | Show All

ID
 (/dota2/Category:Brazil) Golem (/dota2/index.php?title=Golem_(Brazilian_...))
 (/dota2/Category:Brazil) 4nalog (/dota2/index.php?title=4nalog&action=ed...)
 (/dota2/Category:Brazil) Sexyfat (/dota2/index.php?title=Sexyfat&action=e...)
 (/dota2/Category:Brazil) MahhxD (/dota2/index.php?title=MahhxD&action:...
 (/dota2/Category:Brazil) C4t (/dota2/C4t)

https://liquipedia.net/dota2/SG_e-sports



e-sports

(/dota2/File:SG-e-sports.png)

Team Information

Location: 

(/dota2/Category:Brazil)

Brazil

(/dota2/Category:Brazil)

Region: 

(/dota2/Category:South_Ame
America

(/dota2/Category:South_Ame

Sponsor: Intel (<https://www.intel.com.br>) • Pichau (<https://www.pichau.com.br/>) • GFalleN (<https://web.archive.org/web/http://gabrielfallen.com.br/producao-d-a-linha-gfallen/>) • GG.bet (<https://gg.bet/pt/betting/>) • AOC (<http://www.aoc.com.br/>)

Total Earnings: \$263,056

Links

ID
 (/dota2/Category:Brazil) Nuages (/dota2/index.php?title=Nuages&action=edit)
 (/dota2/Category:Brazil) mini (/dota2/index.php?title=Mini_(Brazilian_players))
 (/dota2/Category:Brazil) Luci (/dota2/index.php?title=Luci_(Brazilian_players))

(http://www.sgesports.com.br/) (https://facebook.com/SGesports1) (https://www.twitch.tv/sgesportsbr) (https://twitter.com/SGe_sports) (https://www.youtube.com/channel/UCWiu7Up16hORAxOo-MQ5a1g) (https://www.instagram.com/sg.esports) (https://www.dotabuff.com/esports/teams/5679840) (https://www.datdota.com/teams/5679840)

Organization

Former

Former Organization		
ID	Name	Position
 (/dota2/Category:Brazil) Babi	Barbara Borna	Manager
 (/dota2/Category:Brazil) c4t (/dota2/Category:Brazil) c4t	milano Ito Gerotto Yamakawa	Coach
 (/dota2/Category:Brazil) YonKyon	Gustavo Santana	Manager

History







Created: Organization: 2016
 (/dota2/Dota_2) Dota 2: 2016-11-13
 Disbanded: 2019-07-23

Achievements

Date	Place	Tier	Tournament	Result
------	-------	------	------------	--------

2018-05-12	7th	Tier 2 (/dota2/Tier_2_Tournaments)	 GESC: Thailand Dota2 Minor (/dota2/GESC/Thailand_Minor/2018)	1/-/6	 Grp S (Group S)
2018-03-17	5 - 8th	Tier 1 (/dota2/Tier_1_Tournaments)	 World Electronic Sports Games 2017 (/dota2/World_Electronic_Sports_Games/2017)	0 : 2	 (/dota2/World_Electronic_Sports_Games/2017)
2018-02-04	2nd	Tier 3 (/dota2/Tier_3_Tournaments)	 WESG 2017 South America Finals (/dota2/World_Electronic_Sports_Games/2017/South_America)	0 : 2	 (/dota2/World_Electronic_Sports_Games/2017/South_America)
2017-11-04	5 - 6th	Tier 2 (/dota2/Tier_2_Tournaments)	 AMD SAPPHIRE Dota PIT League (/dota2/Dota_Pit_League/Season_6)	0 : 1	 (/dota2/Dota_Pit_League/Season_6)
2017-10-28	7 - 8th	Tier 1 (/dota2/Tier_1_Tournaments)	 ESL One Hamburg 2017 (/dota2/ESL_One/Hamburg/2017)	1 : 2	 (/dota2/ESL_One)
2017-10-14	5 - 6th	Tier 2 (/dota2/Tier_2_Tournaments)	 StarLadder i-League Invitational Season 3 (/dota2/StarLadder/i-League_Invitational/3)	0 : 2	 (/dota2/StarLadder/i-League_Invitational/3)
2017-10-08	1st	Tier 3 (/dota2/Tier_3_Tournaments)	Pichau Masters 2017 (/dota2/Pichau_Masters/2017)	3 : 0	 (/dota2/Pichau_Masters/2017)
2017-07-09	2nd	Tier 2 (/dota2/Tier_2_Tournaments)	 The Final Match Season 1 (/dota2/The_Final_Match/Season_1)	1 : 3	 (/dota2/The_Final_Match)
2017-04-29	5 - 8th	Tier 1 (/dota2/Tier_1_Tournaments)	 The Kiev Major 2017 (/dota2/Dota_Major_Championships)	1 : 2	 (/dota2/Dota_Major_Championships)
2017-01-14	5 - 8th	Tier 1 (/dota2/Tier_1_Tournaments)	 World Electronic Sports Games 2016 (/dota2/World_Electronic_Sports_Games/2016)	0 : 2	 (/dota2/World_Electronic_Sports_Games/2016)
Complete list of results in any tournament (/dota2/SG_e-sports/Results#Detailed_Results)					

Recent Matches

Date	Time	Tier	Tournament	Score
2019-07-08	22:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (
2019-07-08	19:30 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (
2019-07-08	18:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (t
2019-07-08	03:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (
2019-07-07	22:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (
2019-07-07	20:30 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	0 : 1 (

2019-07-07	18:15 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019 South America Qualifier (/dota2/The_International/2019/South_America)	1 : 0	(/dota2/Qualifier_Tournaments)
2019-07-04	23:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019: South America Open Qualifier #1 (/dota2/The_International/2019/South_America/Open_Qualifier/1)	2 : 1	(/dota2/Qualifier_Tournaments)
2019-07-04	20:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019: South America Open Qualifier #1 (/dota2/The_International/2019/South_America/Open_Qualifier/1)	2 : 0	(/dota2/Qualifier_Tournaments)
2019-07-03	23:00 UTC (Coordinated Universal Time (UTC+0))	Qualifier (/dota2/Qualifier_Tournaments)	 The International 2019: South America Open Qualifier #1 (/dota2/The_International/2019/South_America/Open_Qualifier/1)	1 : 0	(/dota2/Qualifier_Tournaments)

Complete list of matches in any tournament (/dota2/SG_e-sports/Played_Matches)

Trivia

- SG means Stealth Gaming

External links

- SG e-sports's old Dotabuff account (<https://www.dotabuff.com/esports/teams/3580606>)

Gallery

(/dota2/File:SG_e-sportslogo.png)

Original SG e-sports logo prior to Apr.21,
2018

References

1. "South American rivalries form as SG e-sports qualifies for Kiev" (http://www.espn.com/esports/story/_/id/18905124/dota-2-sa-kiev-major-qualifier-sg-e-sports-victorious). ESPN.
2. SG e-sports (16 March 2019). "Depois de um período parado, nós retornamos com muitas novidades e jogos para vocês!" (<https://www.facebook.com/SGesports1/posts/1244522589038290>). Facebook.
3. SG e-sports (3 July 2019). "Nossa line-up para o campeonato contará com o retorno de um atleta querido e um novo mid." (https://twitter.com/SGe_sports/status/1146384344061136896). Twitter.
4. SG e-sports (23 July 2019). "GRATIDÃO!" (https://twitter.com/SGe_sports/status/1153671421035515905). Twitter.
5. SG e-sports (11 March 2019). "11 de março de 2019" (<https://www.facebook.com/SGesports1/posts/1146384344061136896>). Facebook.

5. SG e-sports (14 November 2019). "Um ate breve.." (https://twitter.com/SGe_sports/status/1194720471213912065). Twitter.
6. SG e-sports (23 April 2018). "Comunicamos a nossa torcida a saída do player Lucas *bardo* Barbosa, por decisão do mesmo." (https://twitter.com/SGe_sports/status/988525713291653120). Twitter.
7. SG (31 May 2018). "Muito obrigado Emilano "c4t" Ito e Thiolcor." (<https://www.facebook.com/SGesports1/photos/a.690918941065327.1073741828.641413999349155/1024366654387219/?type=3&theater>). Facebook.
8. SG (11 June 2018). "Olá amantes da décima arte!" (<https://www.facebook.com/notes/sg-e-sports/sg-e-sports-dota-2/1031073457049872/>). Facebook.
9. SG e-sports (27 August 2018). "Muito obrigado Stanley "Stan King" Yang." (<https://www.facebook.com/SGesports1/photos/a.690918941065327/1115979638559253/?type=3>). Facebook.
10. SG e-sports (7 September 2018). "Muito obrigado a todos os players que fizeram parte de nossa line" (https://twitter.com/SGe_sports/status/1037907961056780289). Twitter.
11. SG e-sports (14 November 2018). "SEM ANUNCIO DE ANUNCIO!" (<https://www.facebook.com/SGesports1/photos/a.690918941065327/1163517913805425/>). Facebook.
12. SG e-sports (1 August 2017). "OBRIGADO C4T! NÓS SEMPRE ACREDITAMOS NA MÁGICA!" (<https://www.facebook.com/SGesports1/photos/a.690918941065327.1073741828.641413999349155/859698274187392/?type=3>) (in Portuguese). Facebook. Retrieved 1 August 2017.
13. SG e-sports (29 August 2017). "A SG e-sports fez história." (<https://www.facebook.com/SGesports1/photos/a.690918941065327.1073741828.641413999349155/873675856122967/?type=1&theater>) (in Portuguese). Facebook. Retrieved 29 August 2017.
14. SG e-sports (2017-09-10). "DEPOIS DE TANTO SUSPENSE, A NOSSA NOVA LINE DE DOTA 2 ESTÁ CONFIRMADA!" (<https://www.facebook.com/SGesports1/posts/879346078889278>). Facebook. Retrieved 2017-09-10.
15. SG e-sports (2017-12-31). "BEM VINDO DE VOLTA!" (<https://www.facebook.com/SGesports1/posts/937367706420448>). Facebook. Retrieved 2017-12-31.
16. SG e-sports (2016-11-13). "A MELHOR EQUIPE DE DOTA 2 DO BRASIL AGORA É SG E-SPORTS!!!" (<https://www.facebook.com/SGesports1/photos/a.690918941065327.1073741828.641413999349155/712175968939624>). Facebook. Retrieved 2016-11-14.

Retrieved from "https://liquipedia.net/dota2/index.php?title=SG_e-sports&oldid=1050593
(https://liquipedia.net/dota2/index.php?title=SG_e-sports&oldid=1050593)"

Our Wikis

[Apex Legends \(/apexlegends/\)](#)

[Artifact \(/artifact/\)](#)

[Brood War \(/starcraft/\)](#)

[Counter-Strike \(/counterstrike/\)](#)

[Dota 2 \(/dota2/\)](#)

[Hearthstone \(/hearthstone/\)](#)

[Heroes of the Storm \(/heroes/\)](#)

[League of Legends \(/leagueoflegends/\)](#)

[Overwatch \(/overwatch/\)](#)

[PUBG \(/pubg/\)](#)

[Rainbow Six \(/rainbowsix/\)](#)

[Rocket League \(/rocketleague/\)](#)

[Smash \(/smash/\)](#)

[StarCraft II \(/starcraft2/\)](#)

[Warcraft III \(/warcraft/\)](#)

[Commons \(/commons/\)](#)

Alpha

[Fortnite \(/fortnite/\)](#)

[Arena FPS \(/arenafps/\)](#)

[Team Fortress \(/teamfortress/\)](#)

[World of Warcraft \(/worldofwarcraft/\)](#)

[Fighting Games \(/fighters/\)](#)

[FIFA \(/fifa/\)](#)

[Clash Royale \(/clashroyale/\)](#)

[Arena of Valor \(/arenaofvalor/\)](#)

[Paladins \(/paladins/\)](#)

About

[Privacy policy \(/dota2/Liquipedia:Privacy_policy\)](#)

[About Liquipedia Dota 2 Wiki \(/dota2/Liquipedia:About\)](#)

[Disclaimers \(/dota2/Liquipedia:General_disclaimer\)](#)

Contact Us

[Send an email \(mailto:contact@liquipedia.net\)](mailto:contact@liquipedia.net)

[Post feedback \(https://tl.net/forum/website-feedback/94785-liquipedia-feedback-thread\)](https://tl.net/forum/website-feedback/94785-liquipedia-feedback-thread)

Chat with us (<https://liquipedia.net/discord>)

([http](#)

([http](#)

([http](#)

([http](#)

([http](#)

This page was last edited on 9 August 2020, at 07:38.
Text/code is available under CC-BY-SA (/dota2/Liquipedia:Copyrights). Licenses for other media varies.



Home



Search



Your Library

PLAYLISTS



Create Playlist



Liked Songs



VERIFIED ARTIST

SG Lewis

4,786,322 monthly listeners

FOLLOW













Overview

Related Artists

About

Popular

		Chemicals	4:14
		Experience	2:56
		Throwaway (with Clairo)	3:00
		Impact (feat. Robyn & Chanel Tres) E	4:43
		Pressure (with SG Lewis)	2:49

Singles and EPs

Cookies

Cookie policy

We and our partners use cookies to personalize your experience, to show you ads based on your interests, and for measurement and analytics purposes. By using our website and our services, you agree to our use of cookies as described in our Cookie Policy.

1 occasional ads. No credit card

SIGN UP FREE



COVID-19 is an emerging, rapidly evolving situation.
 Get the latest public health information from CDC: <https://www.coronavirus.gov>.
 Get the latest research from NIH: <https://www.nih.gov/coronavirus>.



PERIODIC TABLE > ELEMENT SUMMARY

Seaborgium

Seaborgium is a chemical element with symbol Sg and atomic number 106. Classified as a transition metal, seaborgium is a solid at room temperature.

H																	He
Li	Be	<div style="text-align: center;"> <p>106</p> <p>Sg</p> <p>Seaborgium</p> </div> <div style="text-align: center; margin-top: 5px;"> View All Properties </div>										B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	**	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og
		*	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
		**	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

1 Identifiers



1.1 Element Name



Seaborgium

- ▶ [PubChem](#); Commission on Isotopic Abundances and Atomic Weights (CIAAW), International Union of Pure and Applied Chemistry (IUPAC)

1.2 Element Symbol



Sg

- ▶ [PubChem](#); Commission on Isotopic Abundances and Atomic Weights (CIAAW), International Union of Pure and Applied Chemistry (IUPAC)

1.3 InChI



InChI=1S/Sg

- ▶ [PubChem](#)

1.4 InChI Key



VAOUCABZIBBBJH-UHFFFAOYSA-N

- ▶ [PubChem](#)

2 Properties



2.1 Atomic Weight



271

- ▶ Jefferson Lab, U.S. Department of Energy

269

- ▶ Los Alamos National Laboratory, U.S. Department of Energy

Relative Mass: 271.13393(63#)

- ▶ NIST Physical Measurement Laboratory

2.2 Electron Configuration



[Rn]7s²5f¹⁴6d⁴

- ▶ Los Alamos National Laboratory, U.S. Department of Energy

[Rn]5f¹⁴ 6d⁴ 7s²

- ▶ NIST Physical Measurement Laboratory

2.3 Atomic Radius



Empirical Atomic Radius

empirical: 132 pm (predicted)

- ▶ Los Alamos National Laboratory, U.S. Department of Energy

2.4 Oxidation States



2.4 Oxidation States



6, (5), (4), (3), 0 (parenthesized oxidation states are predictions)

▶ Los Alamos National Laboratory, U.S. Department of Energy

2.5 Ground Level



0

▶ NIST Physical Measurement Laboratory

2.6 Ionization Energy



7.8 eV (The level was determined by interpolation or extrapolation of known experimental values or by semiempirical calculation; its absolute accuracy is reflected in the number of significant figures assigned to it.)

▶ NIST Physical Measurement Laboratory

2.7 Atomic Spectra



Levels Holdings

▶ NIST Physical Measurement Laboratory

2.8 Physical Description



Solid

▶ Jefferson Lab, U.S. Department of Energy

2.9 Element Classification



Metal

▶ Jefferson Lab, U.S. Department of Energy

2.10 Element Period Number



7

▶ Jefferson Lab, U.S. Department of Energy

2.11 Element Group Number



6

▶ Jefferson Lab, U.S. Department of Energy

2.12 Estimated Crustal Abundance



Not Applicable

▶ Jefferson Lab, U.S. Department of Energy

2.13 Estimated Oceanic Abundance



Not Applicable

▶ Jefferson Lab, U.S. Department of Energy

3 History



Seaborgium was first produced by a team of scientists led by Albert Ghiorso working at the Lawrence Berkeley Laboratory in Berkeley, California, in 1974. They created seaborgium by bombarding atoms of californium-249 with ions of oxygen-18 using a machine called the SuperHeavy Ion Linear Accelerator. The collision produced atoms of seaborgium-263 and four free neutrons. Seaborgium-263 is an isotope of seaborgium with a half-life of about 1 second. Three months before the Berkeley group announced their discovery, a team of scientists working at the Joint Institute for Nuclear Research in Dubna, Russia, claimed to have produced seaborgium. Their method involved bombarding atoms of lead-207 and lead-208 with ions of chromium-54 with a device called a cyclotron. They believed that they had produced atoms of seaborgium-259. The Berkeley group's work was confirmed in 1993 and they were credited with the discovery. Seaborgium's most stable isotope, seaborgium-271, has a half-life of about 2.4 minutes. It decays into rutherfordium-267 through alpha decay or decays through spontaneous fission..

► [Jefferson Lab, U.S. Department of Energy](#)

In June 1974, members of the Joint Institute for Nuclear Research in Dubna, U.S.S.R., reported their discovery of Element 106 which they reported to have synthesized. Glenn Seaborg was part of this group, and the element was named in his honor

In September 1974, workers of the Lawrence Berkeley and Livermore Laboratories also claimed creation Element 106 "without any scientific doubt!" The LBL and LLL Group used the Super HILAC to accelerate ^{18}O ions onto a ^{249}Cf target.

Element 106 was created by the reaction $^{249}\text{Cf}(^{18}\text{O}, ^4\text{N})^{263}\text{X}$, which decayed by alpha emission to rutherfordium, and then by alpha emission to nobelium, which in turn further decayed by alpha between daughter and granddaughter. The element so identified had alpha energies of 9.06 and 9.25 MeV with a half-life of 0.9 ± 0.2 s.

At Dubna, 280-MeV ions of ^{54}Cr from the 310-cm cyclotron were used to strike targets of ^{206}Pb , ^{207}Pb , and ^{208}Pb , in separate runs. Foils exposed to a rotating target disc were used to detect spontaneous fission activities. The foils were etched and examined microscopically to detect the number of fission tracks and the half-life of the fission activity. Other experiments were made to aid in confirmation of the discovery.

► [Los Alamos National Laboratory, U.S. Department of Energy](#)

4 Description



Seaborgium is named after Glenn Seaborg.

- ▶ [Los Alamos National Laboratory, U.S. Department of Energy](#)

5 Uses



Since only a few atoms of seaborgium have ever been made, there are currently no uses for seaborgium outside of basic scientific research.

- ▶ [Jefferson Lab, U.S. Department of Energy](#)

6 Compounds



See more information at the Seaborgium compound page.

[▶ PubChem](#)

6.1 Element Forms



CID	Name	Formula	SMILES	Molecular Weight
56951717	seaborgium	Sg	[Sg]	269.129

[▶ PubChem](#)

7 Isotopes



Stable Isotope Count

0

[▶ Jefferson Lab, U.S. Department of Energy](#)

7.1 Atomic Mass, Half Life, and Decay



Nuclide	Atomic Mass and Uncertainty [u]	Half Life and Uncertainty	Discovery Year	Decay Modes, Intensities and Uncertainties [%]
²⁵⁸ Sg	258.112984 ± 0.000443 [Estimated]	2.7 ms ± 0.5	1997	SF=?; α<20%
²⁵⁹ Sg	259.114353 ± 0.000123 [Estimated]	402 ms ± 56	1985	α=97±0.1%; SF<3%; ε<1%
²⁵⁹ Sg ^m	259.114353 ± 0.000123 [Estimated]	226 ms ± 27		α=97±0.1%; SF>3%; ε<1%
²⁶⁰ Sg	260.114383508 ± 0.000022045	4.95 ms ± 0.33	1984	SF=60±3%; α=40±3%
²⁶¹ Sg	261.115948188 ± 0.000019853	183 ms ± 5	1984	α=98.1±0.4%; β ⁺ =1.3±0.3%; SF=0.6±0.2%
²⁶¹ Sg ^m	261.115948188 ± 0.000019853	9.3 us ± 1.8	2010	IT=100%
²⁶² Sg	262.116335446 ± 0.000038015	10.9 ms ± 2.3	2001	SF≈100%; α ?
²⁶³ Sg	263.118294 ± 0.000102 [Estimated]	940 ms ± 140	1974	α=87±0.8%; SF=13±0.8%
²⁶³ Sg ^m	263.118294 ± 0.000102 [Estimated]	420 ms ± 100	1995	α=?; IT ?
²⁶⁴ Sg	264.118929 ± 0.000304 [Estimated]	47 ms ± 20	2006	SF≈100%; α ?
²⁶⁵ Sg	265.121090 ± 0.000132 [Estimated]	9.2 s ± 1.6	1994	α>50%; SF ?
²⁶⁵ Sg ^m	265.121090 ± 0.000132 [Estimated]	16.4 s ± 2.4	1994	α>65±1.6%; SF ?
²⁶⁶ Sg	266.121973 ± 0.000263 [Estimated]	390 ms ± 110	2006	SF=100%
²⁶⁷ Sg	267.124322 ± 0.000276 [Estimated]	1.8 m ± 0.7	2008	SF=83%; α=17%
²⁶⁸ Sg	268.125392 ± 0.000504 [Estimated]	2 m [Estimated]		α ?; SF ?
²⁶⁹ Sg	269.128570 ± 0.000391 [Estimated]	5 m ± 3	2010	α≈100%; SF ?
²⁷⁰ Sg	270.130426 ± 0.000598 [Estimated]	3 m [Estimated]		α ?; SF ?
²⁷¹ Sg	271.133932 ± 0.000628 [Estimated]	3.1 m ± 1.6	2004	α=70%; SF=30%
²⁷² Sg	272.135890 ± 0.000781 [Estimated]	4 m [Estimated]		α ?; SF ?

^{273}Sg	273.139580 ± 0.00054 [Estimated]	5 m [Estimated]	SF ?
-------------------	--------------------------------------	-----------------	------

► Atomic Mass Data Center (AMDC), International Atomic Energy Agency (IAEA)

8 Information Sources



- 1. PubChem**
<https://pubchem.ncbi.nlm.nih.gov>
Seaborgium
- 2. Atomic Mass Data Center (AMDC), International Atomic Energy Agency (IAEA)**
Sg
<https://www-nds.iaea.org/amdc/>
- 3. Commission on Isotopic Abundances and Atomic Weights (CIAAW), International Union of Pure and Applied Chemistry (IUPAC)**
LICENSE
<http://www.ciaaw.org/bylaws.htm>
Seaborgium
<http://www.ciaaw.org/>
- 4. Jefferson Lab, U.S. Department of Energy**
LICENSE
Please see citation and linking information: <https://education.jlab.org/faq/index.html>
<https://www.jlab.org/privacy-and-security-notice>
Seaborgium
<https://education.jlab.org/itselemental/ele106.html>
- 5. Los Alamos National Laboratory, U.S. Department of Energy**
Seaborgium
<https://periodic.lanl.gov/106.shtml>
- 6. NIST Physical Measurement Laboratory**
LICENSE
<https://www.nist.gov/pml/database-disclaimer>
Seaborgium
<https://physics.nist.gov/cgi-bin/Elements/ellInfo.pl?element=106>

Sg Americas Securities, Llc

SEC CIK #0001261467

[SEC.report \(https://sec.report\)](https://sec.report) > / [CIK \(https://sec.report/CIK\)](https://sec.report/CIK) >

/ [Sg Americas Securities, Llc \(https://sec.report/CIK/0001261467\)](https://sec.report/CIK/0001261467)

Sg Americas Securities, Llc is a broker-dealer registered with the U.S. Security and Exchange Commission and incorporated in the state of Delaware. For financial reporting, their fiscal year ends on December 31st. This page includes all SEC registration details as well as a list of all documents (S-1, Prospectus, Current Reports, 8-K, 10K, Annual Reports) filed by Sg Americas Securities, Llc.

Company Details

Reporting File Number	008-66125
Regulated Entity Type	Broker - Dealer
State of Incorporation	DELAWARE
Fiscal Year End	12-31
Date of Edgar Filing Update	2020-07-23
Business Address	245 PARK AVENUE

Business Address	245 PARK AVENUE NEW YORK NY 10167
Business Phone	212-278-5004
Mailing Address	245 PARK AVENUE NEW YORK NY 10167

-Documents

Email Notifications   (/CIK/0001261467.rss)

Form	Title	Date
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000030/)	2020-09-17 08:58:56
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000028/)	2020-08-05 11:28:55
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000024/)	2020-07-22 14:09:23
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000023/)	2020-07-14 22:17:57
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000021/)	2020-06-10 11:52:01
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000020/)	2020-06-04 14:53:55
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000015/)	2020-05-28 12:34:15
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000010/)	2020-03-25 14:35:21
MA-A	Annual Municipal Advisor Registration Update (/Document/0001261467-20-000008/)	2020-03-11 09:18:38
X-17A-5	Annual Report (/Document/0001261467-20-000006/)	2020-03-02 19:05:04
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-20-000002/)	2020-02-07 14:24:52

21/09/2020

Sg Americas Securities, Llc SEC Registration

MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000054/)	2020-01-17 13:48:16
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000051/)	2019-12-03 11:49:00
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000050/)	2019-11-22 10:31:37
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000048/)	2019-11-15 08:47:53
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000049/)	2019-11-14 15:46:06
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000046/)	2019-11-13 15:48:31
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000042/)	2019-09-24 10:41:59
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000041/)	2019-09-17 16:51:46
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000039/)	2019-09-10 06:57:50
MA-I	Municipal Advisor Registration Application (/Document/0001261467-19-000038/)	2019-08-29 12:04:22
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000036/)	2019-08-22 17:29:10
MA-I	Municipal Advisor Registration Application (/Document/0001261467-19-000035/)	2019-08-19 14:47:38
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000033/)	2019-08-02 10:28:52
MA-I	Municipal Advisor Registration Application (/Document/0001261467-19-000032/)	2019-08-01 17:04:27
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000030/)	2019-07-30 15:54:07
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000027/)	2019-07-17 13:26:32
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000021/)	2019-06-13 10:31:49
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000018/)	2019-05-15 15:27:01
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000014/)	2019-04-17 10:14:24
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000010/)	2019-03-27 17:19:42
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000007/)	2019-03-08 10:02:48
X-17A-5	Annual Report (/Document/0001261467-19-000009/)	2019-03-01 16:52:21
MA-I	Municipal Advisor Registration Application (/Document/0001261467-19-000006/)	2019-02-27 16:16:24

MA-I	Municipal Advisor Registration Application (/Document/0001261467-19-000007/)	2018-02-27 16:16:04
MA-A	Annual Municipal Advisor Registration Update (/Document/0001261467-19-000004/)	2019-02-21 11:23:00
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-19-000001/)	2019-02-05 16:15:08
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000058/)	2018-12-04 17:26:10
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000055/)	2018-11-01 14:07:51
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000054/)	2018-10-26 11:46:08
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000052/)	2018-10-24 13:47:14
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000048/)	2018-10-17 10:49:46
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000045/)	2018-10-01 08:23:07
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000044/)	2018-09-14 16:31:03
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000043/)	2018-09-07 11:32:44
MA-I/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000042/)	2018-09-05 08:54:29
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000041/)	2018-08-31 15:25:50
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000039/)	2018-08-23 13:51:07
MA/A	Municipal Advisor Registration Application [Amended] (/Document/0001261467-18-000037/)	2018-08-20 16:04:52
MA-I	Municipal Advisor Registration Application (/Document/0001261467-18-000034/)	2018-06-29 11:14:59
MA-I	Municipal Advisor Registration Application (/Document/0001261467-18-000033/)	2018-06-28 16:32:25

[2] Next-> (/CIK/0001261467/2#documents)

0-50 of 117 Results

Page: 1 | 2 (/CIK/0001261467/2#documents) | 3 (/CIK/0001261467/3#documents) |

Latest USPTO Trademark Filings [🔗](https://uspto.report/company/Sg-Americas-Securities-L-L-C) (https://uspto.report/company/Sg-Americas-Securities-L-L-C)

Mark Image	Registration Serial	Trademark	Application Date
	3740511 77346484	ALTERNATIVEEDGE(https://uspto.report/TM/77346484)	2007-12-07
	3591956 77162920	METALS EDGE(https://uspto.report/TM/77162920)	2007-04-23

Related SEC Filings - Sg Americas [🔍](/CIK/Search/Sg+Americas) (/CIK/Search/Sg+Americas)

SG AMERICAS SECURITIES, LLC of DELAWARE	0001261467 (/CIK/0001261467)
SG Americas Securities, LLC of DELAWARE (/CIK/0001313360)	0001313360 (/CIK/0001313360)
SG Americas, Inc. of DELAWARE (/CIK/0001453835)	0001453835 (/CIK/0001453835)
SG Americas Securities Holdings, Inc. of DELAWARE (/CIK/0001368585)	0001368585 (/CIK/0001368585)



(http://www.ufl.edu/)

REGISTRAR (HTTPS://SG.UFL.EDU/REGISTRAR/)



(https://sg.ufl.edu/)

DOCUTRAQ (HTTPS://WWW.DOCUTRAQ.SG.UFL.EDU/)

ABOUT (HTTPS://SG.UFL.EDU/ABOUT/)

SG FINANCE

BRANCHES (HTTPS://SG.UFL.EDU/BRANCHES/)

HOME PAGE (HTTPS://SG.UFL.EDU)

SERVICES (HTTPS://SG.UFL.EDU/SERVICES/)

ABOUT (HTTPS://SG.UFL.EDU/ABOUT/)

SG FINANCE ()

ELECTIONS (HTTPS://SG.UFL.EDU/ELECTIONS/)
MENU

RESOURCES (HTTPS://SG.UFL.EDU/RESOURCES/)

GET INVOLVED (HTTPS://SG.UFL.EDU/GET-INVOLVED/)

ABOUT

LOCATION, HOURS, & CONTACT

FORMS

FUNDING

TRAINING

For over a century, Student Government Finance has taken pride in funding what is truly important to students at the University of Florida. Finance works with the university's Activity and Service Fee Budget, which accrues when each student pays tuition. Activity and Services Fees are authorized under Florida Statute 1009.24, and fees are collected by the Office of the University Registrar as a component of tuition in

the amount recommended annually by the Local Fee Committee and approved by the **State University System of Florida's Board of Regents**. (<http://fbog.edu>)

For the 2019-2020 fiscal year, each student pays \$19.06 per credit hour, which amounts to a \$21,444,157 budget.

Student Government strives to continually improve the student experience at UF while operating in a fiscally responsible manner. SG administers the allocation of the Activity and Service Fees and divides them into three main entities called the Big 3: the **J. Wayne Reitz Union** (<https://www.union.ufl.edu/>)/**Student Activities and Involvement** (<https://studentinvolvement.ufl.edu/>), **Recreational Sports** (<https://recsports.ufl.edu/>), and SG. The Budget and Appropriations Committee of the Student Senate then holds hearings for each of the Big 3 in the summer to ensure that the funding continues to be spent in the best interest of the students. The Committee also holds hearings to establish a budget for the next fiscal year each spring.

The Activity and Service Fee Budget funds a wide variety of things at UF, including but not limited to:

- Student organizations and events (Visit GatorConnect for a full list of campus groups)
- Student Government Productions, which features nationally recognized artists and performers
- ACCENT Speakers Bureau, which brings prominent, influential, and controversial speakers to campus
- SG Bike Repair, SG Print Lab, and the SG Graphics and Copy Center, all of which provide certain services at no charge or a reduced cost to students or student organizations.

MEET SG FINANCE STAFF



GARY BRYANT
Finance Manager

✉ gbryant@ufsa.ufl.edu
(mailto:gbryant@ufsa.ufl.edu)





KIMBERLY HARRELL

Fiscal Assistant III

✉ kharrell@ufsa.ufl.edu

(<mailto:kharrell@ufsa.ufl.edu>)



CHRIS BURDSALL

Fiscall Assistant II

✉ cburdsall@ufsa.ufl.edu
(mailto:cburdsall@ufsa.ufl.edu)





TABITHA HILL

Fiscal Assistant I

✉ tahill@ufsa.ufl.edu

(mailto:tahill@ufsa.ufl.edu)

(<http://www.ufsa.ufl.edu/>)

CONTACT

3000 J. WAYNE REITZ UNION

352-392-1665

SGCHIEF@SG.UFL.EDU (MAILTO:SGCHIEF@SG.UFL.EDU)



(<https://www.facebook.com/ufstudentgov/>)



(<https://twitter.com/ufstudentgov?lang=en>)



(<https://www.instagram.com/ufstudentgov/?hl=en>)

Copyright © 2020 UF Student Governement

SERVICES

Consulting Services

The SG Consulting Group offers a variety of service packages, as well as specialized programs and assistance. We can work with you to provide services that meet both your needs and your budget. In addition, we offer a 30% fee reduction to all ASGA members.

+ SG Retreat Facilitation

+ SG Training/Mini Conference



#sgconsultant

Curated Tweets by @asgaonline

+ One Day Site Visit

+ Two Day Site Visit

+ Consult By Phone

+ Consult By The Hour

+ Meeting Tune-Up

+ Document Reconstruction

+ Team Building/Member Retention Analysis

+ Election Review/Online Voting Analysis

+ Parliamentary Procedure Training



ASGA

@asgaonline

#sgconsultant Get help with your constitution. Get help with facilitating your training retreat. The SG Consulting Group can help!

Mar 9, 2016



ASGA

@asgaonline

#sgconsultant The SG Consulting Group is about to unveil a brand-new Web site. Much easier to use. Faster. Searchable.

Mar 8, 2016



ASGA

@asgaonline

#sgconsultant Get the private consulting and analysis your SG needs to improve from the SG Consulting Group

Mar 8

Leave a message



SG Consulting Group

- HOME
- ABOUT US ▾
- WHY CONSULT? ▾
- SERVICES ▾
- RECENT PROJECTS ▾
- CONTACT US





Shop with SG Cosmetics and wigs



Home All Collections

Mink Hair 😊 Wigs

613 hair 613 frontals

613 closures Makeup

All Products



SG MAKEUP COLLECTION



SG GLOW SKIN OIL
\$20.00



<https://sgcosmetics.shop>

21/09/2020

(1) SG COSMETICS – SG COSMETICS



LIPGLOSS SHOOTING STARS 🌟

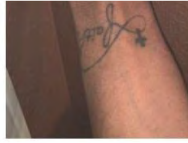
\$7.00



SGCOSMETICS PRIDE PALLET

\$35.00





The magic butter
\$10.00



THE SG MAKEUP PALLET
\$35.00



<https://sgcosmetics.shop>

2/14

21/09/2020

(1) SG COSMETICS – SG COSMETICS



PUSSY PRECIOUS SETTING SPRAY

\$13.00



SG COSMETICS® Pomade - DARK Brown

\$10.00

VIEW ALL

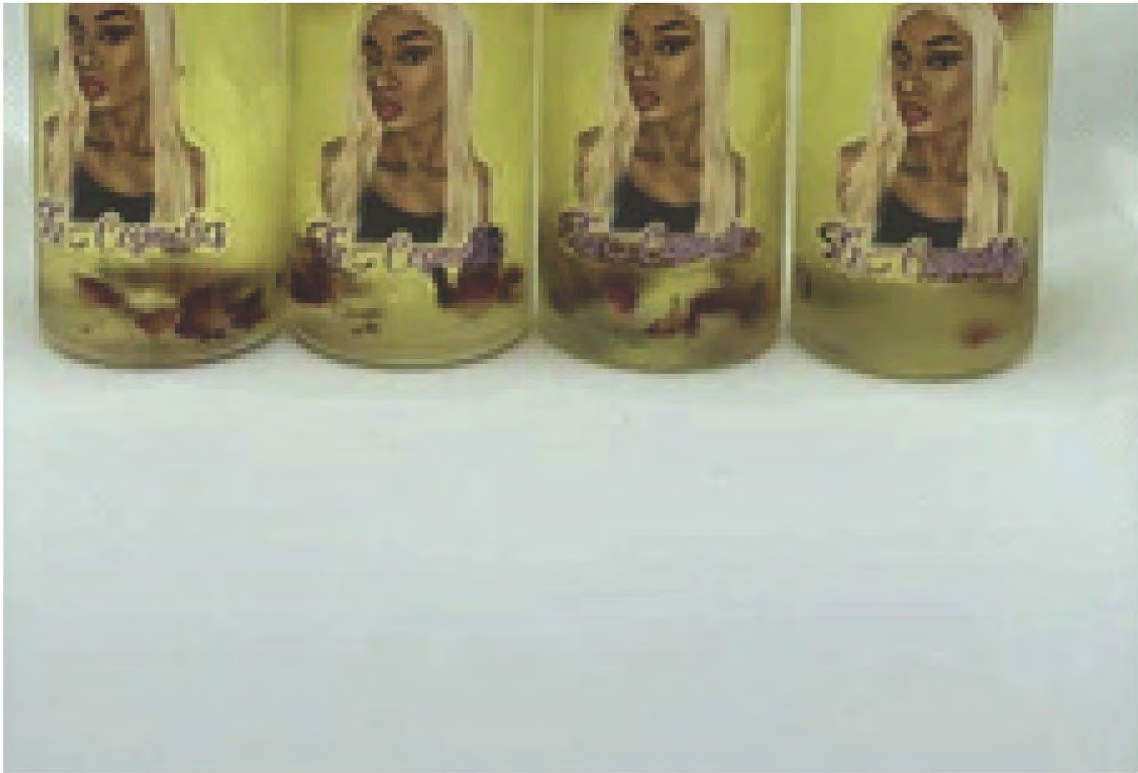


<https://sgcosmetics.shop>

3/14

21/09/2020

(1) SG COSMETICS – SG COSMETICS





<https://sgcosmetics.shop>

21/09/2020

(1) SG COSMETICS – SG COSMETICS



SG GLOW SKIN OIL

\$20.00

Tax included. Shipping calculated at checkout.

ADD TO CART

SG GLOW OIL

1.691 us fluid ounces

Formulated to have a light consistency while hydrating the skin without clogging your pores. SG GLOW can be used alone and or with a full routine! This multi-purpose oil has no limit while being used from head to toe — it has become a must have. SG GLOW is perfect for those who struggle with any skin inflammations, blackheads, whiteheads, hyperpigmentation, and evening skin tone. It is amazing for all skin types (dry/oily/acne-prone/eczema, sensitive & more)

21/09/2020

(1) SG COSMETICS – SG COSMETICS

Handmade with Avocado Oil, Sweet Almond Oil, Vitamin E Oil, Organic Rosehip Oil, Argan Oil, Olive Oil, Solar Power, Love & Dried Roses

 SHARE  TWEET  PIN IT

SHOP MY HAIR AND WIGS

Hand made wigs

Mink 613 Hair

Mink Hair 😍

21/09/2020

(1) SG COSMETICS – SG COSMETICS

SG COSMETICS PRIDE PALLET

SGCOSMETICS PRIDE PALLET

\$35.00

SG COSMETICS Crystal Brush set

\$50.00



SANTANA E\$KOBAR -
Rapper/Songwriter/Artist
SUPPORT SUBSCRIBE LIKE
Twitter: @SantanaEskobar
Instagram: @SantanaEskobar
Snapchat: @SantanaEskobar
Bookings|| Features|| Biz:
cartelboyzent@gmail.com

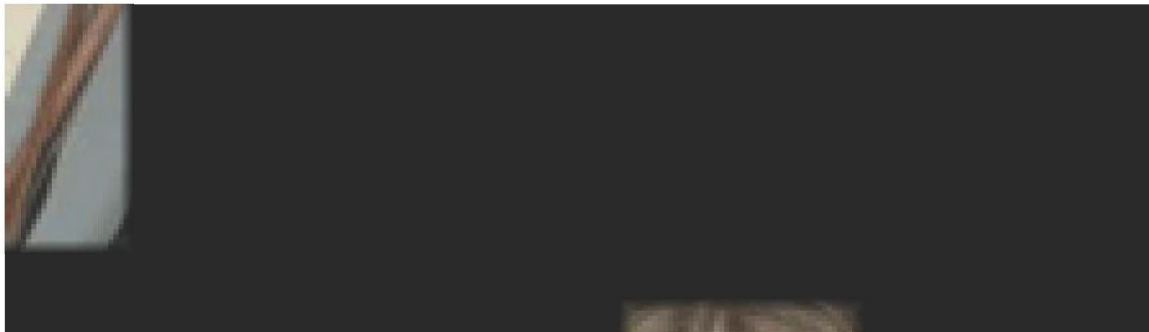
BOOK YOUR SPECIAL MAKEUP APPOINTMENT

Booking with SG COSMETICS

Exotic Glam Is FULL everything Go Full or Go Home 🤎 (Cut Crease ,Glitter , Blown Liner. Is all Optional).

Price will be the same with or without Lashes

Please have your face freshly washed and free of all oils and any other cosmetic Products







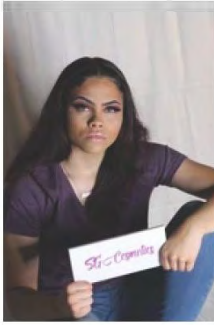
mikey lewinsky

Follow Him on IG

<https://sgcosmetics.shop>

10/14







THE SG MAKEUP PALLET

\$35.00

Tax included. Shipping calculated at checkout.

Option

THE SG MAKEUP PALLET

ADD TO CART

Dive into these 10 grabbin' shades and show 'em what you got !

[SHARE](#) [TWEET](#) [PIN IT](#)



SHANE DAWSON X JEFFREE STAR Conspiracy Palette SHAWN GRAHAM

Shane Dawson X JEFFREE STAR





mikey lewinsky

Promo code pmikey



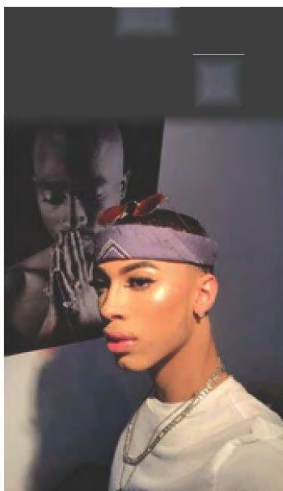
payy elise

Promo code PAYELISE19



21/09/2020

(1) SG COSMETICS – SG COSMETICS



hustlebxby_beauty

Quick links

Search

Talk about your business

Share store details, promotions, or brand content with your customers.

Newsletter

SUBSCRIBE



© 2020, SG COSMETICS Powered by Shopify

21/09/2020

Sniper Gang – SG Hot Box

Must be 21+ to legally make a purchase.



[Home](#) [Shop Products](#)
[SG Hot Box \(bundle pack\)](#)
[Contact](#)



SHOP NOW





21/09/2020

Sniper Gang – SG Hot Box





SG Hot Box 2.0 (5pc bundle pack)

~~\$70.00~~ \$49.99 Sale

Shipping calculated at checkout.

ADD TO CART

IMPORTANT: Must read the terms and conditions prior to checkout.

The wait is over! Introducing the Sniper Gang Hot Box. The only smoking bundle you'll ever need. We've been working hard on bringing you custom SG smoking accessories that make your life easier.

Complete with 5 custom SG items:

- Clear Tray
- Black/Orange Logo Grinder
- 5 Glass Tips
- Lighter Sleeve
- Papers

Features and Specs:

Custom Glass Tips – Get bigger/smooth hits with the SG wide mouth glass tips. Never have to worry about getting material in your mouth! (12 x 30 Wide Mouth design.)

Organic Rolling Papers - SG natural wood pulp papers are made clean with no chemicals. The 100% natural Arabic gum is sourced from conflict free growers in Africa. While the papers are unrefined

natural Arabic gum is sourced from contact tree growers in Africa. While the papers are unrefined and unbleached, and 100% organic.

Clear Rolling Tray – The SG acrylic rolling tray is the only tray you’ll ever need. While most rolling trays are made of tin or rough plastics. Sniper Gang rolling trays are made of acrylic, giving them a sturdy feel with a reflective smooth surface. Customized with the SG logo in the middle, this tray is a must have for anyone rolling up.

SG Lighter Slip – SG custom lighter slips will fit any full size BIC lighter. Long lasting and durable.

Grinder – These new grinders have an improved blade lay out for a more coarse break down. With an orange logo on a glossy black finish.

Don't sleep on our limited drop! Get your Hot Box today.

 SHARE  TWEET  PIN IT

FEATURED PRODUCTS

Lighter

\$9.99

SG Lighter Sleeve (includes: Free BIC lighter)

\$9.99

Grinder (Black/Orange)

\$19.99

Tray (Clear)

\$19.99

Grinder (Gold)

21/09/2020

Sniper Gang – SG Hot Box

\$29.99

Hot Box Cutlass Tee

\$34.00

SG Crystal Ashtray

\$29.99

Rolling Papers
\$2.99

SG Bubbler Pipe + Accessories
\$199.99

SG Quartz Banger
\$34.99

SG 7-hole Bowl
\$64.99

SG Carb Cab
\$19.99

Basic Quartz Banger
\$9.99

21/09/2020

Sniper Gang – SG Hot Box

Tray (Black)
Sold out

SG Lit Pad
Sold out

Grinder
Sold out

SG Smokus Focus
Sold out

SG Pre-Roll Case
Sold out

21/09/2020

Sniper Gang – SG Hot Box

[VIEW ALL](#)

OUR PRODUCTS

Bundle Box

Individual Products

CONNECT WITH US! #SGHOTBOX





Quick links

[Home](#)

[Privacy Policy](#)

[Shipping Policy](#)

[Refund Policy](#)

[Terms of Service](#)

Must be 21+ to purchase.

IMPORTANT! Must read the [terms and conditions](#) prior to checkout.

Sign-up for exclusive deals!

SUBSCRIBE

The "SG" / Firebrand

The **"SG"** was conceived by Nashville plant manager Whitey Morrison in 1979 to fill the gap in the budget end of the SG lineup, following the discontinuation of the Special (although a short-lived model bridged the gap between them, see: SG Standard / Special). This model introduced the change in control layout that the SG Standard would undergo the following year. It also had a unique finish with black paint splatter and small dings throughout to create a distressed appearance. In January 1980, a new version called the "SG Firebrand" was introduced with a branded-in Gibson logo and a Mahogany body and neck for a slightly lower price. By July 1980, these models both became part of the "Firebrand Series" and were renamed as "The 'SG' Standard" and "The 'SG' Deluxe", with the Standard now gaining the branded-in logo as well. The name of the Deluxe model was changed several times throughout its production run. While the last catalog these models were featured in was from 1981, the last models were shipped as late as 1985. Most examples seem to have been produced in 1980 and leftover stock of Deluxes were refinished in new full-gloss colors with black headstocks and silk-screened logos throughout 1981. The Standard was discontinued in 1982. New production of the Deluxe appears to have been done in smaller batches from 1982 to early 1984 before they were phased out in favor of the newly returned Special.



The "SG" (Standard) Edit

- 1979-1981
- \$499 (1979)
- \$599 (July 1980)

Body:

- Beveled, solid Walnut body
- Nitrocellulose Lacquer finish
 - Semi-gloss distressed



Neck:

- 3-pc laminated Walnut
- Set-in construction
 - 3 degree angle
 - Titebond glue
- Joins body at 20th fret
- Rosewood fretboard w/ dot inlays (early 1979)
- Ebony fretboard w/ dot inlays
 - Inlay at 1st fret
 - 12" radius
- Volute
- Large Open Book headstock
- Silk-screened Gibson logo (1979)
- Branded Gibson logo
- "Made in U.S.A." stamp
- 17° headstock pitch
- 22 frets
- 24 ⁹/₁₆" scale
- 1 11/16" nut width

Electronics:

- "The SG" Humbucker (Neck position)
 - Indox 7 ceramic magnet
 - 7.2K Ohms DCR
 - Designed by Bill Lawrence
- "Velvet Brick" zebra Humbucker (Bridge position)
 - Indox 7 ceramic magnet

[https://solidguitar.fandom.com/wiki/The_"SG"/_Firebrand](https://solidguitar.fandom.com/wiki/The_)



21/09/2020

The "SG" / Firebrand | SG Wiki | Fandom

- 7.5K Ohms DCR
- Originally called the "TGA Super Humbucker" (1979)
- Designed by Bill Lawrence
- 3-way switch
- 2 Vol, 2 Tone
 - CTS 300k pots
 - 100k tone (sometimes)

Hardware:

- Chrome Hardware
- Grover Keystone tuning machines (1979)
- Schaller M6 tuning machines (1980-1981)
 - Keystone buttons
- 5-ply "Angel Wing" pickguard
- Bell shaped truss rod cover
 - 2-ply b/w with "The 'SG'" engraving (1979)
 - 2-ply b/w with "Firebrand 'The SG' Standard" engraving
- Black Speed knobs
- Switch ring (early-mid 1979)
- Harmonica Tune-O-Matic bridge and stopbar tailpiece (early-mid 1979)
- Nashville Tune-O-Matic bridge and stopbar tailpiece

Finishes:

- Natural Walnut

The "SG" Deluxe [Edit](#)

- 1980-1984
- \$529 (July 1980)



Body:

- Beveled, solid Honduran Mahogany body
- Nitrocellulose Lacquer finish
 - Semi-gloss distressed
 - Gloss (1981-1984)

Neck:

- 3-pc laminated Honduran Mahogany
- 1-pc quartersawn Honduran Mahogany (1983-1984)
- Set-in construction
 - 3 degree angle
 - Titebond glue
- Joins body at 20th fret
- Ebony fretboard w/ dot inlays
 - Inlay at 1st fret
 - 12" radius
- Rosewood fretboard w/ dot inlays (~1983, uncommon)
- Volute (1979-1981)
- Large Open Book headstock
- Narrow Open Book headstock (1982-1984)
- Branded Gibson logo
- Silk-screened Gibson logo (1982-1984)
- "Made in U.S.A." stamp
- 17° headstock pitch
- 22 frets
- 24 $\frac{9}{16}$ " scale
- 1 $\frac{11}{16}$ " nut width

Electronics:

[https://solidguitar.fandom.com/wiki/The_"SG"/_Firebrand](https://solidguitar.fandom.com/wiki/The_)



- "The SG" Humbucker (Neck position)
 - Indox 7 ceramic magnet
 - 7.2K Ohms DCR
 - Designed by Bill Lawrence
- "Velvet Brick" zebra Humbucker (Bridge position)
 - Indox 7 ceramic magnet
 - 7.5K (bridge) Ohms DCR
 - Originally called the "TGA Super Humbucker" (1979)
 - Designed by Bill Lawrence
- 3-way switch
- 2 Vol, 2 Tone
 - CTS 300k pots
 - 100k tone (sometimes)

Hardware:

- Chrome Hardware
- Schaller M6 tuning machines (1980-1981)
 - Chrome Keystone buttons
- Grover Rotomatic tuning machines (1981-1983)
 - 14:1 ratio
 - Chrome Keystone buttons
- Grover Kluson-style tuning machines (1984)
 - 14:1 ratio
 - "Green Key" buttons
- 5-ply "Angel Wing" pickguard
- Bell shaped truss rod cover
 - 2-ply b/w with "Firebrand 'The SG' Deluxe" engraving
 - 2-ply b/w with "SG Firebrand" engraving

Bahamas Blue

- 2-ply b/w with "SG Firebrand" engraving
 - 2-ply b/w with "The 'SG'" engraving (1983-1984)
- Black Speed knobs
- Nashville Tune-O-Matic bridge and stopbar tailpiece
- 3-Point Tune-O-Matic bridge and stopbar tailpiece (1982-1984)

Finishes:

- Natural Mahogany
- Antique Mahogany
- Wine Red (1981-1984)
- Ebony (1981-1984)
- Devil Red (1981-1982)
- Bahamas Blue (1981-1982)
- Goldburst (1981-1982)
- Silver (1981-1982)
- Holly Green (1981-1982)
- Candy Apple Red (1983-1984)
- Electric Blue (1983-1984)
- Yellow Mist (1983-1984)
- Tangerine (1983-1984)
- Ultra Violet (1983-1984)
- Walnut (1983-1984)
- Antique Tobacco Sunburst (1980 / 1984?)
- Vintage Cherry Sunburst (1984)
- Silverburst (1984)

Retrieved from "https://solidguitar.fandom.com/wiki/The_%22SG%22/_Firebrand?oldid=3434"

Categories:

21/09/2020

The "SG" / Firebrand | SG Wiki | Fandom

Community content is available under CC-BY-SA unless otherwise noted.



MOMMY & ME

Personalized earrings, bracelets, pendants and rings to celebrate the eternal bond between mamma and child.

SHOP THE COLLECTION



ALL EYES ON ENAMEL

Introducing the 'Quinn' ring, a My Story classic reimaged in enamel.

SHOP NOW

The Slider Bangle

Personalize our best-selling charm bracelet to reflect your unique style and story.

SHOP NOW



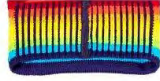
SHOP +

BRIDAL +

GIFTS +

SHOWROOM APPOINTMENTS

CONTACT



Item

Arm Candy
\$ 30.00



Tiny Treasures Gold Name
Necklace
from \$ 490.00



I AM BRACELET
\$ 225.00



Pave Bangle
\$ 1,995.00

Bridal by SG

Begin your journey to find your dream engagement ring by scheduling a virtual appointment with our bridal consultants.

[LEARN MORE](#)

[ABOUT](#)

[TERMS AND CONDITIONS](#)

[CUSTOMER CARE](#)

[PRIVACY STATEMENT](#)



SIGNUP FOR OUR NEWSLETTER

Email Address

SG-101 Smart Home Gateway with Siren Z-Wave Plus

+ ADD INQUIRY

Overview

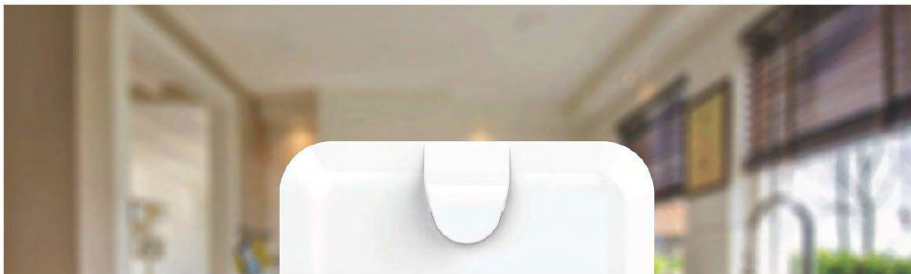
Highlights

Specification

Download

Video

FAQ



**Full and
Easy
Control
over your**



Smart Home

SG-101

The heart of your Smart Home, supports up to 232 sensors or actuators. Wide connection distance up to 40 meters (Indoor). With AirLive SmartLife

21/09/2020

SG-101 Smart Home Gateway with Siren Z-Wave Plus_Product List_Smart Home Product_Smart IoT | AirLive (歐立科技)

0

Select Language ▼

21/09/2020

SG-101 Smart Home Gateway with Siren Z-Wave Plus_Product List_Smart Home Product_Smart IoT | AirLive (歐立科技)

0

Select Language ▼

<https://www.airlive.com/product/SG-101>

21/09/2020

SG-101 Smart Home Gateway with Siren Z-Wave Plus_Product List_Smart Home Product_Smart IoT | AirLive (歐立科技)

0

Select Language ▼



Related Products

21/09/2020

SG-101 Smart Home Gateway with Siren Z-Wave Plus_Product List_Smart Home Product_Smart IoT | AirLive (歐立科技)

0

Select Language ▼

(<https://www.google.com/>)

<https://www.airlive.com/product/SG-101>

5/6

Select Language ▼

Social

Phone : 886-2-2218-6888 (tel:+886-2-2218-6888)

Mail : info@airlive.com (mailto:info@airlive.com)

[Marketing \(banner.php\)](#)

[Banner \(banner.php\)](#)

[Catalogues & DM \(catalogs.php\)](#)

[Product Photo \(photo.php\)](#)

[Video \(video.php\)](#)

[Commercial Video \(video.php?cid=1\)](#)

[Tutorial Video \(video.php?cid=2\)](#)

[Sitemap \(sitemap.php\)](#)

[About Us \(about.php\)](#)

[Company \(about.php\)](#)

[ISO \(iso.php\)](#)

[Warranty & RMA \(rma.php\)](#)

[Where to buy \(wheretobuy.php\)](#)

[Privacy Policy \(privacy.php\)](#)

[Contact Us \(contact.php\)](#)

<https://www.airlive.com/product/SG-101>



[Back to website](#)

[Shop](#)

[My account](#)



Full Spectrum Soft Gels (30 SG)



Full Spectrum Soft Gels (30 SG)

\$55.00

15mg Active Cannabinoids

-	1	+
---	---	---

[ADD TO CART](#)

SKU: 850003224022

Categories: CBD, General Health



Categories: CBD, General Health

Ananda Professional

Description

Brand

Description

From farm to pharmacy, Ananda oversees the entire process of hemp extraction. 100% organic, grown on American farms. Ananda Professional's took the same formulation as their CBD oils and created a convenient, easy-to-swallow capsule. Each softgel is an exact dose of 15mg. Softgels are ideal for those new to CBD or those who are looking for the precision and convenience of a capsule.



Share On Facebook



Tweet This Product



Pin This Product



Email This Product

Related products



Full Spectrum Hemp Extract CBD Oil Drops 40 mg/ml (2000mg per bottle)
\$220.00

Add to cart

Details



Basic Preventive 4
\$44.80

Add to cart

Details



Basic Preventive 2
\$37.30

Add to cart

Details



Balance Plus
\$26.90

Add to cart

Details

ADDRESS

4016 Massillon Road, Suite B
Uniontown, OH 44685

HOURS

Mon-Fri 9am-5pm

SOCIAL MEDIA



PHONE & FAX

Phone 330.899.0406
Toll Free 866.797.2667
Fax 330.899.0652

© Compounding Pharmacy of
Green
Website Design by Storey
Marketing

The content and photographs on this website are copyrighted or licensed material and may not be downloaded for other than personal use. Retransmission, republication, reproduction or any other use of the content or photographs is prohibited.



[HOME](#) [ABOUT](#) [MEMBERSHIP](#) [CONSULTANCY](#) [TRAINING](#) [EVENTS](#) [STRATEGIC GOALS](#) [CONTACT US](#)

SG Corner

Mrs Gisa Fuatai Purcell, Acting CTO Secretary-General

Mrs. Gisa Fuatai Purcell took office as Acting Secretary-General on July 2018. Upon taking office, Mrs Purcell immediately commenced work on developing the CTO's Strategic Plan for 2020-2024 designed to build toward the vision that the CTO is a trusted partner for sustainable development for all through ICTs.

Latest News

WTISD 2018 – Secretary-General Taylor's statement

- » [Secretary-General Taylor: AI a long-lasting legacy but risks of misuse real](#)

SG thanks the government of Gibraltar for a successful Data forum 2018

- » [CTO urges members to consider shared model data protection framework.](#)

CTO ICT Forum '17 agrees that the digital future offers enormous prospects for greater social inclusion and economic growth

- » [Shola Taylor calls for member countries to invest in broadband and ICT services urgently or miss out on IoT and AI evolution](#)

UK Foreign Office and CTO working together on the cybersecurity challenge

- » Secretary-general Shola Taylor thanked UK Foreign Secretary Boris Johnson for the support the uK has given to Commonwealth countries in strengthening their cybersecurity

SG goes on mission to Australia, to to re-engage the nation in the CTO

- » SG goes on mission to Australia, to to re-engage the nation in the CTO

Shola Taylor signs the host agreement for the commonwealth Data Forum 2018.

- » Shola Taylor meets Honourable minister Bassano of GIBRALTAR and signs the host agreement for the commonwealth Data Forum 2018. – July 2017

Shola Taylor leads CTO delegation at ICANN59

- » Shola Taylor leads CTO delegation at ICANN59 in Johannesburg June 2017

Secretary-General congratulates Huawei and Tonga

- » SG congratulates Huawei for joining as ICT sector member and Tonga for joining as full member country in May 2017

CTO Secretary-General presents at Uganda Annual Law Conference April 2017

- » Shola Taylor presents keynote on the future of the legal profession delivered at Uganda's April 2017 Annual Law Conference

CTO Secretary-General moderates panel at GSMA's Ministerial Programme

- » Shola Taylor, Secretary-General of the CTO moderated a discussion on the role of mobile in expanding growth, inclusion and innovation in Africa at the GSMA Ministerial Programme in Barcelona on 27 February 2017.

Secretary-General Shola Taylor calls on African countries to meet their obligations for digital switchover

- » [Press release on Mr Taylor calling for better spectrum valuation in the West Africa region and announcing spectrum programme in support of the region.](#)

Malawi Minister welcomes CTO's Member Action Plan for Malawi

- » [Press release on The Honourable Patricia Kaliati, Minister of Information and Civic Education, Malawi visit with Shola Taylor at the CTO's Headquarters](#)

Shola Taylor calls on Minister for Communications, Dr Edward Omane Boamah during meeting of ITU Council in Geneva

- » [Dr Edward Omane Boamah and Shola Taylor](#)

The role of the Commonwealth in facilitating cooperation in Cyberspace

- » [Shola Taylor's, Secretary-General, Commonwealth Telecommunications Organisation opening speech at the Commonwealth Cybersecurity forum 2016, London UK](#)

Sri Lanka minister Honourable Harin Fernando welcomes CTO's strategic plan

- » [Press release on Sri Lankan minister Honourable Harin Fernando visit with Shola Taylor at the CTO's Headquarters](#)

WSIS Forum 2016 – CTO outlines new plans to promote ICTs for development

- » [Press release on CTO outline plans to promote ICTs for development in the Commonwealth and beyond](#)
- » Also in the news: www.mobileswagg.com

"Digital broadcasting to boost Nigeria's global presence in broadcasting," says CTO's Secretary-General, Shola Taylor

- » [Press release on the pilot launch of Nigeria's digital terrestrial broadcasting switchover in Jos, Plateau State, Nigeria](#)
- » [National Broadcasting Commission, Nigeria](#)
- » [Digital Switchover Nigeria in the news](#)

Malawi High Commissioner to the UK welcomes new CTO MAP programme

- » [Press release on the visit of His Excellency Kena Mphonda to the CTO headquarters in London](#)
- » [CTO Membership](#)

UK Digital Economy Minister Ed Vaizey commends CTO on new strategic goals

- » [Press release on the visit of Ed Vaizey MP to the CTO headquarters in London](#)
- » [UK Government plans for superfast broadband](#)

This site uses cookies: [Find out more.](#)

Modern SG Collection

SG Modern Figured

\$549.00

SG Classic Worn P-90s

\$379.00



① Finish Options

② Finish Options

SG Muse

\$429.00



⑦ Finish Options

SIGN UP FOR EPIPHONE NEWS & SPECIAL OFFERS

Email Address

SUBSCRIBE

Gibson Brands, Inc. respects your right to privacy. By submitting this form you are agreeing to the Terms & Conditions and Privacy Policy.

FOLLOW EPIPHONE ON SOCIAL MEDIA



Electric Guitars

- Epiphone USA
- Archtop
- Designer
- Bass
- Original Les Paul
- Original ES
- Original SG
- Original Designer

- Electric Travel
- Modern Les Paul
- Modern SG
- Artist & Limited Run
- Kramer Original
- Kramer Modern

Acoustic Guitars

- Original Acoustic
- Masterbilt
- Acoustic Travel
- Bluegrass
- Ukulele
- Modern Acoustic

Accessories &

Support

- Customer Service
- Warranty Registration & Info
- Report Counterfeits
- Store Policies & FAQ

Dealer Resources

- Find an Epiphone Dealer
- Dealer Resource Center

Our Company

- History
- Careers
- Contact Us

21/09/2020

Epiphone | Modern SG Collection

Epiphone Gear
Epiphone Hardware
Epiphone Lifestyle &
Apparel

Gibson Gives

Visit The Gibson Brands Family

Copyright 2020 Gibson Brands, Inc. All rights reserved.

[Privacy Policy](#) | [Terms & Conditions](#) | [Registered Trademarks](#)

LATEST ESPORTS NEWS: • [Immortal Treasure 3 and Dota 2 TI10 Battle Pass](#) • [PUBG Labs introduces new Arena Mode](#)



CS:GO



November 18, 2019

WHAT IS THE SG 553 AND WHY IS EVERYONE COMPLAINING ABOUT IT?

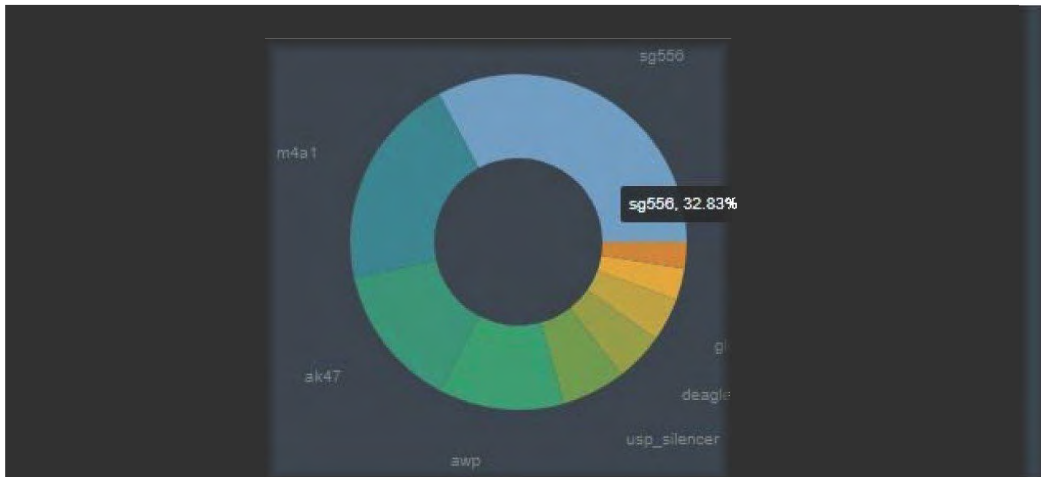
Astralis kicked off their Intel Grand Slam Season 3 bid with a win at IEM Beijing-Haidian 2019.

The SG553, popularly known as the Krieg, was the weapon of choice for CS:GO pros at IEM Beijing. However, the rise in the SG 553's popularity, near-obsolete a year ago, has been rapid and controversial.

Even as professional players are increasingly using the scoped rifle, there are constant complaints about how the gun has changed the game.

What Are the Reasons for the Increasing Popularity of the SG 553?

Terms



SG 553 usage statistics at IEM Beijing-Haidian 2019 | [HLTV](#)

The SG 553 is a \$3,000 scoped rifle, exclusive to the terrorist side with 100% armor penetration. Despite being in the game for several years, the weapon recently rose in popularity because of a price reduction and a sudden awareness amongst pros on its viability and effectiveness.

The SG553's counterpart on the CT side, the AUG, received a nerf in June 2019 when Valve increased the weapon's price to \$3300. CS:GO players turned their attention to the SG553, and the weapon has seen increasing usage in International LAN events since the **Berlin Major**.

Here are the statistics on the SG553's usage in recent International LAN Events following the StarLadder Berlin Major.

BLAST Pro Series Moscow: 9.18%

ESL One New York: 20.28%

DreamHack Masters Malmo: 21.2%

StarSeries & i-League Season 8: 24.66%


BLAST Pro Series Copenhagen: 32.17%

IEM Beijing-Haidian: 32.83%

The trend of increasing popularity for the SG 553 is because of its viability against the AWP, its 100% armor penetration, and the high value it provides for its cost. At \$2750, the SG 553 has nearly the same price as the all-time popular AK 47.

The SG 553's Advantages Over the AK 47

SOCIAL

 Facebook

 Twitter

 Instagram

 YouTube

 Twitch

ESPORTZ

[About Us](#)

[Contact](#)

[Business News](#)

[Esportz Minute](#)

[Esportz Network Podcast](#)

[Shop](#)

[Coins Shop](#)

GAMES

[Overwatch](#)

[CS:GO](#)

[Dota 2](#)

[League of Legends](#)

[Super Smash Bros](#)

[Fortnite](#)

[Valorant](#)

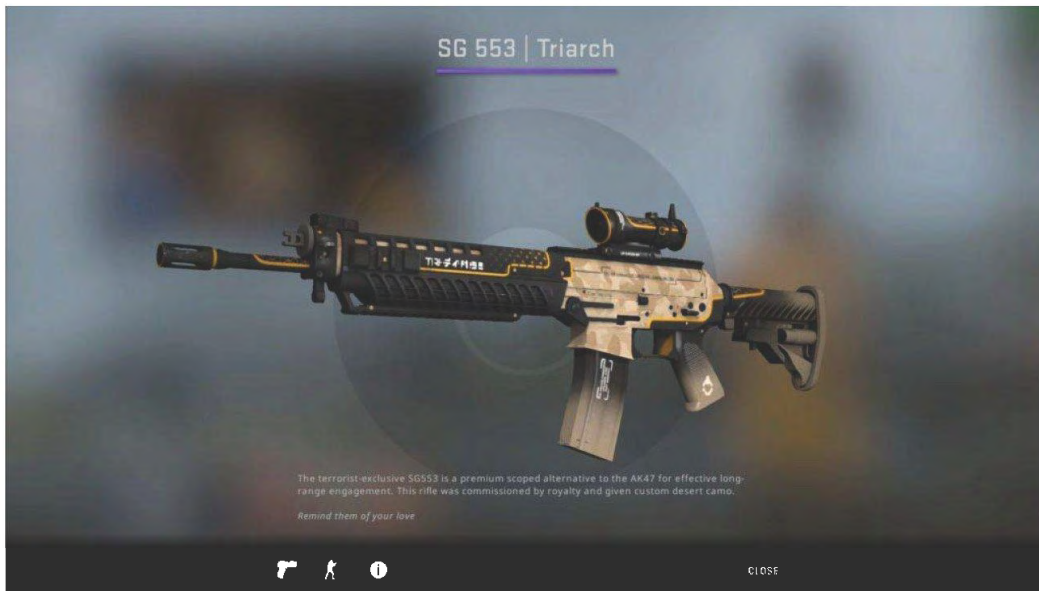
[Call of Duty](#)

[Rocket League](#)

[Rainbow Six Siege](#)

[More Games](#)

<https://www.esportznetwork.com/esports-what-is-the-553-and-why-is-everyone-complaining-about-it/>



CS:GO Pros are increasingly using the SG 553 in professional matches. | elecsपो.com

Priced a nominal \$50 more than the all-time popular AK-47, the SG 553 offers multiple advantages over the \$2700 AK47.

Scoped Rifle is a deterrent to CT AWPers. At 100% armor penetration, the SG 553 scores over the AK's 77.5% armor penetration. The SG 553 has the highest first-shot accuracy of any assault rifle in the game. The scoped rifle has a high firing rate and a short reload time. One Headshot can kill an opponent

CS:GO Pros Feel That Valve Should Nerf the SG 553



Several Counter-Strike professional players have expressed their opinions against the SG 553 on Social Media. The SG 553 is one of the most overpowered weapons in Counter-Strike history, according to Astralis player Peter “dupreeh” Rasmussen.

Richard Papillon 
@shoxCSGO 


Hey .@CSGO , when will come the Krieg nerf? We had AUG, now this... Can we back to CS identity please?

4:21 PM · Oct 15, 2019 



 5.2K  412 people are Tweeting about this

daps 
@daps 


As much as I love using the SG 553 (Krieg) it's honestly ruining the game to some degree. It's costs \$50 more then an AK and shoots faster, has a scope and is easier to spray. Either buff the AUG again or nerf the gun, please @CSGO

10:41 AM · Oct 16, 2019 



2.4K 147 people are Tweeting about this

C9.Colossus ALEX 
@CSGOALEX 


.@csgo_dev, nerf the Krieg or bring back the AUG, but CT's can't challenge a Krieg at the moment thanks

4:05 PM · Jun 27, 2019 

2.2K 155 people are Tweeting about this

Peter Rasmussen 
@dupreeh 

The Krieg-meta however, is really getting out of hands.
[@CSGO](#)

5:52 AM · Oct 25, 2019 

2.4K 78 people are Tweeting about this

In a recent interview with **HLTV**, Dupreeh explains the reasons for his extreme views on the SG 553. Due to its scoped accuracy and 100% armor penetration, the SG 553 allows CTs to take duels from different angles, that they would not usually take, if the CTs get their hands on the SG 553. The weapon is effective against AWP's, and the Terrorist sides can out-duel the CT AWP.

<https://www.esportznetwork.com/esports-what-is-the-553-and-why-is-everyone-complaining-about-it/>

21/09/2020

What is the SG 553 and Why is Everyone Complaining about it? | Esportz Network

@deweking | Instagram

His teammate Nicolai “dev1ce” Reedtz was of a similar opinion in an Instagram post where the player struggled to cope with the Kriegs as an AWPer.

Some players have suggested that Valve increase the Krieg’s price or change the weapon to a semi-automatic weapon.

Russel van Dulken  @Twistzz · Oct 28, 2019 

Making the krieg semi-automatic at all times would be an interesting way to fix it tbh

Russel van Dulken  @Twistzz

No semi-automatic gun in cs yet, I think it should be the first. In my mind this is the only way not to ruin the gun entirely

6:00 AM · Oct 28, 2019 

 880  26 people are Tweeting about this

<https://www.esportznetwork.com/esports-what-is-the-sg-553-and-why-is-everyone-complaining-about-it/>

[Terms](#)

However, Evil Geniuses player Tarik “tarik” Celik, in an interview with **VPesports**, feels that the weapon, although overpowered, provides the same platform for all teams. It is up to the teams to adjust their gameplay and learn the weapon, which is still a relatively new entrant into the professional CS:GO scene.

It's the meta right now, so everyone has to adjust and everyone has an equal chance to use whatever is available. It's not like only one team can use this gun, so everyone has the right to use it so you just have to adjust to the current meta and play with what you're given.

The Game developer handled a similar situation with the AUG by increasing its price. An increase in the SG 553's price would make it less lucrative compared to traditional rifles such as the AK 47.

Valve has not responded with any updates to the weapon's price or performance. However, with a near-consensus amongst pros about the need for a nerf, Valve might release an update soon.

Written by Rohan Samal

- 👉 [Berlin Major](#)
- 👉 [Blast](#)
- 👉 [CSGO](#)
- 👉 [ESL](#)
- 👉 [Esports](#)
- 👉 [Esports Events](#)
- 👉 [Esports Minute](#)
- 👉 [Esports Network Podcast](#)
- 👉 [Esports News](#)
- 👉 [Esports Podcast](#)
- 👉 [Esportz Network](#)
- 👉 [Krieg](#)
- 👉 [Rohan Samal](#)
- 👉 [SG 553](#)
- 👉 [StarLadder](#)
- 👉 [StarLadder Berlin Major](#)

CS:GO

A guide to IEM Global Challeng...

CULTURE

Three Mobile Esports to get in...

CALL OF DUTY

Call of Duty: Mobile introduction...

[Previous Posts](#)

[The 2019 Esports Awards winners](#)

[Next Posts](#)

[The Meteoric rise of Brehze](#)

LEAVE A REPLY

You must be **logged in** to post a comment.

[Privacy](#) - [Terms](#)

SG induction in ischemia-induced neuronal death

Stress granule induction after brain ischemia is independent of eukaryotic translation initiation factor (eIF) 2 α phosphorylation and is correlated with a decrease in eIF4B and eIF4E proteins

María Irene Ayuso ^{1*}, Emma Martínez-Alonso ¹, Ignacio Regidor ², Alberto Alcázar ^{1*}

From the ¹Department of Investigation and ²Neurophysiology, Hospital Ramón y Cajal, IRYCIS, Madrid, Spain

Running title: *SG induction in ischemia-induced neuronal death*

* To whom correspondence should be addressed: Dr. Alberto Alcázar: Dept. Investigación, Hospital Ramon y Cajal, Ctra. Colmenar km 9.1, E-28034 Madrid, Spain; e-mail: alberto.alcazar@hrc.es. Dr. María I. Ayuso: Neurovascular Research Group, Instituto de Biomedicina de Sevilla, Av. Manuel Siurot s/n, E-41013 Sevilla, Spain; e-mail: mayuso-ibis@us.es

Keywords: brain, ischemia, eukaryotic initiation factor 4B (eIF4B), eukaryotic initiation factor 4E (eIF4E), hippocampus, cell death, stress granule, translation initiation, translation regulation

ABSTRACT

Stress granules (SGs) are cytoplasmic ribonucleoprotein aggregates that are directly connected with the translation-initiation arrest response to cellular stresses. Translation inhibition

protein eIF4E and the eIF4B, suggesting that remodeling of the eIF4F complex was required for SG formation. Finally, pharmacological protection of CA1 ischemic neurons with cycloheximide decreased the formation of SGs and restored eIF4E

(TI) is observed in transient brain ischemia, condition which induces persistent TI even after reperfusion, i.e., when blood flow is restored, and causes delayed neuronal death (DND) in selective vulnerable regions. We previously described a connection between TI and DND in the hippocampal *cornu ammonis* 1 (CA1) in an animal model of transient brain ischemia. To link the formation of SGs to TI and DND after brain ischemia, we investigated SG induction in brain regions with differential vulnerabilities to ischemia–reperfusion (IR) in this animal model. SG formation is triggered by both eukaryotic translation initiation factor (eIF) 2 α phosphorylation and eIF4F complex dysfunction. We analyzed SGs by immunofluorescent colocalization of granule-associated protein TIA-1 with eIF3b, eIF4E and ribosomal protein S6, and studied eIF2 and eIF4F complex. The results showed that IR stress induced SG formation in the CA1 region after 3-day reperfusion, consistent with TI and DND in CA1. SGs were formed independently of eIF2 α phosphorylation, and their appearance was correlated with a decrease in the levels of eIF4F compounds, the cap-binding

and eIF4B levels in CA1. These findings link changes in eIF4B and eIF4E to SG induction in regions vulnerable to death after IR.

INTRODUCTION

Stress granules (SGs)¹ are cytoplasmic aggregates composed of stalled translation preinitiation complexes. SG formation is induced under stress conditions that are known to inhibit translation initiation such as oxidative stress, heat shock, viral infection or inhibition of the proteasome (1-3). The SGs contain components of translationally silent preinitiation complexes that includes the small ribosomal subunit (40S), early translation initiation factors eIF3, eIF4A, eIF4E, eIF4G, and poly(A) binding protein 1 (PABP1); as well as several RNA-binding proteins resulting in an accumulation of untranslated messenger ribonucleoproteins (mRNPs) (4,5). Notably, these mRNPs specifically contain aggregation-prone proteins, such as T-cell internal antigen-1 (TIA-1), TIA-1-related protein (TIAR) or G3BP, that nucleate the assembly of SGs (1,2). Under different stress conditions SG formation can be

triggered by: (i) phosphorylation of the α -subunit of eIF2 (eIF2 α) at Ser⁵¹ site (1,6); (ii) inhibition of ternary complex independently of eIF2 α phosphorylation by depleting eIF2 or preventing its association with Met-tRNA^{Met} (7); or (iii) interfering with the activity of eIF4F complex, like reductions in the levels of eIF4A, eIF4B, eIF4E or eIF4G (7-9). SGs are implicated in translation initiation regulation by sequestering the translational machinery, and have been proposed as mediators of a selective translational silencing to integrate the cellular response to stress (10).

Brain ischemia produces severe metabolic stress and cells respond with the inhibition of translation. When brain reperfusion is initiated after ischemia and energy metabolism is restored, translation arrest persists in the ischemia-affected areas, although translational rates are restored later in resilient regions of the brain (11,12). However, translation inhibition persists in selective areas, mainly in the regions of penumbra in focal ischemia, and in the hippocampal *cornu ammonis* 1 (CA1) region in global ischemia (13-15). In these vulnerable regions, neuronal degeneration known as delayed neuronal death occurs (16-18). Thus, persistent translation inhibition strictly

delayed neuronal death after IR stress. Our aim was to study SG formation at later reperfusion following global brain ischemia, comparing the vulnerable hippocampal CA1 region with two ischemia-resistant brain regions, the cerebral cortex and hippocampal CA3 region. Additionally, we studied the mechanisms of SG formation under IR stress. Our results showed the induction of SGs specifically in the reperfused CA1 region, in relationship with translational arrest; and indeed both results correlated with neuronal death (20). We propose that SG formation is triggered by remodeling eIF4F complex components after IR stress, specifically the decrease of the expression of eIF4B –the eIF4A activating protein–, along with the decrease in the levels of the cap-binding protein eIF4E. Furthermore, pharmacological-induced protection of ischemic neurons decreased the number of SGs and restored the levels of eIF4E and eIF4B in the CA1 region. Results that were in accordance with translation recovery and neuronal survival previously described (20).

RESULTS

Specific induction of SGs in the hippocampal cornu ammonis 1 region after ischemia-

thus, persistent translation inhibition strictly correlates with delayed neuronal death in vulnerable neurons at later reperfusion following both focal and global ischemia (13-15,19,20).

It is well known that protein synthesis is blocked at the translation initiation stage during ischemia–reperfusion (IR) (19,21). Given that IR induces stress response, the expression of stress proteins will be selectively regulated and SG formation, as pivotal RNA granules in the response to cell stress, should have an important role in this pathology. The sequestration of ribosomes in insoluble protein aggregates during reperfusion after global and focal brain IR in the course of translation arrest it has been reported (22,23). In addition, sequestration of polyadenylated mRNAs in granular structures (mRNA granules) in neurons following IR has been described (24). They, like protein aggregates, were formed reversibly in surviving neurons and irreversibly in dying neurons (24). It has been proposed that these aggregates may be a potential cause of the lack of recovery of normal protein synthesis in reperfused CA1 (19). However, to date, it has not been observed a specific induction of SGs in vulnerable neurons, in addition to translation arrest and

reperfusion

Given that SGs are closely related to translation inhibition, we decided to study whether there was a differential induction of SGs between the vulnerable CA1 region and the resilient brain regions, cerebral cortex and hippocampal CA3 region. The study was performed at 3 days of reperfusion after ischemia (R3d), when we have previously described that delayed neuronal death occurs in correlation with translation inhibition in vulnerable regions (20). The study was performed by double immunofluorescence staining for classical SG markers: eIF3b, eIF4E, S6 and TIA-1 (2,5).

First, we examined the b-subunit of eIF3 (eIF3b) and TIA-1 double labeling. TIA-1 is a nuclear protein that translocates to the cytoplasm and forms punctate aggregates distinctive for SGs; and eIF3 is a component of preinitiation complex and a robust and specific marker for SGs (2,4,5). In the SHC3d control, a diffuse signal for eIF3b was located in the cytoplasm and nucleus of the cortical and hippocampal regions; TIA-1 was mainly localized in the nucleus of the cortical and hippocampal regions (Figure 1A, SHC3d control

panels). The merged images showed colocalization of eIF3b/TIA-1 in punctate aggregates in the cytoplasm specific for SGs (Figure 1A, arrows). R3d induced a significant increase in the number of cells with eIF3b/TIA-1 colocalizing into SGs in the CA1 region (Figure 1), whereas no significant changes were found in the cortex and CA3 regions induced by IR stress. The number of cells harboring SGs in the CA1 R7d group was greater than in the CA1 R3d group (Figure 1B).

Furthermore, we analyzed the colocalization of eIF4E and TIA-1 by double labeling. eIF4E is a initiation factor that is part of the SG core (2,4,5). In the SHC3d control, eIF4E was primarily located in the cytoplasm of both cortical and hippocampal regions (Figure 2A, SHC3d panels). The merged images showed colocalization of eIF4E/TIA-1 in punctate aggregates in the cytoplasm specific for SGs (Figure 2A, arrows). The analysis of eIF4E/TIA colocalization into SGs confirmed a significant induction of SGs in R3d in the CA1 region compared with the control situation, whereas induction of SGs was not found in the cortex nor in the CA3 region (Figure 2). The number of cells with SGs in the CA1 of R7d group was higher compared with the R3d group (Figure

more SGs estimated with S6/TIA-1 colocalization in the cerebral cortex and hippocampal CA3 in R3d (Figure 3). This may be due to a different antigen recognition by the antibodies used or epitope overlapping in the SG complex; although, the fact that this result reveals a different stage of the SGs should not be discarded. In summary, IR stress induced SG formation specifically in the CA1 region after R3d, which was even more noticeable at 7 days after reperfusion.

Polysome dissociation in the hippocampal cornu ammonis 1 region after ischemia-reperfusion

Ischemia-induced translation arrest persists after ischemic reperfusion in the vulnerable CA1 region in global ischemia (15,19). Since ribosome sedimentation profiles showing polysome dissociation are specific indicators of translation initiation inhibition (8,15,20,25), we analyzed polysome profiles in this CA1 region. And then, the polysome/80S species ratio was also calculated (Figure 4). In this figure, we show comparison between SHC3d and R3d, data of the latter condition included in our previous study (20). Comparison between R3d and control condition showed a polysome/80S ratio significantly lower

the higher compared with the control group (Figure 2B).

Translation preinitiation complex components are the core constituents of SGs, which include small (40S) but not large (60S) ribosomal subunits (2,4,5). Subsequently, we studied the colocalization of TIA-1 and S6, as a ribosomal small subunit marker, to characterize SGs (2). In the SHC3d control, S6 was localized in the cytoplasm of the cortical and hippocampal regions (Figure 3A, SHC3d panels). The merged images showed colocalization of S6/TIA-1 in punctate aggregates in the cytoplasm specific for SGs (Figure 3A, arrows). The S6/TIA-1 double staining analysis into SGs showed a significant increase of SGs in R3d in the CA1 region compared with the control condition (Figure 3B). Although there was an increase in the SGs assessed with S6 and TIA-1 in the cortex and in the CA3 regions at R3d (being the number of cells with these SGs similar in the CA1 and CA3), the increase with respect to the control was much lower than in the CA1, and it was not significant (Figure 3B).

The relative SG values based on colocalization with translation initiation factors and TIA-1 were similar (Figure 1 and 2). However, there were

shown a polysomalous state significantly lower in R3d (0.51 ± 0.04 for R3d (20), and 0.79 ± 0.01 for control; $p = 0.0019$). Therefore, significant polysome dissociation occurred in the CA1 region during R3d. Additionally, the peak for the 40S ribosomal subunit was lower in R3d group than in the control group.

SG induction in the CA1 region precedes to neuronal death

Persistent translation inhibition, as we demonstrated here and in our previous study (20), correlates with neuronal death in CA1 neurons at later reperfusion following global ischemia (13-15,19,20). The SG induction in the CA1 region at R3d described above, led us to study the timing between SG formation and neuronal death induction in CA1. We carried out a set of ischemic animals with 1 day, 2, 2.5, 3 and 7 days of reperfusion, and studied eIF4E/TIA-1 colocalization for SG evaluation (see above) and apoptotic neuronal death by TUNEL assay (20). The timing of SG and apoptotic neuronal death induction in CA1 is showed in Figure 5. Interestingly, SG induction was found at R2d, whereas the neuronal death was observed later,

starting at R2.5d (Figure 5A). Thus, the number of cells harboring SGs was significant at R2d, compared to the presence of apoptotic neurons, which were scarce (Figure 5C).

SG formation was observed in intact and whole neuronal cells but not in apoptotic cells (Figures 1-3A and 5A); result that was demonstrated by co-labeling the cells with eIF4E/TIA-1 and TUNEL, co-labeling that was not detected (Figure 5B).

The number of cells harboring SGs between R2.5d and R7d was lower than that of the TUNEL-positive cells, apoptotic cells that were markedly increased from R2.5d to R7d in the CA1 region (Figure 5C). While TUNEL-positive apoptotic cells are an end stage, SG formation in viable cell could be a transitory stage (Figure 5A-B); accordingly, and interestingly, when the number of cells harboring SGs was aggregated to each time interval, a very significant correlation with the number of apoptotic cells was found ($r = 0.9844$ Pearson coefficient; $p < 0.005$) (Figure 5C). Moreover, when the data of the number of cells with SGs or with TUNEL label were expressed as a percentage (in relation to total viable cells or total nuclei, respectively), both values were coincident –with the exception of R2d– and strictly

Concerning eIF2B and eIF5, there were no significant differences in these factors when compared with the controls, nor between the cerebral cortex and CA1 region (Figure 6B). Thus, interestingly, SG formation induced by R3d in the CA1 region was independent from eIF2 α or eIF2B ϵ phosphorylation or changes in eIF2, eIF2B or eIF5 levels.

Ischemia-reperfusion stress decreases levels of eIF4B and eIF4E in the hippocampal cornu ammonis 1 region

The eIF4F is a heterotrimer that contains the cap-binding protein eIF4E, the RNA helicase eIF4A, and the scaffolding protein eIF4G (26). In turn, eIF4A activity is directly dependent on the activity of eIF4B, which makes the helicase complex fully functional (27). Reduction in the levels of eIF4A, eIF4B, eIF4E or eIF4G induced by stress can trigger SG formation (7-9). In order to study if these initiation factors are implicated in the induction of SGs by IR stress, we analyzed their levels by western blotting using specific antibodies. The results showed that there was a significant decrease in eIF4B levels in the CA1 region at R3d in comparison with the control level

correlated ($r = 0.9920$ Pearson coefficient; $p < 0.001$) (Figure 5D).

SG formation was independent of eIF2 activity

The formation of SGs by stress conditions, for example, IR stress, can be triggered by ternary complex inhibition, which may in turn be induced by eIF2 α phosphorylation or depletion of eIF2 (1,6,7). Given that R3d induced a significant SG formation in the CA1 region, we studied the levels and phosphorylation of eIF2 α and the eIF2-regulators eIF2B and eIF5. We analyzed these initiation factors by western blotting using phospho-specific- and pan-antibodies.

eIF2 α levels and eIF2 α phosphorylation were detected and quantified in R1d, R2d, R3d and SHC3d control, and no significant differences were found when compared with the control, or between the cerebral cortex and CA1 region (Figure 6A). The increase of eIF2 α phosphorylation at 30 min of reperfusion (R30) after ischemia, is shown as control for induced eIF2 α phosphorylation (Figure 6A, C R30 and CA1 R30, inserts).

region at R3d in comparison with the control level (Figure 7A). In contrast, no significant changes in eIF4A or eIF4G levels were found in the R3d group, when compared with the control group in the hippocampal CA1 region or cerebral cortex (Figure 7A). In addition, we analyzed the eIF4B phosphorylation levels at the regulated Ser⁴²² site (28) by western blotting using a phospho-specific antibody. The phosphorylation levels were residual, and no significant changes were found in the R3d group when compared with the control, nor between the cerebral cortex and hippocampal CA1 region (data not shown).

We performed an immunohistochemical analysis to confirm the decreased levels of eIF4B found in the CA1 region at R3d, labeling eIF4B with fluorescent secondary antibody (Figure 7B, images). Quantification of fluorescence intensity of labeled eIF4B showed a decrease in protein levels of eIF4B in CA1 R3d (Figure 7B). This decrease was significant in comparison with the control or with the cerebral cortex or hippocampal CA3 region, confirming the results of the immunoblot studies.

R3d induced a significant decrease in eIF4E levels in the CA1 region. This decrease was also

significant when compared with that in the cerebral cortex (Figure 8A, eIF4E). Furthermore, we analyzed the eIF4E phosphorylation at regulated Ser²⁰⁹ site (29) by western blotting using phospho-specific antibody. No significant changes in eIF4E phosphorylation were found in the R3d group compared with the control, nor between the cerebral cortex and CA1 region (Figure 8A, phospho-eIF4E, p-Ser209). To confirm the decreased levels of eIF4E found in the CA1 region at R3d, we quantified the intensity of eIF4E labeled with fluorescent secondary antibody in Figure 2 (eIF4E images). A decrease in protein levels of eIF4E was demonstrated by quantification of its lower fluorescence intensity in CA1 R3d (Figure 8B). This decrease was significant in comparison with the control, and with the cerebral cortex and hippocampal CA3 region, mirroring the results of the immunoblot studies. In conclusion, IR stress during R3d decreased eIF4B and eIF4E levels in the hippocampal CA1 region concurrent with the induction of SGs.

Cycloheximide treatment inhibits SG induction in the hippocampal cornu ammonis 1 region after

eIF4E and eIF4B in samples from the CA1 region in CHX-treated animals in the R3d group. CHX induced a significant increase in the levels of eIF4E and eIF4B when compared with CA1 R3d from untreated animals, or with the SHC3d control group (Figure 9D and 9E). Interestingly, when we quantified the fluorescence intensity of eIF4E labeled in Figure 9A (eIF4E images), the results showed that eIF4E returns to control levels in the CHX-treated R3d group in the CA1 region (Figure 10A). Similarly, we performed an immunohistochemical analysis labeling eIF4B with fluorescent secondary antibody (Figure 10B, images), and quantified the fluorescence intensity of the eIF4B labeled. The results showed that eIF4B reached control levels in the CHX-treated R3d group in the CA1 region (Figure 10B). Thus, these immunofluorescence studies confirmed the results from the immunoblot analysis (Figure 9D and 9E). All of these results were opposite to those described above in R3d untreated animals, which had SG induction and lower levels of eIF4E and eIF4B in the CA1 region. This situation was reversed reaching control conditions by treatment with CHX. In addition, both SG formation inhibition and the increased levels of eIF4E and

ischemia-reperfusion

Cycloheximide has been previously described by our group and others groups as a neuroprotective agent in ischemia models (20,30,31). Moreover, CHX is known as a SG assembly inhibitor in cell lines (5). We treated animals with an adequate dose of CHX to induce neuroprotection (20) and studied its effect on SG formation after IR in the brain regions. The effect of CHX was detected by immunofluorescence analysis for SG markers. eIF4E/TIA-1 colocalization in brain sections from CHX-treated animals revealed a decreased colocalization in the cytoplasm (Figure 9A, arrows). The decrease in SG formation was evident in the cerebral cortex and CA1 regions (Figure 9A), as well as in the CA3 region (not shown). Quantification of the number of cells harboring SGs in the CHX-treated R3d group showed a significant decrease with respect to untreated R3d animals in all studied regions (Figure 9B). Similar results were found using eIF3b/TIA-1 colocalization for SG identification and quantification (Figure 9C). These results demonstrated that CHX treatment inhibited SG formation after R3d. We studied the levels of

eIF4B, induced by CHX (this paper), correlated with neuronal apoptosis inhibition and increased translational rates in the CA1 of ischemic CHX-treated animals (20).

DISCUSSION

We investigated the formation of SGs in three brain regions with differential vulnerabilities to IR stress. We found that: (i) IR stress induced SG formation specifically in the CA1 region at later reperfusion (R3d) in an animal model of global brain ischemia; (ii) SG formation strictly correlated with the inhibition of translation initiation; (iii) the induction of SGs in this region occurred independently of eIF2 inhibition by eIF2 α phosphorylation or changes in eIF2B; (iv) SG formation was in accordance with a decrease in the expression of the cap-binding protein eIF4E and the eIF4B factor; and (v) pharmacological protection of ischemic animals with CHX decreased the number of SGs in the CA1 upon long-term reperfusion after ischemia, and prevented the decrease in eIF4E and eIF4B levels.

The finding of SG induction in the CA1 region at later reperfusion following brain

ischemia, is the first one to provide consistent data concerning the characterization of the presence and composition of SGs in terms of initiation factors of the translation after IR. The induction of SGs in CA1 neurons after IR was in agreement with our previous studies that described the selective neuronal death in the CA1 region (20). Moreover, CHX treatment at a concentration that shown to be neuroprotective in this CA1 region (20) prevented SG formation.

SGs are induced in response to stress conditions known to inhibit translation initiation (6). During long-term reperfusion after ischemia (R3d), protein synthesis initiation remains inhibited in the CA1 region, as demonstrated here with polysome profiles, and in our previous study (20). In the CA1 polysome profile, the peak for the 40S ribosomal subunit was lower in the R3d group than in the control SHC3d group; suggesting the movement of small ribosomal subunits into induced SGs in the neuronal cells of this region, as described in other experimental models (7,32).

The sequestration of the translational machinery in SGs is considered a form of protection to stress in cells, reprogramming the mRNA metabolism to repair the stress-induced

was identified (19,36). The irreversible inhibition of protein synthesis is considered a hallmark of delayed cell death after ischemia (13,15). Thus, these events, sequentially or cooperatively, may result in irreparable damage to the protein synthesis machinery, and be related to delayed neuronal death after brain ischemia.

Regarding the mechanism of SG formation in the CA1 region under IR stress, we found that the induction of SGs occurred without an increase in eIF2 α phosphorylation levels, or eIF2 depletion. It is established that eIF2 α phosphorylation occurs rapidly with reperfusion following ischemia, representing a "classical stress response", but this induction is transient, and post-ischemic neurons have the phospho-eIF2 α dephosphorylated before delayed neuronal death (19). We and other have previously described the induction of eIF2 α phosphorylation in ischemic brains after 30 min (R30), 1 or 2 hours of reperfusion; and this phosphorylation returns to control values after 4 to 8 hours of reperfusion after global ischemia (24,37). Here, the induction of eIF2 α phosphorylation is shown at R30, demonstrating the no induction of eIF2 α phosphorylation with

damage and facilitate and promote survival (2,33). However, the presence of SGs in neurons has recently been linked to neurodegeneration, because SG formation could promote persistent pathological protein aggregates that would interfere with the normal function of the cell, leading to cell death (34). Herein, the specific induction of SGs in the CA1 region at later reperfusion after ischemia, a stress situation which induces a persistent translation inhibition, is convergent with delayed neuronal death in this region (20). This supports the notion that SG formation might play an important role in IR stress and may be linked to neuronal death. Studies in other models of global and focal brain ischemia have shown persistent abnormal protein aggregates in the ischemia-vulnerable neurons destined to die after the ischemic insult (22,23). Although the increase of S6/TIA-1-containing SGs in CA1 neurons at later reperfusion after ischemia was reported, this result was found in dead neurons (35), and has not been confirmed in viable cells (24). Instead, the formation of mRNA granular structures orphaned from both ribosomal subunits—in contrast to SGs which contain the 40S subunit—

control levels between 1 and 3 days of reperfusion after ischemia; being this effect highlighted at R2d, when SG formation was first observed. Therefore, SG formation must be induced by a mechanism independent from this phosphorylation. Recent studies in cell lines have described new pathways independent from eIF2 α phosphorylation for SG induction. It has been reported that the decrease in the levels of eIF4B (7,9), or the breaking of the eIF4F association with the mRNA cap structure through eIF4E inactivation by 4E-BP1 (9,38,39), can lead to the formation of SGs. In our study, no changes were found in eIF4A nor eIF4G levels, ruling out their involvement in the mechanism of SG induction after IR stress. Our results showed a decrease in the levels of eIF4B, particularly in the CA1 region, which correlates with the presence of SGs. This suggests that eIF4B may participate as a SG inducer after IR.

Furthermore, our results showed that IR stress induces a decrease in eIF4E levels in the CA1 region correlated with the presence of SGs. The availability of eIF4E is critical for the proper control of cell functioning because it is a limiting step in translation initiation (26). A decreased

availability of free eIF4E in the cytoplasm can trigger SG formation (9,38,39).

eIF4E is a primary factor in the control of gene expression, and is regulated by the family of translational repressors named eIF4E-binding proteins (4E-BPs) (40). 4E-BPs compete with eIF4G and inhibit eIF4G binding to eIF4E, which in turn prevents eIF4F complex formation and inhibits cap-dependent translation (40,41). Among them, 4E-BP1 has been directly implicated in promoting the formation of selenite- and H₂O₂-induced SGs, through the enhancement of eIF4E/4EBP1 interaction (38,39). It has been shown that the decrease in eIF4E/eIF4G interaction induces SGs (9,38,39). 4E-BP2 is the predominant 4E-BP expressed in the brain. Firstly, we reported an increase in 4E-BP2/eIF4E association in the vulnerable CA1 region at R3d, which consequently reduces the availability of eIF4E (20). Additionally, we recently reported a decrease in the binding of 4E-BP2 to eIF4E, and an increase in eIF4E/eIF4G interaction in the cerebral cortex compared with CA1 at R3d (42).

In summary, these results suggest that a decrease in the levels of eIF4B accompanied by a lower availability of eIF4E (this paper) along with

association, and the rise of active eIF4E in the cytoplasm can contribute to inhibit SG formation in the CA1 region. Both of these effects, along with the increase in eIF4E and eIF4B levels – possibly due to the CHX-induced restored translation – should converge to form functional eIF4F complexes, leading to recovery of the cap-dependent translational levels, inhibition of SG formation, and a decrease in neuronal death in the CA1 region of ischemic animals.

The experimental evidence showed in this study, reveals that SG induction is started at R2d and correlates with delayed neuronal death from R2.5d, when apoptotic neuronal death begin in the vulnerable CA1 region. Therefore, it would be reasonable that SGs contribute to this neuronal death, instead of being a secondary effect of the injury after IR. SG formation is directly connected with translation initiation arrest (1,2), a situation which is previous to cell death in vulnerable regions after IR (13-15). Herein, the inhibition of SG formation induced by CHX treatment, a molecule that interferes in the translation machinery, demonstrates that translation regulation has a causal role on SG formation. In accordance with this after IR SG induction was detected in

an increase in 4E-BP2/eIF4E association (20), may directly promote the formation of SGs in the CA1 region after long-term reperfusion. Decreased levels of eIF4B and eIF4E are possibly due to the persistent translational arrest in this region. In a deleterious feedback loop, SG formation in addition to increased 4E-BP2/eIF4E complex, could reduce even more the availability of eIF4E, leading to translation arrest and cell collapse, inducing neuronal apoptosis, and driving delayed neuronal death in the CA1 region after IR stress.

Our previous results have shown that CHX treatment of ischemic animals decreases neuronal apoptosis induced by IR and induces a decrease in the 4E-BP2 bound to eIF4E during reperfusion in the CA1 neurons, in addition to the recovering of protein synthesis in this region (20). CHX has been described that disassembles SGs in cell lines after 1-2 h treatment (5). However, there is no data about this effect in CHX-treated animals or its effect after 3 days. In the present study CHX decreased SG formation after IR stress. The fact that CHX also has an effect on interfering 4E-BP2/eIF4E complex formation (20), suggests that the CHX-induced decrease in 4E-BP2/eIF4E

may also, with the CHX treatment, decrease in viable neuronal cells, i.e., with the translation machinery complete, and not in the damaged or degenerated –apoptotic– neurons characteristic of the CA1 region. Additionally, the fact that there was a proportional increase of neurons with SGs in the CA1 region, in a manner that corresponded to the increase in apoptotic neurons, could indicate the connection between SG occurrence and neuronal death induction. In this way, the presence of SGs in CA1 neurons could be shown as a transitory stage to apoptotic neuronal death. Thus, here in the protection of CA1 ischemic neurons induced by CHX, the number of cells with SGs was decreased. Furthermore, the presence of SGs in neurons has recently been linked to neurodegeneration because it has been described that the formation of pathological TIA-1-containing SGs could lead to cell death in neurodegenerative diseases (34,43). All of these findings support the hypothesis that prolonged periods of stress, e.g., a persistent translation inhibition in the CA1 region, could cause formation of stable and pathological SGs leading to neurodegeneration (43). It has been proposed that a prolonged concentration of proteins that

nucleate SG assembly containing an abundance of prion-like domains, i.e. TIA-1 (44), eventually leads to the formation of hyper-stable SGs refractory to disassembly, trapping essential mRNP factors to response after stress (45).

In conclusion, the present study, in combination with our previous work on the changes in 4E-BP2/eIF4E association following global brain ischemia (20), allow us to demonstrate that the formation of SGs induced by IR stress is correlated with inhibition of protein synthesis and delayed neuronal death following brain ischemia. In order to support this outcome, we show compelling experimental evidence that components of the translation initiation machinery, eIF4B and eIF4E, can mediate the mechanism of SG formation in vulnerable regions after ischemia. These findings provide a more complete understanding of the mechanisms underlying the inhibition of protein synthesis and delayed neuronal death under IR, offering the SGs as new targets for therapies aimed at the recovery of vulnerable cells in brain ischemia.

EXPERIMENTAL PROCEDURES

Materials

β -tubulin antibody (catalog number T5201) was from Sigma (Madrid, Spain). All general chemicals were purchased from Sigma unless stated otherwise.

Animal model of ischemia and ischemia-reperfusion

Transient global forebrain ischemia was induced in adult male Wistar rats (aged 10–12 weeks, from Charles River, L'Arbresle, France) by the standard four-vessel occlusion (4VO) model described previously (20,46). Both vertebral arteries were irreversibly occluded by electrocoagulation under anesthesia with a mixture of atropine, ketamine and diazepam (0.25, 62.5 and 5 mg/kg, respectively) delivered by intra-peritoneal injection. After 24 h, both common carotid arteries were occluded for 15 min by small atraumatic clips to induce ischemia, and then the clips were removed from the carotid arteries. After 30 min, 1 day, 2, 2.5, 3 or 7 days of reperfusion (R30, R1d, R2d, R2.5d, R3d or R7d, respectively), the animals were sacrificed. Sham control (SHC3d) animals were prepared in the same way as the R3d animals, but without carotid occlusion. In some experiments, animals were treated with 1.0 mg/kg

Rabbit polyclonal anti-eIF3b subunit (H-300; catalog number sc-28857) antibody; goat polyclonal anti-eIF4G1 (N-20; catalog number sc-9601), anti-TIA-1 (C-20; catalog number sc-1751), and anti-eIF4A1 (N-19; catalog number sc-14211) antibodies; and mouse monoclonal anti-eIF5 (A-3; catalog number sc-48419), and anti-eIF4B (D-4; catalog number sc-376062) antibodies were from Santa Cruz Biotechnology (Santa Cruz, USA). Mouse monoclonal anti-eIF4E antibody (catalog number 610269) was from BD Transduction Laboratories (Erembodegem, Belgium). Rabbit polyclonal anti-phospho-eIF2 α (Ser⁵¹) antibody (catalog number 44-728G) was from Biosource (Nivelles, Belgium). Mouse monoclonal anti-S6 ribosomal protein antibody (54D2; catalog number #2317), rabbit polyclonal anti-phospho-eIF4E (Ser²⁰⁹) (catalog number #9741), anti-eIF4B (catalog number #3592) and anti-eIF2B ϵ (catalog number #3595) antibodies were from Cell Signaling (Beverly, USA). Rabbit polyclonal anti-phospho-eIF2B ϵ (Ser⁵³⁹) antibody (catalog number ab4775) and mouse monoclonal anti-eIF2 α antibody (catalog number ab5369) were from Abcam (Cambridge, UK). Rabbit polyclonal anti-

experiments, animals were treated with 100 mg/kg cycloheximide (CHX), diluted in saline vehicle, administered by intraperitoneal injection 45 min before ischemia induction. The Ethics Committee of the Hospital Ramón y Cajal, Madrid, approved all the experiments. All procedures associated with animal experiments were in accordance with Spanish legislation (RD 53/2013), Directives of the European Union (2010/63/UE) and the ARRIVE (Animal Research: Reporting In Vivo Experiments) guidelines.

Sample preparation

Cerebral cortex and hippocampal CA1 region from control and ischemic animals were rapidly dissected out under a magnifying glass. The samples were homogenized 1:5 (w/v) with Buffer A (20 mM Tris-HCl, pH 7.5; 140 mM potassium chloride; 5 mM magnesium acetate; 1 mM dithiothreitol; 2 mM benzamidine; 1 mM EDTA; 2 mM EGTA; 10 μ g/ml pepstatin A, leupeptin and antipain; 20 mM sodium β -glycerophosphate; 20 mM sodium molybdate; 0.2 mM sodium orthovanadate) and centrifuged at 12,000 \times g for 15 min to obtain a postmitochondrial supernatant (PMS). All procedures were performed at 4 $^{\circ}$ C.

The PMS fraction corresponding to each animal was separately kept at -80°C until used, and protein concentrations were determined for each sample.

Western blot analysis

Samples of PMS (35 μg) from each different experimental condition were analyzed by SDS-PAGE, transferred onto PVDF membranes (GE Healthcare, Barcelona, Spain), and incubated overnight at 4°C with the primary antibody to the specific protein. The blots were incubated for 1 h with peroxidase-conjugated anti-mouse, anti-rabbit (both from GE Healthcare) or anti-goat (Santa Cruz Biotechnology) IgG, and developed with ECL reagent (GE Healthcare). The western blots were quantified using ImageQuant TL software (GE Healthcare). Internal standards (tubulin) were included to normalize the different immunoblots. Data were expressed in arbitrary units. Protein markers (range: 12–225 kDa) (GE Healthcare) were used to calculate the apparent molecular weight (MW).

Immunohistochemistry and confocal fluorescence microscopy

1 h at room temperature added sequentially. The secondary antibodies used were Alexa-488-conjugated donkey anti-rabbit IgG (Molecular Probes, Eugene, USA), rhodamine-Red-X-conjugated donkey anti-goat IgG (H+L) and fluorescein isothiocyanate (FITC)-conjugated or Cy5-conjugated donkey anti-mouse IgG (H+L) (Jackson ImmunoResearch Laboratories, West Grove, PA, USA). Preparations were mounted with coverslips in anti-fade solution containing Hoechst 33342, for nuclear staining and examined using an MRC-1024 confocal laser scanning microscope (Bio-Rad, Madrid, Spain) equipped with an Olympus IX70 inverted microscope. Samples were sequentially scanned in the green, red and blue channels controlled by LaserSharp software (Bio-Rad) with all acquisition settings kept constant for all images. Data acquisition was performed sequentially in order to avoid crosstalk between the emission spectra of the fluorochromes. Unrelated rabbit, goat and mouse antibodies were used to test background staining. The fluorescence intensity for eIF4E- and eIF4B-labelled cells was quantified in intact cells using LaserSharp software.

SG induction was assessed by counting the number

fluorescence microscopy

The animals were killed by transcardiac perfusion performed under deep anesthesia. Perfusion via the left ventricle was started with a washout of 200 ml 0.9% NaCl and the brains, following perfusion and fixing with 4% (w/v) paraformaldehyde solution in PBS, were removed and postfixed in the same solution overnight at 4 °C. Brains were washed sequentially with 10, 20 and 30% (w/v) saccharose in PBS, embedded in Tissue-Tek OCT (Sakura Finetek, Zoeterwoude, Netherlands) and frozen at -80 °C prior to cryostat sectioning. Brain coronal sections (10 µm thick) were prepared at the level of interaural $+5.7 \pm 0.2$ mm on Real Capillary Gap microscope slides (Dako, Barcelona, Spain). Brain sections containing the hippocampus were postfixed with 4% paraformaldehyde in PBS for 5 min, washed in PBS, and incubated in 10 mM sodium citrate (pH 6.0) at 95 °C for 3 min, cooled for 20 min and washed in PBS three times. Sections were incubated in a blocking solution (5% heat-inactivated donkey serum, 0.1% Triton X-100 in PBS) for 1 h at room temperature and were subsequently incubated with primary antibodies overnight at 4 °C, followed by specific fluorochrome-conjugated secondary antibodies for

20 min. The number of cells harboring SGs per field was assessed by counting the number of cells harboring SGs per field. Six fields from the hippocampal CA1 and CA3 or cortex regions (0.07 mm² each) from a given section were analyzed with confocal microscopy (100× objective). SGs were identified by three criteria: (i) eIF3b/TIA-1, eIF4E/TIA-1 and S6/TIA-1 colocalization in the green/red channels, respectively; (ii) colocalization showed in dense cytoplasmic punctate aggregates; and (iii) without nuclear localization. The images were digitized with LaserSharp software, and cells harboring ≥ 1 granule were counted in each field by two independent observers. The number of cells harboring SGs per field for a brain sample (animal) represented the average from three to four sections (18-24 fields).

Polysome profile analysis

PMS fractions from fresh cerebral cortex and hippocampal CA1 region were homogenized 1:2 (w/v) with Buffer A, containing 100 U/mL RNasin (RNase inhibitor, Promega, Madison, WI, USA) and 0.2 mg/mL heparin in diethyl-pyrocyanate-treated water; and were layered (45 µl, ~50 mg RNA) onto 4 ml 15–55% linear sucrose gradient containing 20 mM Tris-HCl, pH 7.6, 3 mM

magnesium acetate and 100 mM KCl, as described previously (20). Ultracentrifugation was performed in an SW60 rotor (Beckman, Madrid, Spain) at $164,000 \times g$ for 3 h. Gradient profiles were eluted from the top of the gradient using a density gradient fractionator and monitored at 254 nm with an online UV detector. The profiles were registered; peaks were quantified by valley-to-valley integration method shaping the baseline, and the ratio of polysomes/80S species calculated. The entire procedure was performed at 4 °C.

TUNEL assay

Apoptotic neurons within brain sections were detected using the terminal deoxynucleotidyl transferase-mediated dUTP Nick-End Labeling (TUNEL) assay (Promega, USA) as described in (20). After the labeling of nuclei with fluorescein-12-dUTP by terminal deoxynucleotidyl transferase reaction, brain sections were washed and then were mounted in anti-fade solution with glycerol-buffer containing p-phenylenediamine and 30 μ M bisbenzimidazole (Hoechst 33342) for nuclear staining. The hippocampal CA1 fields from a given section

were analyzed with confocal microscopy (40x objective) to count the number of apoptotic nuclei (green); total number of nuclei were observed by Hoechst staining (blue). The number of TUNEL-positive apoptotic neurons was blindly counted by two independent observers as described for SG counting (see above).

Statistical analysis

Different animals from each experimental condition or group were independently analyzed in duplicate, and their average values were used for statistical analysis. Data from 3–9 different animals were represented in arbitrary units and expressed as mean \pm SD. Statistical analysis was performed either using analysis of variance (ANOVA) following Newman–Keuls' or Bonferroni's post test, when ANOVA was significant, to compare the data between experimental groups or between selected pairs groups, respectively. Statistical significance was set at $p < 0.05$ using Prism statistical software (GraphPad Software, San Diego, CA, USA).

ACKNOWLEDGMENTS

This work was supported by the Institute of Health Carlos III (ISCIII) from the Spanish Ministry of Economy and Competitiveness and FEDER grants to AA (PI14/00705). We are indebted to Ms. M. Gómez-Calcerrada for her assistance.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest with the contents of this article.

AUTHOR CONTRIBUTIONS

AA conceived and designed the study. MIA and EMA did experiments. MIA, EMA, IR and AA analyzed the data. MIA and AA wrote the manuscript. All authors approved the final version of the manuscript.

REFERENCES

1. Anderson, P., and Kedersha, N. (2002) Stressful initiations. *J. Cell Sci.* **115**, 3227-3234
2. Anderson, P., and Kedersha, N. (2006) RNA granules. *J. Cell Biol.* **172**, 803-808
3. Mazroui, R., Di Marco, S., Kaufman, R. J., and Gallouzi, I.-E. (2007) Inhibition of the ubiquitin-proteasome system induces stress granule formation. *Mol. Biol. Cell* **18**, 2603-2618
4. Gonzalez, C. I., Wilusz, C. J., and Wilusz, J. (2007) The interface between mRNA turnover and translational control. in *Translational Control in Biology and Medicine* (Mathews, M. B., Sonenberg, N., and Hershey, J. W. B. eds.), Cold Spring Harbor Laboratory Press, New York. pp 719-745

5. Kedersha, N., and Anderson, P. (2007) Mammalian stress granules and processing bodies. *Methods Enzymol.* **431**, 61-81
6. Kedersha, N. L., Gupta, M., Li, W., Miller, I., and Anderson, P. (1999) RNA-binding proteins TIA-1 and TIAR link the phosphorylation of eIF-2 alpha to the assembly of mammalian stress granules. *J. Cell Biol.* **147**, 1431-1442
7. Mokas, S., Mills, J. R., Garreau, C., Fournier, M. J., Robert, F., Arya, P., Kaufman, R. J., Pelletier, J., and Mazroui, R. (2009) Uncoupling stress granule assembly and translation initiation inhibition. *Mol. Biol. Cell* **20**, 2673-2683
8. Dang, Y., Kedersha, N., Low, W. K., Romo, D., Gorospe, M., Kaufman, R., Anderson, P., and Liu, J. O. (2006) Eukaryotic initiation factor 2 α -independent pathway of stress granule induction by the natural product pateamine A. *J. Biol. Chem.* **281**, 32870-32878
9. Mazroui, R., Sukarieh, R., Bordeleau, M. E., Kaufman, R. J., Northcote, P., Tanaka, J., Gallouzi, I., and Pelletier, J. (2006) Inhibition of ribosome recruitment induces stress granule formation independently of eukaryotic initiation factor 2alpha phosphorylation. *Mol. Biol. Cell* **17**, 4212-4219
10. Anderson, P., and Kedersha, N. (2009) RNA granules: post-transcriptional and epigenetic modulators of gene expression. *Nat. Rev. Mol. Cell Biol.* **10**, 430-436
11. Hata, R., Maeda, K., Hermann, D., Mies, G., and Hossmann, K. A. (2000) Dynamics of regional brain metabolism and gene expression after middle cerebral artery occlusion in mice. *J. Cereb. Blood Flow Metab.* **20**, 306-315
12. Lipton, P. (1999) Ischemic cell death in brain neurons. *Physiol. Rev.* **79**, 1431-1568
13. Thilmann, R., Xie, Y., Kleihues, P., and Kiessling, M. (1986) Persistent inhibition of protein synthesis precedes delayed neuronal death in postischemic gerbil hippocampus. *Acta Neuropathol.* **71**, 88-93
14. Hermann, D. M., Kilic, E., Hata, R., Hossmann, K. A., and Mies, G. (2001) Relationship between metabolic dysfunctions, gene responses and delayed cell death after mild focal cerebral ischemia

- metabolic dysfunctions, gene responses and delayed cell death after mild focal cerebral ischemia in mice. *Neuroscience* **104**, 947-955
15. Hossmann, K. A. (2006) Pathophysiology and therapy of experimental stroke. *Cell. Mol. Neurobiol.* **26**, 1057-1083
 16. Kirino, T. (2000) Delayed neuronal death. *Neuropathology* **20**, S95-S97
 17. Harukuni, I., and Bhardwaj, A. (2006) Mechanisms of brain injury after global cerebral ischemia. *Neurol. Clin.* **24**, 1-21
 18. Pulsinelli, W. A., Brierley, J. B., and Plum, F. (1982) Temporal profile of neuronal damage in a model of transient forebrain ischemia. *Ann. Neurol.* **11**, 491-498
 19. DeGracia, D. J., Jamison, J. T., Szymanski, J. J., and Lewis, M. K. (2008) Translation arrest and ribonemics in post-ischemic brain: layers and layers of players. *J. Neurochem.* **106**, 2288-2301
 20. Ayuso, M. I., Martinez-Alonso, E., Cid, C., de Leciana, M. A., and Alcazar, A. (2013) The translational repressor eIF4E-binding protein 2 (4E-BP2) correlates with selective delayed neuronal death after ischemia. *J. Cereb. Blood Flow Metab.* **33**, 1173-1181
 21. White, B. C., Sullivan, J. M., DeGracia, D. J., O'Neil, B. J., Neumar, R. W., Grossman, L. I., Rafols, J. A., and Krause, G. S. (2000) Brain ischemia and reperfusion: molecular mechanisms of neuronal injury. *J. Neurol. Sci.* **179**, 1-33
 22. Liu, C. L., Ge, P., Zhang, F., and Hu, B. R. (2005) Co-translational protein aggregation after transient cerebral ischemia. *Neuroscience* **134**, 1273-1284
 23. Zhang, F., Liu, C. L., and Hu, B. R. (2006) Irreversible aggregation of protein synthesis machinery after focal brain ischemia. *J. Neurochem.* **98**, 102-112
 24. Jamison, J. T., Kayali, F., Rudolph, J., Marshall, M., Kimball, S. R., and DeGracia, D. J. (2008) Persistent redistribution of poly-adenylated mRNAs correlates with translation arrest and cell death following global brain ischemia and reperfusion. *Neuroscience* **154**, 504-520

25. Cooper, H. K., Zaleswska, T., Kawakami, S., Hossmann, K. A., and Kleihues, P. (1977) The effect-of ischaemia and recirculation on protein synthesis in the rat brain. *J. Neurochem.* **28**, 929-934
26. Pestova, T., Lorsch, J. R., and Hellen, C. U. T. (2007) The mechanism of translation initiation in eukaryotes. in *Translational Control in Biology and Medicine* (Mathews, M. B., Sonenberg, N., and Hershey, J. W. B. eds.), Cold Spring Harbor Laboratory Press, New York. pp 87-128
27. Rogers, G. W., Jr., Richter, N. J., Lima, W. F., and Merrick, W. C. (2001) Modulation of the helicase activity of eIF4A by eIF4B, eIF4H, and eIF4F. *J. Biol. Chem.* **276**, 30914-30922
28. Shahbazian, D., Roux, P. P., Mieulet, V., Cohen, M. S., Raught, B., Taunton, J., Hershey, J. W., Blenis, J., Pende, M., and Sonenberg, N. (2006) The mTOR/PI3K and MAPK pathways converge on eIF4B to control its phosphorylation and activity. *EMBO J.* **25**, 2781-2791
29. Raught, B., and Gingras, A. C. (2007) Signaling to translation initiation. in *Translational Control in Biology and Medicine* (Mathews, M. B., Sonenberg, N., and Hershey, J. W. B. eds.), Cold Spring Harbor Laboratory Press, New York. pp 369-400
30. Goto, K., Ishige, A., Sekiguchi, K., Iizuka, S., Sugimoto, A., Yuzurihara, M., Aburada, M., Hosoya, E., and Kogure, K. (1990) Effects of cycloheximide on delayed neuronal death in rat hippocampus. *Brain Res.* **534**, 299-302
31. Papas, S., Crepel, V., Hasboun, D., Jorquera, I., Chinestra, P., and Ben-Ari, Y. (1992) Cycloheximide reduces the effects of anoxic insult in vivo and in vitro. *Eur. J. Neurosci.* **4**, 758-765
32. Higashi, S., Kabuta, T., Nagai, Y., Tsuchiya, Y., Akiyama, H., and Wada, K. (2013) TDP-43 associates with stalled ribosomes and contributes to cell survival during cellular stress. *J. Neurochem.* **126**, 288-300
33. Anderson, P., and Kedersha, N. (2002) Visibly stressed: the role of eIF2, TIA-1, and stress granules in protein translation. *Cell Stress Chaperones* **7**, 213-221
34. Wolozin, B. (2012) Regulated protein aggregation: stress granules and neurodegeneration. *Mol*

35. DeGracia, D. J., Rudolph, J., Roberts, G. G., Rafols, J. A., and Wang, J. (2007) Convergence of stress granules and protein aggregates in hippocampal cornu ammonis 1 at later reperfusion following global brain ischemia. *Neuroscience* **146**, 562-572

36. Jamison, J. T., Szymanski, J. J., and DeGracia, D. J. (2011) Organelles do not colocalize with mRNA granules in post-ischemic neurons. *Neuroscience* **199**, 394-400

37. Martin de la Vega, C., Burda, J., and Salinas, M. (2001) Ischemia-induced inhibition of the initiation factor 2 α phosphatase activity in the rat brain. *NeuroReport* **12**, 1021-1025

38. Fujimura, K., Sasaki, A. T., and Anderson, P. (2012) Selenite targets eIF4E-binding protein-1 to inhibit translation initiation and induce the assembly of non-canonical stress granules. *Nucleic Acids Res.* **40**, 8099-8110

39. Emara, M. M., Fujimura, K., Sciaranghella, D., Ivanova, V., Ivanov, P., and Anderson, P. (2012) Hydrogen peroxide induces stress granule formation independent of eIF2 α phosphorylation. *Biochem. Biophys. Res. Commun.* **423**, 763-769

40. Rhoads, R. E. (2009) eIF4E: new family members, new binding partners, new roles. *J. Biol. Chem.* **284**, 16711-16715

41. Proud, C. G. (2007) Signalling to translation: how signal transduction pathways control the protein synthetic machinery. *Biochem. J.* **403**, 217-234

42. Ayuso, M. I., Martinez-Alonso, E., Salvador, N., Bonova, P., Regidor, I., and Alcazar, A. (2015) Dissociation of eIF4E-binding protein 2 (4E-BP2) from eIF4E independent of Thr37/Thr46 phosphorylation in the ischemic stress response. *PLoS One* **10**, e0121958

43. Wolozin, B., and Apicco, D. (2015) RNA binding proteins and the genesis of neurodegenerative diseases. *Adv. Exp. Med. Biol.* **822**, 11-15

44. Gilks, N., Kedersha, N., Ayodele, M., Shen, L., Stoecklin, G., Dember, L. M., and Anderson, P. (2004) Stress granule assembly is mediated by prion-like aggregation of TIA-1. *Mol. Biol. Cell* **15**, 5383-5398
45. Buchan, J. R. (2014) mRNP granules. Assembly, function, and connections with disease. *RNA Biol.* **11**, 1019-1030
46. Garcia-Bonilla, L., Cid, C., Alcazar, A., Burda, J., Ayuso, I., and Salinas, M. (2007) Regulation proteins of eukaryotic initiation factor 2-alpha subunit (eIF2a) phosphatase, under ischemic reperfusion and tolerance. *J. Neurochem.* **103**, 1368-1380

FOOT NOTES

¹ Abbreviations used: CA1, cornu ammonis 1; CA3, cornu ammonis 3; eIF, eukaryotic initiation factor; 4E-BP, eIF4E-binding protein; IR, ischemia-reperfusion; SHC, sham control animals; R3d, 3 days of reperfusion after ischemia; R7d, 7 days of reperfusion after ischemia; SG, stress granule; TIA-1, T-cell internal antigen-1; TIAR, TIA-1-related protein; CHX, cycloheximide; 4VO; four-vessel occlusion.

FIGURE LEGENDS

Figure 1. Identification of SGs by colocalization analysis of eIF3b and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.

(A) Brain sections of the cerebral cortex (C) or hippocampal CA1 or CA3 regions (CA1 and CA3, respectively) from control (SHC3d) and ischemic animals with 3- and 7-day reperfusion (R3d and R7d, respectively), were used for eIF3b and TIA-1 colocalization by confocal fluorescence microscopy for identification and quantification of the cells harboring SGs. eIF3b was labeled with Alexa 488 secondary antibody (in green) and TIA-1 was labeled with rhodamine-Red-X secondary antibody (in red). Green and red channels were merged and eIF3b/TIA-1 colocalization showed punctate aggregates in yellow as SGs (arrows). The dyed nuclei with Hoechst are shown in blue. This figure shows representative results from three to four different animals. Scale bar in μm . (B) The bar diagram represents the quantification of the number of cells harboring SGs per field (eIF3b/TIA-1 colocalization in ≥ 1 granule /cell). Bars represent the mean \pm SD of 3–4 independent animals analyzed. *** $p < 0.001$ and * $p < 0.05$, CA1 R7d and R3d compared with CA1 SHC3d; $^{\S}p < 0.05$, CA1 R7d compared with CA1 R3d.

Figure 2. Identification of SGs by colocalization analysis of eIF4E and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.

(A) Brain sections as in Figure 1 were used for eIF4E and TIA-1 colocalization by confocal fluorescence microscopy for identification and quantification of cells harboring SGs. eIF4E was labeled with FITC secondary antibody (in green) and TIA-1 was labeled (in red) as in Figure 1. eIF4E/TIA-1 colocalization showed punctate aggregates in yellow as SGs (arrows). The dyed nuclei with Hoechst are shown in blue. This figure shows representative results from three to four different animals. Scale bar in μm . (B) The bar diagram represents the quantification of the number of cells harboring SGs per field (eIF4E/TIA-1 colocalization in ≥ 1 granule /cell). Bars represent the mean \pm SD of 3–4 independent animals analyzed. *** $n < 0.001$ CA1 R7d and R3d compared with CA1 SHC3d; $^{\S}n < 0.05$ CA1 R7d compared with CA1

R3d.

Figure 3. Identification of SGs by colocalization analysis of S6 and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.

(A) Brain sections as in Figure 1 were used for S6 and TIA-1 colocalization by confocal fluorescence microscopy for identification and quantification of cells harboring SGs. S6 was visualized using FITC secondary antibody (in green) and TIA-1 was labeled (in red) as in Figure 1. S6/TIA-1 colocalization showed punctate aggregates in yellow as SGs (arrows), and the dyed nuclei with Hoechst are shown in blue. Figures show representative results from three to nine different animals. Scale bar in μm . (B) The bar diagram represents the quantification of the number of cells harboring SGs per field (S6/TIA-1 colocalization in ≥ 1 granule/cell). Bars represent the mean \pm SD of 3–9 independent animals analyzed. $*p < 0.05$, compared with SHC3d.

Figure 4. Polysome dissociation upon reperfusion in the hippocampal CA1 region.

Polysome profiles were obtained from samples of the hippocampal CA1 region (CA1) from control (SHC3d) and ischemic animals with 3 days reperfusion (R3d). The values are the ratio of polysome (P)/80S monosome species. Figures show representative results from three independent experiments. $**p < 0.01$, CA1 R3d compared with CA1 SHC3d, by *t* test.

Figure 5. SG induction in the CA1 region was preceding to neuronal death

(A) Brain sections of the hippocampal CA1 region from control (SHC3d) and ischemic animals with reperfusion for 1, 2, 2.5, 3 or 7 days (R1d, R2d, R2.5, R3d and R7d, respectively), were used for eIF4E (in green) and TIA-1 (in red) colocalization by confocal fluorescence microscopy for identification and quantification of the cells harboring SGs as in Figure 2. eIF4E/TIA-1 colocalization showed punctate aggregates in yellow as SGs (arrows). Adjacent brain sections were used for apoptosis detection by a

transferase-mediated dUTP nick-end labeling (TUNEL) assay (in green). Cell nuclei were stained with Hoechst 33342 dye (in blue, insets). The pictures show representative results from four different animals (SHC3d and R7d, not shown). Scale bar in μm . **(B)** Brain sections of CA1 R3d as in **(A)**, were co-labeled for eIF4E with Cy5 secondary antibody (in green), TIA-1 with rhodamine-Red-X secondary antibody (in red), and TUNEL assay (in light blue). No co-labeling between SGs (in yellow; arrows) and TUNEL was detected. **(C, D)** Quantification of cells harboring SGs (black line) or TUNEL-positive apoptotic cell nuclei (blue line) in CA1, were represented in number of cells per field **(C)**; or expressed as percentage of the total cell number **(D)**. In **(C, D)**, triangles, data were aggregated to each time interval. Data are indicated as mean \pm SD of 4 independent animals analyzed per group. ** $p < 0.01$, and *** $p < 0.001$, R2d, R2.5d, R3d or R7d compared with the control or R1d. Embedded graphs show their linear regression after logarithmic transformation.

Figure 6. Levels of eIF2 α , eIF2 α phosphorylation, eIF2B ϵ , eIF2B ϵ phosphorylation and eIF5 after IR.

(A) Samples of the cerebral cortex (C) or hippocampal CA1 region (CA1) from control (SHC3d) and ischemic animals with reperfusion for 30 min, 1, 2 or 3 days (R30, R1d, R2d and R3d, respectively) were subjected to SDS-PAGE and western blotting. The inserts show a representative western blot developed for anti-eIF2 α (eIF2 α) and anti-phospho-eIF2 α Ser⁵¹ (phospho-eIF2 α , eIF2 α p-Ser51) antibodies. **(B)** SHC3d and R3d samples of C or CA1 were subjected to SDS-PAGE and western blotting using anti-eIF2B ϵ (eIF2B ϵ), anti-phospho-eIF2B ϵ Ser⁵³⁵ (phospho-eIF2B ϵ , eIF2B ϵ p-Ser535), and anti-eIF5 (eIF5) antibodies. In **(A)** and **(B)**, bar graphs show the data of the quantification of translational factor levels; phospho-forms are quantified with respect to total levels of the protein (ratios). Data are from 3–7 different animals run in duplicate; error bars indicate SD. Comparisons were not significant ($p > 0.05$). The numbers to the right of the inserts indicate the apparent MW in kDa from protein markers.

Figure 7. Levels of eIF4C, eIF4A, and eIF4B after IR.

Figure 7. Levels of eIF4G, eIF4A and eIF4B after IR.

(A) Samples of the cerebral cortex (C) or hippocampal CA1 region (CA1) from control (SHC3d) and ischemic animals with 3-day reperfusion (R3d) were subjected to SDS-PAGE and western blotting with anti-eIF4G (eIF4G) and anti-eIF4A (eIF4A) antibodies, and anti-eIF4B (eIF4B) antibody #3592. Figures show representative results. Bar graphs show the quantification of translational factor levels from 4–7 different animals run in duplicate. Error bars indicate SD. * $p < 0.05$, CA1 R3d compared with CA1 SHC3d. The numbers to the right of the western blot figures indicate the apparent MW in kDa from protein markers. (B) Brain sections of the cerebral cortex (C) or hippocampal CA1 or CA3 regions (CA1 and CA3, respectively) from SHC3d and R3d were used for identification and quantification of eIF4B into cells. eIF4B was detected with anti-eIF4B antibody D-4 and labeled with FITC secondary antibody. Square images show representative results of eIF4B-labeled cells in C, CA1 or CA3. The bar graph shows the quantification of the intensity of fluorescence per cell of eIF4B labeled in brain sections. Bars represent the mean \pm SD of 4 independent animals analyzed. * $p < 0.05$, CA1 R3d compared with CA1 SHC3d; $^{\S}p < 0.05$, C or CA3 R3d compared with CA1 R3d. Lower magnified images (landscape images) show the decreasing of eIF4B label in CA1 R3d compared with SHC3d or CA3 R3d.

Figure 8. Levels of eIF4E and eIF4E phosphorylation at Ser²⁰⁹ site after IR.

(A) Samples as described in Figure 7 were subjected to SDS-PAGE and western blotting with anti-eIF4E (eIF4E) and anti-phospho-eIF4E Ser²⁰⁹ (phospho-eIF4E, eIF4E p-Ser209) antibodies. Figures show representative results. Bar graphs show the quantification of eIF4E levels from 6–8 different animals run in duplicate. Error bars indicate SD. ** $p < 0.01$, CA1 R3d compared with CA1 SHC3d; $^{\S}p < 0.05$, C R3d compared with CA1 R3d. The numbers to the right of the western blot figures indicate the apparent MW in kDa from protein markers. (B) The bar graph shows the quantification of the intensity of fluorescence per cell of eIF4E labeled in Figure 2 (eIF4E images). Error bars indicate SD. ** $p < 0.01$, CA1 R3d compared with CA1 SHC3d; $^{\S}p < 0.05$, C or CA3 R3d compared with CA1 R3d. Lower magnified images show the decreasing of eIF4E label in CA1 R3d compared with SHC3d or CA3 R3d.

Figure 9. Cycloheximide (CHX) treatment inhibits SG formation in the CA1 region after IR.

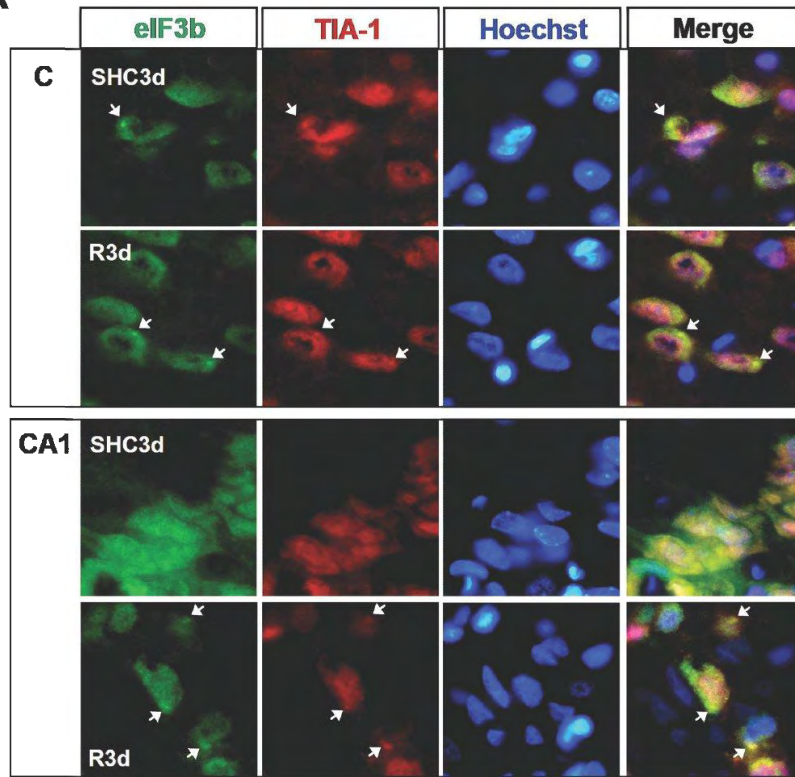
(A) Brain sections of the cerebral cortex (C) or hippocampal CA1 region (CA1) or CA3 region (images not shown) from untreated (vehicle) or treated animals (1 mg/kg CHX in vehicle) that underwent ischemia with 3 days reperfusion (R3d+VEH and R3d+CHX, respectively) were used for eIF4E and TIA-1 colocalization by confocal fluorescence microscopy, for identification and quantification of the cells harboring SGs as described in Figure 2. Figures show representative results from three to four different animals. Scale bar, 50 μ m. (B) The bar diagram represents quantification of cells harboring SGs per field (eIF4E/TIA-1 colocalization in ≥ 1 granule /cell). (C) The bar diagram represents quantification of the number of cells harboring SGs using eIF3b/TIA-1 colocalization as in Figure 1. In (B) and (C), bars represent the mean \pm SD of three to four independent animals analyzed. *** $p < 0.001$, and * $p < 0.05$, R3d+CHX compared with R3d+VEH. (D, E) CA1 samples from control (SHC3d), untreated (R3d+VEH) and treated (R3d+CHX) animals as in (A) were subjected to western blotting with anti-eIF4E (eIF4E) (D) or anti-eIF4B (eIF4B) (E) antibodies. Figures show representative results. Bar graphs show quantification of eIF4E or eIF4B levels from 3–8 different animals run in duplicate. Error bars indicate SD. * $p < 0.05$, CA1 R3d+VEH compared with CA1 SHC3d; [§] $p < 0.05$, CA1 R3d+CHX compared with CA1 R3d+VEH. The numbers to the right of the western blot figures indicate the apparent MW in kDa from protein markers.

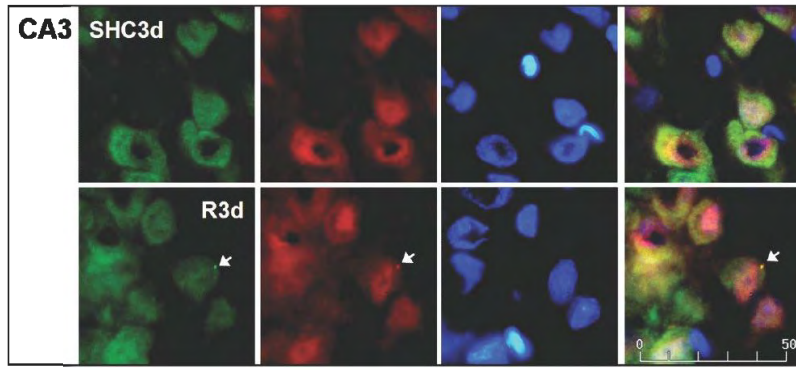
Figure 10. Cycloheximide (CHX) prevents the ischemia reperfusion (IR)-induced decrease of eIF4E and eIF4B in the CA1 region.

(A) The bar graph shows the quantification of the intensity of fluorescence per cell of eIF4E labeled in Figure 9A (eIF4E images). Lower magnified images show the increasing of eIF4E label in CA1 R3d+CHX compared with R3d+VEH (B) Brain sections of C CA1 or CA3 from R3d+VEH and

R3d+CHX as in Figure 9A, were used for identification and quantification of eIF4B into cells. eIF4B was labeled with FITC secondary antibody. Square images show representative results of eIF4B-labeled cells in C, CA1 or CA3. The bar graph shows the quantification of the intensity of fluorescence per cell of eIF4B labeled in brain sections. Lower magnified images (landscape images) show the increasing of eIF4B label in CA1 R3d+CHX compared with R3d+VEH. In **(A)** and **(B)**, bars represent the mean \pm SD of three to four different animals analyzed; data of eIF4E and eIF4B SHC3d controls were from Figure 8B and 7B, respectively. Comparisons were performed for each region. **p < 0.01, CA1 R3d+VEH compared with SHC3d or R3d+CHX.

A





B

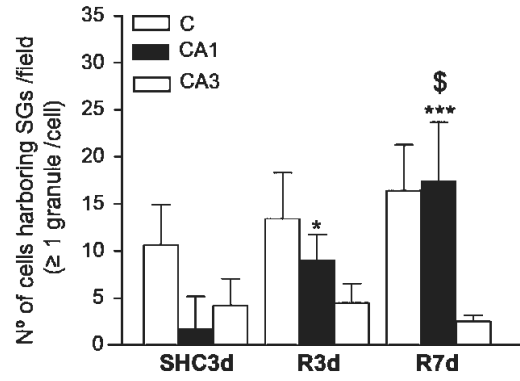
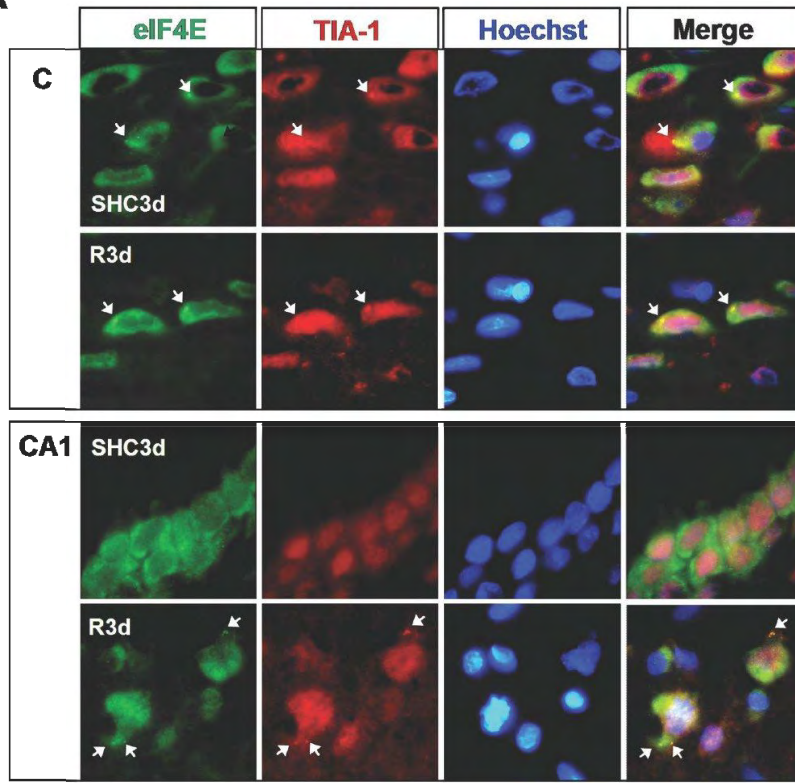
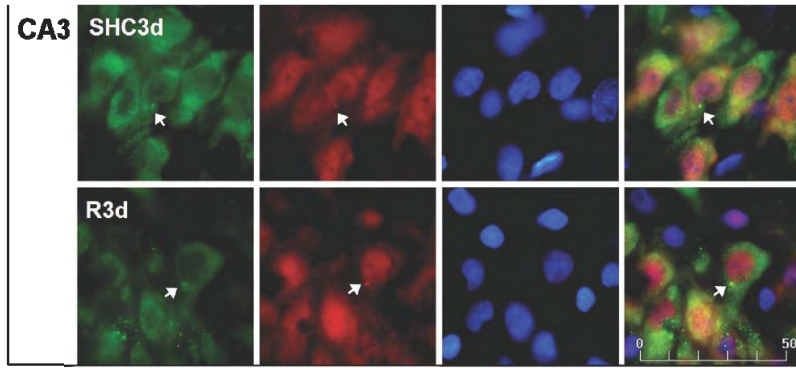


Figure 1. Identification of SGs by co-localization analysis of eIF3b and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.

A





B

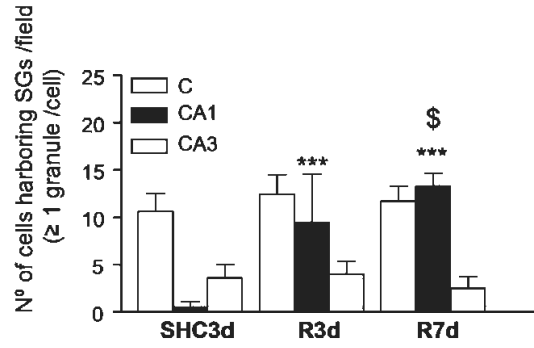
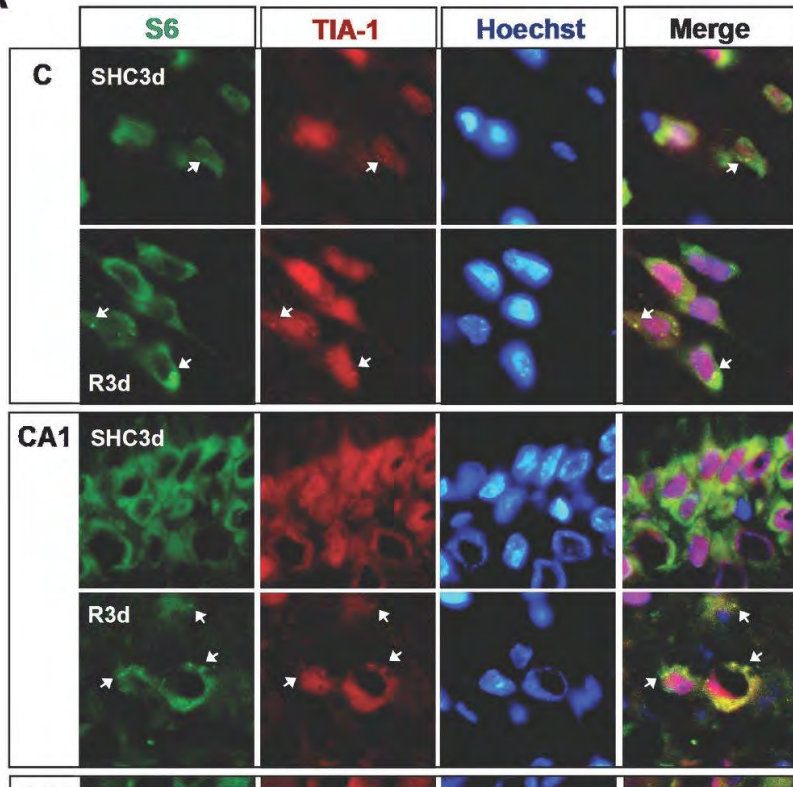


Figure 2. Identification of SGs by co-localization analysis of eIF4E and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.

A



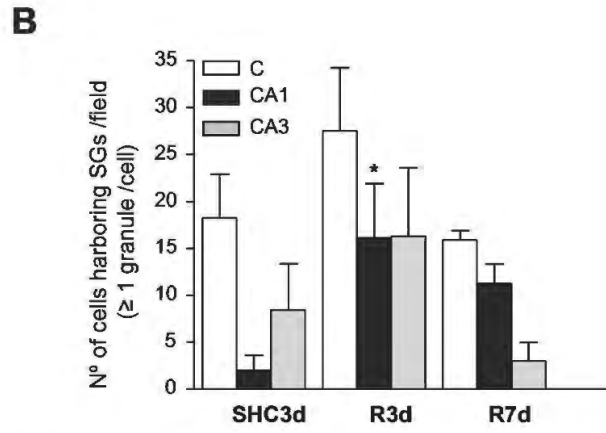
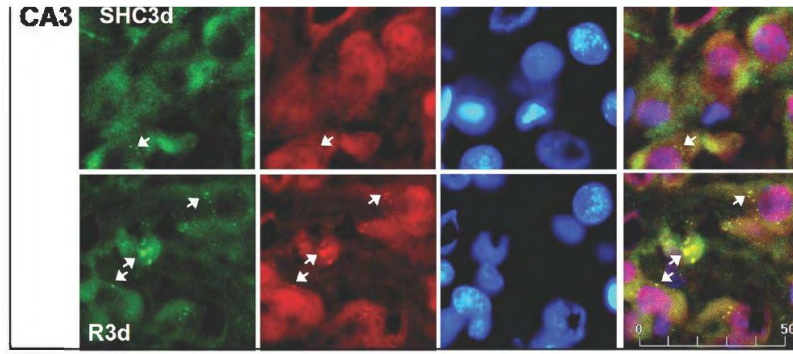
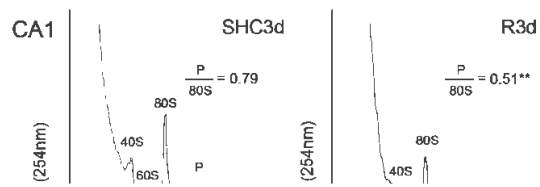


Figure 3. Identification of SGs by colocalization analysis of S6 and TIA-1 in the cerebral cortex and hippocampal CA1 and CA3 regions.



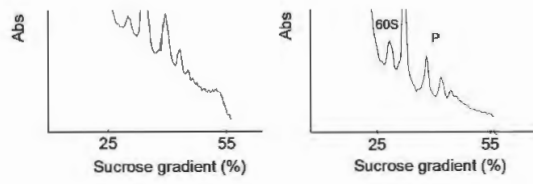
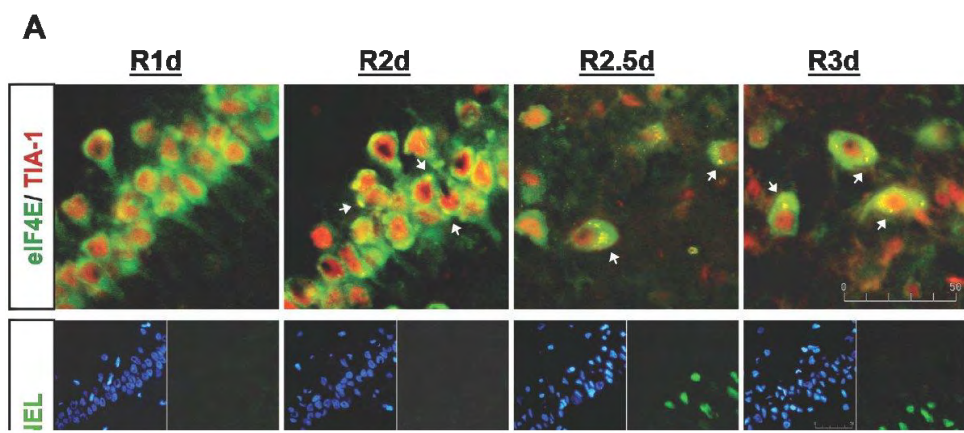


Figure 4. Polysome dissociation upon reperfusion in the hippocampal CA1 region.



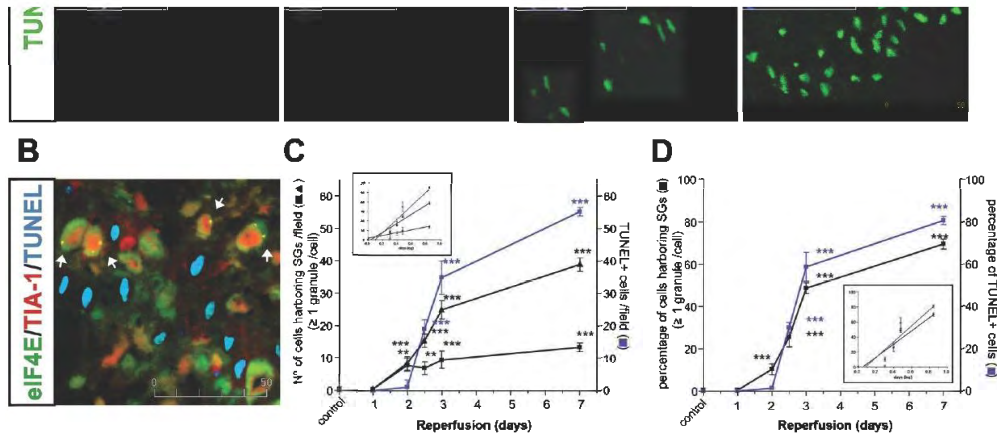
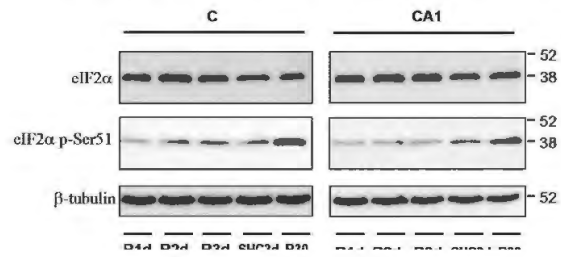
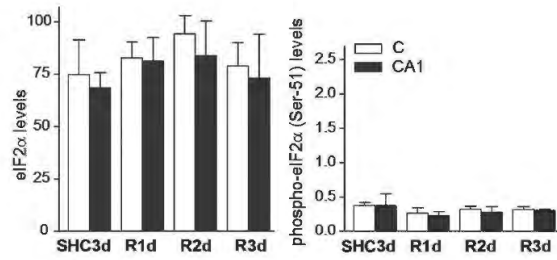


Figure 5. SG induction in the CA1 region was preceding to neuronal death.

A

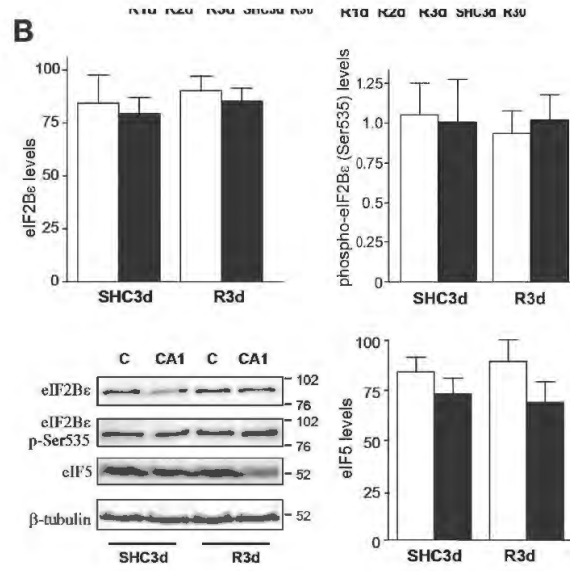
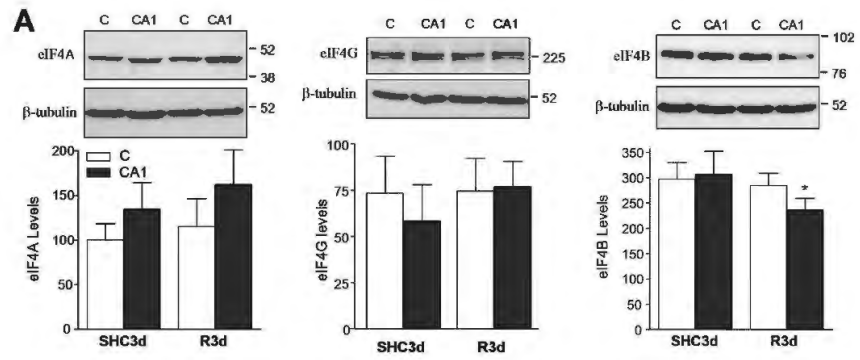


Figure 6. Levels of eIF2a, eIF2a phosphorylation, eIF2Be, eIF2Be phosphorylation and eIF5 after IR.



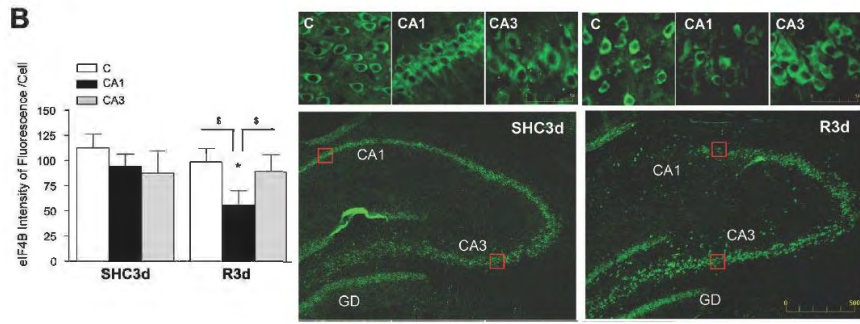
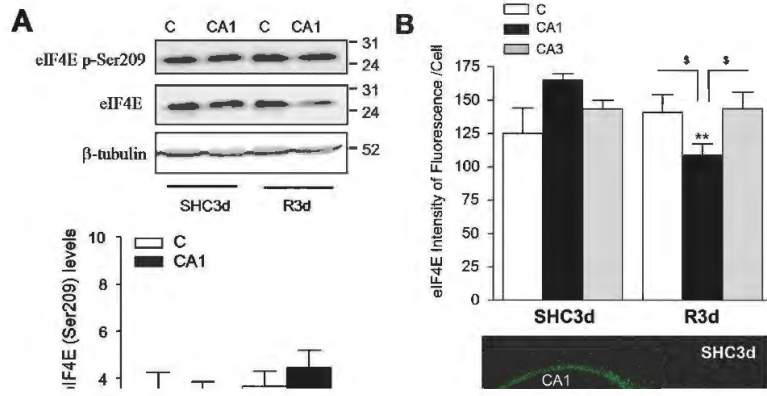


Figure 7. Levels of eIF4G, eIF4A and eIF4B after IR.



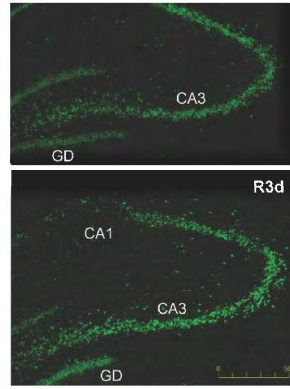
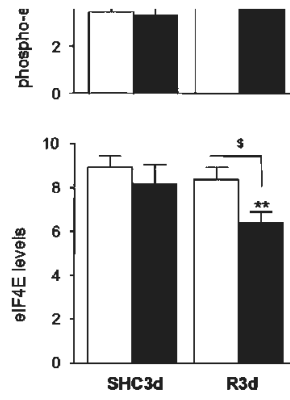


Figure 8. Levels of eIF4E and eIF4E phosphorylation at Ser209 site after IR.

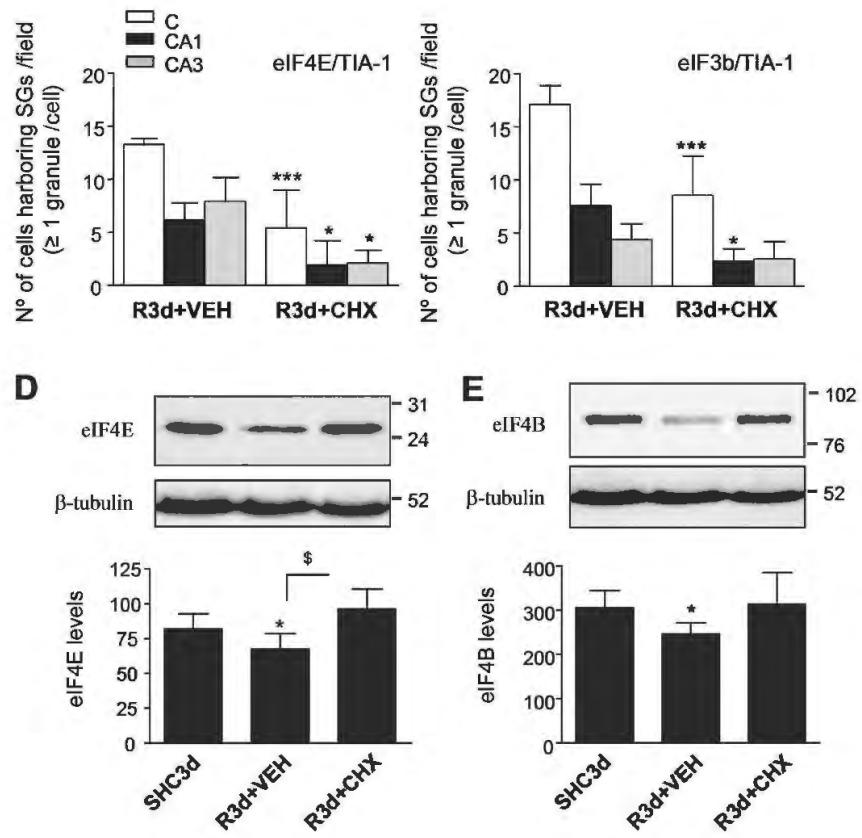
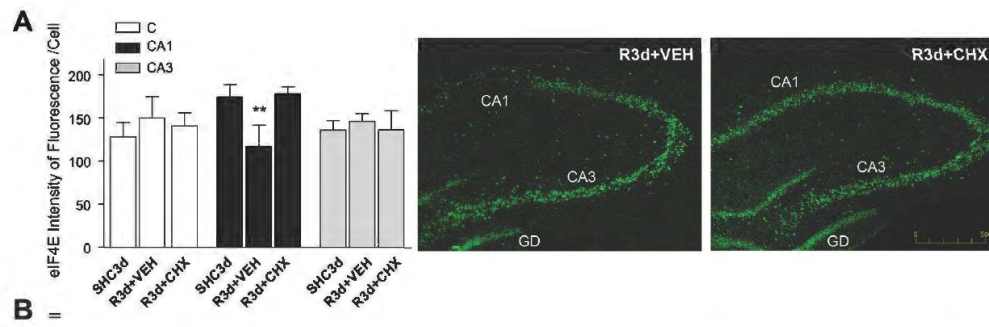


Figure 9. Cycloheximide (CHX) treatment inhibits SG formation in the CA1 region after IR.



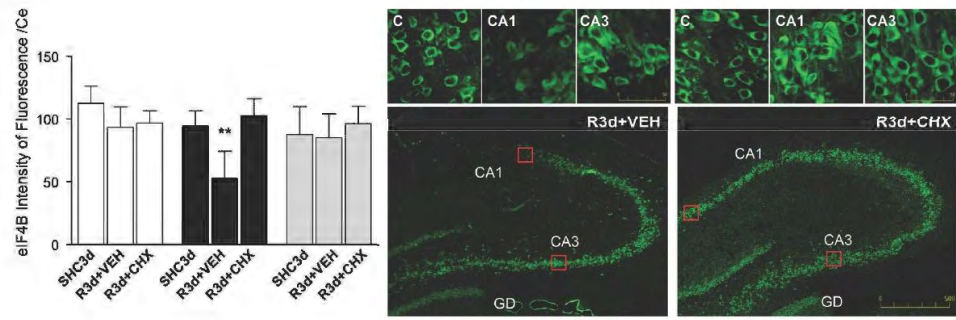


Figure 10. Cycloheximide (CHX) prevents the ischemia reperfusion (IR)-induced decrease of eIF4E and eIF4B in the CA1 region.

Stress granule induction after brain ischemia is independent of eukaryotic translation initiation factor (eIF) 2 α phosphorylation and is correlated with a decrease in eIF4B and eIF4E proteins

María Irene Ayuso, Emma Martínez-Alonso, Ignacio Regidor and Alberto Alcázar


J. Biol. Chem. published online November 11, 2016

Access the most updated version of this article at doi: [10.1074/jbc.M116.738989](https://doi.org/10.1074/jbc.M116.738989)

Alerts:

- [When this article is cited](#)
- [When a correction for this article is posted](#)

[Click here](#) to choose from all of JBC's e-mail alerts

 No items in your cart.

The page below is a sample from the LabCE course **Chemical Screening of Urine by Reagent Strip**. Access the complete course and earn ASCLS P.A.C.E.-approved continuing education credits by subscribing online.

[Learn more about Chemical Screening of Urine by Reagent Strip \(online CE course\) »](#)

Measuring Specific Gravity (SG)

The urine reagent strip measures specific gravity (SG) in increments of 0.005 with readings from 1.000 to 1.030.

The test principle is based on a change in pKa (the negative log of the acid disassociation) of certain pretreated electrolytes (methyl vinyl ether/maleic anhydride) in relation to ionic concentration of the urine. These electrolytes in the specific gravity area contain acid groups that dissociate according to the ionic concentration of the specimen. The more ions in the specimen, the more acid groups will dissociate, releasing hydrogen ions and causing a more acid pH.

The reagent area contains a pH indicator (bromothymol blue) which demonstrates the change in pH. The higher the specific gravity of the urine specimen, the more acidic the reagent area will become. The colors of the reagent area will range from deep blue-green in urines of low ionic concentration to green-to-yellow green in urines of increasing ionic concentration, and consequently, higher specific gravity.





[Frequently asked questions](#) | [List of available courses](#)

Copyright ©2001 - 2020 LabCE. All rights reserved.



Search



37



Try Premium Free for 1 Month



SG Group

Entertainment · Mapo-gu, Seoul · 76 followers

Awakening the creative spark for a healthy and confident future

Follow

Visit website [↗](#)

See

- Home
- About
- Jobs
- People

About

In a world troubled by anxiety and uncertainty, SG Group values creativity, responsibility, as well as a strong focus on physical and mental health as the path forward to a bright, confident, and prosperous future. The co... see more

See all

Messaging

Yo
jo
th
th

SG Group
76 followers
1w • 🌐

New milestone on our journey to give Kpop a refresh in West:





Bobblehead Music, SG엔터테인먼트와 파트너십 통해
n.news.naver.com • 2 min read


👍 1


👍 Like 💬 Comment ➦ Share ✉ Send

Be the first to comment on this


-  **Dennis Teng**
InMail • Career Opportunity

-  **Jeni Sowerby**
Jeni: Congrats on your work anniver...

-  **Austin Hoo**
You've let Austin know you'd like to l...

-  **Leonard Leong**
InMail • Career Opportunity

- Kenneth Goh**
InMail • Connection opportunity

-  **Jace Liew**
You: Thanks

- May Tong**
📎 May sent an attachment

- Jimmy O**
You: Hi Jimmy, Whats the jobscope...



Search

1 37

Try Premium Free for 1 Month

See exclusive Premium insights on 450k+ companies

[Upgrade to Premium](#)



SG Group

76 followers

1mo • Edited •

[+ Follow](#) ⋮

We just released our very first teaser of SG Entertainment's girl's group. There will be much more to come in the next weeks, so stay tuned ;)

[...see more](#)



[SG Trainee] SG Girl Group Trainee- Yelin TEASE!
youtube.com

Messaging


6


 Like  Comment  Share  Send

Be the first to comment on this

 Search messages 


 **Dennis Teng**
InMail • Career Opportunity


 **Jeni Sowerby**
Jeni: Congrats on your work anniver...

 **Austin Hoo**
You've let Austin know you'd like to l...

 **Leonard Leong**
InMail • Career Opportunity

Kenneth Goh
InMail • Connection opportunity

 **Jace Liew**
You: Thanks

May Tong
 May sent an attachment

Jimmy O
You: Hi Jimmy, Whats the jobscope...

21/09/2020

PHAROS SG (Fishery Patrol Vessel) Registered in United Kingdom - Vessel details, Current position and Voyage information - IMO 9041265, ...








(0)




 **PHAROS SG**




 Fishery Patrol Vessel IMO: 9041265

-  SHOW ON LIVE MAP
-  ADD NOTES
-  ADD TO FLEET
-  CREATE NOTIFICATIONS

Hey! Want to group and monitor 
vessels like this in a Fleet?


21/09/2020

PHAROS SG (Fishery Patrol Vessel) Registered in United Kingdom - Vessel details, Current position and Voyage information - IMO 9041265, ...

Hey! Want to group and monitor
vessels like this in a Fleet? 

21/09/2020

PHAROS SG (Fishery Patrol Vessel) Registered in United Kingdom - Vessel details, Current position and Voyage information - IMO 9041265, ...

Hey! Want to group and monitor
vessels like this in a Fleet? 



Support Generation (SG) Module

More than 25 years ago, Materialise started with just one Stereolithography machine. And from the very beginning, it was clear that intelligent software was needed that could deal with issues in the area of support. The Materialise Magics SG module was introduced as a solution, and today offers the most complete **support generation toolbox for Stereolithography** on the market.

- Easily identify critical support areas
- Reduce data preparation time with semi-automatic support generation
- Create and optimize adequate structures for different types of geometry
- Efficiently remove support and limit finishing time
- Save building time and material with non-solid, single-line, optionally perforated supports
- Stay in control of all of your parameters
- Choose from a complete gallery of support structures

Want to find out more?

[Download our Support Generation Module Brochure](#)

© Copyright Materialise 2020 | [Cookie Statement](#) | [Terms of Use and Privacy Policy](#) | [Legal Disclaimer](#) | [Copyright and Trademarks](#)

This website uses cookies to ensure you get the best experience on our website.

By clicking anywhere on our website you will accept our cookie policy.

Are you looking for software for 3D Printing?





SG Project Pro 5

Simple Genius Software [Business > Project management](#)

♡ Wish list

The Simple Genius brand means fresh design thinking for practical project management apps. Designed and refined by a [More](#)

\$99.99

Buy



△ [See System Requirements](#)



EVERYONE

Available on



PC

Description

The Simple Genius brand means fresh design thinking for practical project management apps. Designed and refined by a veteran Project and Program Manager, the SG apps address real-world needs for managers. And with over 100,000 apps sold in 100 countries, SG delivers proven and trusted solutions.

SG Project Pro is the flagship of the SG suite and is the only Windows app that provides a complete touch-friendly project management solution including task-based planning, management of issues, risks, action items, and costs, as well as powerful and beautiful reporting. It excels at managing multiple concurrent projects and team members in ways that no other project management app does.

With SG Project Pro you will gain the confidence of being in control and understanding your projects, plus look brilliant to your team, management, and stakeholders. And since the SG apps are carefully designed for ease of use and productivity anyone can use them, while focusing on the project, not the app.

With SG Project you can quickly:

[Show More](#)

Screenshots



People also like

SAVE \$7... PDF Jack \$21.49 \$14.49+	Flowdia Diagrams \$14.99	MetaMoji Note \$24.99+	MetaMoji Note \$11.99+	espresso Mind Map \$1.99	Project Timeline Free+	Mik Dyi Fre

Features

- Manage multiple active projects
- See a quick overview of all Projects, Reports, and People
- Create task schedules with Table and Gantt views
- Use all task link types including FS, SS, FF, and SF
- Use either keyboard/mouse or touch-based devices
- Build custom work schedules and apply to projects or tasks
- Create and manage Issues, Risks, and Action Items for each project
- Manage project costs including labor and material costs
- Produce customized reports for projects and team members
- Fine-tune your reports with dozens of options
- Share data to and from MS Project using XML files
- Share and back up data easily using Dropbox or Box.com
- Use SG Sync to share project data with all supported SG platforms

Additional information

<https://www.microsoft.com/en-us/p/sg-project-pro-5/9nblggh30wp3?activetab=pivot:overviewtab>

Published by Simple Genius Software	Approximate size 3.55 MB	Installation Get this app while signed in to your Microsoft account and install on up to ten Windows 10 devices.	Additional terms SG Project Pro 5 privacy policy Terms of transaction
Copyright Copyright © Simple Genius Software 2015	Age rating For all ages	Language supported English (United States)	Seizure warnings Photosensitive seizure warning
Developed by Simple Genius Software	Category Business > Project management	Publisher Info SG Project Pro 5 website SG Project Pro 5 support	Report this product Sign in to report this app to Microsoft
Release date 7/22/2015	This app can Access your Internet connection Permissions info		



Search

LOG IN

SIGN UP



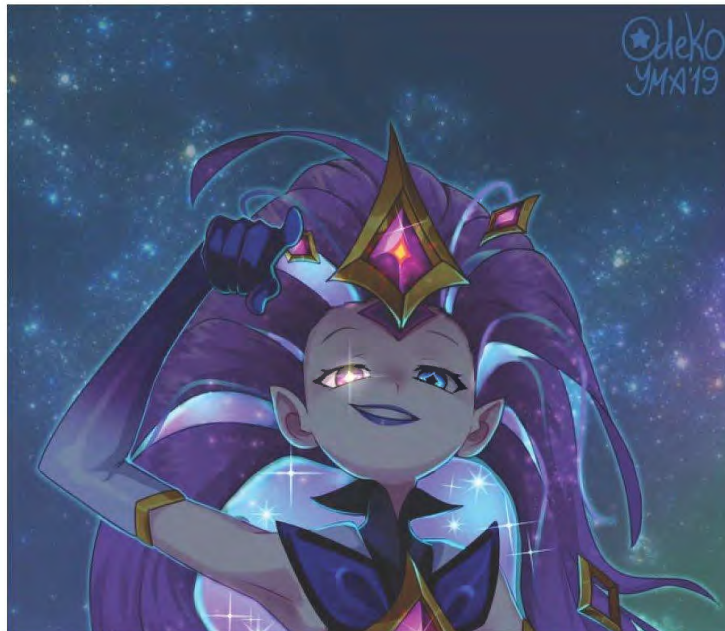
453 | Awe... Art repost (source in comments)

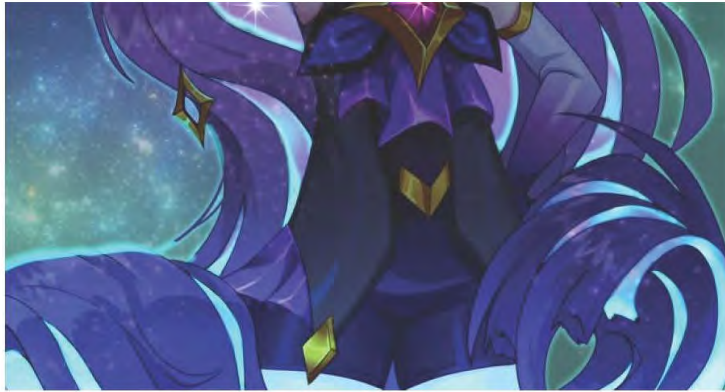
X CLOSE

Posted by u/toxic_nutella 1 year ago

453 Awesome SG Zoe art

Art repost (source in comments)





18 Comments Share ...

100% Upvoted

This thread is archived
New comments cannot be posted and votes cannot be cast

SORT BY **BEST** ▾



Search

LOG IN

SIGN UP



[VIEW ENTIRE DISCUSSION \(18 COMMENTS \)](#)

More posts from the zoemains community

Posted by u/TheRealTGGecko 5 days ago

522 Meme **Yes indeed, we have extra everything :D**





22 Comments Share ...

PROMOTED · Posted by u/DatadogHQ 5 months ago 🔒

275 **Anybody wanna be a CTO or engineering leader in e-commerce? Check out what site performance metrics the CTO of Dollar Shave Club cares about**



Search

LOG IN

SIGN UP



Posted by u/Empanader 1 day ago

504

Art Original **Me and my best friend ruining my boyfriend's games but it's the wolf meme**



6 Comments Share ...

https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

3/12



Q Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

4/12



Q Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

5/12



Q Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

6/12

21/09/2020

Awesome SG Zoe art : zoemains



Q Search

LOG IN

SIGN UP



21/09/2020

Awesome SG Zoe art : zoemains



Q Search

LOG IN

SIGN UP



21/09/2020

Awesome SG Zoe art : zoemains



Q Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

9/12

21/09/2020

Awesome SG Zoe art : zoemains



Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

10/12

21/09/2020

Awesome SG Zoe art : zoemains



Q Search

LOG IN

SIGN UP



https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

11/12

21/09/2020

Awesome SG Zoe art : zoemains



Q Search

LOG IN

SIGN UP



Continue browsing in r/zoemains

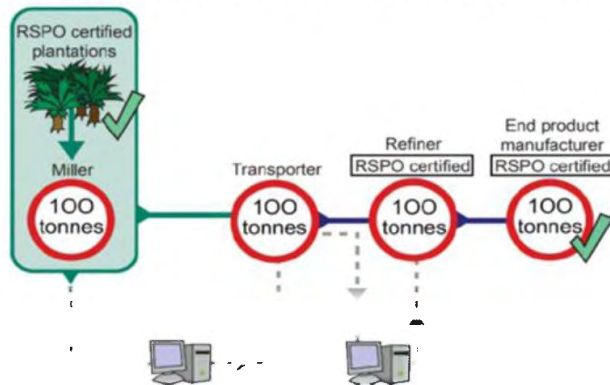
https://www.reddit.com/r/zoemains/comments/cx35h5/awesome_sg_zoe_art/

12/12

Introduction

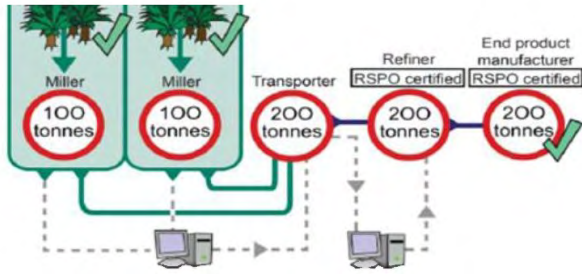
This procedure covers the control, monitoring and documentation of **sustainable (conserving an ecological balance by avoiding depletion of natural resources)** palm purchased by Ultrapharm for the purpose of producing products covered within the **sustainable** RSPO (Roundtable on sustainable Palm Oil) scheme.

The types of supply chain systems from the RSPO scheme are;

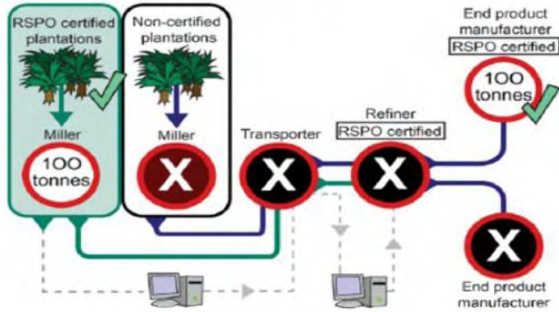


Identity Preserved or IP – this means that identity preserved (IP) supply chain assures that the RSPO palm oil is uniquely identifiable to a single RSPO certified mill and its certified supply base.





Segregated or SG – this means that certified palm oil is kept separate throughout the supply chain (Ultraparm purchase SG Palm)



Mass Balance (not to be confused with traceability mass balance) - this means certified palm oil is mixed in with conventional palm oil but monitored administratively

Document Ref: SOP (P) 069A	Revision No: 3	13/04/2016
Prepared by:- Clare Crane	Approved by:- Rebecca Stewart	Page 1

Scope

Ultrapharm aims to adhere with industry changes and move to purchase and participate in the controlled use of certified **sustainable (SG) palm oil**, as defined by the RSPO scheme.

We intend to produce products used in the **sustainable** scheme through working with our customers and in line with their requirements.

Palm oil has been sourced to the **segregated (separate or isolate)** scheme, and all remaining palm based or materials containing palm are purchased as part of the identity Persevered (IP), Segregated (SG) or mass balance. This demonstrates our commitment to working with producers to find more effective and **sustainable** solutions.

Responsibility

This lies with the purchasing team to purchase **the Segregated (SG) Palm Oil** in the first instance.

The material controller for Ultrapharm, will ensure that all **SG segregated Palm Oil** delivered to site is approved and **segregated**, this will be documented on the incoming load order delivery note along with;

- Delivery Address and contact details
- RSPO registration number
- Order number
- Date & time of delivery
- General appearance and cleanliness of deliveries

- General appearance and cleanliness of deliveries

- Weight/quantity delivered
- Product description and statement (SG or sustainable oil)
- Vehicle Reg and batch/pallet Number
- Comments section (special requirements)

The Stores Despatch Operative is responsible for ensuring that all **SG Palm Oil** deliveries are checked upon receipt for the above details and any irregularities are reported immediately to the QA team where, if appropriate an NCR will be raised and the supplier contacted. If the delivery is unacceptable then the pallets(s) will be quarantined and rejected. QA will be informed immediately.

QA will be informed of the delivery and they are responsible for the following checks for **SG Palm Oil**;

- Load Description (ensure paperwork states segregated sustainable palm oil or SG Palm Oil)
- Product Code
- Quantity delivered
- Any special comments
- Organoleptic

If all above checks are acceptable, QA will pass this and complete all relevant paperwork, of which, is retained within the QA department for 3 years. Following this the stores operative(s) will allocate the SG Palm Oil into a designated storage area.

QA must on a Monthly basis access the RSPO website and check that all certification for AAK via Silbury Foods Limited are still valid, this is then recorded on the RSPO monthly check sheet, a screen shot of the check is printed off and added to the specified sheet for RSPO. The link below will take you into the required area for checking however, you can also access this via,

Document Ref: SOP (P) 069A	Revision No: 3	13/04/2016
Prepared by:- Clare Crane	Approved by:- Rebecca Stewart	Page 2



Segregated Sustainable (SG) Palm Oil

Delivery Note must be matched to PO and Certificate of conformance/Analysis received for each delivery.

Site materials controller - or nominated person must also record that supplier registration is still active on RSPO site and note on Delivery; - as a minimum on a monthly basis, the check must ensure that the certificate is still in date.

RSPO Web Site Link:

http://www.rspo.org/en/current_list_of_supply_chain_certification

Current certs;

Supplier	RSPO Membership number	IP,SG,MB
AAK	2-0001-04-000-00	MB,SG,IP
Silbury	2-0144-10-000-00	IP,SG,MB

Upon delivery should any irregularities occur these must be reported immediately to the QA team or nominee where, if appropriate an NCR will be raised and the supplier contacted. If the delivery is unacceptable then the delivery will be rejected.

NB: If an NCR is raised with a delivery that occurs out of office hours, with the potential of a rejection,

then the Technical Manager or nominee must be contacted for approval.

Calculation Example:

Opening stock: 500kg
Delivery: 250kg
Balance: 750kg
Booked to Line: 300kg
Quantity in Recipe: 250kg
Returned to Store: 50kg
% in Recipe: 15%
Quantity of Finished Goods: 1575kg
Recorded Waste: 50kg

Total Input: 250kg
Expected Output: 1667kg (based on 15% in recipe)
Actual Output: 1575kg + 50kg = 1625kg

Difference between expected and actual = 42kg or 2.5%.



Document Ref: SOP (P) 069A	Revision No: 3	13/04/2016
Prepared by:- Clare Crane	Approved by:- Rebecca Stewart	Page 3

SG Credit Partners Team

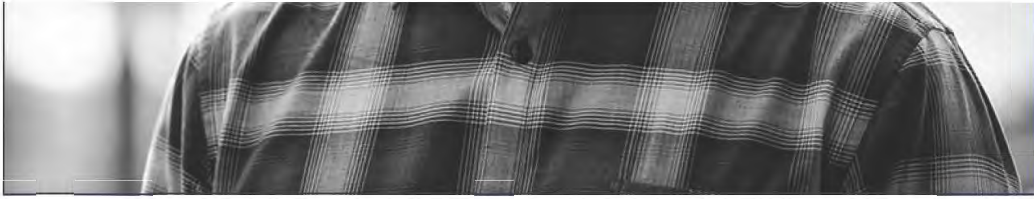




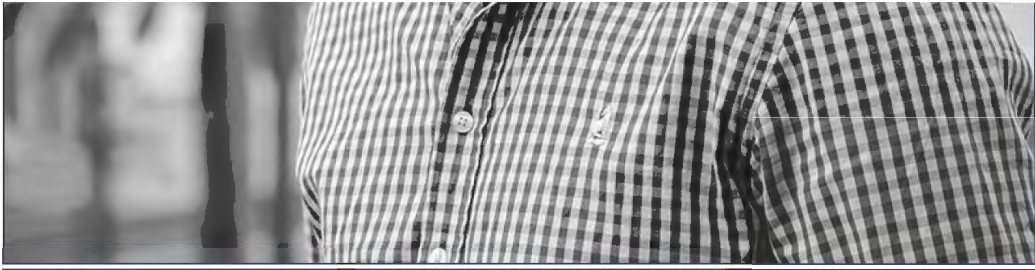


































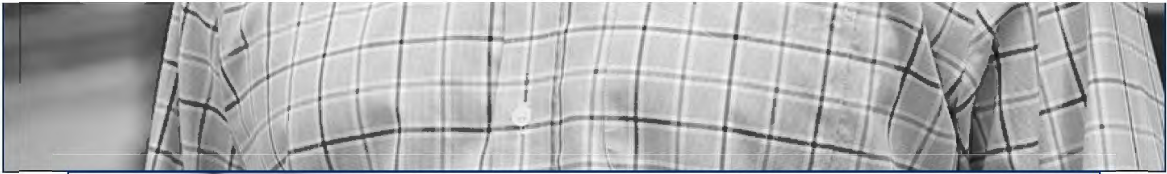


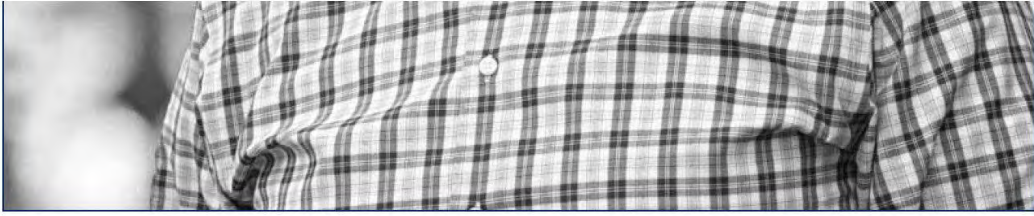
Board Of Directors













Home	History	Goals	Grant Focus Area	Proposal Guidelines	Contact Us
----------------------	-------------------------	-----------------------	----------------------------------	-------------------------------------	----------------------------

SG Foundation

The SG Foundation strives to serve God and the poor by relieving suffering and improving the quality of life in communities locally and in Central America.



