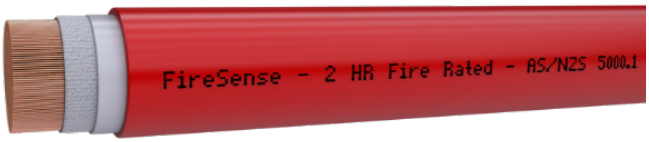
PRODUCT DATA SHEET

Single Core
2HR Fire Rated Cable

FEATURES



- ✓ 2HR Fire Rated - WS52W
- ✓ PVC Free - Low Smoke Zero Halogen (LSZH)
- ✓ ActivFire certified
- ✓ RCM / Global Mark certified
- ✓ Green Building Code of Australia/Green Star compliant
- ✓ 110°C continuous operation
- ✓ 0.6 / 1kV voltage rating
- ✓ Single Double Insulated
- ✓ ACMA Compliance - AS/CA S008
- ✓ Cable Construction - AS/NZS 5000.1
- ✓ Fire & Mechanical Protection - AS/NZS 3013, AS/NZS 4507 (RHE-3)
- ✓ Flexible Class 6 conductors
- ✓ Flexible, easy to strip, install & terminate

PRODUCT DESCRIPTION

FireSense fire rated cables have been specifically designed for use within the Fire Alarm and Mechanical/ Electrical industries. FireSense Fire Rated Single Core cables are ideal for use in submains and Mechanical Service Switchboard (MSSB) feeds. They are designed for 110°C continuous operating temperature, constructed from the highest quality cross-linked polymers and 100% pure annealed conductors delivering excellent electrical performance. Class 6 Flexible conductors, makes them flexible, easy to strip, install & terminate

Independently tested and approved to the requirements of AS/NZS 3013 for both fire and mechanical properties. Environmentally friendly meeting the Green Building Code of Australia / Green Star requirements, all FireSense 2HR Fire Rated cables are made from LSZH materials & have third party PVC Free Certification from Bureau Veritas and Good Environmental Choices Australia (GECA). FireSense 2HR Fire Rated cable is the only FULL range of ActivFire certified cable in Australia

FireSense fire rated cables have been tested and approved to electrical standards AS/NZS 5000.1 by respective industry testing authorities. It is a mandatory requirement of AS/NZS 3000:2007 Appendix H and AS/NZS 1668.1 that cables be approved to AS/NZS 3013 and carry a 2HR fire rating.

FireSense's highly specialised insulation and outersheath materials meet the stringent Impact and Cutting test requirements of AS/NZS 3013, yet allow for ease of stripping and cable placement on trays saving valuable installation time on site.

It is recommended that FireSense stainless steel cable ties be used for fixing cable to tray every 1.0 metre when mounted horizontally and every 0.6 metres when mounted vertically. When fixing to catenary wire our recommendation is as follows:

If cable bunch is ≥ 25mm diameter cables should be supported with stainless steel ties every 300mm.
If cable bunch is < 25mm diameter cables should be supported with stainless steel ties every 600mm.

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ORDERING INFORMATION

Part Number	No. of Cores	Cross Section (mm^2)	Conductor Class	Approx Overall Diameter (mm)	Operating Temperature (°C)	AS/NZS 3013 Rating
FR-6-1C	1	6	Class 6	10.6	-25 to + 110	WS52W
FR-10-1C	1	10	Class 6	11.8	-25 to + 110	WS52W
FR-16-1C	1	16	Class 6	12.8	-25 to + 110	WS52W
FR-25-1C	1	25	Class 6	14.2	-25 to + 110	WS52W
FR-35-1C	1	35	Class 6	16	-25 to + 110	WS52W
FR-50-1C	1	50	Class 6	18	-25 to + 110	WS52W
FR-70-1C	1	70	Class 6	20	-25 to + 110	WS52W
FR-95-1C	1	95	Class 6	23	-25 to + 110	WS52W
FR-120-1C	1	120	Class 6	25	-25 to + 110	WS52W
FR-150-1C	1	150	Class 6	28	-25 to + 110	WS52W
FR-185-1C	1	185	Class 6	30	-25 to + 110	WS52W
FR-240-1C	1	240	Class 6	33	-25 to + 110	WS52W
FR-300-1C	1	300	Class 6	35	-25 to + 110	WS52W
FR-400-1C	1	400	Class 6	41	-25 to + 110	WS52W
FR-500-1C	1	500	Class 6	46	-25 to + 110	WS52W
FR-630-1C*	1	630	Class 6	49	-25 to + 110	WS52W

* FR-630-1C is an indent item and lead times may apply.

TECHNICAL SPECIFICATIONS

Conductors	Stranded Annealed Copper
Flame Barrier	Mica Tape
Insulation	Flame Retardant, Low Smoke, Zero Halogen (X-HF-110)
Sheath	Flame Retardant, Low Smoke, Zero Halogen (HFS-110-TP)*
Voltage Rating	0.6/1kV
Operating Temperature	-25° to +110°C
Insulation Color	White
Sheath Color	Red

* Please note: LSZH HFS-110-TP sheath material is UV stabilised but red colour may be subject to fading over time if exposed to direct sunlight.

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ELECTRICAL CHARACTERISTICS

Part Number	DC Resistance (Ω / Km)	AC Resistance @ 50Hz (Ω / Km at °C) As per AS3008 Table 4.10B				Current Carrying Capacity Unenclosed (Amps) As per AS3008 Table 3.20			
	25°C	45°C	75°	90°	110°	Spaced	Touching	Exposed	Underground Wiring Enclosure
FR-6-1C	3.30	3.62	4.01	4.21	4.47	70	56	48	56
FR-10-1C	1.91	2.10	2.32	2.44	2.59	96	77	65	75
FR-16-1C	1.21	1.33	1.47	1.54	1.64	128	103	86	96
FR-25-1C	0.78	0.857	0.949	0.995	1.06	173	139	116	126
FR-35-1C	0.554	0.609	0.674	0.707	0.750	214	171	142	154
FR-50-1C	0.386	0.425	0.470	0.493	0.523	262	210	174	183
FR-70-1C	0.272	0.300	0.332	0.348	0.369	335	267	220	229
FR-95-1C	0.206	0.227	0.252	0.264	0.280	416	332	272	275
FR-120-1C	0.161	0.178	0.197	0.207	0.219	487	387	317	320
FR-150-1C	0.129	0.144	0.159	0.166	0.176	561	447	364	360
FR-185-1C	0.106	0.119	0.131	0.137	0.145	653	519	422	408
FR-240-1C	0.0801	0.0912	0.100	0.105	0.111	784	621	502	480
FR-300-1C	0.0641	0.0745	0.0817	0.0853	0.0901	910	719	579	553
FR-400-1C	0.0486	0.0586	0.0639	0.0666	0.0702	1069	839	673	628
FR-500-1C	0.0384	0.0486	0.0526	0.0547	0.0574	1250	972	776	732
FR-630-1C	0.0287	0.0394	0.0423	0.0438	0.0457	1464	1125	893	823

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ELECTRICAL CHARACTERISTICS CONTINUED

Part Number	Calculations Trefoil @ 50Hz @ 20°C		3 Phase Voltage Drop @ 50Hz (mV/A.m at °C) As per AS 3008 Table 46			
	Inductance mH	Reactance Ω / Km	45°	75°	90°	110°
FR-6-1C	0.375	0.1180	5.86	6.49	6.81	7.22
FR-10-1C	0.343	0.1077	3.49	3.86	4.05	4.30
FR-16-1C	0.328	0.1029	2.20	2.43	2.55	2.70
FR-25-1C	0.309	0.0970	1.39	1.54	1.62	1.71
FR-35-1C	0.287	0.0901	1.01	1.12	1.17	1.24
FR-50-1C	0.277	0.0870	0.754	0.832	0.870	0.922
FR-70-1C	0.266	0.0835	0.534	0.587	0.613	0.648
FR-95-1C	0.258	0.0809	0.399	0.435	0.454	0.479
FR-120-1C	0.255	0.0802	0.328	0.356	0.370	0.389
FR-150-1C	0.253	0.0795	0.280	0.302	0.313	0.328
FR-185-1C	0.251	0.0788	0.241	0.257	0.266	0.277
FR-240-1C	0.246	0.0773	0.206	0.217	0.223	0.230
FR-300-1C	0.241	0.0756	0.186	0.193	0.197	0.203
FR-400-1C	0.241	0.0757	0.160	0.176	0.178	0.182
FR-500-1C	0.238	0.0749	0.152	0.163	0.165	0.168
FR-630-1C	0.234	0.0735	0.152	0.156	0.156	0.157

Permissable Thermal Short Circuit Current (kA) for 1 second @ 110°C with Insulation Max. Temperature of 250°C in accordance with AS/NZS 3008 Table 5.5 ($I^2t = K^2S^2$)

Conductor Size (mm^2)	6	10	16	25	35	50	70	95
Short Circuit Current (kA)	0.792	1.32	2.112	3.3	4.62	6.6	9.24	12.54

Conductor Size (mm^2)	120	150	185	240	300	400	500	630
Short Circuit Current (kA)	15.84	19.8	24.42	31.68	39.6	52.8	66	83.16

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CABLE LUG TERMINATION

Generally, published lug sizing is based on Class 2 conductors, which have a smaller overall diameter due to the lower number of copper strands. FireSense Single Core cables are Class 6 flexible conductors, therefore it is essential to consider the overall conductor diameter when selecting the correct size lug. The differences in conductor diameter become increasingly significant for cable sizes ≥ 240mm², where the number of strands increase substantially.

It is CRITICAL that "Flared, Bellmouth Lugs" are used with Class 5/6 cables. This ensures the lug has a wider mouth to accept the strands, and then they are compressed progressively during insertion. Straight lugs (without a flared mouth) should NOT be used with class 5/6 flexible cables.

FireSense recomends Pacific Components CTL Series Flared Bellmouthed lugs for FireSense Class 6 flexible cables. Details provided below.

Cable	Supplier	Cable Lug Desciption	Lug Internal Diameter in mm
FR-16-1C	Pacific Components	CTL-16-XX Copper Flared Bellmouth Lug	5.5
FR-25-1C	Pacific Components	CTL-25-XX Copper Flared Bellmouth Lug	7.1
FR-35-1C	Pacific Components	CTL-35-XX Copper Flared Bellmouth Lug	8.2
FR-50-1C	Pacific Components	CTL-50-XX Copper Flared Bellmouth Lug	9.5
FR-70-1C	Pacific Components	CTL-70-XX Copper Flared Bellmouth Lug	11.2
FR-95-1C	Pacific Components	CTL-95-XX Copper Flared Bellmouth Lug	13.5
FR-120-1C	Pacific Components	CTL-120-XX Copper Flared Bellmouth Lug	15.6
FR-150-1C	Pacific Components	CTL-150-XX Copper Flared Bellmouth Lug	16.7
FR-185-1C	Pacific Components	CTL-185-XX Copper Flared Bellmouth Lug	18.5
FR-240-1C	Pacific Components	CTL-240-XX Copper Flared Bellmouth Lug	21.2
FR-300-1C	Pacific Components	CTL-300-XX Copper Flared Bellmouth Lug	23.5
FR-400-1C	Pacific Components	CTL-400-XX Copper Flared Bellmouth Lug	26.8
FR-500-1C*	Pacific Components	CTL-500-XX Copper Flared Bellmouth Lug	30
FR-630-1C	Pacific Components	CTL-630-XX Copper Flared Bellmouth Lug	34

*** Firm Fit -** The above bellmouth lug for the FR-500-1C will require tapping on with hammer before crimping. If access is restricted, you may want to consider upsizing to the 630mm lug. This may require double crimping. Please confirm process with lug manufacturer.

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WEIGHT PER METRE

Please note: the below measurements are approximate only and do not account for the weight of the drum.

Cable	Approx weight per metre (kg)
FR-6-1C	0.1540
FR-10-1C	0.2120
FR-16-1C	0.2740
FR-25-1C	0.3750
FR-35-1C	0.4667
FR-50-1C	0.6067
FR-70-1C	0.8167
FR-95-1C	1.0310
FR-120-1C	1.3429
FR-150-1C	1.6760
FR-185-1C	1.9905
FR-240-1C	2.3800
FR-300-1C	3.0600
FR-400-1C	4.0424
FR-500-1C	4.9000
FR-630-1C	6.75

STANDARDS COMPLIANCE

Fire & Mechanical	AS/NZS 3013
Cable Construction	AS/NZS 5000.1
ACMA Compliance	AS/CA S008
Conductors	AS/NZS 1125
Insulation	AS/NZS 3808
Sheath	AS/NZS 3808
Cable	AS/CA S008
Cable Performance	AS/NZS 4507 (RHE-3)
Vertical Flame Spread	AS/NZS 1660.5.1 (Section 6 - Category C - AS/NZS IEC 60332-3-24)
Smoke Density	AS/NZS 1660.5.2, AS/NZS IEC 61034
Halogen Gas	AS/NZS 1660.5.3, AS/NZS IEC 60754-1
Acidity of Gases	AS/NZS 1660.5.4, AS/NZS IEC 60754-2
Vertical Flame Propogation	AS/NZS 1660.5.6, AS/NZS IEC 60332-1

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MINIMUM BENDING RADIUS

The minimum bend radius is 10x Cable Diameter.

The measuring points are from outer sheath using the inner static bend radius, as indicated in Fig 1 to the right.

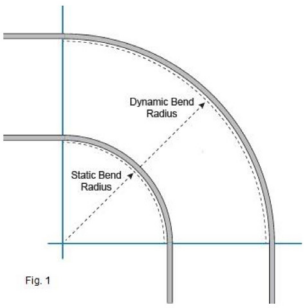

Fig. 1

APPROVALS & CERTIFICATION

Part Number	AS/NZS 3013			AS/NZS 5000.1	
	Rating	Certificate No.	Issuer	Certificate No.	Issuer
FR-6-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-10-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-16-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-25-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-35-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-50-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-70-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-95-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-120-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-150-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-185-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-240-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-300-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-400-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-500-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.
FR-630-1C	WS52W	FAS 240027 R1.6	Warrington Fire	GMA-511153	Global Mark Pty Ltd.

ActivFire Listing Number	afp-2417		
RCM Responsible Supplier	E6560	Level 3	GMA-511153
Bureau Veritas GECA Certificate Number	3407		
Bureau Veritas PVC Free Certificate Number	2835		

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CLASSIFICATION

AS/NZS 3013 is a classification system which defines the performance of a Wiring System (WS). The classification system prefix is 'WS' followed by two numerals and a supplementary letter W. ie

AS/NZS 3013 Fire Rated Cable Technical Information

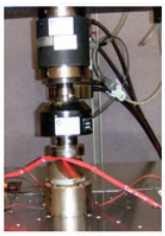
Classification of the fire and mechanical performance of wiring system elements:

AS/NZS 3013 is a classification system which defines the performance of a Wiring System (WS). The classification system prefix is 'WS' followed by two numerals and a supplementary letter W. ie.

WS	5	2	W

1	15 minutes
2	30 minutes
3	60 minutes
4	90 minutes
5	120 minutes

	Impact Test (J)	Cutting Test (kN)	Level of Protection
1	2.5	0.3	Light
2	15	1.0	Moderate
3	50	5.0	Heavy
4	500	5.0	Very Heavy
5	5000	5.0	Extremely Heavy



The 'W' suffix denotes the wiring system's capability to maintaining circuit integrity when subjected to water spray immediately following a fire.

Cables are subjected to fire at 1050°C for 120 minutes, then water sprayed for a further 3 minutes.

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