



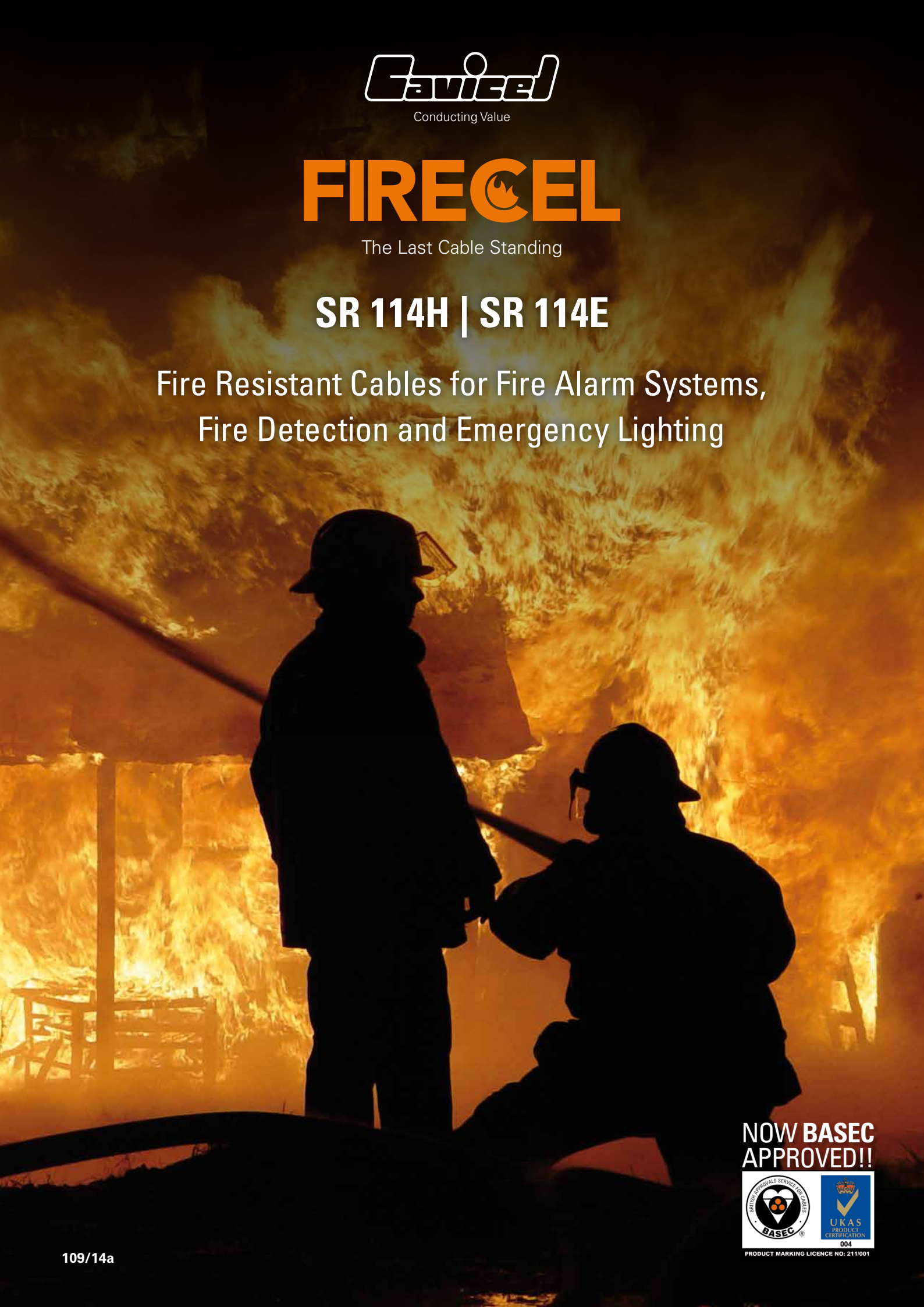
Conducting Value

FIRECEL

The Last Cable Standing

SR 114H | SR 114E

Fire Resistant Cables for Fire Alarm Systems,
Fire Detection and Emergency Lighting



**NOW BASEC
APPROVED!!**



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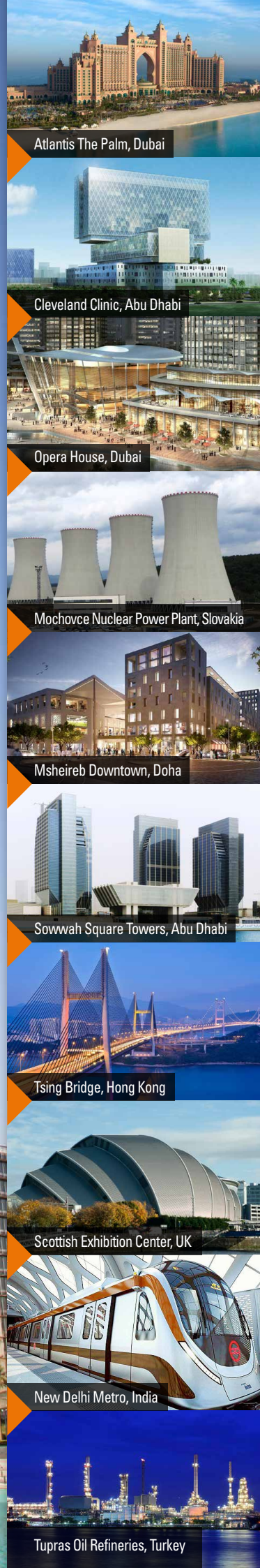
PRODUCT MARKING LICENCE NO: 211/001

FIRECEL SR 114 IN THE WORLD

FIRECEL cables are installed all over the world. New projects are coming. Cavicel has been committed since 1970 to the study, design and manufacture of highly reliable fire resistant cables. Designed and manufactured in Italy.

Approvals

- Civil Defence - *Abu Dhabi*
- Civil Defence - *Dubai*
- Civil Defence - *Bahrain*
- Civil Defence - *Qatar*
- Saso - *Saudi Arabia*
- Royal Oman Police - *Sultanate Of Oman*
- Fire Service Directorate - *Kuwait*
- Fire Service Dept. (Fire Protection Bureau) - *Hong Kong*



Atlantis The Palm, Dubai

Cleveland Clinic, Abu Dhabi

Opera House, Dubai

Mochovce Nuclear Power Plant, Slovakia

Msheireb Downtown, Doha

Sowwah Square Towers, Abu Dhabi

Tsing Bridge, Hong Kong

Scottish Exhibition Center, UK

New Delhi Metro, India

Tupras Oil Refineries, Turkey

Burj Khalifa Tower - Dubai

According to **BS 5839-1:2013** "Fire detection and fire alarm systems for buildings – Part 1: Code of practice for system design, installation, commissioning and maintenance", two different levels of cable fire resistance are specified.

For most application "**standard**" fire resistant cables can be used. However, for other applications, such as unsprinklered premises or buildings, in which the designer or specifier require an improved fire resistance, "**enhanced**" cables must be used.

Enhanced cables meet the most severe fire tests as they survive fire at the highest temperature of **930 °C**, with water and mechanical shocks for **120 min**.

FIRECEL	Standard S R 114H	Enhanced SR 114E
Code of Practice	BS 5839-1:2013 Clause 26.2d	BS 5839-1:2013 Clause 26.2e
Circuit Integrity	BS EN 50200:2015 (PH 30 - PH 60 - PH 120) 830°C fire and mechanical shocks	BS EN 50200:2015 (PH 120) 830°C fire and mechanical shocks
	BS EN 50200:2015 + Annex E 830°C - 30 min. (15 min. fire and mechanical shocks + 15 min. fire mechanical shocks and water spray)	BS 8434-2:2003 +A2:2009 930°C - 120 min. (60 min. fire and mechanical shocks + 60 min. fire mechanical shocks and water spray)
	BS 6387:2013 - Category CWZ IEC 60331-21:1999	
Fire Propagation	BS EN 60332-3:2009, BS EN 60332-1:2004	
Acid Gas Emission	BS EN 60754-1/2:2014	
Smoke Density	BS EN 61034-2:2005 + A1:2013	
Basic Design	BS 7629:2015	

BS 5839-1 recommends "**enhanced**" fire resistant cables for the following applications:

- in unsprinklered buildings (or parts of buildings) in which the fire strategy involves evacuation of occupants in four or more phases;
- in unsprinklered buildings of greater than 30 m in height;
- in unsprinklered premises and sites in which a fire in one area could affect cables of critical signal paths associated with areas remote from fire, in which it is envisaged people will remain in occupation during the course of the fire;
- in any other buildings in which the designer, specifier or regulatory authority, on the basis of a fire risk assessment that takes fire engineering considerations into account, considers that the use of enhanced fire resisting cables is necessary.

BS 8519:2010 "Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting application"

- Category 1 - 30 minutes survival time: Tested to EN 50200 PH 30 + Annex E as per requirements for "**standard**" control cables.
- Category 2 - 60 minutes survival time: Tested to EN 50200 PH 60 + BS 8434-2 as per requirements for "**enhanced**" control cables.
- Category 3 - 120 minutes survival time: Tested to EN 50200 PH 120 + BS 8491 as per requirements for "**enhanced**" control cables.

BS 8519 does not cover the wiring of fire detection and fire alarm systems which are still covered by the BS 5839-1, BS 5839-8 and BS 5839-9 and emergency lighting systems which are still covered by the BS 5266-1.

For more information we recommend to consult BS 5839-1 Par.26 and BS 8519:2010 and BS 8491.

FEATURES AND ADVANTAGES

Flexible

Very flexible construction that makes the installation easier in all conditions.

LSZH (Low Smoke Zero Halogen)

Combustion gases with very low toxicity, low smoke emission, and no corrosive gas, for the safeguard of human life and electronic equipment.

Flame retardant

Limiting the spread of the fire along the cable run, flame barriers can be avoided or reduced.

Protected against electrostatic noise

Cable is fully screened and conductors are twisted.

Moisture resistant

No special terminals are required to prevent moisture absorption. It can be installed in damp environments.

Suitable for data transmission

Twisting of conductors make the cable suitable for clear data transmission.

Low cost installation

Neither special tools, nor special training are necessary. A cheap and effective cable stripper is available on request to simplify installation. Easy to handle.

Quality Assurance

In order to satisfy QA requirements, traceability is assured by batch number printed on outer jacket. All drums are delivered with our internal TEST REPORT that can be seen or download through QR Code on top right of the label.

APPLICATIONS

- Hotels
- Theatres and cinemas
- Museums
- Hospitals
- Shopping centres
- Offices
- Schools
- Airports
- Undergrounds and tunnels
- Railway stations
- High-rise buildings
- Data communication centres
- Public address systems
- Traffic control systems
- Fire fighting systems

Quality and Environmental Certifications



ISO 9001:2008
Certificate No. CS1-249



Assessed to ISO 9001:2008
Cert/LPCB ref. 217



GOST ISO 9001-2011
(ISO 9001:2008)
certification N CдC.TII.CM.04293-14



ISO 9001:2008
n. 9125.CAVL

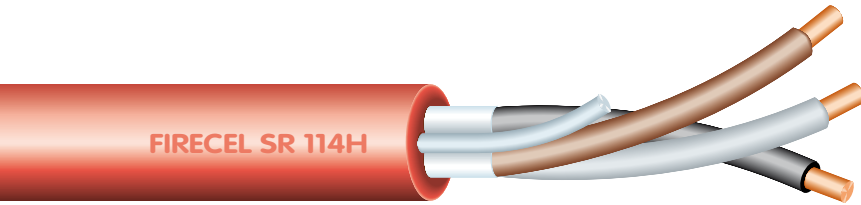


ISO 14001:2015
n. 9191.CVCL

FIRECEL SR 114H Standard Cable 300/500 V



Silicone Insulation / Overall Screen
Solid & Stranded conductor



Applicable Standards

- BS 5839-1:2013** Clause 26.2d
- BS EN 50200:2015 (PH 30 - PH 60 - PH 120)** 830°C fire and mechanical shocks
- BS EN 50200:2015 + Annex E** 830°C - 30 min. (15 min. fire and mechanical shocks + 15 min. fire mechanical shocks and water spray)
- BS 6387:2013**
- Cat. C** fire @ 950°C - 180 min
- Cat. W** fire and water @ 650°C - 15 + 15 min.
- Cat. Z** fire and mechanical shocks @ 950°C - 15 min. fire



LPCB ref. 217f
(cables up to 4 cores)
For the scope of the LPCB Approval see www.redbooklive.com



For the scope of the BSEAC Approval see www.bseac.org.uk

APPLICATIONS

FIRECEL SR 114H are primarily intended for general application. Typical applications are:

- BS 5839-1** for **standard** fire resistant cables in fire detection and fire alarm systems for building
- BS 5839-8** for voice alarm systems
- BS 5839-9** for emergency voice communication systems.
- BS 5266-1** for emergency lighting of premises (PH60)
- BS 8519** for fire-resistant control cable systems for life safety and fire-fighting application - Category 1

OPERATING TEMPERATURE

-40°C to +90°C

APPLICABLE STANDARDS

- Basic design*
BS 7629-1
- Fire resistant*
BS 6387 (cat. C-W-Z)
BS EN 50200 (class PH30 - PH60 - PH120)
BS EN 50200 annex E (fire, mechanical shock and water spray) IEC 60331
- Flame retardant*
BS EN 60332-1-2
BS EN 60332-3-24 cat. C
- Acid gas emission*
BS EN 60754-1
BS EN 60754-2
- Smoke density*
BS EN 61034-2

CABLE CONSTRUCTION

Conductors

Plain annealed copper wire, solid class 1 or stranded class 2 according to EN 60228.

Insulation

High performance fire resistant silicone rubber type EI2 to BS EN 50363-1.

Cabling

Insulated cores are cabled together.

Overall screen

Aluminium/polyester tape.

Circuit protective conductor or drain wire

Uninsulated tinned copper conductor of the same section and class as the insulated conductors in the 2-, 3- and 4-core cables. Drain wire of 0.5 mm² tinned copper conductor is provided in cables with more than 4 conductors.

Outer sheath

LSZH thermoplastic material type LTS3 to BS 7655-6.1.

Colour red or white (other colours on request).

COLOUR CODE UP TO 4 CORES TO HD 308

- 2 cores: ● ●
- 3 cores: ● ● ●
- 4 cores: ● ● ● ●
- 7 cores*: centre ●
1st layer ● ● ● - 4 cores ●
- 12 cores*: centre ● ● ● ●
1st layer ● ● ● ● - 7 cores ●
- 19 cores*: centre ●
1st layer ● ● ● ● - 4 cores ● ● ● ●
2nd layer ● ● ● ● - 10 cores ●

**(on request the cores can be one colour only, identified by printed numbers)*

N° of cond. x cross section (mm ²)	Size of conductors (n°/mm)	Size of earth wire (n°/mm)	Outer diameter (mm)	Weight (kg/km)	P clips type
1 mm² solid					
2x1.0	1/1.13	1/1.13	7.1	70	AC7
3x1.0*	1/1.13	1/1.13	7.6	85	AC8
4x1.0*	1/1.13	1/1.13	8.3	110	AC8
7x1.0	1/1.13	1/0.80**	10.0	165	AC11
12x1.0	1/1.13	1/0.80**	12.5	255	AC12
19x1.0	1/1.13	1/0.80**	15.0	380	AC16
1.5 mm² solid					
2x1.5	1/1.38	1/1.38	8.0	95	AC8
3x1.5	1/1.38	1/1.38	8.5	115	AC8
4x1.5	1/1.38	1/1.38	9.4	140	AC9
7x1.5	1/1.38	1/0.80**	11.3	225	AC11
12x1.5	1/1.38	1/0.80**	14.5	340	AC14
19x1.5	1/1.38	1/0.80**	17.0	520	AC16
1.5 mm² stranded					
2x1.5	7/0.53	7/0.53	8.4	100	AC8
3x1.5	7/0.53	7/0.53	8.9	125	AC9
4x1.5	7/0.53	7/0.53	9.8	155	AC11
2.5 mm² solid					
2x2.5	1/1.75	1/1.75	9.4	130	AC9
3x2.5	1/1.75	1/1.75	10.0	170	AC11
4x2.5	1/1.75	1/1.75	11.0	210	AC11
2.5 mm² stranded					
2x2.5	7/0.67	7/0.67	9.9	145	AC11
3x2.5	7/0.67	7/0.67	10.3	180	AC11
4x2.5	7/0.67	7/0.67	11.7	230	AC11
4 mm² stranded					
2x4	7/0.85	7/0.85	11.5	200	AC11
3x4	7/0.85	7/0.85	12.2	260	AC12
4x4	7/0.85	7/0.85	13.5	330	AC13

approximate values

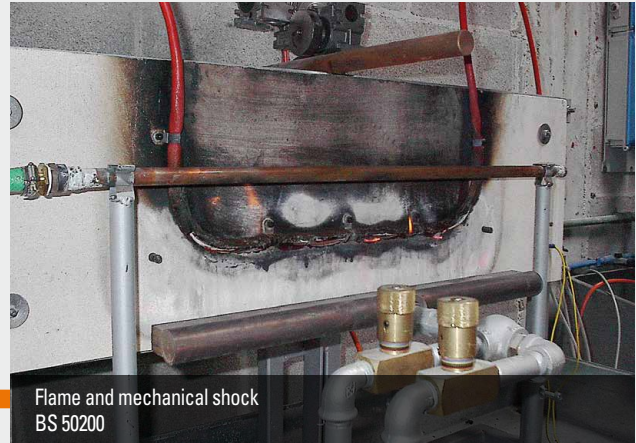
* not included in BS 7629-1:2015 and in LPCB/BASEC approval.

** drain wire

FIRECEL CABLES ARE TESTED AND CERTIFIED BY THIRD-PARTY INSPECTION COMPANIES: **LPCB-BRE** AND **BASEC**. ANYWAY IN CAVICEL ALL TESTS RELATED TO FIRE ARE INHOUSE PERFORMED ON A REGULAR BASE, TO GET A VERY HIGH TRUST TO ASSURE CUSTOMERS THE COMPLETE SAFETY.



Ongoing fire test



Flame and mechanical shock
BS 50200



Flame retardant test on bunched cables
IEC 60332-3



Smoke density test
BS EN 61034-2



Flame retardant test on single wire
IEC 60332-1, BS 4066 pt. 1



Smoke corrosivity
BS EN 60754-2



Flame, mechanical shock and water spray
BS 8434-2



HCl emission
BS EN 60754-1

FIRECEL® SR 114 WITHSTAND THE FOLLOWING TESTS:

BS 6387



Following tests are carried out to verify if a cable is capable of maintaining circuit integrity under fire condition, fire with water, and fire with mechanical shocks. During the tests the cables are maintained at their rated voltage.

Cat. C

950 °C



180'



Cat. W

650 °C

15'



+

15'



Total duration of test: 30'



Cat. Z

950 °C



15'



BS EN 50200 ANNEX E



This test is carried out to verify circuit integrity during a fire. The cable is exposed to a flame at 830°C and mechanical shocks for 15 minutes and additional 15 minutes to flame, mechanical shocks and water spray. During the tests the cables are maintained at their rated voltage.

830 °C

15'



+



+

15'



+



Total duration of test: 30'



SR 114H	SR 114E	Flame temperature	Test conditions	Time	10'	15'	20'	30'	40'	50'	
✓	✓	950 °C		BS 6387:2013 Cat. C	[Red bar from 10' to 50']						
✓	✓	650 °C		BS 6387:2013 Cat. W	[Red bar from 10' to 30']					30 min.	
							[Blue bar from 15' to 30']				
								15 min.			
✓	✓	950 °C		BS 6387:2013 Cat. Z	[Red bar from 10' to 15']					15 min.	
								15 min. (1 impact/30 sec.)			
✓	✓	830 °C		BS EN 50200:2015	[Red bar from 10' to 15']					PH 15	
								PH 30			
✓	✓	830 °C		BS EN 50200:2015 + Annex E	[Red bar from 10' to 30']					30 min.	
								30 min. (1 impact/5 min.)			
							[Blue bar from 15' to 30']				
								15 min.			
	✓	930 °C		BS 8434-2:2003 + A2:2009	[Red bar from 10' to 50']						



Fire



Water



Mechanical Shock

BS EN 50200



This test is carried out to verify the circuit integrity of cables exposed to fire at 830°C and mechanical shocks. During the tests the cables are maintained at their rated voltage.

PH 15

830 °C



15'

PH 30

830 °C



30'

PH 60

830 °C



60'

PH 90

830 °C



90'

PH 120

830 °C



120'



BS 8434-2

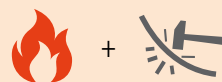


This test is carried out to verify circuit integrity during a fire. The cable is exposed to a flame at 930°C and mechanical shocks for 60 minutes and additional 60 minutes to flame, mechanical shocks and water spray. During the tests the cables are maintained at their rated voltage.

930 °C



60'



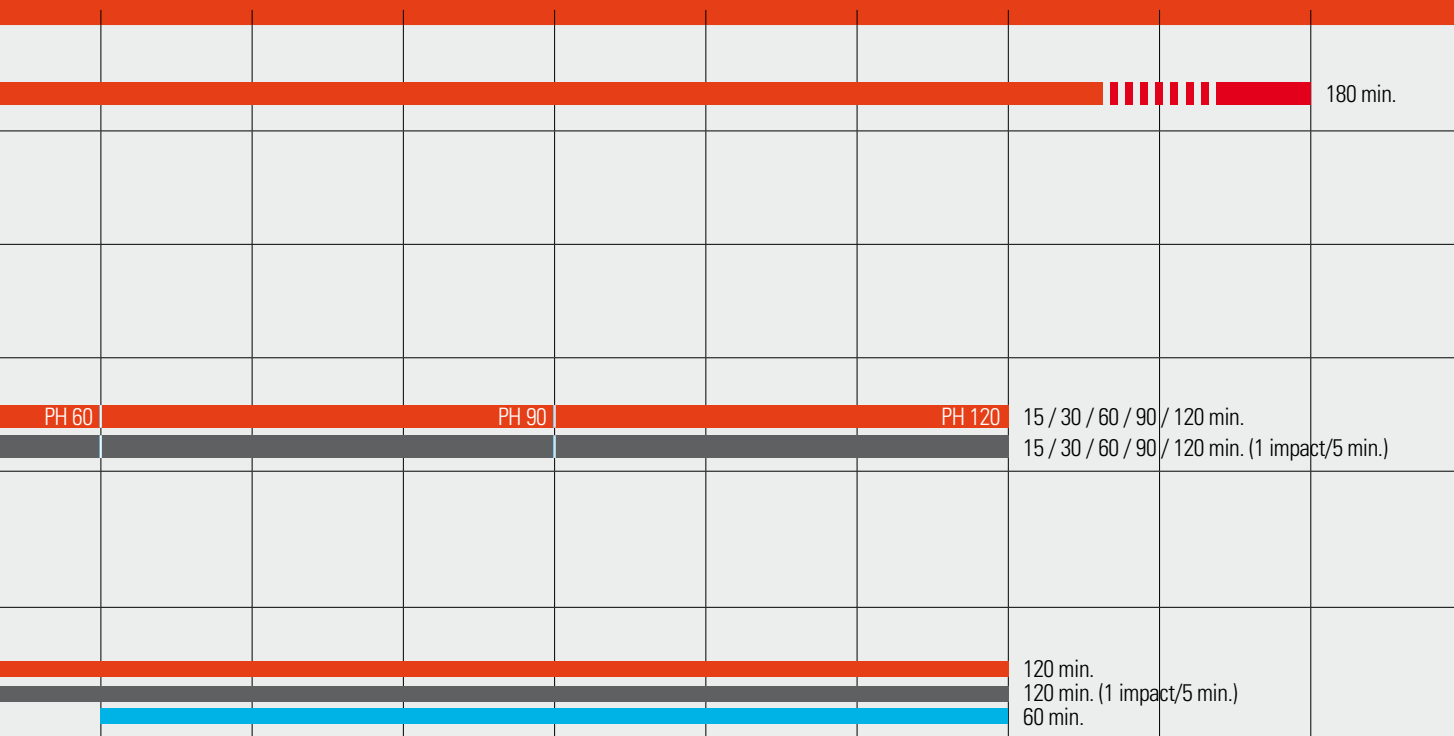
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60'



Total duration of test: 120'

60' 70' 80' 90' 100' 110' 120' ... 180'



Electrical Characteristics

Voltage rating	SINGLE OR THREE PHASE CIRCUIT UP TO 300/500 V R.M.S. OR UP TO 750 V D.C. CIRCUIT			
	1	1.5	2.5	4
Temperature rating - for insulated conductors only	-40 ÷ +90 °C max +200 °C			
Cross section (sq mm)	1	1.5	2.5	4
Conductor resistance (Ω/km at 20 °C)	18.1	12.1	7.41	4.61
Insulation resistance (MΩxkm at 20 °C)	300	300	300	300
Nominal Capacitance (pF/m)				
SR 114H - core/core	100	110	130	160
- core/screen	170	190	220	270
SR 114E - core/core	95	100	120	150
- core/screen	160	170	200	250

Current Ratings and Voltage Drop¹

Size of conductor (sqmm)	INSTALLATION METHOD: CLIPPED DIRECT				INSTALLATION METHOD: IN CONDUIT OR IN CABLE TRAY			
	two-core cable		three/four-core cable		two-core cable		three/four-core cable	
	current rating	voltage drop x A x m cos w = 1	current rating	voltage drop x A x m cos w = 1	current rating	voltage drop x A x m cos w = 1	current rating	voltage drop x A x m cos w = 1
1.0	19	45	17	39	17	45	15	39
1.5	24	30	22	26	22	30	19.5	26
2.5	33	18	30	15	30	18	26	15
4.0	45	11	40	10	40	11	35	10

¹ Conductor operating temperature: 90 °C; Ambient temperature: 30 °C.

Rating Factors

Ambient temp. (°C)	25	30	35	40	45	50	55	60	65
Rating factor	1.04	1.00	0.95	0.90	0.85	0.80	0.74	0.67	0.60

For grouping												
Number of cables	2	3	4	5	6	8	10	12	14	16	18	20
Rating factor	0.80	0.70	0.65	0.60	0.57	0.52	0.48	0.45	0.43	0.41	0.39	0.38

Armouring

FIRECEL cables can be supplied with:

SWA

Steel Wire Armour



SWB

Steel Wire Braid



Cable Installation

Ambient Temperature

FIRECEL cables are easy to install also at temperature as low as -10 °C.

Storage temperature: -40 °C to +80 °C.

Bending Radius

Minimum 6 times the nominal diameter of the cable.

Installation

Cable is easy to handle and easy to install without special tools.

Cable can be fixed directly to a surface using LSZH coated copper P clips or Saddle clips, available together with cables. Plastic clips must not be used.

Cable can also be installed in cable tray or in conduits, or direct buried in plaster.

Suitable for outdoor installation too, in appropriate protected environments.



Glands

For standard installation, general purpose nylon glands can be used.

In explosion proof area suitable proof glands can be used with armoured cables.



Available colours: white/red.

Our commitment to environmentally friendly products.

CAVICEL is committed to providing our customers with environmentally friendly products in compliance with the European Union (EU) RoHS Directive (Restriction of Hazardous Substances) and REACH Regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).





Conducting Value

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DUBAI BRANCH OFFICE



CORPORATE VIDEO



Cavicel firmly believes in the importance of the quality of its products and it undertakes itself to produce them using clean technologies for the respect and the protection of the environment.

All information contained in this brochure is believed to be accurate. Specifications can change at any time, according to technical developments and market changes.

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