



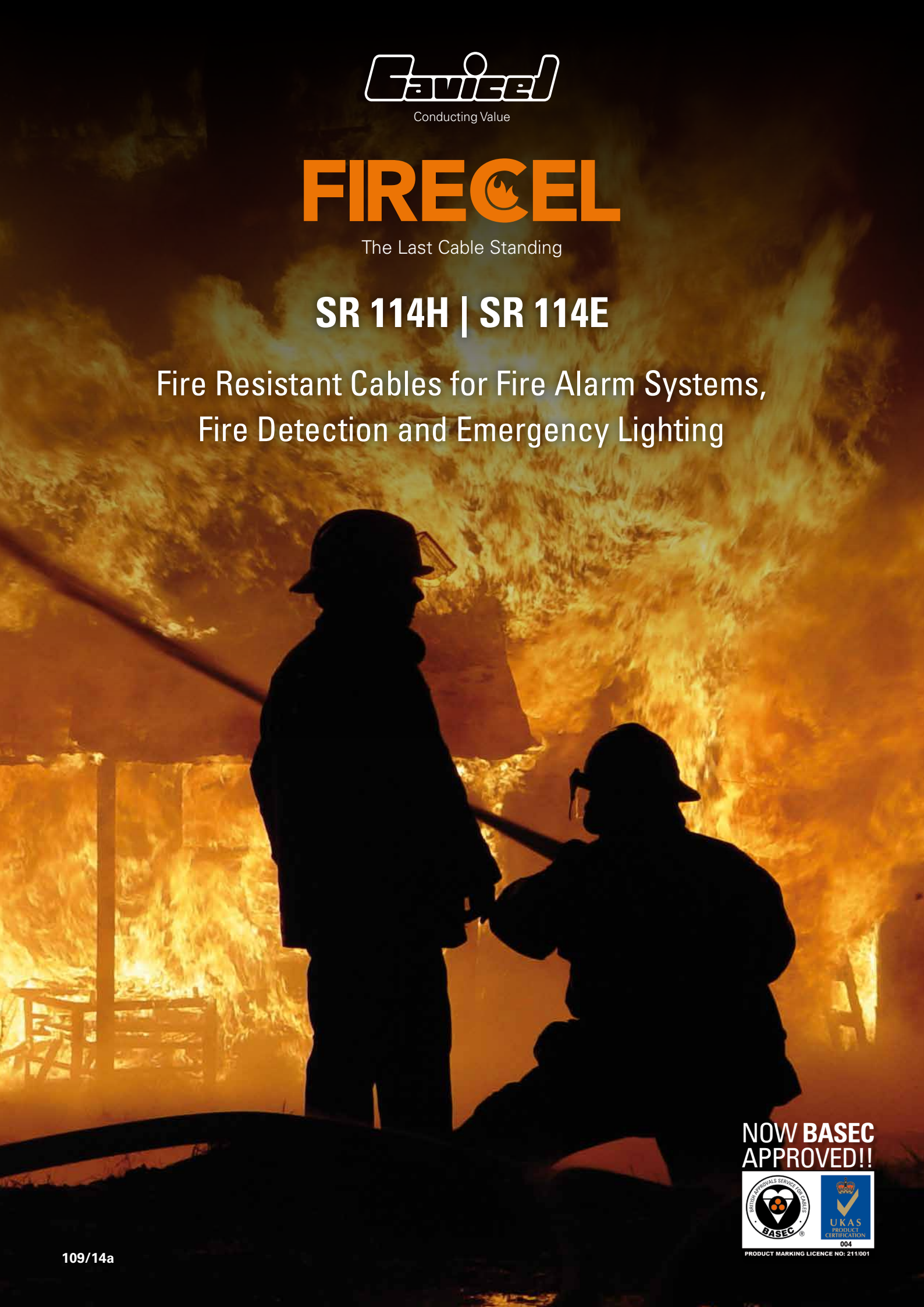
Conducting Value

# FIRECEL

The Last Cable Standing

## SR 114H | SR 114E

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



**NOW BASEC  
APPROVED!!**



004

PRODUCT MARKING LICENCE NO: 211/001

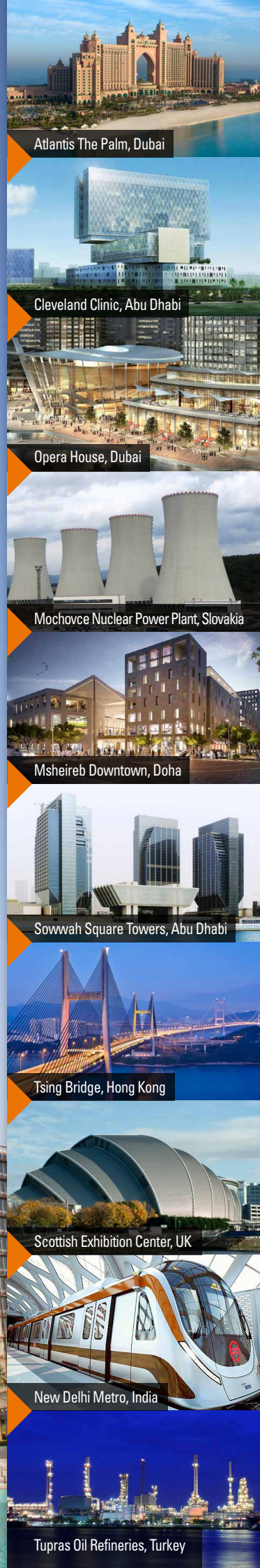


# FIRECEL SR 114 IN THE WORLD

**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 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



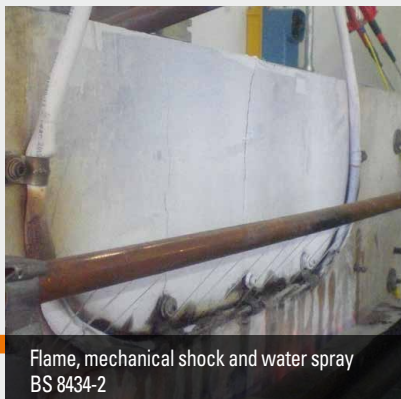
Smoke density test  
BS EN 61034-2



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.				
								[Red bar from 15' to 30']			
									15 min. (1 impact/30 sec.)		
✓	✓	830 °C		BS EN 50200:2015	[Red bar from 10' to 15']			[Red bar from 30' to 40']			
✓	✓	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**

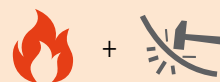


This test is carried out to verify circuit integrity during a fire. The cable is exposed to a flame at 930°C and mechanical shocks for 60 minutes and additional 60 minutes to flame, mechanical shocks and water spray. During the tests the cables are maintained at their rated voltage.

930 °C



60'



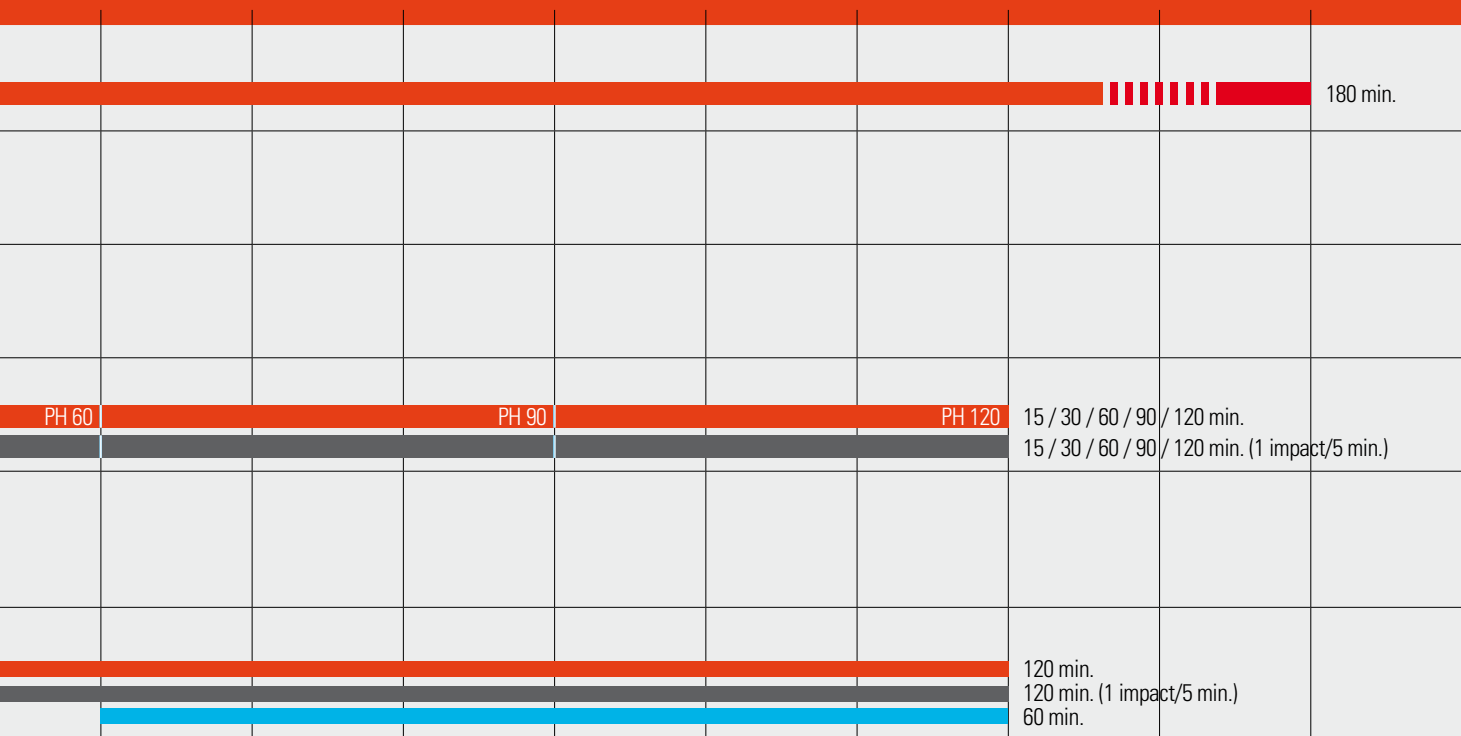
+

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)				
<b>SR 114H</b> - core/core	100	110	130	160
- core/screen	170	190	220	270
<b>SR 114E</b> - core/core	95	100	120	150
- core/screen	160	170	200	250

## Current Ratings and Voltage Drop<sup>1</sup>

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

<sup>1</sup> 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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**MADE IN ITALY**

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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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