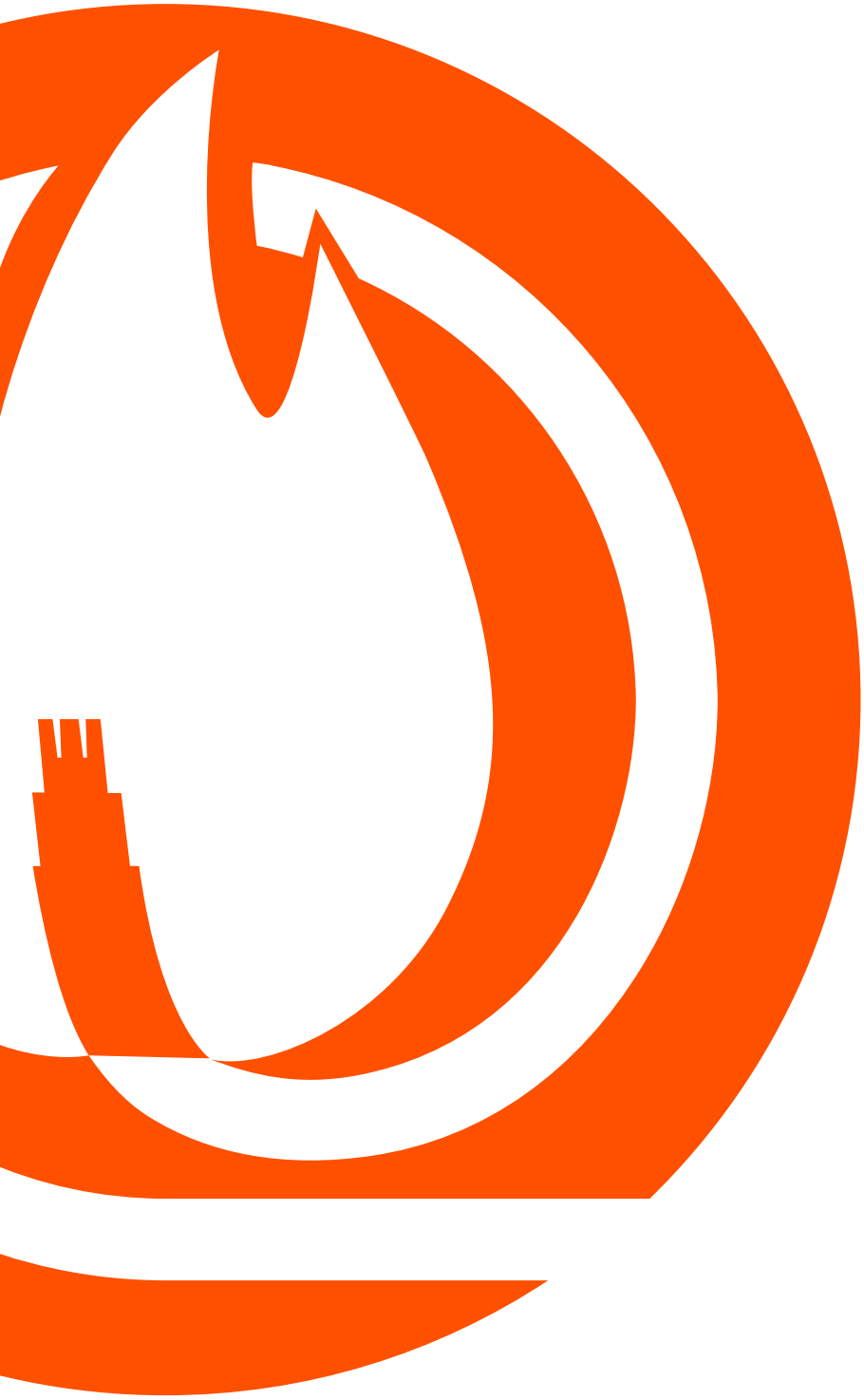
FIRE RESISTANT CABLES



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Cable Type	Application	Specification	Conductor Class

ERVITAL FIRE RESISTANT SIGNAL CONTROL CABLES

ERVITAL JE-H(St)H...Bd FE180/PH120	# Fire detection and fire alarm system circuits	VDE 0815	1
ERVITAL JE-H(St)H...Bd FE180/E30	# Fire detection and fire alarm system circuits	VDE 0815	1
ERVITAL JE-H(St)H...Bd FE180/E90	# Fire detection and fire alarm system circuits	VDE 0815	1
ERVITAL LIHH FE180/PH120	# Emergency announcement systems	VDE 0812 / VDE 0815	5
ERVITAL LIHCH FE180/PH120	# Emergency announcement systems	VDE 0812 / VDE 0815	5
ERVITAL LIHCH FE180/E30	# Emergency announcement systems	VDE 0812 / VDE 0815	5
ERVITAL LIHCH FE180/E90	# Emergency announcement systems	VDE 0812 / VDE 0815	5
ERVITAL LIH(St)H FE180/PH120	# Emergency announcement systems	VDE 0812 / VDE 0815	5
ERVITAL LIH(St)CH FE180/PH120	# Emergency announcement systems	VDE 0812 / VDE 0815	5

ERVITAL FIRE RESISTANT ENERGY CABLES

ERVITAL NHXH FE180/E90	# Fire detection and fire alarm system circuits # Fire escape route lighting # Emergency announcement systems # Fire-fighting water pumps # Smoke, heat exhaust and pressurization fans # Emergency lifts	VDE 0266	1-2
ERVITAL NHXCH FE180/E90		VDE 0266	1-2
ERVITAL (N)HXH FE180/E30		HD 604 S1 Section 5H	1-2
ERVITAL (N)HXH FE180/E90		HD 604 S1 Section 5H	1-2
ERVITAL (N)HXCH FE180/E30		HD 604 S1 Section 5H	1-2
ERVITAL (N)HXCH FE180/E90		HD 604 S1 Section 5H	1-2

FIRESAFE FIRE RESISTANT CABLES

FIRESAFE	# Emergency lighting, fire detection and fire alarm system circuits.	-	1-2
FIRESAFE GOLD	# Emergency lighting, fire detection and fire alarm system circuits.	BS 7629-1:2015	1-2

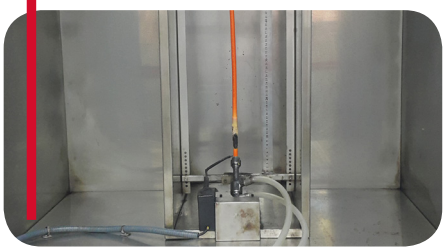
FIRE RESISTANT SIGNAL CONTROL & ENERGY **CABLES**

Insulation	Sheath	Nominal Voltage	Temperature range for static installation (°C) Min. ... Max.	Flame Retardant Test **EN 60332-1-2**	Flame Propagation Test **EN 60332-3-24**	Smoke Density Test **EN 61034-2**	Corrosive Gas Test **EN 60754-2**	Halogen Free Test **EN 60754-1**	Circuit Integrity Test (FEI80) **IEC 60331-23**	Circuit Integrity With Shock Test (PH120) **EN 50200**	Circuit Integrity With Shock and Water Test (Cat. C-W-Z) **BS 6387**	Cable System Circuit Integrity (E30/E90) **DIN 4102-12**
Silicone	HFFR	225 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	X
Silicone	HFFR	225 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	225 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	X
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	X
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	X
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	X	X
Mica+XLHF	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Mica+XLHF	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	0,6/1 kV	-40°C ... +90°C	√	√	√	√	√	√	√	X	√
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	√	X
Silicone	HFFR	300/500 V	-40°C ... +70°C	√	√	√	√	√	√	√	√	X

EN 60332-1-2 : Test for Vertical Flame Propagation for a Single Insulated Wire or Cable

Sample Characteristics
Minimum Length: 600 mm
Test Characteristics
Flame Temperature: Determined by the stipulated setting of the burner flame
Duration: min. 60 sec. Burner at an angle of 45° to the vertical
Requirement
The fire damage must end at least 50 mm below the upper fixing clamp. The cable must be self-extinguishing

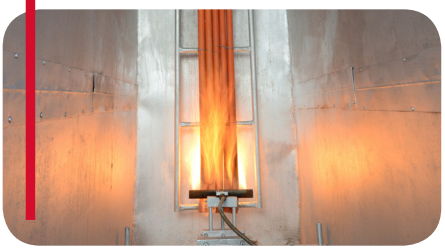
EN 60332-1-2



EN 60332-3-24 : Test for Vertical Flame Spread of Vertically - Mounted Bunched Wires or Cables - Category C

Sample Characteristics
Minimum Length: 4 m x test pcs.
Total Volume: 1,5 l non-metallic material/m
Test Characteristics
Flame Temperature: Determined by the stipulated quantity of propane gas and air
Duration: 20 min.
Requirement
The visible area of fire damage to the cables must not exceed 2,5 m in height from the bottom edge of the burner

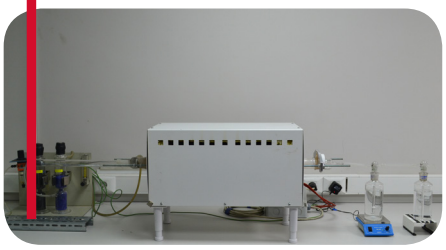
EN 60332-3-24



EN 60754-1 : Test on Gases Evolved during Combustion of Metarials from Cables - Part 1 : Determination of the Amount of Halogen Acid Gas

Sample Characteristics
Insulation and sheath compaunds
Test Characteristics
Heat Temperature: 800°C
Duration: 40 minutes in total, with at least 20 minutes at the maximum temperature
Requirement
The test is passed if the halogen acid gas content is lower than 5 mg/g

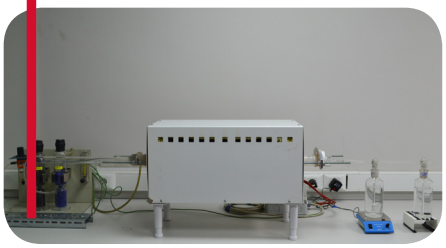
EN 60754-1



EN 60754-2 : Test on Gases Evolved during Combustion of Metarials from Cables - Part 2 : Determination of Acidity (by pH Measurement) & Conductivity

Sample Characteristics
Insulation and sheath compaunds
Test Characteristics
Heat Temperature: 935°C
Duration: 30 min.
Requirement
The test is passed if the pH-values is lower than 4,3 and the electrical conductivity does not exceed 100 S/cm

EN 60754-2



EN 61034-2 : Measurement of Smoke Density of Cables Burning under Defined Conditions

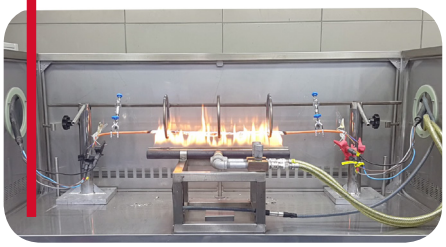
Sample Characteristics
Insulation and sheath compaunds
Test Characteristics
Test Set-Up: A cable specimen is burnt in a closed chamber using a flammable liquid
Flame Temperature: Determined by the quantity and composition of the fuel
Duration: 40 min.
Requirement
Light transmission is 60% min.

EN 61034-2

IEC 60331-23 : Tests for Electric Cables under Fire Conditions - Circuit Integrity (FE180)

Sample Characteristics
Minimum Length: 1.200 mm
Test Characteristics
Flame Temperature: 750°C
Voltage: Cable nominal voltage
Duration: 180 min.
Requirement
Function continuity ≥ 180 min.
(The sample will be connected to electrical supply and placed into the flames)

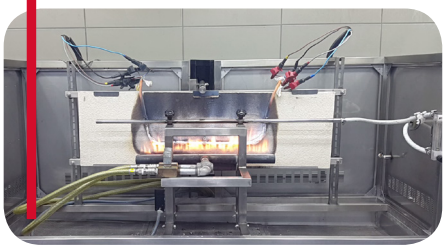
IEC 60331-23



EN 50200 : Test for Resistance to Fire of Unprotected Small Cables for Use in Emergency Circuits (PH120)

Sample Characteristics
Cable Diameter: 20 ≤ mm
Minimum Length: 1.200 mm
Test Characteristics
Flame Temperature: 830°C
Mechanical Shock: Each 5 min.
Voltage: Cable nominal voltage
Duration: 120 min.
Requirement
Function continuity ≥ 120 min.

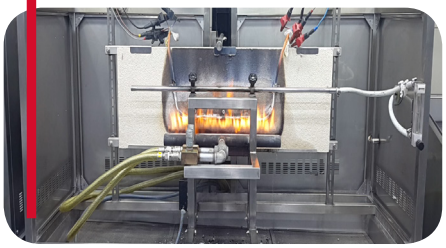
EN 50200



EN 50200 Annex E : Similar to EN 50200 with Water Spray

Sample Characteristics
Cable Diameter: 20 ≤ mm
Minimum Length: 1.200 mm
Test Characteristics
Flame Temperature: 830°C
Duration: 30 min.
(15 min. fire & shock and than 15 min. fire & shock & water)
Requirement
Function continuity ≥ 30 min.

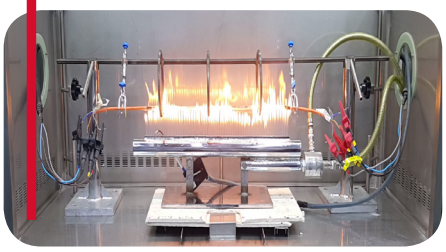
EN 50200 Annex E



BS 6387 CAT C : Test Method for Resistance to Fire of Cables Required to Maintain Circuit Integrity under Fire Conditions

Sample Characteristics
Minimum Length: 1.200 mm
Test Characteristics
Flame Temperature: 950°C
Voltage: Cable nominal voltage
Duration: 180 min.
Requirement
Function continuity ≥ 180 min.

BS 6387 CAT C



BS 6387 CAT W : Test Method for Resistance to Fire of Cables Required to Maintain Circuit Integrity under Fire Conditions with Water

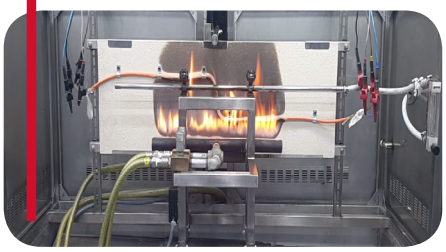
Sample Characteristics
Minimum Length: 1.500 mm
Test Characteristics
Flame Temperature: 650°C
Voltage: Cable nominal voltage
Water spray with sprinkle
Duration: 30 min. (15 min. fire and than 15 min. fire & water)
Requirement
Function continuity ≥ 30 min.

BS 6387 CAT W

BS 6387 CAT Z : Test Method for Resistance to Fire of Cables Required to Maintain Circuit Integrity under Fire Conditions with Mechanical Shock

Sample Characteristics
Cable Diameter: ≤ 20 mm
Minimum Length: 1.200 mm
Test Characteristics
Flame Temperature: 950°C
Voltage: Cable nominal voltage
Mechanical Shock: Each 30 s
Duration: 15 min.
Requirement
Function continuity ≥ 15 min.

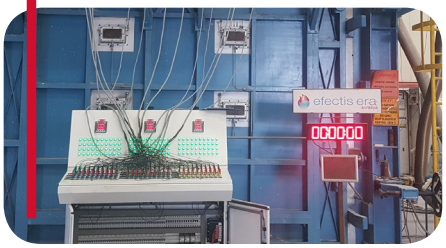
BS 6387 CAT Z



DIN 4102-12 : Fire Behaviour of Building Materials & Building Components - Part 12: Circuit Integrity Maintenance of Electric Cable Systems, Requirements and Testing (E30-E60-E90)

Sample Characteristics
Minimum Length: 4.000 mm x test pcs.
Test Characteristics
Fire Temperature: from ambiant to > 1.000°C (ΔT=345log[8tmin+1])
Voltage: 400V for 0,6/1kV Cables & 110V for ≤ 0,6/1kV cables
Duration: 90 min.
Requirement
Function continuity ≥ 30, 60 or 90 min.

DIN 4102-12



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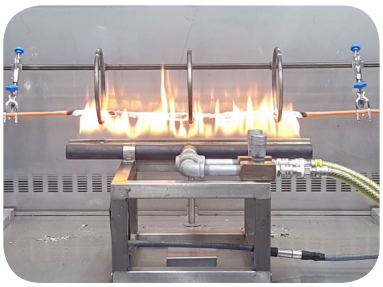
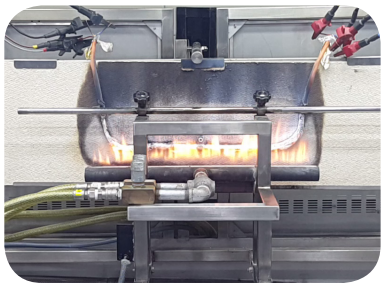
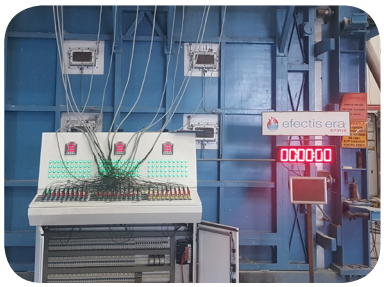
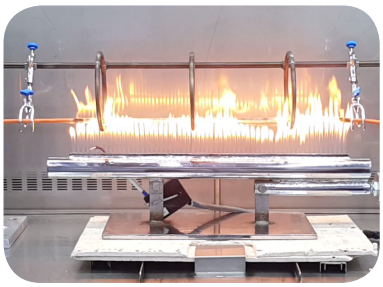
	FE180	PH120	E30	E60	E90
Standard(s)	IEC 60331-21/23	TS/BS/EN 50200 - TS/BS/EN50362	DIN VDE 4102-12		
Temperature	750°C	830±40°C	up to 1000°C		
Duration	180 min.	120 min.	30 min.	60 min.	90 min.
Voltage	up to 1 kV	up to 1 kV	up to 1 kV		
Test Method	Flame is applied to the cable only	Flame and physical impact are applied to the cable only	Flame is applied to the whole cable system		
Figure					
Explanation	**IEC 60331-21/23** These standards contains the information about tests for electric cables under fire conditions - Circuit integrity- Part 21/23	**TS/BS/EN 50200 - TS/BS/EN50362** These standards contain method of test for resistance to fire of unprotected small and big cables (smaller than 20mm and bigger than 20mm overall diameter) for use in emergency circuits. (Circuit integrity with shock)	**DIN VDE 4102-12** This standard specifies requirements for and methods of testing the maintenance of circuit integrity in electrical cable systems under fire conditions. It applies only to cables rated for voltages up to 1 kV. The test method specified here identifies the maintenance of circuit integrity as the absence of a short circuit or interruption in the cable system. It is not suitable for determining function impairment as a result of voltage drops or a heat-induced increase in conductor resistance.		

FIRE RESISTANT CABLES
COMPARISON OF FIRE TESTS

	C	W	Z
Standard(s)	BS 6387	BS 6387	BS 6387
Temperature	950±40°C	650±40°C	950±40°C
Duration	180 min.	30 min.	15 min.
Voltage	up to 1 kV		
Test Method	Flame is applied to the cable only	Flame and water spray are applied to the cable only	Flame and physical impact are applied to the cable only
Figure			
Explanation	**BS 6387 C** Protocol C subjects the cable under test to a flame via direct impingement corresponding to a temperature attack of 950 °C ±40 °C.	**BS 6387 W** Protocol W subjects the cable under test to a flame via direct impingement corresponding to a temperature attack of 650 °C ±40 °C with direct application of water simulating a sprinkler system.	**BS 6387 Z** Protocol Z subjects the cable under test to a flame via direct impingement corresponding to a temperature attack of 950 °C ±40 °C with indirect application of mechanical shock.

FIRE RESISTANT CABLES

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