Reg. No. 041/S-159

The Experts on Fire Safety

CLASSIFICATION OF FUNCTION IN FIRE IN ACCORDANCE WITH DIN 4102-12: 1998-11

with direct field of application

FIRES-CR-251-13-AUPE

Name of the product:	Power and communication cables of Berica cavi S. p. A. at cable bearing system OBO Bettermann
Sponsor:	Berica cavi S. p. A. Via della Meccanica 2 Meledo di Sarego (Vicenza) 360 40 Italy
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1. INTRODUCTION

This classification report defines the function in fire classification assigned to product: Power and communication cables of Berica cavi S. p. A. at cable bearing system OBO Bettermann in accordance with the procedures given in DIN 4102-12: 1998-11.

This test was carried out according to standard STN 92 0205: 2012 and meets requirements of DIN 4102-12: 1998-11. Basic deviation in process and carrying out of test between these standards is in measuring and in control of temperature in the test furnace. According to STN 92 0205: 2012, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 025: 2012 for classification of tested cables according to DIN 4102-12: 1998-11, but not conversely.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The product, Power and communication cables of Berica cavi S. p. A. at cable bearing system OBO Bettermann is defined as a power cables with circuit integrity maintenance.

2.2 PRODUCT DESCRIPTION

Product comprised from fire resistant halogen free power and communication cables at cable bearing system. Cables are used for the transport of energy and the transmission of signals and controls for electrical equipment when you need maximum security against fire, such as emergency lighting and alarm systems, automatic fire detection, fire extinguishing equipment, automatic opening doors, ventilation systems and conditioning, emergency telephone systems. Cables are assigned for fixed indoor installation in dry or wet environments and temporarily outdoor. Cables can be installed on platforms, pipes, conduits and similar systems.

Used cables by test:

(N)HXH FE180/E30 4x1,5	(8x)
(N)HXH FE180/E30 4x25	(8x)
EUROSAFE FE180 UNSCREENED 4x0,5	(8x)
EUROSAFE FE180 UNSCREENED 4x2,5	(8x)
EUROSAFE JE-H(St)H 1x2x0,8	(8x)
EUROSAFE JE-H(St)H 1x2x0,9	(8x)

Bearing system

Cable bearing system used for the fire resistance test: OBO Bettermann – cable trays, cable ladders cable clips and accessories.

More detailed information about product and bearing system is shown in drawings which form an integral part of test report. Drawings were delivered by sponsor.

3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, Slovak republic	Berica cavi S. p. A. Meledo di Sarego 360 40 Italy	FIRES-FR-242-13-AUNE	12. 12. 2013	STN 92 0205 ZP-27/2008 DIN 4102-12

3.2 TEST RESULTS

No./ Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205 ZP-27/2008 DIN 4102-12	1	2 cables EUROSAFE FE180 UNSCREENED 4x2,5	**6**	57 minutes
	2	2 cables EUROSAFE FE180 UNSCREENED 4x0,5		55 minutes
	3	2 cables (N)HXH FE180/E30 4x25	**7**	51 minutes
	4	2 cables (N)HXH FE180/E30 4x1,5		44 minutes
	5	2 cables (N)HXH FE180/E30 4x25		62 minutes
	6	2 cables (N)HXH FE180/E30 4x1,5		58 minutes
	7	cable EUROSAFE FE180 UNSCREENED 4x2,5	**5**	89 minutes
	8	cable EUROSAFE FE180 UNSCREENED 4x2,5		89 minutes
	9	cable EUROSAFE FE180 UNSCREENED 4x0,5		86 minutes
	10	cable EUROSAFE FE180 UNSCREENED 4x0,5		89 minutes
	11	cable (N)HXH FE180/E30 4x25		90 minutes no failure / interruption
	12	cable (N)HXH FE180/E30 4x25		59 minutes
	13	cable (N)HXH FE180/E30 4x1,5		54 minutes
	14	cable (N)HXH FE180/E30 4x1,5		52 minutes
	15	cable EUROSAFE FE180 UNSCREENED 4x2,5	**4**	90 minutes no failure / interruption
	16	cable EUROSAFE FE180 UNSCREENED 4x2,5		90 minutes no failure / interruption
	17	cable EUROSAFE FE180 UNSCREENED 4x0,5		90 minutes no failure / interruption
	18	cable EUROSAFE FE180 UNSCREENED 4x0,5		90 minutes no failure / interruption
	19	cable EUROSAFE FE180 UNSCREENED 4x2,5	**1**	54 minutes
	20	cable EUROSAFE FE180 UNSCREENED 4x2,5		54 minutes
	21	cable EUROSAFE FE180 UNSCREENED 4x0,5		81 minutes
	22	cable EUROSAFE FE180 UNSCREENED 4x0,5		78 minutes
	23	cable (N)HXH FE180/E30 4x25	**2**	58 minutes
	24	cable (N)HXH FE180/E30 4x25		48 minutes
	25	cable (N)HXH FE180/E30 4x1,5		43 minutes
	26	cable (N)HXH FE180/E30 4x1,5		48 minutes
	52	2 cables EUROSAFE JE-H(St)H 1x2x0,9	**7**	81 minutes
	53	2 cables EUROSAFE JE-H(St)H 1x2x0,8	**8**	71 minutes
	54	2 cables EUROSAFE JE-H(St)H 1x2x0,8	**5**	51 minutes
	55	2 cables EUROSAFE JE-H(St)H 1x2x0,9		59 minutes
	56	2 cables EUROSAFE JE-H(St)H 1x2x0,8	**4**	75 minutes
	57	2 cables EUROSAFE JE-H(St)H 1x2x0,9		85 minutes
	58	2 cables EUROSAFE JE-H(St)H 1x2x0,9	**2**	84 minutes
	59	2 cables EUROSAFE JE-H(St)H 1x2x0,8	**3**	75 minutes

The fire test was discontinued in 93rd minute at the request of test sponsor.

Specimens S1 – S26 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S59 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.

Circuit breakers with rating 3 A were used.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 3.2 of DIN 4102-12:1998-11 .

4.2 CLASSIFICATION ACCORDING TO DIN 4102-12

Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable
EUROSAFE FE180 UNSCREENED	EUROSAFE FE180 UNSCREENED 4x0,5	Cable trays SKS 630, consoles US 3 K, brackets MWA 12 31. Holders ABR with threaded rods M10 fixed to ceiling clamps BSB. Loading 10 kg.m^{-1}. Consoles in spacing of 1200 mm. **Tracks No. 1 - 3.**	**E 60**	n x ≥0,5 – 2,5 mm^2 n ≥ 2 **E 30**
	EUROSAFE FE180 UNSCREENED 4x2,5		**E 30**	
(N)HXH FE180/E30	(N)HXH FE180/E30 4x1,5		**E 30**	n x ≥1,5 – 25 mm^2 n ≥ 2 **E 30**
	(N)HXH FE180/E30 4x25		**E 30**	
EUROSAFE JE-H(St)H	EUROSAFE JE-H(St)H 1x2x0,9		**E 60**	n x 2 x ≥ 0,9 mm n ≥ 1 **E 60**
	EUROSAFE JE-H(St)H 1x2x0,8		**E 60**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 60**
EUROSAFE FE180 UNSCREENED	EUROSAFE FE180 UNSCREENED 4x0,5	Ceiling profiles 1268L. Single cable clips 732. Profiles in spacing of 300 mm. **Tracks No. 4.**	**E 90**	n x ≥0,5 – 2,5 mm^2 n ≥ 2 **E 90**
	EUROSAFE FE180 UNSCREENED 4x2,5		**E 90**	
(N)HXH FE180/E30	(N)HXH FE180/E30 4x1,5		**E 30**	n x ≥1,5 – 25 mm^2 n ≥ 2 **E 30**
	(N)HXH FE180/E30 4x25		**E 30**	
EUROSAFE JE-H(St)H	EUROSAFE JE-H(St)H 1x2x0,9		**E 60**	n x 2 x ≥ 0,9 mm n ≥ 1 **E 60**
	EUROSAFE JE-H(St)H 1x2x0,8		**E 60**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 60**
EUROSAFE FE180 UNSCREENED	EUROSAFE FE180 UNSCREENED 4x0,5	Ceiling profiles 1268L. Single cable clips 2056L with troughs 2058. Profiles in spacing of 600 mm. **Tracks No. 5.**	**E 60**	n x ≥0,5 – 2,5 mm^2 n ≥ 2 **E 60**
	EUROSAFE FE180 UNSCREENED 4x2,5		**E 60**	
(N)HXH FE180/E30	(N)HXH FE180/E30 4x1,5		**E 30**	n x ≥1,5 – 25 mm^2 n ≥ 2 **E 30**
	(N)HXH FE180/E30 4x25		**E 60**	
EUROSAFE JE-H(St)H	EUROSAFE JE-H(St)H 1x2x0,9		**E 30**	n x 2 x ≥ 0,9 mm n ≥ 1 **E 30**
	EUROSAFE JE-H(St)H 1x2x0,8		**E 30**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 30**

Cable	Type of tested cable, single cross-sections and number of conductors	Arrangement	Classification for type of tested cable (by cross-sections and number of conductors)	Classification for cable

EUROSAFE FE180 UNSCREENED	EUROSAFE FE180 UNSCREENED 4x0,5	Cable ladders LG 640 VS/F, consoles US 3 K, brackets MWA 12 41. Holders ABL with threaded rods M12 fixed to ceiling clamps BSB. Loading 20 kg.m^{-1}. Consoles in spacing of 1200 mm. **Tracks No. 6 - 8.**	**E 30**	n x ≥0,5 – 2,5 mm^2 n ≥ 2 **E 30**
	EUROSAFE FE180 UNSCREENED 4x2,5		**E 30**	
(N)HXH FE180/E30	(N)HXH FE180/E30 4x1,5		**E 30**	n x ≥1,5 – 25 mm^2 n ≥ 2 **E 30**
	(N)HXH FE180/E30 4x25		**E 30**	
EUROSAFE JE-H(St)H	EUROSAFE JE-H(St)H 1x2x0,9		**E 60**	n x 2 x ≥ 0,9 mm n ≥ 1 **E 60**
	EUROSAFE JE-H(St)H 1x2x0,8		**E 60**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 60**

4.3 FIELD OF APPLICATION

- throughout the period during which circuit integrity is to be maintained, neighbouring building components shall not have a negative effect on circuit integrity;
- although testing is only carried out on cables arranged horizontally, test results also apply to cables arranged either diagonally or vertically (e.g. risers), as long as the cable system is supported in transitional areas (i.e. where it switches from a horizontal to a vertical arrangement) in such a manner that the cables will not slip or kink at corners;
- test results of function in fire test of cables tested at standard supporting construction are also applicable for tested standard supporting construction of other producers;
- test results of function in fire test of cables tested at standard supporting construction are also applicable for cables of other producers tested at standard supporting construction;
- maximal length of increasing routing shall be 3500 mm with consistent horizontal placing of cable with minimal length of 300 mm (apart from cable bending) and with maximal spacing of clips of 300 mm, eventually the cables are stabilized by cable transmissions at floor or ceiling with particular fire resistance;
- for vertical systems, the test results obtained for cables mounted singly on the ceiling using single clips apply**.** Brackets of proven suitability may also be used, as long as their spacing is equal to that of the single clips tested;
- results of testing single cables on the ceiling apply also to cables mounted horizontally on walls;
- results of testing bunched cables on a ladder or tray also apply to support construction attached to a wall. However, such constructions required proof of suitability by means of a test certificate or other document issued by an accredited testing laboratory.

5. LIMITATIONS

Load-bearing construction elements for fixing of cable systems must be proved for at least the same fire resistance compare to classified function in fire of cable system.

This classification document does not represent type approval or certification of the product.

The classification is valid provided that the product, field of application and standards and regulations are not changed.

Approved:

Ing. Štefan Rástocký
leader of the testing laboratory

Signed:

Bc. Dávid Šubert
technician of the testing laboratory