CLASSIFICATION OF FUNCTION IN FIRE
FIRES-CR-157-13-AUPE

Fire resistant power cables NOPOVIC NHXH

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-157-13-AUPE

Name of the product: Fire resistant power cables NOPOVIC NHXH

Sponsor:
nkt cables a/s
Toftegårdsvej 2
DK-4550 Asnaæs
Denmark

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1. INTRODUCTION

This classification report defines the function in fire classification assigned to product: Fire resistant power cables NOPOVIC NHXH with cable bearing system BAKS 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, Fire resistant power cables NOPOVIC NHXH is defined as a power cables with circuit integrity maintenance.

2.2 PRODUCT DESCRIPTION

Product comprised from fire resistant halogen free power cables NOPOVIC NHXH designed for fixed installation in ordinary or possibly damp environments. Value of water pH in short-term shallow immersion is 3-11. They are suitable, in particular, for use on an inflammable surface and in environments with fire hazards where maintenance of circuit integrity during a fire is required. If it is necessary to lay the cable in the ground, it has to be provided with a protection tube, and has to be laid in bed of sand. The cables could not be exposed to long-term direct sun radiation. They are suitable for places with high concentration of people such as underground, airports, and hospitals, or for protection of high-tech equipment in buildings in case of fire.

Bearing system

Cable bearing system used for the fire resistance test: BAKS – cable trays, cable mesh trays, cable ladders cable clips UDF and cable hangers UK/UKO1.

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	nkt cables a/s DK-4550 Asnaæs Denmark	FIRES-FR-108-13-AUNE	11. 07. 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 NOPOVIC NHXH 4x1,5 E90 Asneas	**8**	90 minutes no failure / interruption
	2	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas		46 minutes
	3	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas	**6**	90 minutes no failure / interruption
	4	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas		68 minutes
	5	4 cables NOPOVIC NHXH 5x1,5 E90 nktcV	**6, 8**	75 minutes
	6	2 cables NOPOVIC NHXH 4x50 E90 nktcK	**12**	90 minutes no failure / interruption
	7	2 cables NOPOVIC NHXH 4x50 E90 nktcK		90 minutes no failure / interruption
	8	2 cables NOPOVIC NHXH 4x10 E90 nktcK	**11**	90 minutes no failure / interruption
	9	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	10	2 cables NOPOVIC NHXH 4x10 E30 Asneas		73 minutes
	11	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	12	2 cables NOPOVIC NHXH 4x10 E30 Asneas	**7**	26 minutes
	13	2 cables NOPOVIC NHXH 4x10 E90 Asneas		79 minutes
	14	2 cables NOPOVIC NHXH 4x50 E90 nktcK		73 minutes
	15	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	16	2 cables NOPOVIC NHXH 4x10 E30 Asneas	**5**	62 minutes
	17	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	18	2 cables NOPOVIC NHXH 4x50 E90 nktcK		90 minutes no failure / interruption
	19	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	20	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas	**11**	60 minutes
	21	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	22	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	23	2 cables NOPOVIC NHXH 4x10 E30 Asneas		61 minutes
	24	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	25	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas		90 minutes no failure / interruption
	26	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas	**10**	29 minutes
	27	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	28	2 cables NOPOVIC NHXH 4x10 E30 Asneas		80 minutes
	29	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	30	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	31	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas		71 minutes
	32	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	33	2 cables NOPOVIC NHXH 4x1,5 E90 nktcV	**4**	26 minutes
	34	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas		26 minutes
	35	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	36	2 cables NOPOVIC NHXH 4x10 E30 Asneas		24 minutes
	37	2 cables NOPOVIC NHXH 4x1,5 E30 Asneas	**2**	52 minutes
	38	2 cables NOPOVIC NHXH 4x1,5 E90 Asneas		90 minutes no failure / interruption
	39	2 cables NOPOVIC NHXH 4x10 E30 Asneas		57 minutes
	40	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	41	2 cables NOPOVIC NHXH 4x10 E30 Asneas	**10**	70 minutes
	42	2 cables NOPOVIC NHXH 4x10 E90 Asneas		82 minutes
	43	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption

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	44	2 cables NOPOVIC NHXH 5x1,5 E90 nktcV	**3**	90 minutes no failure / interruption
	45	2 cables NOPOVIC NHXH 4x10 E90 Asneas		90 minutes no failure / interruption
	46	2 cables NOPOVIC NHXH 4x50 E90 nktcK		90 minutes no failure / interruption
	47	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	48	2 cables NOPOVIC NHXH 4x50 E90 nktcK	**1**	90 minutes no failure / interruption
	49	2 cables NOPOVIC NHXH 4x10 E90 nktcK		90 minutes no failure / interruption
	50	2 cables NOPOVIC NHXH 4x50 E90 nktcK	**9**	90 minutes no failure / interruption
	51	2 cables NOPOVIC NHXH 4x50 E90 nktcK		90 minutes no failure / interruption

The fire test was discontinued in 96th minute at the request of test sponsor.

Specimens S1 – S51 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.

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

Type of cable: NOPOVIC NHXH E90 (producer: nkt cables s.r.o., Průmyslová 1130, 272 01 Kladno, CZ)

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
NOPOVIC NHXH E90	NOPOVIC NHXH 4x10 E90	Cable trays KCP/KCOP300H60/B300, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 10 kg.m^{-1}. Consoles in spacing of 1200 mm. **Track No. 1.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Cable ladders DGOP400H60/B400, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1200 mm. **Track No. 3.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Cable trays KGJ/KGOJ400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Track No. 5.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Track No. 7.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x50 E90		**E 60**	
	NOPOVIC NHXH 4x10 E90	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 300 mm. **Tracks No. 9, 10.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 600 mm. **Tracks No. 9, 10.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Cable clips UDF fixed to ceiling in spacing of 300 mm. **Tracks No. 11, 12.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	
	NOPOVIC NHXH 4x10 E90	Cable clips UDF fixed to ceiling in spacing of 600 mm. **Tracks No. 11, 12.**	**E 90**	n x ≥10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x50 E90		**E 90**	

Type of cable: NOPOVIC NHXH E90 (producer: nkt cables a/s, Toftegårdsvej 25, DK-4550 Asnaæs, Denmark)

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
NOPOVIC NHXH E90	NOPOVIC NHXH 4x1,5 E90	Cable trays KCP/KCOP300H60/B300, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 10 kg.m^{-1}. Consoles in spacing of 1200 mm. **Track No. 2.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	
	NOPOVIC NHXH 4x1,5 E90	Cable ladders DGOP400H60/B400, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1200 mm. **Tracks No. 3, 4.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	
	NOPOVIC NHXH 4x1,5 E90	Cable trays KGJ/KGOJ400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Tracks No. 5, 6.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	
	NOPOVIC NHXH 4x1,5 E90	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Tracks No. 7, 8.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E90		**E 60**	
	NOPOVIC NHXH 4x1,5 E90	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 300 mm. **Track No. 10.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E90		**E 60**	
	NOPOVIC NHXH 4x1,5 E90	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 600 mm. **Track No. 10.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	
	NOPOVIC NHXH 4x1,5 E90	Cable clips UDF fixed to ceiling in spacing of 300 mm. **Track No. 11.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	
	NOPOVIC NHXH 4x1,5 E90	Cable clips UDF fixed to ceiling in spacing of 600 mm. **Track No. 11.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 90**
	NOPOVIC NHXH 4x10 E90		**E 90**	

Type of cable: NOPOVIC NHXH E30 (producer: nkt cables a/s, Toftegårdsvej 25, DK-4550 Asnaæs, Denmark)

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
NOPOVIC NHXH E30	NOPOVIC NHXH 4x1,5 E30	Cable trays KCP/KCOP300H60/B300, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 10 kg.m^{-1}. Consoles in spacing of 1200 mm. **Track No. 2.**	**E 30**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 30**
	NOPOVIC NHXH 4x10 E30		**E 30**	
	NOPOVIC NHXH 4x1,5 E30	Cable ladders DGOP400H60/B400, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1200 mm. **Track No. 4.**	**Without classification**	**Without classification**
	NOPOVIC NHXH 4x10 E30		**Without classification**	
	NOPOVIC NHXH 4x1,5 E30	Cable trays KGJ/KGOJ400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Tracks No. 5, 6.**	**E 60**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E30		**E 60**	
	NOPOVIC NHXH 4x1,5 E30	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Tracks No. 7, 8.**	**E 30**	**Without classification**
	NOPOVIC NHXH 4x10 E30		**Without classification**	
	NOPOVIC NHXH 4x1,5 E30	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 300 mm. **Track No. 10.**	**E 60**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E30		**E 60**	
	NOPOVIC NHXH 4x1,5 E30	Ceiling profiles SDOP 400, cable hangers UK/UKO1. Profiles in spacing of 600 mm. **Track No. 10.**	**Without classification**	**Without classification**
	NOPOVIC NHXH 4x10 E30		**E 60**	
	NOPOVIC NHXH 4x1,5 E30	Cable clips UDF fixed to ceiling in spacing of 300 mm. **Track No. 11.**	**E 90**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E30		**E 60**	
	NOPOVIC NHXH 4x1,5 E30	Cable clips UDF fixed to ceiling in spacing of 600 mm. **Track No. 11.**	**E 60**	n x ≥1,5 -10 mm^2 n ≥ 2 **E 60**
	NOPOVIC NHXH 4x10 E30		**E 60**	

Type of cable: NOPOVIC NHXH E90 (producer: nkt cables Vrchlabí s.r.o., člen skupiny NKT, Českých bratří 509, 543 14 Vrchlabí, Czech republic)

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
NOPOVIC NHXH E90	NOPOVIC NHXH 5x1,5 E90	Cable ladders DGOP400H60/B400, consoles WPCW/WPCO700, brackets WMC/WMCO300, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1200 mm. **Tracks No. 3, 4.**	**E 90**	**Without classification**
	NOPOVIC NHXH 4x1,5 E90		**Without classification**	**Without classification**
	NOPOVIC NHXH 5x1,5 E90	Cable trays KGJ/KGOJ400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Track No. 6.**	**E 60**	**Without classification**
	NOPOVIC NHXH 5x1,5 E90	Cable mesh trays KDS/KDSO400H60/3, horizontal supports CWP/CWOP40H40/05, threaded rods PG M10. Loading 20 kg.m^{-1}. Consoles in spacing of 1500 mm. **Track No. 8.**	**E 60**	**Without classification**

4.3 FIELD OF APPLICATION

This classification is valid for the following end use applications:

- § 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