

## RESISTANCE TO FIRE CLASSIFICATION REPORT FOR PRODUCT FIRES-CR-178-06-AUPE

Cables with integrity function FE180/E90  
Type – (N)HXH, (N)HXCH, HTKSH, HTKSHekw



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## **FIRE RESISTANCE CLASSIFICATION REPORT ACCORDING TO DIN 4102 – 12:1998-11**

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**Name of product:** Cables with integrity function FE180/E90  
Type – (N)HXH, (N)HXCH, HTKSH, HTKSHekw

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## 1. Introduction

This fire resistance classification report defines classification to power and communication non-halogen cables types – (N)HXH, (N)HXCH, HTKSH, HTKSHekw in bearing system BAKS and in accordance with method stated in DIN 4102 – 12: 1998-11.

## 2. Details of the classified product

### 2.1 General

*According to the sponsor definition, product is used for service installations with required circuit integrity maintenance.*

### 2.2 Product description

Product comprised from supporting system with accessories – power and communication non-halogen cables, cable trays, cable ladders, ceiling ledges with clamps UEF, UDF, UKO and sleeves – OZO, OZMO.

Cables: (N)HXH PH90/E30-E90 4x1,5 RE 0,6/1 kV ( 14 x )  
(N)HXH PH90/E30-E90 4x50 RM 0,6/1 kV ( 8 x )  
(N)HXCH PH90/E30-E90 4x1,5/1,5 RE 0,6/1 kV ( 12 x )  
(N)HXCH PH90/E30-E90 4x50/25 RM 0,6/1 kV ( 6 x )  
HTKSH PH90/E30 4x2x0,8 ( 12 x )  
HTKSHekw PH90/E30 1x2x2,3 ( 10 x )

Supporting system: was made by cable ladders, trays, individual clamps, clamps in ceiling ledges.

Supporting system was made by three vertical ceiling hangers type WCE which horizontal brackets type WMCO were fixed to. Vertical hangers were fixed to concrete ceiling by means of dowels PSRO M10 x 80 in spacing of 1200 mm. Fixation and arrangement of horizontal brackets are visible in appendix No.12 of this report. Two trays type KCOP300H60/3 were fixed to horizontal brackets from one side of vertical consoles and two ladders type DGOP400H60/3 were fixed from other side of vertical hangers. Trays and ladders were fixed to horizontal brackets by means of screws M8 with nuts M8 through clamps of type ZMO. Joints of trays and ladders was realized by means of connecting components type (BLO300, LPOLH60) at tray and type LDOCHE60E at ladder and by means of screws M8 with nuts M8 – 20 bolted joints at tray and 12 bolted joints at ladder. From outside, horizontal brackets were fixed through grips type UPWO by means of threaded bar PGM10 fixed from both sides by nut M10 with washer M10 to ceiling hanger type USOV. Ceiling hangers were fixed to ceiling by dowels type PSRO M10.

Ceiling assembling was realized by means of clamps type: UEF, UDF, OZMO, OZO which were fixed to ceiling by dowels SRO M6 x 30 and by means of ceiling ledge, which was fixed to concrete ceiling by three dowels PSRO M8 x 75. Clamps type UKO were inserted to this ceiling ledge. Number of components and arrangement are visible in drawing.

Cable penetration through the wall of test furnace was sealed by mineral wool Nobasil.

Load capacity: bearing system was loaded with maximal tolerance according to the standard:

- trays with 10 kg/m and ladders with 20 kg/m.

Loading with steel chain was used as the equivalent load.

More detailed information about specimen construction is shown in the drawings which form the appendix of this test report. Drawings were delivered by the sponsor of the test.

All the information about technical specifications of used materials and semi-products, information about their type sign and their producers were delivered by sponsor. This information was not subject of the specimen inspection.

### 3. Test reports / reports about extended product application & test results used for this classification

#### 3.1 Test reports / reports about extended product application

Serial report number	Testing laboratory	Test sponsor	Test report No.	Date of test	Test method
[1]	Fires s.r.o., Batizovce, SR	TECHNOKABEL S.A., Warszawa, Poland	FIRES-FR-160-06-AUNE	16.11.2006	DIN 4102 – 12:1998-11

The test specimen was conditioned according to EN 1363 – 1 before the fire resistance test.

#### 3.2 Test results

SPECIMENS	Time to first failure/interruption of conductor
Specimens 1-2: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 3-4: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 5-6: cables (N)HXCH PH90/E30-E90 4x50/25 RM	90 minutes no failure
Specimens 7-8: cables (N)HXH PH90/E30-E90 4x50 RM	90 minutes no failure
Specimens 9-10: cables (N)HXH PH90/E30-E90 4x50 RM	90 minutes no failure
Specimens 11-12: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 13-14: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 15-16: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 17-18: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 19-20: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 21-22: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 23-24: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 25-26: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 27-28: cables (N)HXH PH90/E30-E90 4x50 RM	90 minutes no failure
Specimens 29-30: cables (N)HXH PH90/E30-E90 4x1,5 RE	90 minutes no failure
Specimens 31-32: cables (N)HXH PH90/E30-E90 4x50 RM	90 minutes no failure
Specimens 33-34: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 35-36: cables (N)HXCH PH90/E30-E90 4x50/25 RM	90 minutes no failure
Specimens 37-38: cables (N)HXCH PH90/E30-E90 4x1,5/1,5 RE	90 minutes no failure
Specimens 39-40: cables (N)HXCH PH90/E30-E90 4x50/25 RM	90 minutes no failure
Specimen 41: cable HTKSHekw PH90/E30 1x2x2,3	62 minutes
Specimen 42: cable HTKSHekw PH90/E30 1x2x2,3	75 minutes
Specimen 43: cable HTKSH PH90/E30 4x2x0,8	75 minutes
Specimen 44: cable HTKSH PH90/E30 4x2x0,8	75 minutes
Specimen 45: cable HTKSHekw PH90/E30 1x2x2,3	47 minutes
Specimen 46: cable HTKSHekw PH90/E30 1x2x2,3	62 minutes
Specimen 47: cable HTKSH PH90/E30 4x2x0,8	90 minutes no failure
Specimen 48: cable HTKSH PH90/E30 4x2x0,8	90 minutes no failure
Specimen 49: cable HTKSHekw PH90/E30 1x2x2,3	71 minutes
Specimen 50: cable HTKSHekw PH90/E30 1x2x2,3	76 minutes
Specimen 51: cable HTKSH PH90/E30 4x2x0,8	32 minutes
Specimen 52: cable HTKSH PH90/E30 4x2x0,8	32 minutes
Specimen 53: cable HTKSH PH90/E30 4x2x0,8	90 minutes no failure
Specimen 54: cable HTKSH PH90/E30 4x2x0,8	67 minutes
Specimen 55: cable HTKSH PH90/E30 4x2x0,8	74 minutes
Specimen 56: cable HTKSH PH90/E30 4x2x0,8	83 minutes
Specimen 57: cable HTKSH PH90/E30 4x2x0,8	90 minutes no failure
Specimen 58: cable HTKSH PH90/E30 4x2x0,8	90 minutes no failure
Specimen 59: cable HTKSHekw PH90/E30 1x2x2,3	73 minutes
Specimen 60: cable HTKSHekw PH90/E30 1x2x2,3	56 minutes
Specimen 61: cable HTKSHekw PH90/E30 1x2x2,3	90 minutes no failure
Specimen 62: cable HTKSHekw PH90/E30 1x2x2,3	90 minutes no failure

The fire test was discontinued in 102<sup>nd</sup> minute at the request of sponsor.

#### 4. Classification and field of direct application

##### 4.1 Classification reference

This classification is elaborated in accordance with clause 3.2 of DIN 4102 – 12: 1998-11.

##### 4.2 Classification by clause 3.2 DIN 4102 – 12:1998-11

Product comprised from supporting system with accessories – power and communication non-halogen cables, cable trays, cable ladders, ceiling ledges with clamps UEF, UDF, UKO and sleeves – OZO, OZMO.

Cable	Type of cable, single cross-sections and number of conductors	Arrangement	Classification by cross-sections and number of conductors	Classification cable	
<b>(N)HXH P90</b>	(N)HXH PH90/E30-E90 4x1,5 RE	ladder	<b>E 90</b>	<b>E 90</b>	
	(N)HXH PH90/E30-E90 4x50 RM		<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE	tray	<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x50 RM		<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE	clamps UEF	<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE	clamps UDF	<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE	clamps OZMO	<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x50 RM	clamps OZO	<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE		<b>E 90</b>		
	(N)HXH PH90/E30-E90 4x1,5 RE	clamps UKO	<b>E 90</b>		
(N)HXH PH90/E30-E90 4x50 RM	<b>E 90</b>				
<b>(N)HXCH P90</b>	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	ladder	<b>E 90</b>	<b>E 90</b>	
	(N)HXCH PH90/E30-E90 4x50/25 RM		<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	tray	<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x50/25 RM		<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	clamps UEF	<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	clamps UDF	<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	clamps OZMO	<b>E 90</b>		
	(N)HXCH PH90/E30-E90 4x1,5/1,5 RE	clamps UKO	<b>E 90</b>		
(N)HXCH PH90/E30-E90 4x50/25 RM	<b>E 90</b>				
<b>HKTSH P90</b>	HTKSH PH90/E30 4x2x0,8	ladder	<b>E 60</b>	<b>E 60</b>	
	HTKSH PH90/E30 4x2x0,8	tray	<b>E 90</b>	<b>E 90</b>	
	HTKSH PH90/E30 4x2x0,8	clamps UEF	<b>E 60</b>	<b>E 60</b>	
	HTKSH PH90/E30 4x2x0,8	clamps UDF	<b>E 30</b>	<b>E 30</b>	
	HTKSH PH90/E30 4x2x0,8	clamps OZMO	<b>E 90</b>	<b>E 90</b>	
	HTKSH PH90/E30 4x2x0,8	clamps UKO	<b>E 60</b>	<b>E 60</b>	
<b>HKTSHekw P90</b>	HTKSHekw PH90/E30 1x2x2,3	ladder	<b>E 30</b>	<b>E 30</b>	
	HTKSHekw PH90/E30 1x2x2,3	tray	<b>E 90</b>	<b>E 90</b>	
	HTKSHekw PH90/E30 1x2x2,3	clamps UDF	<b>E 60</b>	<b>E 60</b>	
	HTKSHekw PH90/E30 1x2x2,3	clamps OZMO	<b>E 30</b>	<b>E 30</b>	
	HTKSHekw PH90/E30 1x2x2,3	clamps UKO	<b>E 60</b>	<b>E 60</b>	

Note: Classification is valid for all numbers and cross-sections of tested cable type if number of conductors and their cross-sections are not stated. Classification is valid only for tested cable types, number and cross-sections of conductors if number of conductors and their cross-sections are stated.

#### 4.3 Field of the application of test results

This classification is valid for following final usage of product:

- § test results acquired for cables fixed individually at the ceiling with usage of the individual clips and individual clips with longitudinal supports are applicable for vertical systems (e. g. slope) while the cable system is supported in transition places (e.g. where system traverses from the horizontal to the vertical arrangement) in case that cables are not slide and whirl in corners;
- § test results of cables bunched on the ladder or in the tray are also applicable to supporting constructions fixed in the wall, while this construction was tested at the maximal loading according to the standard;
- § test results are applicable only for systems without connection elements (e.g. junction box, branch bar);
- § test results are applicable at other types of tested supporting constructions, tested at the maximal loading according to the standard.

#### 5. Limitations

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

The classification is valid until 08. 12. 2011.

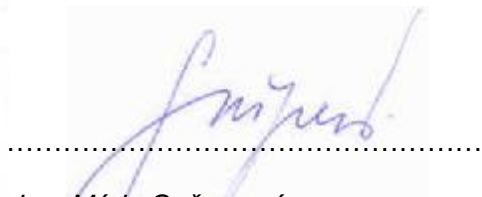
#### EXECUTED



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#### APPROVED



Ing. Mária Gašperová  
head of product certification body  
FIRES spol. s r.o. Batizovce

#### 6. Normative references

DIN 4102 – 2:1977-09	Fire behavior of building materials and elements - requirements and testing
DIN 4102 – 12:1998-11	Fire resistance of electric cable systems required to maintain circuit integrity
STN EN 1363-1:2001	Fire resistance tests – Part 1: General requirements