

## **FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-131-22-NURE**

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**Cable supporting system NIEDAX with halogen-free power cables of Dätwyler**

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# FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH ČSN 73 0895: 2016

**FIRES-JR-131-22-NURE**

**Name of the product:** Cable supporting system NIEDAX with halogen-free power cables of Dätwyler

**Sponsor:** Dätwyler IT Infra AG  
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Switzerland

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## 1. INTRODUCTION

This expert judgement report with classification defines the function in fire classification assigned to element „ Cable supporting system Niedax GmbH & Co. KG with halogen-free power cables of Dätwyler IT Infra AG” in accordance with the classes given in ČSN 73 0895: 2016.

The test was carried out according to standard STN 92 0205 and meets also all requirements of ČSN 73 0895: 2016 and test results can be directly used for classification of tested products according to ČSN 73 0895: 2016.

This expert judgement report defines field of application which is outside the field of direct application according test standard.

## 2. DETAILS OF CLASSIFIED PRODUCT

### 2.1 GENERAL

The element, Cable supporting system Niedax GmbH & Co. KG with halogen-free power cables of Dätwyler IT Infra AG, is defined as a cable supporting system for power and communication halogen free cables with circuit integrity maintenance in fire.

### 2.2 PRODUCT DESCRIPTION

The element comprises of cable supporting system of company Niedax GmbH & Co. KG (cable trays, cable ladders, cable group holders, consoles, brackets, threaded rods, cable clips and accessories) with halogen-free power cables of company Dätwyler IT Infra AG with circuit integrity maintenance in fire.

#### **Cable tray RLVC 60**

Cable tray is made of steel sheet 0,9 mm thick. Height of side wall is 60 mm and maximum tested width is 400 mm. Trays are fixed together by integrated plug-in connectors and nut bolts FLM 6x12 (1pc per side and 2 pcs on the bottom). Maximum tested loading is 20 kg.m<sup>-1</sup>. Tested cable tray is RLVC 60.400.

#### **Cable ladder STL 60**

Cable ladder is made of steel sheet thickness 1,5 mm and spacing of transoms is 300 mm. Cross-section dimensions of transoms are (30 x 15 x 1,5) mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by two side connectors KLVB 60/4 with nut bolts FLM8x13 (4 pcs per connector). Maximum tested loading is 20 kg.m<sup>-1</sup>. Tested ladder is STL 60.403.

#### **C-profile 2970**

Profile with dimensions (30 x 15) mm is made of bent steel sheet 1,5 mm thick. Profile is used for fixing of cables to ceiling and wall by cable clips.

#### **Console HU 5050**

Console consists of base plate with dimensions (140 x 80 x 5) mm and support with dimensions (50 x 50 x 2,5) mm. Console is used for gripping of brackets to ceiling.

#### **Holder WWU**

Holder WWU150/8 is made of L-shape steel sheet 5,0 mm thick with dimensions (60 x 60) mm and 40 mm wide. Holders are used for fixation of ladders to ceiling.

#### **Bracket KTAS**

Bracket consists of two parts – base plate (163 x 60 x 8 mm) and bent steel sheet (103,6 x 430 x 2 mm) welded together. Brackets are used for fixation of trays and ladders to consoles.

#### **Spacer HDS**

Spacer is made of bent steel sheet 1,5 mm thick with dimensions (80 x 43) mm. Spacers are used for reinforcement of consoles at place of brackets fixation.

**Cable clip SAS**

Cable clip consists of two parts made of bent steel sheet from 1,2 to 2,0 mm thick and is used for fixation of cables to ceiling or wall.

**Cable clamps "B"**

Cable clamp consists of two parts made of bent steel sheet from 1,5 to 2,0 mm thick and is used for fixation of cables to ceiling or wall.

**Cable group holder SHUD V1**

Cable group holder with dimensions (110 x 93 x 80) mm is made of steel sheet 1,5 mm thick and is used for fixation of cables to wall.

**Aluminium tube IESR 63 AL**

Aluminium tubes IESR 63 AL with a circumference of Ø 63 mm and a wall thickness of 1,5 mm is used for cable routing

**Cables**

Power and communication free halogen cables are specified for stationary distribution of electrical energy in dry and damp premises. Since they are free from halogens and exhibit enhanced fire performance, these cables are used in those applications where in the event of fire, the negative effect on concentrations of people and valuable material goods must be minimized. Suitable for hotels, hospitals, underground railways, airport etc. to protect people and technical building equipment in the event of fire where there is requirement for maintaining the functional integrity all cable installation in the event of fire. The cables develop in case of fire low heat released rate and smoke and no burning particles drop away during fire accident. Functional integrity all cable installation in the event of fire is guaranteed only with use specified supporting member and cables grips.

**The cables used for the test:**Power cables:

DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5  
DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x16  
DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50  
DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5  
DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50  
DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5  
DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25

The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

More detailed information about product construction is shown in the drawings which form an integral part of test report [1]. Drawings were delivered by sponsor.





### 3. TEST REPORTS AND EXTENDED APPLICATION REPORTS IN SUPPORT OF CLASSIFICATION

#### 3.1 TEST REPORTS AND EXTENDED APPLICATION REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SR	Dätwyler IT Infra AG, Altdorf, Switzerland	FIRES-FR-167-22-AUNE	16. 06. 2022	STN 92 0205: 2014 / Z1: 2019

#### 3.2 TEST RESULTS

Test report No. /Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
[1] STN 92 0205	S1	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50	E2	0 minutes no failure / interruption
	S2	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5		0 minutes
	S3	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25	E3	0 minutes no failure / interruption
	S4	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		2 minutes
	S5	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50	C2	0 minutes no failure / interruption
	S6	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5		2 minutes
	S7	DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		0 minutes no failure / interruption
	S8	DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25		0 minutes no failure / interruption
	S9	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5	D3	0 minutes
	S10	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50		0 minutes no failure / interruption
	S11	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5	D2	0 minutes no failure / interruption
	S12	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25		0 minutes no failure / interruption
	S13	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5	B1	0 minutes no failure / interruption
	S14	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50		0 minutes no failure / interruption
	S15	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		0 minutes no failure / interruption
	S16	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25		0 minutes no failure / interruption
	S17	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		0 minutes
	S18	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50		0 minutes no failure / interruption
	S19	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5	B2	0 minutes no failure / interruption
	S20	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50		0 minutes no failure / interruption
	S21	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		2 minutes
	S22	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25		0 minutes no failure / interruption
	S23	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		2 minutes
	S24	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50		0 minutes no failure / interruption
	S25	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x1,5	A1	7 minutes
	S26	2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca....., 1 kV 4x50		0 minutes no failure / interruption
	S27	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		0 minutes no failure / interruption
	S28	2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25		0 minutes no failure / interruption
	S29	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		0 minutes no failure / interruption
	S30	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50		0 minutes no failure / interruption
	S31	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50	D1	0 minutes no failure / interruption
	S32	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		0 minutes no failure / interruption
	S33	DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x50/25	C1	7 minutes
	S34	DATWYLER KERAM (N)HXCH FE180 E90 B2ca....., 1kV 4x1,5/1,5		0 minutes no failure / interruption
S35	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5	0 minutes no failure / interruption		
S36	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50	0 minutes no failure / interruption		
S37	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x16	F1	0 minutes	
S38	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		2 minutes	
S39	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x50	E1	0 minutes no failure / interruption	
S40	2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca....., 1kV 4x1,5		2 minutes	



The fire test was terminated in the 93<sup>rd</sup> minute upon request of test sponsor.

Specimens S1 – S40 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W. Circuit breakers with rating 3 A and performance characteristics B(gL) were used.

#### 4. CLASSIFICATION AND FIELD OF APPLICATION

##### 4.1 CLASSIFICATION ACCORDING TO ČSN 73 0895: 2016

The element, cable supporting system of company Niedax GmbH & Co. KG (cable trays, cable mesh trays, cable ladders, support channels, brackets and accessories) with halogen-free power and communication cables of company Dätwyler IT Infra AG with circuit integrity maintenance in fire, is classified according to the following combinations of performance parameters and classes as appropriate.

Used cables of company Dätwyler IT Infra AG by test are classified as follows:

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	
<b>DATWYLER KERAM (N)HXH</b> FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5	Track is made of C-profiles 2970 fixed to ceiling in spacing of 300 mm. Cables are fixed to profiles by cable clamps type "SAS". Ceiling installation. <b>Standard track A1.</b>	<b>P60-R</b>	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>	
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50		<b>P90-R</b>		
<b>DATWYLER KERAM (N)HXH</b> FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5		<b>P90-R</b>	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50		<b>P90-R</b>		
<b>DATWYLER KERAM (N)HXCH</b> FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5		<b>P90-R</b>	n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25				
<b>DATWYLER KERAM (N)HXH</b> FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5		<b>P90-R</b>	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50		<b>P90-R</b>		
<b>DATWYLER KERAM (N)HXH</b> FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5		Track is made of C-profiles 2970 fixed to ceiling in spacing of 300 mm. Cables are fixed to profiles by cable clamps type "B". Ceiling installation. <b>Standard track B1.</b>	<b>P60-R</b>	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50			<b>P90-R</b>	
<b>DATWYLER KERAM (N)HXCH</b> FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5		<b>P90-R</b>	n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25				





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	
DATWYLER KERAM (N)HXH FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5	Track is made of C-profiles 2970 fixed to ceiling in spacing of 600 mm. Cables are fixed to profiles by cable clamps type "B". Ceiling installation. <b>Non-standard track B2.</b>	P90-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50		P90-R		
DATWYLER KERAM (N)HXH FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5		P60-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>	
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50		P90-R		
DATWYLER KERAM (N)HXCH FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5		P30-R	n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P30-R</b>	
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25		P90-R		
DATWYLER KERAM (N)HXH FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5		In cable ladders STL 60.403 fixed to ceiling at up-side down position by corner angles WWU 150/8. Cables fixed to ladder by cable clamps type B in spacing of 300 mm. Fixation in spacing of 1200 mm. Maximum loading 20 kg.m <sup>-1</sup> . Ceiling installation. <b>Standard track C1 and C2.</b>	P60-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50			P90-R	
DATWYLER KERAM (N)HXH FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5			P90-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50			P90-R	
DATWYLER KERAM (N)HXCH FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5	P90-R		n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>	
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25	P60-R			
DATWYLER KERAM (N)HXH FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5	In cable ladders STL 60.403. Consoles combined of console HU 5050, bracket KTAS 400 and spacer HDS 5050. Consoles in spacing of 1500 mm. Maximum loading 20 kg.m <sup>-1</sup> . Suspended installation. <b>Non-standard track D1.</b>		P90-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50			P90-R	
DATWYLER KERAM (N)HXH FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5	In cable ladders STL 60.403. Consoles combined of console HU 5050, bracket KTAS 400 and spacer HDS 5050. Consoles in spacing of 1500 mm. Maximum loading 20 kg.m <sup>-1</sup> . Suspended installation. <b>Non-standard tracks D2 and D3.</b>		P45-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P45-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50			P90-R	
DATWYLER KERAM (N)HXCH FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5		P90-R	n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P90-R</b>	
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25	P90-R			





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
DATWYLER KERAM (N)HXH FE180 E30-E60	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x1,5	Tracks are made of cable group holders SHUD V1 fixed to wall in spacing of 800 mm. Maximum loading 6 kg.m <sup>-1</sup> . Wall installation. <b>Non-standard tracks E1, E2 and E3.</b>	P45-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P45-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50		P90-R	
DATWYLER KERAM (N)HXH FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5		P30-R	n x ≥1,5 mm <sup>2</sup> n ≥1 <b>P30-R</b>
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50		P90-R	
DATWYLER KERAM (N)HXCH FE180 E90	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5		P60-R	n x ≥1,5/1,5 mm <sup>2</sup> n ≥1 <b>P60-R</b>
	DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25		P90-R	
DATWYLER KERAM (N)HXH FE180 E90	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5	In aluminum tubes IESR 63 AL fixed to wall by cable clamps SAS 60 in spacing of 1200 mm. Maximum loading 3 kg.m <sup>-1</sup> . Wall installation. <b>Non-standard track F1.</b>	P60-R	<b>Without classification</b>
	DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x16		<b>Without classification</b>	

The element comprised of Cable supporting system Niedax GmbH & Co. KG with halogen-free power cables of Dätwyler IT Infra AG with circuit integrity maintenance in fire, is classified to classes according to achieved test results of tested cables at tracks.  
Other classification is not allowed.

## 4.2 FIELD OF DIRECT APPLICATION

This classification is valid for the following end use applications:

### General

- cable track functionality shall not be affected negatively by adjacent building or technological elements, another cable tracks, piping tracks or other technological device;
- test results are applicable only in case the cable track in practice will be fixed to a building construction which is sufficient in term of its statics performance for period of functionality in fire, i. e. the element meets the loadbearing criterion R according to ČSN EN 13501-2;
- if the cable track is fixed directly to a building construction element made of material such as concrete, bricks, aerated concrete or steel supporting structure, such anchoring components shall be used, which, in term of their properties, are suitable with respect to used material, used installation method, required thermal attack curve, required period of functionality in fire, mechanical actions caused by cable support construction with cables;
- the cable track can be fixed for example by means of bolted joints, riveted joints, welded joints, joints of direct assembling (inserting). Suitability of fixing type for the purpose shall be demonstrated by a test or statics calculation;
- if it is not possible to fix the cable route directly to element of building construction, an additional construction may be used. Design of such construction shall apply all principles for projection of cable support construction withstanding the fire effects for specified period. It is possible to verify the additional construction properties by means of a calculation in accordance with Eurocodes or by a test. When fixing the additional construction to an element of building construction all requirements given in previous clauses apply.
- the number of cables placed on the cable support construction in horizontal arrangement is limited just by area disposition, but the maximal load acting on the cable support construction, stated by



- manufacturer, shall not be exceeded. Manufacturer specification of the number of cables, if available, shall also be respected;
- if cables run freely they need not be fixed by clips when they are arranged horizontally on trays or ladders;
  - on their whole length the cables shall be installed in such a manner, that the minimal bend radius stated by manufacturer is observed;
  - also cables without functionality in fire may be placed on cable system together with cables with functionality in fire but only under the condition, that minimum distance of 200 mm is observed between them or they are separated by means of suitable fire screen. In addition the common cable management is possible only in case when each power cable or conductor is insulated to maximal voltage used in power management system;
  - communication, data and signal cables shall be placed in such a way, that at all events a distance minimum of 100 mm is provided between those cables and power cables;

When the cable routes are installed in sloped or vertical position following shall be met:

- in points where it turns from horizontal to other orientation the cable route shall be effectively attached and in orientation other than horizontal the cables shall be fixed firmly also in places of bending whereas the allowable support position maximal distances and the allowable minimal bend radius are retained;
- cable tracks installed in arrangement with the angle between the horizontal plane and their longitudinal axis is less than 20° are considered as horizontal;

### **Cables and cable support systems**

- test results are applicable to tested cable route, it means to combination of type, cross-section and manufacturer of the cable and of type and manufacturer of the cable support system. Further direct application possibilities are given in following statements.

Test results for power cables are directly applicable as follows:

- where test specimens according to ČSN 73 0895 are used, the worst test result obtained from testing of these specimens applies to all dimensions and tested arrangement method of tested cable;
- if cables with maximal cross-section of the core less than 50 mm<sup>2</sup> are tested, the worst test result applies to all cross-sections of cables in range of tested cross-sections;
- test result obtained from testing of cables with five or four conductors applies also to cables of the same type with smaller or greater number of conductors;
- in case only cables with minimal or maximal tested cross-section passed successfully the test, the test result is applicable only to the same type of cable, section and arrangement method as tested;

Test results obtained from testing of communication or signal cables are directly applicable as follows:

- test results are applicable to all constructions of specified type with diameter (cross-section) and number of cores equal to or greater than that of test specimen;

Test results obtained from testing of metallic data cables are directly applicable as follows:

- test results from perimeter integrity test apply for tested arrangement method for all dimensions of specified type with diameter (cross-section) and number of cores equal to or greater than that of test specimen;

Test results for cable supports systems are directly applicable as follows:

- test results obtained from testing of installation on cable trays or cable ladders suspended on floor suspension devices are allowed to be applied to support constructions attached to a wall;
- In case the test was carried out with cable tray or ladder with jointing point placed in the middle between support constructions ( $\pm 5\%$  of their distance) the test results apply to any position of jointing point between support constructions;
- test results from test with specimen of cable trays or ladders are applicable also to event when the surface is treated with a colour painting or spraying in layer of surface density  $< 1,0 \text{ kg/m}^2$  or of thickness  $< 1,0 \text{ mm}$  in accordance with ČSN EN 13501-1. When the thickness or surface density of this layer is of greater value it is necessary to carry out a test according to this standard;
- when test specimens of support constructions made in conformity with EN 61537 ed. 2 form steel with surface treatment are used, the test results are directly applicable to support constructions of the same type made of stainless steel but not vice versa. However, it is necessary to demonstrate the mechanical characteristics of stainless steel in range of test temperatures are equal to or greater than those of steel used in test specimens.

For non-standard cable support constructions the test results are directly applicable as follows:

- results from tests carried out on cable trays and cable ladders are applicable to all cable trays and cable ladders of identical construction of smaller width than tested.



- direct application of test results from test on a test specimen is not possible to different design nor to any other product made by another manufacturer;

**4.3 FIELD OF EXTENDED APPLICATION**

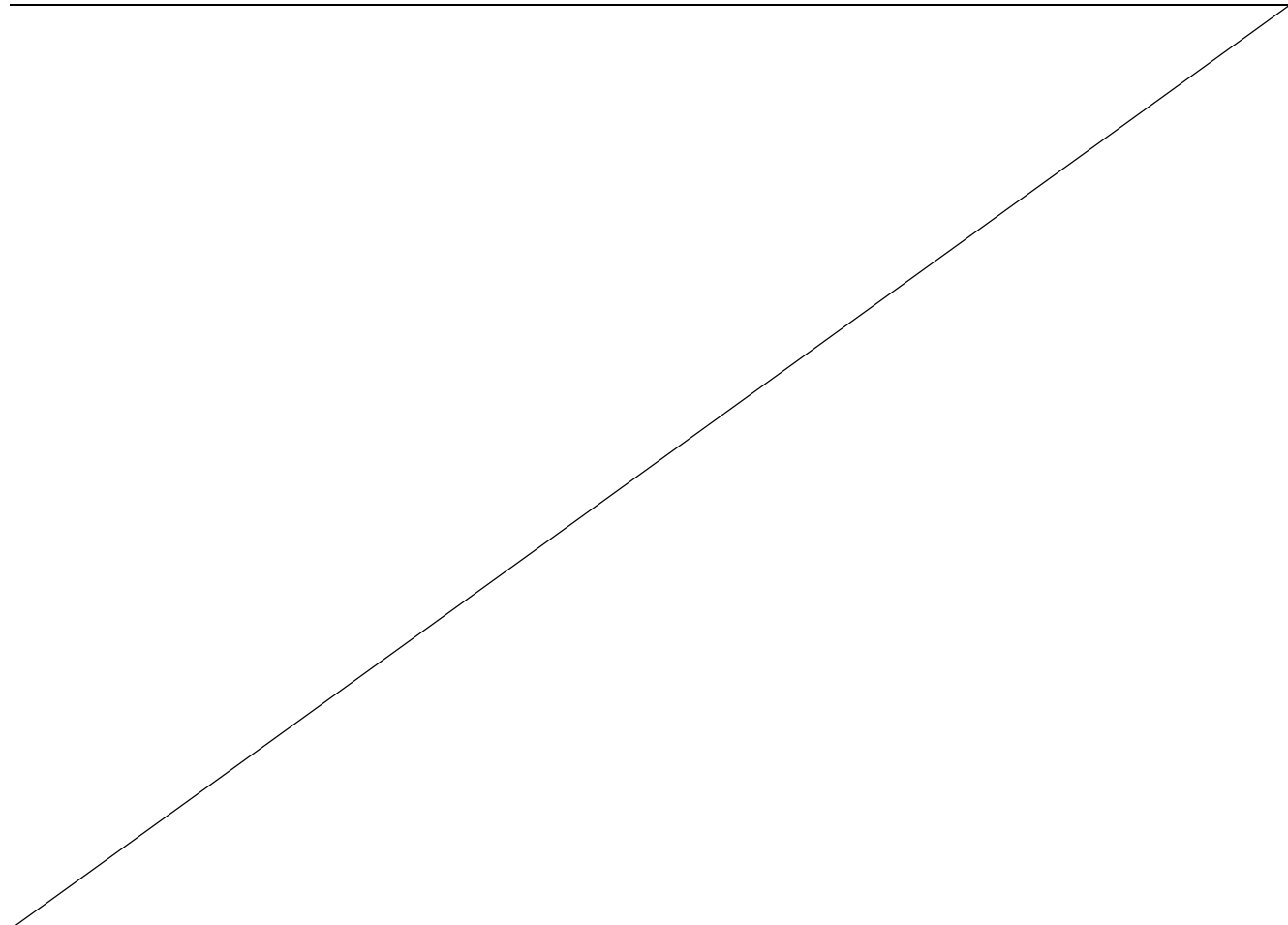
- test result obtained for test specimen of cable tray lengths and cable ladder lengths is applicable to all parts of system, which are used for changing of direction and dimension or for ending of lengths. Typical examples of system parts are elbows, T shaped parts, cross-over parts;
- application of test results for cable tray jointing and cable ladder jointing other than as specified in standard;
- test results obtained for cable system with cable trays are applicable also for usage of coverings of cable trays. However these shall be ensured against movement. It is necessary to include the cover mass into overall load;
- application of test results to different fire scenario than used in test. However, the fire scenario upon which the test results are to be applied shall be as follows: its temperature value for each point of the temperature-time curve has to be lower than respective temperature value for fire scenario used in the test at the same time. When comparing two fire scenarios, it is possible to move the scenarios (their courses) each other along the time axis;

**4.4 LABELING OF CABLE TRACK**

The contractor shall always label the cable track at the accessible place and by permanent way. Label contains following information:

- the name of individual or legal person whose workers have installed the system;
- indication of cable bearing system which is stated in classification report;
- class of function in fire, number of classification report;
- year of installation of cable bearing system.

If the track is long, it is appropriate to repeat the labelling approximately every 50 m.





## 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.  
The construction contractor is solely responsible for proper preparation.

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 by:

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Prepared by:

Ing. Slavomír Hudák  
*Technician of the testing laboratory*

