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# FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-132-22-NURE

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

FIRES
The Experts on Fire Safety

# FUNCTION IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH DIN 4102-12: 1998-11

## FIRES-JR-132-22-NURE

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

**Sponsor:**
Dätwyler IT Infra AG
Gotthardstrasse 31
6460 Altdorf
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 DIN 4102-12: 1998-11.

Test of function in fire was carried out according to standard STN 92 0205. Similar standards for tests of function in fire is DIN 4102-12: 1998-11.

Deviations from standard at the test according to 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: 1999 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1:1999 are used. Measurement by plate thermometers acc. to EN 1363-1: 1999 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1393-1: 1999. 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. Identified deviation results in stricter course of test and it can lead to reduced classification of tested cables what is accepted as enhanced security in practice.

This expert judgement report defines field of application which is outside the field of direct application according test standard. This expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

## 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 $kg.m^{-1}$. 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 $kg.m^{-1}$. 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

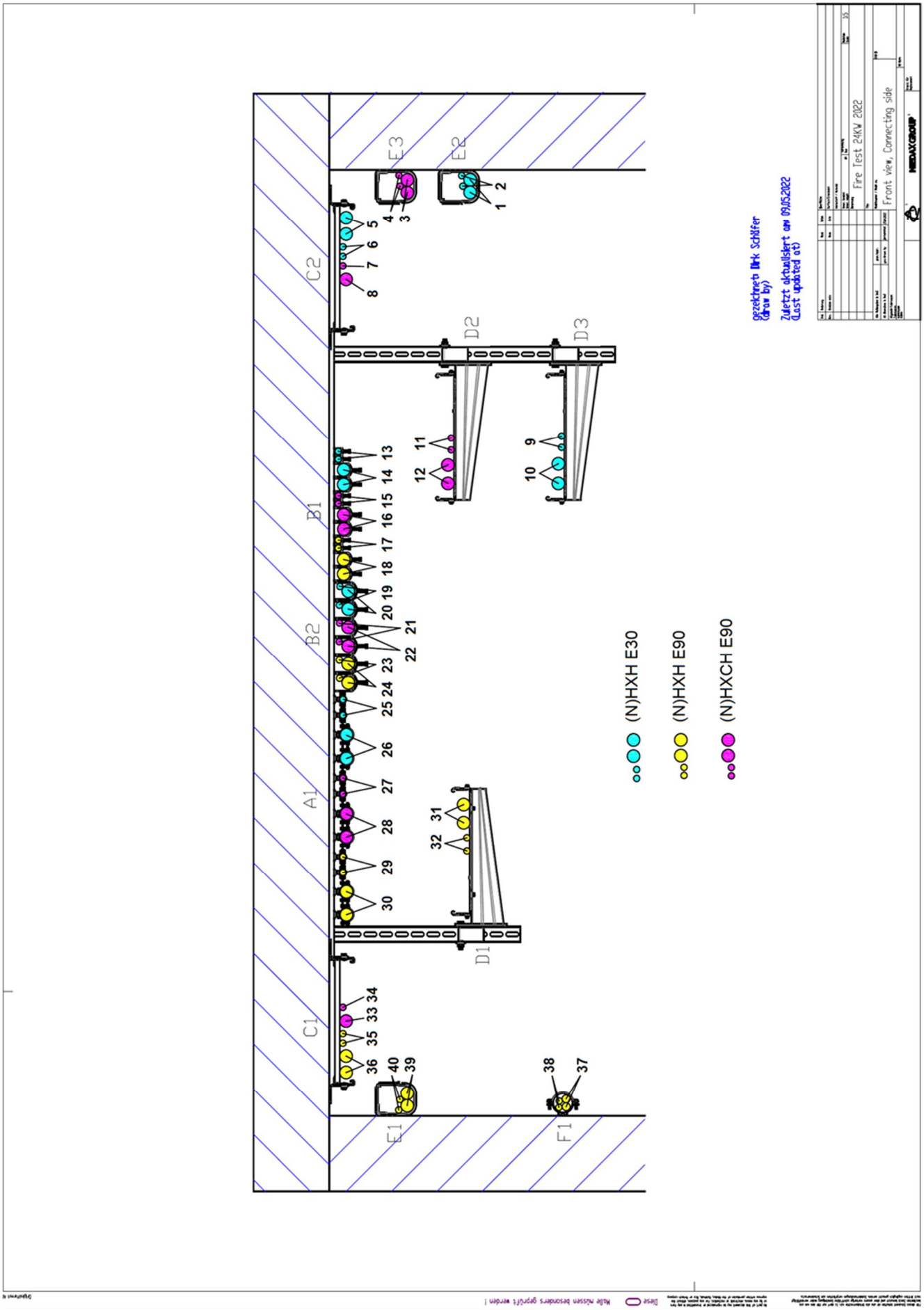
**Cables**
Power and communication free halogen cables are specified for stationary distribution of electrical energy in dry and damp premises. Since they are free from halogens and exhibit enhanced fire performance, these cables are used in those applications where in the event of fire, the negative 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.

Drawing of the tested construction [1].



# 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 | 60 minutes no failure / interruption |
| | S2 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | | 9 minutes |
| | S3 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | E3 | 90 minutes no failure / interruption |
| | S4 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 27 minutes |
| | S5 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x50 | C2 | 90 minutes no failure / interruption |
| | S6 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | | 28 minutes |
| | S7 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 90 minutes no failure / interruption |
| | S8 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | | 90 minutes no failure / interruption |
| | S9 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | D3 | 56 minutes |
| | S10 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x50 | | 90 minutes no failure / interruption |
| | S11 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | D2 | 90 minutes no failure / interruption |
| | S12 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | | 90 minutes no failure / interruption |
| | S13 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | B1 | 90 minutes no failure / interruption |
| | S14 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x50 | | 90 minutes no failure / interruption |
| | S15 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 90 minutes no failure / interruption |
| | S16 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | | 90 minutes no failure / interruption |
| | S17 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 38 minutes |
| | S18 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x50 | | 90 minutes no failure / interruption |
| | S19 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | B2 | 90 minutes no failure / interruption |
| | S20 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x50 | | 90 minutes no failure / interruption |
| | S21 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 34 minutes |
| | S22 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | | 90 minutes no failure / interruption |
| | S23 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 38 minutes |
| | S24 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x50 | | 90 minutes no failure / interruption |
| | S25 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x1,5 | A1 | 17 minutes |
| | S26 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca….., 1 kV 4x50 | | 90 minutes no failure / interruption |
| | S27 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 90 minutes no failure / interruption |
| | S28 | 2 cables DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | | 90 minutes no failure / interruption |
| | S29 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 90 minutes no failure / interruption |
| | S30 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x50 | | 90 minutes no failure / interruption |
| | S31 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x50 | D1 | 90 minutes no failure / interruption |
| | S32 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 90 minutes no failure / interruption |
| | S33 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x50/25 | C1 | 17 minutes |
| | S34 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca….., 1kV 4x1,5/1,5 | | 90 minutes no failure / interruption |
| | S35 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 90 minutes no failure / interruption |
| | S36 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x50 | | 90 minutes no failure / interruption |
| | S37 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x16 | F1 | 8 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 | 90 minutes no failure / interruption |
| | S40 | 2 cables DATWYLER KERAM (N)HXH-J FE180 E90 B2ca….., 1kV 4x1,5 | | 4 minutes |

The fire test was terminated in the 93rd 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 DIN 4102-12: 1998-11

The element, cable supporting system of company BAKS (cable trays, cable mesh trays, cable ladders, support channels, brackets and accessories) and electrical boxes of company Technor Italsmea with halogen-free power and communication cables of company Technokabel S.A. with circuit integrity maintenance in fire, is classified according to the following combinations of performance parameters and classes as appropriate.

Used cables of company Technokabel S.A. 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** |
|---|---|---|---|---|
| **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 300 mm. Cables are fixed to profiles by cable clamps type “SAS”. Ceiling installation. **Standard track A1.** | **E 60** | n x ≥1,5 mm² n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXH** FE180 E90 | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5 | | **E 90** | n x ≥1,5 mm² n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 90** | n x ≥1,5/1,5 mm² n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 90** | |
| **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 300 mm. Cables are fixed to profiles by cable clamps type “B”. Ceiling installation. **Standard track B1.** | **E 90** | n x ≥1,5 mm² n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXH** FE180 E90 | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5 | | **E 60** | n x ≥1,5 mm² n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 90** | n x ≥1,5/1,5 mm² n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 90** | |

| 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. **Non-standard track B2.** | **E 90** | n x ≥1,5 $mm^2$ n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXH** FE180 E90 | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5 | | **E 60** | n x ≥1,5 $mm^2$ n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 30** | n x ≥1,5/1,5 $mm^2$ n ≥1 **E 30** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 90** | |
| **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 $kg.m^{-1}$. Ceiling installation. **Standard track C1 and C2.** | **E 60** | n x ≥1,5 $mm^2$ n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXH** FE180 E90 | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5 | | **E 90** | n x ≥1,5 $mm^2$ n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 90** | n x ≥1,5/1,5 $mm^2$ n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 60** | |
| **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 $kg.m^{-1}$. Suspended installation. **Non-standard track D1.** | **E 90** | n x ≥1,5 $mm^2$ n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **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 $kg.m^{-1}$. Suspended installation. **Non-standard tracks D2 and D3.** | **E 30** | n x ≥1,5 $mm^2$ n ≥1 **E 30** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 90** | n x ≥1,5/1,5 $mm^2$ n ≥1 **E 90** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 90** | |

| 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$^{-1}$. Wall installation. **Non-standard tracks E1, E2 and E3.** | **E 30** | n x ≥1,5 mm$^2$ n ≥1 **E 30** |
| | DATWYLER KERAM (N)HXH-J FE180 E30-E60 B2ca-s1a, d1, a1, 1 kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXH** FE180 E90 | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5 | | **E 30** | n x ≥1,5 mm$^2$ n ≥1 **E 30** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50 | | **E 90** | |
| **DATWYLER KERAM (N)HXCH** FE180 E90 | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x1,5/1,5 | | **E 60** | n x ≥1,5/1,5 mm$^2$ n ≥1 **E 60** |
| | DATWYLER KERAM (N)HXCH FE180 E90 B2ca-s1a, d1, a1, 1kV 4x50/25 | | **E 90** | |
| **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$^{-1}$. Wall installation. **Non-standard track F1.** | **E 60** | **Without classification** |
| | DATWYLER KERAM (N)HXH-J FE180 E90 B2ca-s1a, d1, a1, 1kV 4x16 | | **Without classification** | |

**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 APPLICATION

This classification is valid for the following end use applications:

- throughout the period during which circuit integrity is to be maintained, neighboring 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. in 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;
- where risers are used, circuit integrity classification only applies if the cable is effectively supported (i.e. with a spacing of supports of 3 500 mm or less and the distance between cable clips is ≤ 300 mm). Figure 5 of standard DIN 4102-12 shows a suitable means of mounting cables on risers. Cables may also be stabilized by a seal at penetrations in floors, provided that the sealant material is of a suitable material class, or using clips of proven suitability. The suitability of any design other than that shown in figure 5 may only be assessed by an accredited test laboratory;
- 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;
- test results of testing single cables on the ceiling apply also to cables mounted horizontally on walls;

- test 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;

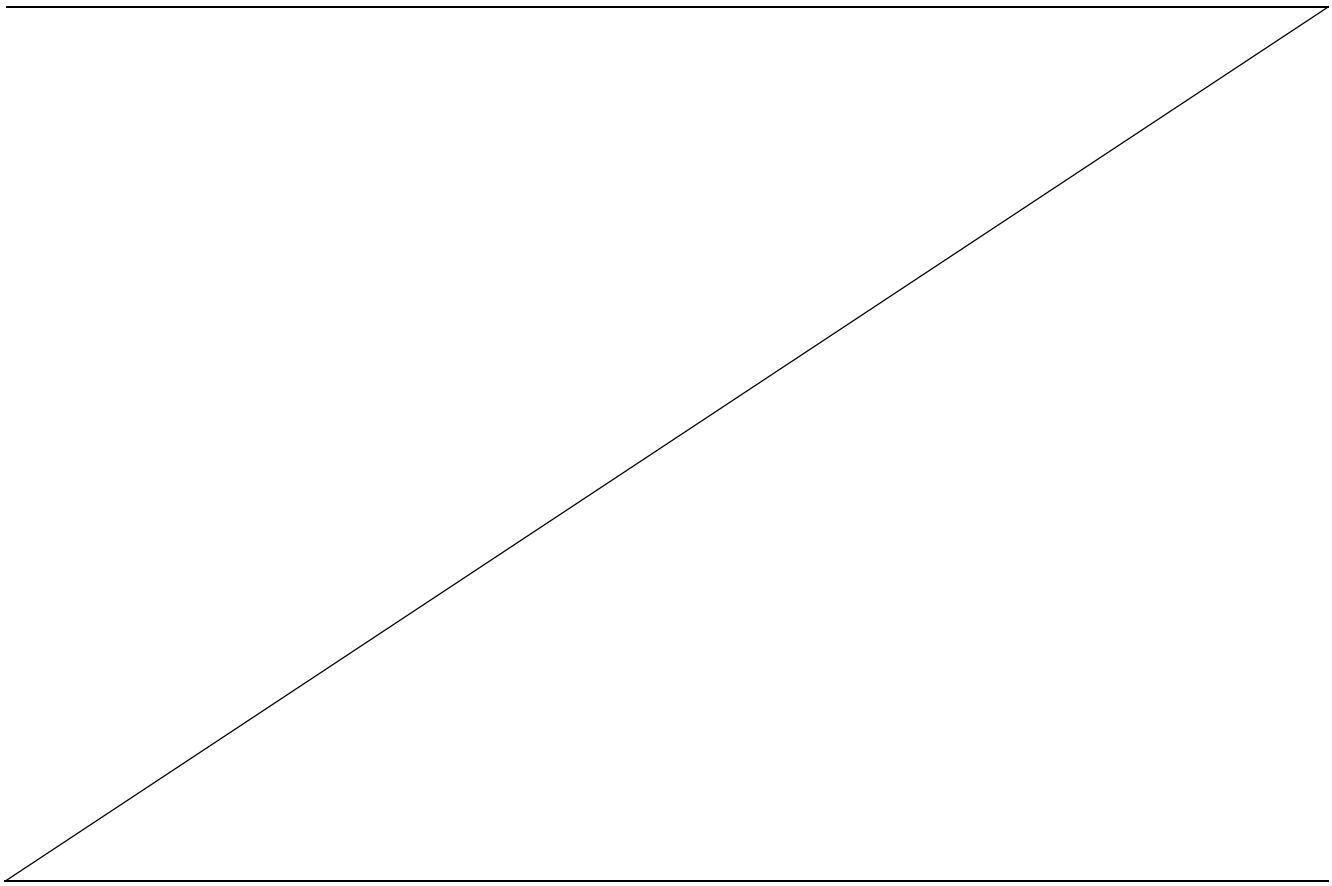
### 4.3 FIELD OF APPLICATION BEYOND THE APPLICATION DEFINED IN STANDARD

- classification for type of cable (by cross-sections and number of conductors) is valid only for tested cable types, number and cross-sections of conductors;
- classification for cable is valid for all numbers and cross-sections of tested cable type;
- test results of cable systems placed on a non-standard support structures are directly applied only to the tested cable systems;
- test results of cables tested at cable trays or ladders are applicable also for another products trays and ladders (cross, elbow, T-bend, bends and etc.;
- 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;
- direct application of test results is only for the tested methods of connecting cable trays and cable ladders;
- test results obtained for cable system with cable trays are directly applicable also for usage of cable trays coverings; the coverings shall be ensured against movement with a proper manner. The weight of the cover must be added to the total load;

### 4.4 LABELING OF CABLE TRACK

Contractor marks cable system by attachment of label which must contain the following informations:
- name of responsible person, who installed the system;
- name of cable system as it is stated in this judgement;
- class of circuit integrity maintenance and classification report number;
- real value of mechanical loading of cable system by cables
- date of assembly of cable 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:

Ing. Štefan Rástocký
*Head of the testing laboratory*

Prepared by:

Ing. Slavomír Hudák
*Technician of the testing laboratory*