

CLASSIFICATION OF FUNCTION IN FIRE FIRES-CR-071-16-AUPE

Power and communications cables Celina Bitner Zaklady Kablowe BITNER, type – (N)HXH, (N)HXCH, JE-H(St)H

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

with direct field of application

FIRES-CR-071-16-AUPE

Name of the product: Power and communications cables Celina Bitner Zaklady Kablowe BITNER,

type – (N)HXH, (N)HXCH, JE-H(St)H

Sponsor: Celina Bitner Zaklady Kablowe BITNER

ul. Józefa Friedleina 3/3

30-009 Kraków

Poland

Prepared by: FIRES, s.r.o.

Osloboditeľov 282 059 35 Batizovce Slovak Republic

Tested property: Function in fire
Test method: DIN 4102 – 12
Type of test: Accredited

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1. INTRODUCTION

This classification report defines the function in fire classification assigned to element Power and communications cables Celina Bitner Zaklady Kablowe BITNER, type – (N)HXH, (N)HXCH, JE-H(St)H at cable bearing system BAKS in accordance with the procedures given in DIN 4102-12: 1998-11.

This products have already been classified by FIRES, s.r.o. and number of previous classification of function in fire is FIRES-CR-123-06-AUPE, issued on 27. 07. 2006 with validity until 20. 07. 2011.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, Power and communications cables Celina Bitner Zaklady Kablowe BITNER, type – (N)HXH, (N)HXCH, JE-H(St)H at cable bearing system BAKS, is defined as a power and communication cables with integrity maintenance in case of fire.

2.2 PRODUCT DESCRIPTION

Product comprised from fire resistant halogen free power and communication cables at cable bearing system.

Power cables (N)HXH, (N)HXCH - safety cables are used in all locations where a special protection against fire and fire damage is necessary for human life and equipment and where strict safety regulations have to be met and where large emergency running time is necessary. They may be used indoor and outdoor, but not directly in earth and water. They are considered as protectively insulated.

Communication cables JE-H(St)H – safety installations cables are used for transmission od signals and measuring data in control circuits, in locations where a particular protection against fire and fire damage for human life and equipment is necessary. Installation cables are not admissible for power installation purposes and direct burial.

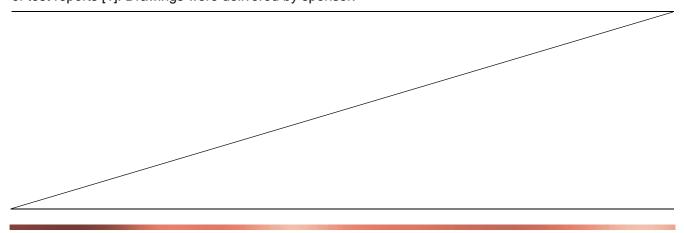
Used cables and cable bearing system by test:

Used cables by test:	(N)HXH - 4x1,5 RE E90 CERAMIC	(12 x)
	(N)HXH - 4x50 RM E90 CERAMIC	(8x)
	(N)HXCH - 4x1,5 RE/ 1,5 E90 CERAMIC	(4 x)
	(N)HXCH - 4x10 RE/ 10 E90 CERAMIC	(4x)
	(N)HXCH - 4x50 RM/ 25 E90 CERAMIC	(8 x)
	JE-H(St)H 2x2x0,8 E90 CERAMIC	(12 x)

Used bearing systems by tests:

Bearing system BAKS – cable trays KCOP, cable ladders DGOP, ceiling ledges SDOC with clips UKO1, clips UDF, UEF, cable holder OZMO and OZO with accessories (consoles, booms, hangers, threaded rods, dowels etc.). Producer BAKS Kazimierz Sielski, Poland.

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



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3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

No.	Name of laboratory	Name of sponsors	Test report No.	Date of the test	Test method
[1]	Fires s.r.o., Batizovce, SR	Celina Bitner Zaklady Kablowe BITNER Kraków, Poland	FIRES-FR- 064-06-AUNE	15. 06. 2006	DIN 4102 – 12: 1998-11

3.2 TEST RESULTS

1	Test report No. /Test method	Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
DIN 4102-12 3 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 4 2 cables (N)HXH - 4x4,5 RE F90 CERAMIC 5 (N)HXH - 4x50 RM E90 CERAMIC 6 (N)HXH - 4x50 RM E90 CERAMIC 7 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 8 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 9 0 minutes no failure / interruption 7 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 2 29 minutes 8 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 9 (N)HXCH - 4x50 RM E90 CERAMIC 10 (N)HXCH - 4x50 RM E90 CERAMIC 11 (N)HXCH - 4x50 RM E90 CERAMIC 12 (N)HXCH - 4x50 RM E90 CERAMIC 13 35 minutes 10 (N)HXCH - 4x50 RM E90 CERAMIC 11 (N)HXCH - 4x50 RM E90 CERAMIC 12 (N)HXCH - 4x50 RM E90 CERAMIC 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 14 (N)HXCH - 4x50 RM E90 CERAMIC 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 20 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 21 (N)HXCH - 4x50 RM E90 CERAMIC 22 (N)HXH - 4x50 RM E90 CERAMIC 23 (N)HXCH - 4x50 RM E90 CERAMIC 24 (N)HXCH - 4x50 RM E90 CERAMIC 25 (N)HXCH - 4x50 RM E90 CERAMIC 26 (N)HXCH - 4x50 RM E90 CERAMIC 27 (N)HXCH - 4x50 RM E90 CERAMIC 28 (N)HXCH - 4x50 RM E90 CERAMIC 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 0 minutes no failure / interruption 26 (N)HXCH - 4x50 RM E90 CERAMIC 9 0 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 0 minutes no failure / interruption 28 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 0 minutes no failure / interruption 29 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 0 minutes no failure / interruption 29 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 0 minutes no failure / interruption 29 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 0 minutes no failure / interruption 30 (N)HXH - 4x1,5 RE E90 CERAMIC 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 32 (N)HXCH - 4x1,5 RE E90		1	(N)HXH - 4x50 RM E90 CERAMIC	1	90 minutes no failure / interruption
4 2 cables (N)+XCH - 4x1,5 RE/1,5 E90 CERAMIC 5 (N)+XH - 4x50 RM E90 CERAMIC 6 (N)+XH - 4x50 RM E90 CERAMIC 7 2 cables (N)+XH - 4x1,5 RE E90 CERAMIC 8 2 cables (N)+XCH - 4x1,5 RE E90 CERAMIC 9 (N)+XCH - 4x50 RM E90 CERAMIC 3 3 5 minutes 10 (N)+XCH - 4x50 RM25 E90 CERAMIC 11 (N)+XCH - 4x50 RM25 E90 CERAMIC 3 3 5 minutes 11 (N)+XCH - 4x50 RM25 E90 CERAMIC 3 3 5 minutes 12 (N)+XCH - 4x50 RM25 E90 CERAMIC 3 3 5 minutes 13 2 cables (N)+XH - 4x1,5 RE 640 CERAMIC 4 90 minutes no failure / interruption 13 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 5 57 minutes 14 (N)+XCH - 4x50 RM25 E90 CERAMIC 5 30 minutes 15 (N)+XCH - 4x10 RE/10 E90 CERAMIC 6 45 minutes 16 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 7 (N)+XCH - 4x10 RE/10 E90 CERAMIC 8 (N)+XCH - 4x10 RE/10 E90 CERAMIC 9 (N)+XCH - 4x10 RE/10 E90 CERAMIC 17 (N)+XCH - 4x10 RE/10 E90 CERAMIC 18 (N)+XCH - 4x10 RE/10 E90 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 19 2 cables (N)+XH - 4x1,5 RE 690 CERAMIC 10 (N)+XH - 4x50 RM E90 CERAMIC 10 (N)+XH - 4x50 RM E90 CERAMIC 11 (N)+XH - 4x50 RM E90 CERAMIC 12 (N)+XH - 4x50 RM E90 CERAMIC 13 (N)+XCH - 4x50 RM E90 CERAMIC 14 (N)+XCH - 4x50 RM E90 CERAMIC 15 (N)+XH - 4x50 RM E90 CERAMIC 16 (N)+XH - 4x50 RM E90 CERAMIC 17 (N)+XH - 4x50 RM E90 CERAMIC 18 (N)+XH - 4x50 RM E90 CERAMIC 19 00 minutes no failure / interruption 10 (N)+XH - 4x1,5 RE 690 CERAMIC 10 (N)+XH - 4x50 RM E90 CERAMIC 10 (N)+XH - 4x50 RM E90 CERAMIC 11 (N)+XH - 4x50 RM E90 CERAMIC 12 (N)+XH - 4x50 RM E90 CERAMIC 13 (N)+XH - 4x50 RM E90 CERAMIC 14 (N)+XCH - 4x50 RM E90 CERAMIC 15 (N)+XH - 4x50 RM E90 CERAMIC 16 (N)+XH - 4x50 RM E90 CERAMIC 17 (N)+XH - 4x50 RM E90 CERAMIC 18 (N)+XH - 4x50 RM E90 CERAMIC 19 (N)+XH - 4x50 RM E90 CERAMIC 20 (N)+XH - 4x50 RM E90 CERAMIC 21 (N)+XH - 4x50 RM E90 CERAMIC 22 (N)+XH - 4x50 RM E90 CER	[1]	2	(N)HXH - 4x50 RM E90 CERAMIC	1	90 minutes no failure / interruption
5 (N)HXH - 4x50 RM E90 CERAMIC 2 90 minutes no failure / interruption 6 (N)HXH - 4x5 RM E90 CERAMIC 2 90 minutes no failure / interruption 7 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 2 29 minutes 8 2 cables (N)HXCH - 4x5 RM25 E90 CERAMIC 3 35 minutes 10 (N)HXCH - 4x50 RM25 E90 CERAMIC 3 35 minutes 11 (N)HXCH - 4x50 RM25 E90 CERAMIC 4 90 minutes no failure / interruption 12 (N)HXCH - 4x50 RM25 E90 CERAMIC 4 90 minutes no failure / interruption 12 (N)HXCH - 4x50 RM25 E90 CERAMIC 4 90 minutes no failure / interruption 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 5 57 minutes 14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 45 minutes 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 6 46 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 7 32 minutes 20 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes <	DIN 4102-12	3	2 cables (N)HXH - 4x1,5 RE E90 CERAMIC	1	44 minutes
6 (N)HXH - 4x50 RM E90 CERAMIC 2 90 minutes no failure / interruption 7 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 2 29 minutes 8 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 2 29 minutes 9 (N)HXCH - 4x50 RM/25 E90 CERAMIC 3 35 minutes 10 (N)HXCH - 4x50 RM/25 E90 CERAMIC 3 35 minutes 11 (N)HXCH - 4x50 RM/25 E90 CERAMIC 4 90 minutes no failure / interruption 12 (N)HXCH - 4x50 RM/25 E90 CERAMIC 4 90 minutes no failure / interruption 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 5 57 minutes 14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 5 30 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 7 32 minutes 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 8 44 minutes 21 (N)HXCH - 4x10 RE/10 E90 CERAMIC 7 36 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x15 RE E90 CERAMIC 8 44 minutes 24 (N)HXH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 31 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 90 minute		4	2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	1	32 minutes
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8 2 cables (N)HXCH - 4xf.5 RE/1,5 E90 CERAMIC 2 29 minutes 9 (N)HXCH - 4x50 RM/25 E90 CERAMIC 3 35 minutes 10 (N)HXCH - 4x50 RM/25 E90 CERAMIC 4 90 minutes no failure / interruption 11 (N)HXCH - 4x50 RM/25 E90 CERAMIC 4 90 minutes no failure / interruption 12 (N)HXCH - 4x50 RM/25 E90 CERAMIC 4 90 minutes no failure / interruption 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 5 57 minutes 14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 6 45 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 7 32 minutes 20 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 33 minutes 21 (N)HXCH - 4x50 RM E90 CERAMIC 7 36 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 44 minutes 24 (N)HXH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 26 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 20 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 20 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x51,5 RE E90 CERAMIC 9 90 minutes no failure / interruption 30 (N)HXH - 4x51,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 32 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 33 minutes 33 (N)HXH - 4x1,5 RE E90 CERAMIC 9 33 minutes 34 (N)HXH - 4x1,5 RE E90 CERAMIC 9 33 minutes 35 (N)HXH - 4x1,5 RE E90 CERAMIC 9 37 minutes 36 (N)HXH - 4x1,5 RE E90 CERAMIC 9 37 minutes 37 (N)HXH - 4x1,5 RE E90 CERAMIC 9 37 minutes 38 (N)HXH - 4x1,5 RE E90 CERAMIC 9 37 minutes		6	(N)HXH - 4x50 RM E90 CERAMIC	2	90 minutes no failure / interruption
9 (N)HXCH - 4x50 RM/25 E90 CERAMIC 10 (N)HXCH - 4x50 RM/25 E90 CERAMIC 11 (N)HXCH - 4x50 RM/25 E90 CERAMIC 12 (N)HXCH - 4x50 RM/25 E90 CERAMIC 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 14 90 minutes no failure / interruption 13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 15 57 minutes 14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 15 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 19 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 20 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 21 (N)HXCH - 4x1,5 RE E90 CERAMIC 22 (N)HXH - 4x50 RM E90 CERAMIC 23 (N)HXCH - 4x50 RM E90 CERAMIC 24 (N)HXCH - 4x50 RM E90 CERAMIC 25 (N)HXH - 4x50 RM E90 CERAMIC 26 (N)HXCH - 4x50 RM E90 CERAMIC 27 (N)HXCH - 4x50 RM E90 CERAMIC 28 (N)HXCH - 4x50 RM E90 CERAMIC 29 (N)HXCH - 4x50 RM E90 CERAMIC 20 (N)HXCH - 4x50 RM E90 CERAMIC 21 (N)HXCH - 4x50 RM E90 CERAMIC 22 (N)HXCH - 4x50 RM E90 CERAMIC 23 (N)HXCH - 4x50 RM E90 CERAMIC 24 (N)HXCH - 4x50 RM E90 CERAMIC 25 (N)HXH - 4x50 RM E90 CERAMIC 26 (N)HXCH - 4x50 RM E90 CERAMIC 27 (N)HXCH - 4x50 RM E90 CERAMIC 28 (N)HXCH - 4x50 RM E90 CERAMIC 30 (N)HXCH - 4x50 RM E90 CERAMIC 31 (N)HXCH - 4x50 RM E90 CERAMIC 32 (N)HXCH - 4x50 RM E90 CERAMIC 33 (N)HXCH - 4x50 RM E90 CERAMIC 34 (N)HXCH - 4x50 RM E90 CERAMIC 35 (N)HXCH - 4x50 RM E90 CERAMIC 36 (N)HXCH - 4x50 RM E90 CERAMIC 37 (N)HXCH - 4x1,5 RE E90 CERAMIC 38 (N)HXCH - 4x1,5 RE E90 CERAMIC 39 0 minutes no failure / interruption 30 (N)HXH - 4x1,5 RE E90 CERAMIC 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 32 (N)HXCH - 4x1,5 RE E90 CERAMIC 33 Minutes 34 (N)HXCH - 4x1,5 RE E90 CERAMIC 35 0 minutes 36 (N)HXCH - 4x1,5 RE E90 CERAMIC 37 (N)HXCH - 4x1,5 RE E90 CERAMIC 38 (N)HXCH - 4x1,5 RE E90 CERAMIC 39 0 minutes no failure / interruption 30 (N)HXH - 4x1,5 RE E90 CERAMIC 30 (N)HXH - 4x1,5 RE E90 CERAMIC 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 32 (N)HXCH - 4x1,5 RE E90 CERAMIC 33 Minutes 34 (N)HXH - 4x1,5 RE		7	2 cables (N)HXH - 4x1,5 RE E90 CERAMIC	2	29 minutes
10		8	2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	2	29 minutes
11		9	(N)HXCH - 4x50 RM/25 E90 CERAMIC	3	35 minutes
12		10	(N)HXCH - 4x50 RM/25 E90 CERAMIC	3	35 minutes
13 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 5 57 minutes 14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 6 45 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 7 33 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 30 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 32 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 33 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 33 minutes 34 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 35 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 36 (H)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 37 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 38 (H)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 39 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 39 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 39 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 30 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 37 minutes		11	(N)HXCH - 4x50 RM/25 E90 CERAMIC	4	90 minutes no failure / interruption
14 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 15 (N)HXCH - 4x10 RE/10 E90 CERAMIC 5 30 minutes 16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 6 45 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 7 36 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes </td <td></td> <td>12</td> <td>(N)HXCH - 4x50 RM/25 E90 CERAMIC</td> <td>4</td> <td>90 minutes no failure / interruption</td>		12	(N)HXCH - 4x50 RM/25 E90 CERAMIC	4	90 minutes no failure / interruption
15		13	2 cables (N)HXH - 4x1,5 RE E90 CERAMIC	5	57 minutes
16 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 6 45 minutes 17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 7 32 minutes 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 5		14	(N)HXCH - 4x10 RE/10 E90 CERAMIC	5	30 minutes
17 (N)HXCH - 4x10 RE/10 E90 CERAMIC 18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 19 2 cables (N)HXCH - 4x1,5 RE E90 CERAMIC 20 2 cables (N)HXCH - 4x1,5 RE F90 CERAMIC 21 (N)HXH - 4x50 RM E90 CERAMIC 22 (N)HXH - 4x50 RM E90 CERAMIC 23 (N)HXCH - 4x50 RM E90 CERAMIC 24 (N)HXH - 4x50 RM E90 CERAMIC 25 (N)HXCH - 4x50 RM E90 CERAMIC 26 (N)HXCH - 4x50 RM E90 CERAMIC 27 (N)HXH - 4x50 RM E90 CERAMIC 28 (N)HXCH - 4x50 RM E90 CERAMIC 29 (N)HXH - 4x50 RM E90 CERAMIC 29 (N)HXH - 4x50 RM E90 CERAMIC 20 (N)HXH - 4x50 RM E90 CERAMIC 21 (N)HXCH - 4x50 RM E90 CERAMIC 22 (N)HXH - 4x50 RM E90 CERAMIC 23 (N)HXCH - 4x50 RM E90 CERAMIC 24 (N)HXCH - 4x50 RM E90 CERAMIC 25 (N)HXH - 4x50 RM E90 CERAMIC 26 (N)HXCH - 4x50 RM E90 CERAMIC 27 (N)HXCH - 4x50 RM E90 CERAMIC 28 (N)HXCH - 4x50 RM E90 CERAMIC 39 90 minutes no failure / interruption 30 (N)HXCH - 4x50 RM E90 CERAMIC 30 (N)HXH - 4x1,5 RE E90 CERAMIC 30 (N)HXH - 4x1,5 RE E90 CERAMIC 30 (N)HXH - 4x1,5 RE E90 CERAMIC 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 33 JE-H(S)H 2x2X0,8 E90 CERAMIC 34 JE-H(S)H 2x2X0,8 E90 CERAMIC 35 JE-H(S)H 2x2X0,8 E90 CERAMIC 36 JE-H(S)H 2x2X0,8 E90 CERAMIC 37 JE-H(S)H 2x2X0,8 E90 CERAMIC 38 JE-H(S)H 2x2X0,8 E90 CERAMIC 39 JE-H(S)H 2x2X0,8 E90 CERAMIC 30 JE-H(S)H 2x2X0,8 E90 CERAMIC 31 JE-H(S)H 2x2X0,8 E90 CERAMIC 32 JE-H(S)H 2x2X0,8 E90 CERAMIC 33 JE-H(S)H 2x2X0,8 E90 CERAMIC 34 JE-H(S)H 2x2X0,8 E90 CERAMIC 35 JE-H(S)H 2x2X0,8 E90 CERAMIC 36 JE-H(S)H 2x2X0,8 E90 CERAMIC 37 JE-H(S)H 2x2X0,8 E90 CERAMIC 38 JE-H(S)H 2x2X0,8 E90 CERAMIC 39 JE-H(S)H 2x2X0,8 E90 CERAMIC 40 JE-H(S)H 2x2X0,8 E90 CERAMIC 51 A minutes 40 JE-H(S)H 2x2X0,8 E90 CERAMIC 52 A minutes 41 JE-H(S)H 2x2X0,8 E90 CERAMIC 53 A minutes		15	(N)HXCH - 4x10 RE/10 E90 CERAMIC	5	30 minutes
18 (N)HXCH - 4x10 RE/10 E90 CERAMIC 6 46 minutes 19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 7 36 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 9 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 minutes no failure / interruption 26 (N)HXCH - 4x50 RM E90 CERAMIC 9 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 minutes no failure / interruption 29 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 minutes no failure / interruption 30 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 38 minutes<		16	2 cables (N)HXH - 4x1,5 RE E90 CERAMIC	6	45 minutes
19 2 cables (N)HXH - 4x1,5 RE E90 CERAMIC 7 32 minutes 20 2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 7 36 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXCH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 30 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 31 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption		17	(N)HXCH - 4x10 RE/10 E90 CERAMIC	6	46 minutes
20 2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 7 36 minutes 21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x15, RE E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 50 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC <td< td=""><td></td><td>18</td><td>(N)HXCH - 4x10 RE/10 E90 CERAMIC</td><td>6</td><td>46 minutes</td></td<>		18	(N)HXCH - 4x10 RE/10 E90 CERAMIC	6	46 minutes
21 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 22 (N)HXH - 4x50 RM E90 CERAMIC 8 44 minutes 23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 30 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 30 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 f minutes 34 JE-H(St)H 2x2x0,8 E90 CERA		19	2 cables (N)HXH - 4x1,5 RE E90 CERAMIC	7	32 minutes
22		20	2 cables (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	7	36 minutes
23 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXCH - 4x15 RE E90 CERAMIC 9 50 minutes 30 (N)HXCH - 4x15 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x15 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x15 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 <t< td=""><td></td><td>21</td><td>(N)HXH - 4x50 RM E90 CERAMIC</td><td>8</td><td>44 minutes</td></t<>		21	(N)HXH - 4x50 RM E90 CERAMIC	8	44 minutes
24 (N)HXCH - 4x50 RM E90 CERAMIC 8 90 minutes no failure / interruption 25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 9 38 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 <td></td> <td>22</td> <td>(N)HXH - 4x50 RM E90 CERAMIC</td> <td>8</td> <td>44 minutes</td>		22	(N)HXH - 4x50 RM E90 CERAMIC	8	44 minutes
25 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 9 50 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		23	(N)HXCH - 4x50 RM E90 CERAMIC	8	90 minutes no failure / interruption
26 (N)HXH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		24	(N)HXCH - 4x50 RM E90 CERAMIC	8	90 minutes no failure / interruption
27 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 28 (N)HXCH - 4x50 RM E90 CERAMIC 9 90 minutes no failure / interruption 29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		25	(N)HXH - 4x50 RM E90 CERAMIC	9	90 minutes no failure / interruption
28 (N)HXCH - 4x50 RM E90 CERAMIC 29 (N)HXH - 4x1,5 RE E90 CERAMIC 30 (N)HXH - 4x1,5 RE E90 CERAMIC 31 (N)HXCH - 4x1,5 RE E90 CERAMIC 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 51 JE-H(St)H 2x2x0,8 E90 CERAMIC 52 JE-H(St)H 2x2x0,8 E90 CERAMIC 53 JE-H(St)H 2x2x0,8 E90 CERAMIC 54 JE-H(St)H 2x2x0,8 E90 CERAMIC 55 JE-H(St)H 2x2x0,8 E90 CERAMIC 66 JE-H(St)H 2x2x0,8 E90 CERAMIC 77 JE-H(St)H 2x2x0,8 E90 CERAMIC 78 JE-H(St)H 2x2x0,8 E90 CERAMIC 79 JE-H(St)H 2x2x0,8 E90 CERAMIC 70 JE-H(St)H 2x2x0,8 E90 CERAMIC 70 JE-H(St)H 2x2x0,8 E90 CERAMIC 70 JE-H(St)H 2x2x0,8 E90 CERAMIC 71 JE-H(St)H 2x2x0,8 E90 CERAMIC 72 JE-H(St)H 2x2x0,8 E90 CERAMIC 73 JE-H(St)H 2x2x0,8 E90 CERAMIC 74 JE-H(St)H 2x2x0,8 E90 CERAMIC 75 JE-H(St)H 2x2x0,8 E90 CERAMIC 77 JE-H(St)H 2x2x0,8 E90 CERAMIC 77 JE-H(St)H 2x2x0,8 E90 CERAMIC 77 JE-H(St)H 2x2x0,8 E90 CERAMIC		26	(N)HXH - 4x50 RM E90 CERAMIC	9	90 minutes no failure / interruption
29 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		27	(N)HXCH - 4x50 RM E90 CERAMIC	9	90 minutes no failure / interruption
30 (N)HXH - 4x1,5 RE E90 CERAMIC 9 50 minutes 31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 33 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		28	(N)HXCH - 4x50 RM E90 CERAMIC	9	90 minutes no failure / interruption
31 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 9 38 minutes 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 6 minutes 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		29	(N)HXH - 4x1,5 RE E90 CERAMIC	9	50 minutes
32 (N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 30 JE-H(St)H 2x2x0,8 E90 CERAMIC 31 JE-H(St)H 2x2x0,8 E90 CERAMIC 32 JE-H(St)H 2x2x0,8 E90 CERAMIC 33 JE-H(St)H 2x2x0,8 E90 CERAMIC 44 Ininutes 55 Ininutes 66 Ininutes 67 Ininutes 68 Ininutes 69 Ininutes		30	(N)HXH - 4x1,5 RE E90 CERAMIC	9	50 minutes
33 JE-H(St)H 2x2x0,8 E90 CERAMIC 34 JE-H(St)H 2x2x0,8 E90 CERAMIC 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 51 A minutes 52 Minutes 53 Minutes 54 Minutes 55 Minutes 66 Minutes 67 Minutes 67 Minutes 68 Minutes 68 Minutes 69 Minutes 69 Minutes 69 Minutes 69 Minutes 60 Minutes		31	(N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	9	33 minutes
34 JE-H(St)H 2x2x0,8 E90 CERAMIC 3 5 minutes 35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		32	(N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	9	38 minutes
35 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 31 minutes 36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		33	JE-H(St)H 2x2x0,8 E90 CERAMIC	3	6 minutes
36 JE-H(St)H 2x2x0,8 E90 CERAMIC 4 41 minutes 37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		34	JE-H(St)H 2x2x0,8 E90 CERAMIC	3	5 minutes
37 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 3 minutes 38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		35	JE-H(St)H 2x2x0,8 E90 CERAMIC	4	31 minutes
38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		36	JE-H(St)H 2x2x0,8 E90 CERAMIC	4	41 minutes
38 JE-H(St)H 2x2x0,8 E90 CERAMIC 5 4 minutes 39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		37			
39 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		38		5	4 minutes
40 JE-H(St)H 2x2x0,8 E90 CERAMIC 6 3 minutes 41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes		39		6	
41 2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC 7 3 minutes					
		41	· · · · · · · · · · · · · · · · · · ·	7	
¬Z Z GADIGO DL¬I I(GIJI I ZAZAQ,O LOO GEITAIVIIO 0 4 1		42	2 cables JE-H(St)H 2x2x0,8 E90 CERAMIC	9	4 minutes

[1] The test was discontinued in 95th minute at the request of test sponsor.

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Specimens S1 - S32 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W. Specimens S33 - S42 were tested by one-phase voltage supply 1 x 110V 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

The element, Power and communications cables Celina Bitner Zaklady Kablowe BITNER, type – (N)HXH, (N)HXCH, JE-H(St)H at cable bearing system BAKS - cable trays KCOP, cable ladders DGOP, ceiling ledges SDOC with clips UKO1, clips UDF, UEF, cable holder OZMO and OZO with accessories (consoles, booms, hangers, threaded rods, dowels etc.) is classified according to the following combinations of performance parameters and classes as appropriate.

Used cables by test [1] 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
(N)HXH E90 CERAMIC	(N)HXH - 4x1,5 RE E90 CERAMIC		E 30	n x ≥1,5 mm ² n ≥ 2 E 30 n x ≥1,5/1,5 mm ² n ≥ 2 E 30
	(N)HXH - 4x50 RM E90 CERAMIC	Cable trays KCOP 300H60/3N. Consoles WPCE 800 fixed by dowels PSRO M10x80. Booms WMCO 300 with holders UPWO and threaded rods PGM10 with holders USOV. Consoles in spacing of 1200 mm. Loading 10 kg.m ⁻¹ . Track No. 1 and 3.	E 90	
(N)HXCH E90 CERAMIC	(N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC		E 30	
	(N)HXCH - 4x50 RM/25 E90 CERAMIC		E 30	
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC		Without classification	Without classification
(N)HXH	(N)HXH - 4x1,5 RE E90 CERAMIC	Cable ladders DGOP 400H60/3N. Consoles WPCE 800 fixed by dowels PSRO M10x80. Booms WMCO 400 with holders UPWO and threaded rods PGM10 with holders USOV.	Without classification	Without
E90 CERAMIC	(N)HXH - 4x50 RM E90 CERAMIC		E 90	classification
(N)HXCH E90 CERAMIC	(N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC		Without classification	Without classification
	(N)HXCH - 4x50 RM/25 E90 CERAMIC	Consoles in spacing of 1200 mm. Loading 20 kg.m ⁻¹ . Track No. 2 and 4.	E 90	
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC		E 30	n x 2 x ≥ 0,8 mm n ≥ 2 E 30

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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
(N)HXH E90 CERAMIC	(N)HXH - 4x1,5 RE E90 CERAMIC	Cable dias UEF	E 30	Without classification
(N)HXCH E90 CERAMIC	(N)HXCH - 4x10 RE/10 E90 CERAMIC	Cable clips UEF fixed by dowels SRO M6x30. Clips in spacing of 300 mm. Ceiling mounting.	E 30	Without classification
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC	Track No. 5.	Without classification	Without classification
(N)HXH E90 CERAMIC	(N)HXH - 4x1,5 RE E90 CERAMIC		E 30	Without classification
(N)HXCH E90 CERAMIC	(N)HXCH - 4x10 RE/10 E90 CERAMIC	Cable clips UDF fixed by dowels SRO M6x30. Clips in spacing of 300 mm. Ceiling mounting.	E 30	Without classification
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC	Track No. 6.	Without classification	Without classification
(N)HXH E90 CERAMIC	(N)HXH - 4x1,5 RE E90 CERAMIC	Cable holders OZMO Holders fixed by dowels SRO M6x30. Holders in spacing of 300 mm. Ceiling mounting.	E 30	Without classification
(N)HXCH E90 CERAMIC	(N)HXCH - 4x1,2 RE/1,5 E90 CERAMIC		E 30	Without classification
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC	Track No. 7.	Without classification	Without classification
(N)HXH E90 CERAMIC	(N)HXH - 4x50 RM E90 CERAMIC	Cable holders OZO Holders fixed by dowels SRO M6x30.	E 30	Without classification
(N)HXCH E90 CERAMIC	(N)HXCH - 4x50 RM/25 E90 CERAMIC	Holders in spacing of 600 mm. Ceiling mounting. Track No. 8.	E 90	Without classification
(N)HXH E90 CERAMIC	(N)HXH - 4x1,5 RE E90 CERAMIC		E 30	n x ≥1,5 mm ² n ≥ 2
	(N)HXH - 4x50 RM E90 CERAMIC	Cable clips UKO1 in the ledges SDOC 600.	E 90	E 30
(N)HXCH E90 CERAMIC	(N)HXCH - 4x1,5 RE/1,5 E90 CERAMIC	Ledges fixed by dowels PSRO M8x75. Clips and ledges in spacing of 300 mm.	E 30	n x ≥1,5/1,5 mm ² n ≥ 2
	(N)HXCH - 4x50 RM/25 E90 CERAMIC	Ceiling mounting. Track No. 9.	E 90	E 30
JE-H(St)H E90 CERAMIC	JE-H(St)H 2x2x0,8 E90 CERAMIC		Without classification	Without classification

The element, Power and communications cables Celina Bitner Zaklady Kablowe BITNER, type – (N)HXH, (N)HXCH, JE-H(St)H at cable bearing system BAKS - cable trays KCOP, cable ladders DGOP, ceiling ledges SDOC with clips UKO1, clips UDF, UEF, cable holder OZMO and OZO with accessories (consoles, booms, hangers, threaded rods, dowels etc.) are classified to classes according to achieved test results of tested cables at tracks. Other classification is not allowed.

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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;
- § 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;
- § 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;
- § test results of function in fire test of cables at nonstandard supporting construction are valid only for tested construction with particular tested cable type and are also applicable for supporting construction with smaller spacing of consoles and smaller loading;
- § test results of cables tested in cable trays or ladders are applicable also for cable trays and ladders with particular construction with smaller width as tested with particular smaller loading;
- § 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.);
- § 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;
- § test results are applicable only for systems without connection elements (e.g. junction box, branch bar).

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:

Ing. Štofon Pástoskú

Ing. Štefan Rástocký leader of the testing laboratory

Signed:

Miroslav Hudák technician of the testing laboratory

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