FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-134-18-NURE

Cable supporting system Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable

FIRES 004/S2-01/04/2019-E-el

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FUNCTIONAL RESISTANCE IN FIRE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION IN ACCORDANCE WITH DIN 4102-12: 1998-11

FIRES-JR-134-18-NURE

Name of the product:	Cable supporting system Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable
Sponsor:	Molek Lapidot Ltd. 30 Modiin St. Segula Industrial Zone 4927176 Petach Tikva Israel
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1. INTRODUCTION

This expert judgement report with classification defines the functional resistance in fire classification assigned to element Cable supporting system Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable in accordance with the classes given in DIN 4102-12: 1998-11.

Test was carried out according to standard STN 92 0205 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, plate thermometers according to EN 1363-1 are used. According to DIN 4102-12: 1998-11, common thermocouples of construction which was used for this measurement till issue of EN 1363-1 are used. Measurement by plate thermometers acc. to EN 1363-1 can be considered as stricter method of temperature control in test furnace in compare with thermocouples used till issue of EN 1363-1. Therefore, it is possible to use results of test according to STN 92 0205 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 or outside the field of extended application according to relevant extended application 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 Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable, is defined as a cable supporting system for power and communication halogen free cables with circuit integrity maintenance.

2.2 PRODUCT DESCRIPTION

Product comprised of cable supporting system Molek Lapidot (cable trays, mesh trays, ladders with accessories) with halogen-free power and communication cables Tele-Fonika Kable.

Cable supporting system of Molek Lapidot:

Cable tray type 210
Cable tray is made of galvanized steel sheet thickness 0,8 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 300 mm. Trays are fixed together by nut bolts (M6x30, 6pcs). Maximum tested loading is 10kg.m^{-1}. Tested tray type is 210 360.

Cable tray type 214
Cable tray is made of galvanized steel sheet thickness 1,5 mm. Height of side wall is 60 mm and maximum tested width of cable tray is 300 mm. Trays are fixed together by nut bolts (M6x30, 6pcs). Maximum tested loading is 10kg.m^{-1}. Tested tray type is 214 300.

Cable mesh tray type 180 100-300
Cable mesh tray is made of galvanized steel wire either ∅ 4,0 mm. Height of side wall is 85 mm and maximum tested width of cable mesh tray is 300 mm. Mesh trays are fixed together by two connectors (128 003) on sides and connectors (128 002 – 1pc, 128 001 – 2pcs) from below. Maximum tested loading is 10kg.m^{-1}. Tested mesh tray type is 180 300.

Cable mesh tray type 180 101-301
Cable mesh tray is made of galvanized steel wire either ∅ 4,0 mm. Height of side wall is 85 mm and maximum tested width of cable mesh tray is 300 mm. Mesh trays are fixed together by integrated . Maximum tested loading is 10kg.m^{-1}. Tested mesh tray type is 180 301.

Cable ladder 350
Cable ladder is made of steel sheet thickness 1,5 mm and spacing of transoms is 300 mm. Dimensions of transoms are (20 x 10 x 1,25) mm. Height of side wall is 60 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by connector (355 000) and nut bolts (M8x30, 6 pcs) on each side. Maximum tested loading is 20kg.m^{-1}. Tested ladder type is 350 400.

Cable ladder 360
Cable ladder is made of steel sheet thickness 2,5 mm and spacing of transoms is 300 mm. Dimensions of transoms are (38 x 25 x 2,5) mm. Height of side wall is 68 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by connector (364 070) and nut bolts (M8x30, 6 pcs) on each side. Maximum tested loading is 20kg.m^{-1}. Tested ladder type is 360 400.

Cable ladder 370
Cable ladder is made of hot dip galvanized steel sheet thickness 2,5 mm and spacing of transoms is 300 mm. Dimensions of transoms are (38 x 25 x 2,5) mm. Height of side wall is 68 mm and maximum tested width of cable ladder is 400 mm. Cable ladders are fixed together by connector (374 070) and nut bolts (M8x30, 6 pcs) on each side. Maximum tested loading is 20kg.m^{-1}. Tested ladder type is 370 400.

Brackets
Bracket type 301 100-600 is made of bent steel sheet thickness either 1,5 mm (length ≤ 315 mm) or 2,0 mm (length ≥ 415 mm). Width of bracket is 40 mm and height is 60 mm (length 115 mm), 80 mm (length 215 mm) or 120 mm (length ≥ 315 mm). Tested brackets are 301 300 and 301 400.

Bracket type 301 101-601 is made of bent steel sheet thickness 2,0 mm. Width of bracket is 34 mm and height is 55 mm (length 115 mm), 85 mm (length 215 mm and 315 mm) or 115 mm (length ≥ 415 mm). Tested brackets are 301 301 and 301 401.

Bracket type 397 200-999 is made of base plate with dimensions (50 x 160 x 8) mm and bent steel sheet either 3,0 mm (length ≤ 600 mm) or 4,0 mm (length 800 mm – 1000 mm). Both parts are welded together and galvanized by hot dip. Tested brackets are 397 300 and 397 400.

Brackets are used for suspension of cable tray or ladders.

Head plates
Head plate type 301 001 is made of bent steel sheet 3,0 mm thick.
Head plate type 397 002 is made of head plate with dimensions (230 x 100 x 8) mm and support with dimensions (60 x 60 x 180 x 3) mm welded together and galvanized by hot dip.

Supports
Support type 301 010 is made of hollow steel sheet profile with dimensions (40 x 40 x 1,5) mm.
Support type 397 000 is made of bent hot dip galvanized steel sheet with dimensions (70 x 55 x 4) mm.

Spacers
Spacers are made of bent steel sheet with dimensions (61 x 40 x 2,5) mm. Length of spacers is 137 mm (379 004) or 184 mm (379 005) mm.

Rod grip
Grip type 340 001 is made of bent steel sheet 4,0 mm thick.
Grip type 340 002 is made of bent steel sheet 2,5 mm thick.

All parts of cable supporting systems are made of galvanized steel. Steel chains were used for additional loading of tracks.

<u>Cables</u>
Halogen-free cables are used for applications in public buildings, where fire would present a significant hazard to human life as a result of emission of toxic gasses and dense smoke hampering the evacuation or when the losses caused by the corrosive acid gasses would be higher than other damage caused by fire.

Cables used by test:

Power cables:
Flame-X 950 (N)HXH FE180/E90 0,6/1 kV

Communication cables:
Flame-X 950 JE-H(St)H Bd FE180/E90

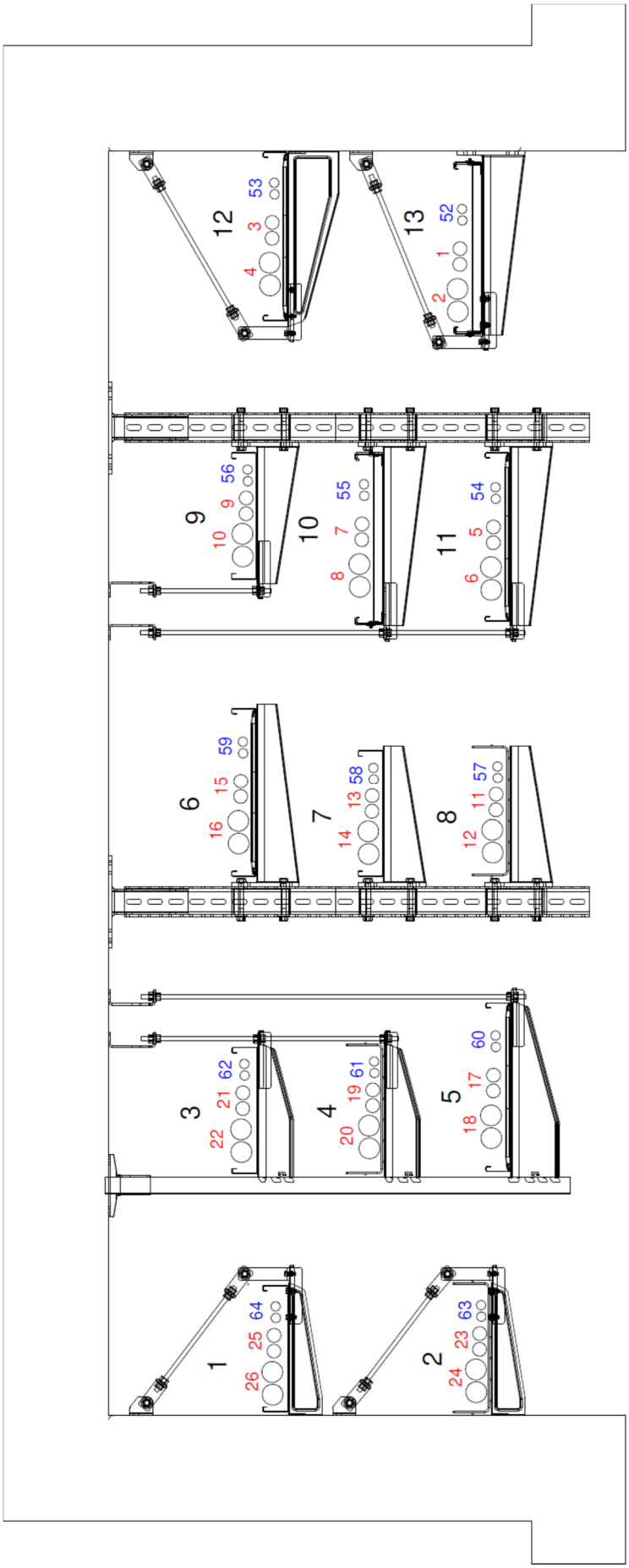
The length of cables was 5,2 m and 4,0 m from that was exposed to fire.

Cable penetration through the wall of test furnace was sealed by mineral wool and sprayed insulation material Tecwool.

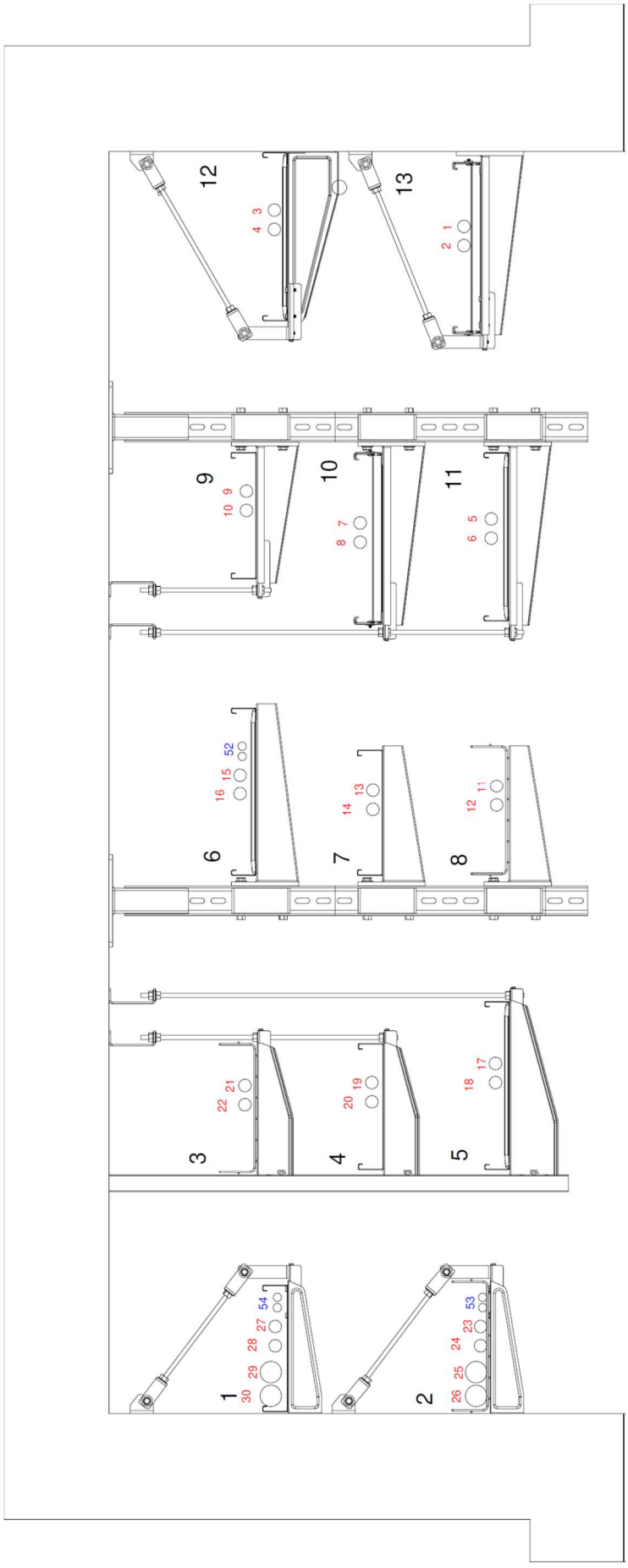
Steel chains were used for additional loading of tracks.

More detailed information about product construction is shown in test reports [1, 2].

Constructions assembled for test [1]:



Constructions assembled for test [2]:



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	Molek Lapidot Ltd., Petach Tikva, Israel	FIRES-FR-223-18-AUNE	18. 10. 2018	STN 92 0205: 2014
[2]			FIRES-FR-197-19-AUNE	15. 08. 2019	

3.2 TEST RESULTS

Test results of test [1]:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	13	52 minutes
2	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
3	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	12	66 minutes
4	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
5	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	11	50 minutes
6	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
7	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	10	51 minutes
8	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
9	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	9	61 minutes
10	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
11	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	8	50 minutes
12	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
13	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	7	73 minutes
14	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
15	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	6	59 minutes
16	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
17	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	5	49 minutes
18	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
19	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	4	69 minutes
20	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
21	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	3	84 minutes
22	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
23	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	2	87 minutes
24	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
25	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	1	84 minutes
26	2 cables Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		90 minutes no failure / interruption
52	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	13	90 minutes no failure / interruption
53	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	12	90 minutes no failure / interruption
54	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	11	90 minutes no failure / interruption
55	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	10	90 minutes no failure / interruption
56	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	9	90 minutes no failure / interruption
57	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	8	90 minutes no failure / interruption
58	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	7	90 minutes no failure / interruption
59	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	6	77 minutes

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
60	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**5**	90 minutes no failure / interruption
61	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**4**	90 minutes no failure / interruption
62	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**3**	90 minutes no failure / interruption
63	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**2**	90 minutes no failure / interruption
64	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**1**	90 minutes no failure / interruption

Test results of test [2]:

Specimen No.	Cables	Track No.	Time to first failure / interruption of conductor
1	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**13**	83 minutes
2	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		78 minutes
3	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**12**	97 minutes
4	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		100 minutes
5	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**11**	87 minutes
6	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		91 minutes
7	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**10**	57 minutes
8	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		64 minutes
9	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**9**	109 minutes
10	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		110 minutes
11	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**8**	81 minutes
12	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		80 minutes
13	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**7**	101 minutes
14	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		76 minutes
15	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**6**	106 minutes
16	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		85 minutes
17	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**5**	70 minutes
18	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		72 minutes
19	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**4**	107 minutes
20	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		100 minutes
21	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**3**	68 minutes
22	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		95 minutes
23	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**2**	82 minutes
24	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		18 minutes
25	cable Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		121 minutes no failure / interruption
26	cable Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		121 minutes no failure / interruption
27	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV	**1**	111 minutes
28	cable Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV		107 minutes
29	cable Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		121 minutes no failure / interruption
30	cable Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV		121 minutes no failure / interruption
52	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**6**	110 minutes
53	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**2**	91 minutes
54	2 cables Flame-X 950 JE-H(St)H 1x2x0,8	**1**	121 minutes no failure / interruption

[1] The fire test was terminated in the 93rd minute upon request of test sponsor
[2] The fire test was terminated in the 122nd minute upon request of test sponsor

Specimens S1 – S30 were tested by three-phase voltage supply 3 x 230/400V with bulbs 240V / 60 W.
Specimens S52 – S64 were tested by one-phase voltage supply 1 x 110V with LED diodes 3V /0,03W.
Circuit breakers with rating 3 A were used.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 CLASSIFICATION

The element, **Cable supporting system Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable**, is classified according to the following combinations of performance parameters and classes as appropriate.

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
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [1]	Cable tray 214 300. Bracket 301 300, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Wall installation. **Non-standard track No. 1 [1].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable tray 210 360. Bracket 301 300, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Wall installation. **Non-standard track No. 1 [2].**	**E 90**	n x ≥ 1,5 mm^2 n ≥ 2 **E 90**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [2]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [2]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [1]	Cable mesh tray 180 300. Bracket 301 300, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Wall installation. **Non-standard track No. 2 [1].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable mesh tray 180 301. Bracket 301 300, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Wall installation. **Non-standard track No. 2 [2].**	**Without classification**	**Without classification**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [2]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [2]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [1]	Cable tray 214 300. Consoles combined of ceiling head plate 301 001 and support 301 010. Bracket 301 301, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Suspended installation. **Standard track No. 3 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **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
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable mesh tray 180 300. Consoles combined of ceiling head plate 301 001 and support 301 010. Bracket 301 301, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Suspended installation. **Non-standard track No. 4 [1, 2].**	**E 90**	n x ≥ 1,5 mm^2 n ≥ 2 **E 90**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable ladder 350 400. Consoles combined of ceiling head plate 301 001 and support 301 010. Bracket 301 401, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Suspended installation. **Standard track No. 5 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable ladder 350 400. Consoles combined of ceiling head plate 397 002 and support 397 000. Bracket 397 400 and spacer 397 004 Consoles spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Suspended installation. **Non-standard track No. 6 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [2]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [1]	Cable tray 214 300. Consoles combined of ceiling head plate 397 002 and support 397 000. Bracket 397 300 and spacer 397 004 Consoles spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Suspended installation. **Non-standard track No. 7 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable mesh tray 180 300. Consoles combined of ceiling head plate 397 002 and support 397 000. Bracket 397 300 and spacer 397 004 Consoles spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Suspended installation. **Non-standard track No. 8 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable tray 214 300. Consoles combined of ceiling head plate 397 002 and support 397 000 reinforced by spacer 397 004. Bracket 397 300, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 10kg.m^{-1}. Suspended installation. **Standard track No. 9 [1, 2].**	**E 90**	n x ≥ 1,5 mm^2 n ≥ 2 **E 90**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **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
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [1]	Cable ladder 360 400. Consoles combined of ceiling head plate 397 002 and support 397 000 reinforced by spacer 397 004. Bracket 397 400, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Suspended installation. **Non-standard track No. 10 [1, 2].**	**E 30**	n x ≥ 1,5 mm^2 n ≥ 2 **E 30**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable ladder 350 400. Consoles combined of ceiling head plate 397 002 and support 397 000 reinforced by spacer 397 004. Bracket 397 400, rod grip 340 002 on opposite end of bracket. Threaded rod M10 passes through rod grip and is fixed to ceiling by hanger 340 001. Consoles spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Suspended installation. **Non-standard track No. 11 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable ladder 350 400. Bracket 301 300, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Wall installation. **Non-standard track No. 12 [1, 2].**	**E 90**	n x ≥ 1,5 mm^2 n ≥ 2 **E 90**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**
Flame-X 950 (N)HXH FE180/E90 1kV	Flame-X 950 (N)HXH-O FE180/E90 4x1,5RE 1kV [2]	Cable ladder 370 400. Bracket 397 400, rod grip 340 003 on opposite end of bracket, threaded rod M10 under 45˚ fixed to wall by rod hanger 340 006. Brackets spaced each 1200 mm. Maximum loading 20kg.m^{-1}. Wall installation. **Non-standard track No. 13 [1, 2].**	**E 60**	n x ≥ 1,5 mm^2 n ≥ 2 **E 60**
	Flame-X 950 (N)HXH-O FE180/E90 4x50RM 1kV [1]		**E 90**	
Flame-X 950 JE-H(St)H 300/500V	Flame-X 950 JE-H(St)H 1x2x0,8 [1]		**E 90**	n x 2 x ≥ 0,8 mm n ≥ 1 **E 90**

The element, **Cable supporting system Molek Lapidot with power and communication halogen-free cables Tele-Fonika Kable** with circuit integrity maintenance classes are 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:

General:

- throughout the period during which circuit integrity is to be maintained, neighbouring building components shall not have a negative effect on circuit integrity;
- although testing is only carried out on cables arranged horizontally, test results also apply to cables arranged either diagonally or vertically (e.g. risers), as long as the cable system is supported in transitional areas (i.e. where it switches from a horizontal to a vertical arrangement) in such a manner that the cables will not slip or kink at corners;

- if the standard support construction specified here is used for testing, test results also apply to other types of tested support construction;
- where risers are used, circuit integrity classification only applies if the cable is effectively supported (i.e. with a spacing of supports of 3500 mm or less). 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 DIN 4102-12, 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. In practice, 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 as shown in DIN 4102-12, figure 6. However, such constructions require proof of suitability by means of a test certificate or other document issued by an accredited testing laboratory.

4.3 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

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

The classification is valid until 26. 09. 2024 provided that the product, field of application and standards and regulations are not changed.

Approved:

Ing. Štefan Rástocký
leader of the testing laboratory

Signed:

Dávid Šubert
technician of the testing laboratory