MFPA Leipzig GmbH

Testing, inspection and certification body for
building materials, building products and building systems

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Classification of fire resistance acc. to
DIN EN 13501-2: 2016-12

Subject matter:	Classification of solid ceilings and walls with installed joint seals “Nullifire FJ203 Fire Resistant Rope” in different material dimensions as well as different installation conditions of the fire resistance class EI 120 according to DIN EN 13501-2: 2016-12
Applicant:	Tremco CPG Germany GmbH Werner-Haepp-Str. 1 D-92439 Bodenwöhr Germany
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This classification report is valid for an unlimited period.

This document consists of 9 pages.

Testing laboratory accredited by DAkkS GmbH in accordance with DIN EN ISO/IEC 17025. The accreditation only applies to the test procedures listed in the certificate (marked with * in this document). The certificate can be viewed at www.mfpa-leipzig.de.

Approved test centre according to the Landesbauordnung [state building code] (SAC 02) and notified testing laboratory, inspection body and certification body (PÜZ-Stelle) according to the Construction Products Regulation (NB 0800).

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1 Introduction

This classification report defines the classification given to solid ceilings and walls with installed joint seals “Nullifire FJ203 Fire-Resistant Rope” in different material dimensions as well as different installation conditions in accordance with the specifications given in DIN EN 1366-4: 2010-08.

2 Details of the classified product

2.1 Type of function

The joint sealant “Nullifire FJ203 Fire Resistant Rope” is defined as a joint sealing product. Its function is to resist fire corresponding to the characteristic fire behaviour in accordance with section 5.2.2 and 5.2.3 of DIN EN 13501-2: 2016-12.

2.2 Product description

The “Nullifire FJ203 Fire Resistant Rope” is a flexible and elastic joint rope made of mineral fibres braided with colourless textile glass fibres.

The data compiled below in Table 1 apply for the joint rope with respect to the thickness, the bulk densities and building material classification.

Table 1 Building material characteristic values of the “Nullifire FJ203 Fire Resistant Rope”

Building material designation	Manufacturer	Thickness [mm]	Bulk density [kg/m³]	Building material classification
“Nullifire FJ203 Fire Resistant Rope” ETA[1)] 19/0282 Joint width Solid part 10 mm	Tremco Illbruck GmbH Change of name Tremco CPG Germany GmbH	Nominal diameter 12 [2)]	at least 927.0 [2)]	A1 acc. to DIN EN 13501-1
“Nullifire FJ203 Fire Resistant Rope” ETA[1)] 19/0282 Joint width Solid part 60 mm	Tremco Illbruck GmbH Change of name Tremco CPG Germany GmbH	Nominal diameter 70 [2)]	at least 284.6 [2)]	A1 acc. to DIN EN 13501-1

1) ETA = European technical assessment

2) All intermediate values between the smallest and largest tested joint width (solid part) can be taken from Table 12 as a function of the nominal diameter as well as the raw densities

If the joint seal “Nullifire FJ203 Fire Resistant Rope” in a single layer is used, the joint cord element can be butt-jointed in the joint area for both verified element dimensions in accordance with the test certificate with test report PB 3.2/19-356-1 dated 28 April 2020.

2.3 Product assignment

When using the joint sealing “Nullifire FJ203 Fire Resistant Rope” in horizontal test setups (ceilings), the dimensioning must be selected depending on the required fire resistance class, the joint width (solid part) and the tested joint diameter.

When using the joint sealing “Nullifire FJ203 Fire Resistant Rope” in a vertical test setup (walls), the dimensioning must be selected depending on the required fire resistance class, the joint width (solid part) and the tested joint diameter.

2.4 Joint seals test set-up

The joint seals “Nullifire FJ203 Fire Resistant Rope” were installed in the joint openings of the horizontal supporting structure according to Table 2.

Table 2 Installation position of the joint sealing according to test report PB 3.2/19-356-1

Joint designation	Joint element	Joint width solid part [mm]	Element thickness solid part [mm]	Element diameter joint element nominal dimension [mm]	Element joint joint cord	Alignment joint element
Wall joint Vertical alignment	“Nullifire FJ203 Fire Resistant Rope” nominal diameter Ø 12 mm	10	100	Ø 12	butt-joint	flush side facing the fire
Wall joint vertical alignment	“Nullifire FJ203 Fire Resistant Rope” nominal diameter Ø 70 mm	60	100	Ø 70	butt-joint	flush side facing the fire
Ceiling joint horizontal alignment	“Nullifire FJ203 Fire Resistant Rope ” nominal diameter Ø 12 mm	10	150	Ø 12	butt-joint	flush side facing the fire
Ceiling joint horizontal alignment	“Nullifire FJ203 Fire Resistant Rope ” nominal diameter Ø 70 mm	60	150	Ø 70	butt-joint	flush side facing the fire

Further structural details as well as the materials used and their building material characteristic values can be found in the test report PPB 3.2/19-356-1 from 28 April 2020 of MFPA Leipzig GmbH.

3 Test reports and test results supporting this classification

3.1 Test reports

Organisation that performed the test	Applicant	Number of the test reports	Test standard
MFPA Leipzig GmbH Hans-Weigel-Str. 2b 04319 Leipzig	Tremco CPG Germany GmbH Werner-Haepp-Str. 1 D-92439 Bodenwöhr Germany	PB 3.2/19-356-1 from 28 April 2020	DIN EN 1366-4: 2010- 08 conjunction with DIN EN 1363-1: 2012-10

3.2 Test results

Table 3 "Nullifire FJ203 Fire Resistant Rope" with Ø 12 mm in the vertical test set-up (one-layered)

Test method	Parameter	Test results in the 120th minute of test
DIN EN 1366-4: 2010-08 in conjunction with DIN EN 1363-1: 2012-10	**Integrity (E)**	
	Combustion of the cotton ball	no combustion
	Appearance of gaps	no gaps
	Appearance of flames on the opposite side	no sustained appearance of flames
	Thermal insulation (I)– Rise in temperature on the side to which no flames are applied above the initial temperature after the 120th minute of test	
	Mean value > 140 K	Not exceeded over a test period of 120 minutes
	max. single value > 180 K	Not exceeded over a test period of 120 minutes

Table 4 "Nullifire FJ203 Fire Resistant Rope" with Ø 70 mm in the vertical test set-up (one-layered)

Test method	Parameter	Test results in the 120th minute of test
DIN EN 1366-4: 2010-08 in conjunction with DIN EN 1363-1: 2012-10	**Integrity (E)**	
	Combustion of the cotton ball	no combustion
	Appearance of gaps	no gaps
	Appearance of flames on the opposite side	no sustained appearance of flames
	Thermal insulation (I)– Rise in temperature on the side to which no flames are applied above the initial temperature after the 120th minute of test	
	Mean value > 140 K	Not exceeded over a test period of 120 minutes
	max. single value > 180 K	Not exceeded over a test period of 120 minutes

Table 5 "Nullifire FJ203 Fire Resistant Rope" with Ø 12 mm in the horizontal test set-up (one-layered)

Test method	Parameter	Test results in the 120th minute of test
DIN EN 1366-4: 2010-08 in conjunction with DIN EN 1363-1: 2012-10	**Integrity (E)**	
	Combustion of the cotton ball	no combustion
	Appearance of gaps	no gaps
	Appearance of flames on the opposite side	no sustained appearance of flames
	Thermal insulation (I)– Rise in temperature on the side to which no flames are applied above the initial temperature after the 120th minute of test	
	Mean value > 140 K	Not exceeded over a test period of 120 minutes
	max. single value > 180 K	Not exceeded over a test period of 120 minutes

Table 6 "Nullifire FJ203 Fire Resistant Rope" with Ø 70 mm in the horizontal test set-up (one-layered)

Test method	Parameter	Test results in the 120th minute of test
DIN EN 1366-4: 2010-08 in conjunction with DIN EN 1363-1: 2012-10	**Integrity (E)**	
	Combustion of the cotton ball	no combustion
	Appearance of gaps	no gaps
	Appearance of flames on the opposite side	no sustained appearance of flames
	Thermal insulation (I)– Rise in temperature on the side to which no flames are applied above the initial temperature after the 120th minute of test	
	Mean value > 140 K	Not exceeded over a test period of 120 minutes
	max. single value > 180 K	Not exceeded over a test period of 120 minutes

4 Classification and direct field of application

4.1 Reference for classification

This classification has been carried out in compliance with section 7.5.9 "Classification of structural joints" of DIN EN 13501-2: 2016-12.

4.2 Classification

The solid ceilings and walls with joint seals "Nullifire FJ203 Fire Resistant Rope" according to section 2 are classified on the basis of the following combinations of performance parameters and classes. Other classifications are not allowed

4.2.1 Classification of the joint seals

4.2.1.1 "Nullifire FJ203 Fire Resistant Rope" with a nominal diameter of 12 mm in the vertical test set-up (one-layered) – 100 mm wall

R	E	I	W	-	t	-	M	P	C	IncSlow	sn	ef	r
-	**E**	**I**	-	-	**120**	-	-	-	-	-	-	-	-

Table 7 Classification of structural joints according to EN 13501-2: 2016-12, section 7.5.9.4

Test conditions	Joint widths
Alignment of the sample - horizontal supporting structure - vertical supporting structure - vertical joints - vertical supporting structure - horizontal joints	 -- V --
Mobility – lateral - No mobility - Forced mobility (%)	 X --
Type of joints - prefabricated - made on site - both prefabricated and made on site	 -- F --
Range of joint widths (in mm)	W 10

Classification according to enclosed space and insulation:

Fire resistance rating: EI 120-V-X-F-W 10

4.2.1.2 "Nullifire FJ203 Fire Resistant Rope" with a nominal diameter of 70 mm in the vertical test set-up (one-layered) – 100 mm wall

R	E	I	W	-	t	-	M	P	C	IncSlow	sn	ef	r
-	E	I	-	-	120	-	-	-	-	-	-	-	-

Table 8 Classification of structural joints according to EN 13501-2: 2016-12, section 7.5.9.4

Test conditions	Joint widths
Alignment of the sample - horizontal supporting structure - vertical supporting structure - vertical joints - vertical supporting structure - horizontal joints	 -- V --
Mobility – lateral - No mobility - Forced mobility	 X --
Type of joints - prefabricated - made on site - both prefabricated and made on site	 -- F --
Range of joint widths (in mm)	W 60

Classification according to enclosed space and insulation:

Fire resistance rating: EI 120-V-X-F-W 60

4.2.1.3 "Nullifire FJ203 Fire Resistant Rope" with a nominal diameter of 12 mm in the horizontal test set-up (one-layered) – 150 mm ceiling

R	E	I	W	-	t	-	M	P	C	IncSlow	sn	ef	r
-	E	I	-	-	120	-	-	-	-	-	-	-	-

Table 9 Classification of structural joints according to EN 13501-2: 2016-12, section 7.5.9.4

Test conditions	Joint widths
Alignment of the sample - horizontal supporting structure - vertical supporting structure - vertical joints - vertical supporting structure - horizontal joints	 H -- --
Mobility – lateral - No mobility - Forced mobility	 X --
Type of joints - prefabricated - made on site - both prefabricated and made on site	 -- F --
Range of joint widths (in mm)	W 10

Classification according to enclosed space and insulation:

Fire resistance rating: EI 120-H-X-F-W 10

4.2.1.4 "Nullifire FJ203 Fire Resistant Rope" with a nominal diameter of 70 mm in the horizontal test set-up (one-layered) – 150 mm ceiling

R	E	I	W	-	t	-	M	P	C	IncSlow	sn	ef	r
-	**E**	**I**	-	-	**120**	-	-	-	-	-	-	-	-

Table 10 Classification of structural joints according to EN 13501-2: 2016-12, section 7.5.9.4

Test conditions	Joint widths
Alignment of the sample - horizontal supporting structure - vertical supporting structure - vertical joints - vertical supporting structure - horizontal joints	 H -- --
Mobility – lateral - No mobility - Forced mobility	 X --
Type of joints - prefabricated - made on site - both prefabricated and made on site	 -- F --
Range of joint widths (in mm)	W 60

Classification according to enclosed space and insulation:

Fire resistance rating: EI 120-H-X-F-W 60

4.3 Summarising classification of the test results

4.3.1 Classification of the joint seals without mechanical shear stress

Table 11 Execution and arrangement of joint sealing

Overview of fire-resistant designs for installation in ≥ 100 mm thick solid walls and 150 mm thick solid ceilings, each with a raw density of ≥ 600 kg/m³				
Field of application with regard to alignment DIN EN 1366- 4: 2010- 08, section 13 Table 1	Joint width solid part [mm]	Joint sealing "Nullifire FJ203 Fire Resistant Rope" Number of layers and arrangement		Classification Fire resistance
(A), (B) [1] and (D)	10 to 60	one-layered [2]	Any arrangement within the solid part joint	EI 120-V-X-F-W 10 to 60 EI 120-H-X-F-W 10 to 60

[1] The solid part joint can also be used as a stepped joint in accordance with image 2 of DIN EN 1366-4 2010-08, section 13 for application area (A) and (B)

[2] In the case of single-layer joint sealing, the joints can be butt-jointed; in this case, care must be taken to ensure that the ends of the joint cord are tightly sealed

4.4 Direct field of application

This classification is valid for the following application conditions:

The joint sealing “Nullifire FJ203 Fire Resistant Rope” is used as a sealant for linear joints between the following space-enclosing building components:

The joint seals can be used in space-enclosing components without shear stress made of cellular concrete with a raw density of 600 kg/m³ and/or bigger raw densities for normal concrete, hollow blocks and masonry.

The “Nullifire FJ203 Fire Resistant Rope” with Ø 12 mm (for the 10 mm wide solid part joint) may only be used with a raw density of ≥ 927.0 kg/m³ and the “Nullifire FJ203 Fire Resistant Rope” Ø 60 mm (for the 60 mm wide solid part joint) with a raw density ≥ 284.6 kg/m³. All intermediate values depending on the joint width (solid part) as well as raw densities of the joint ropes can be taken from Table 12.

Table 12 Nominal diameter depending on the joint width (solid part) as well as the raw densities

Nominal diameter “Nullifire FJ203 Fire Resistant Rope” [mm]	Joint width (Solid part) [mm]	Raw densities [kg/m³]
12	10	≥ 927.0 [1)]
20	15	Nominal bulk density ≥ 449.04
30	20	Nominal bulk density ≥ 273.18
40	25	Nominal bulk density ≥ 267.52
40	30	Nominal bulk density ≥ 267.52
50	40	Nominal bulk density ≥ 238.47
60	50	Nominal bulk density ≥ 210.90
70	60	≥ 284.6 [1)]

[1)] measured raw densities from the fire resistance test, all intermediate measured values were provided by the client

Horizontal supporting structures must have a minimum solid part thickness of 150 mm or more depending on the joint seal “Nullifire FJ203 Fire Resistant Rope” used.

Vertical supporting structures must have a minimum solid part thickness of 100 mm depending on the joint seal “Nullifire FJ203 Fire Resistant Rope” used.

The joint seals in the tested horizontal ceiling structures apply for vertical joints in ceilings without shear stress with joint widths (solid part) of 10 mm and 60 mm. The space-enclosing components must meet the respective fire resistance test requirements according to DIN EN 13501-2: 2016-12.

The joint seals in the tested vertical wall structure apply for vertical joints in walls without shear stress with a joint width (solid part) of 10 mm and 60 mm. The space-enclosing components must meet the respective fire resistance test requirements according to DIN EN 13501-2: 2016-12.

The solid part joints may not experience any lateral strains greater than 7.5% of the joint width according to DIN EN 1366- 4: 2010-08, section 13.4.

Since the joint seals were flush facing the fire side in the tested applications, the application can also be carried out in the middle of the joint cross-section and/or flush on the solid part side facing away from the fire.

The joint seal “Nullifire FJ203 Fire Resistant Rope” may be installed as a single layer in accordance with the boundary conditions of Table 11 and Table 12.

The joint areas of the joint seal “Nullifire FJ203 Fire Resistant Rope” may be butt-jointed according to the test evidence in the basic test report PB 3.2/19-356-1. Care must be taken to ensure a tight seal between the two ends of the joint cord in the joint area.

The selection of the appropriate joint seal "Nullifire FJ203 Fire Resistant Rope" (nominal diameter depending on the joint width of the solid part to be sealed) can be found in Table 11 and Table 12.

When using the joint sealing "Nullifire FJ203 Fire Resistant Rope" in horizontal test setups (ceilings), the dimensioning must be selected depending on the required fire resistance class, the joint width (solid part) and the tested joint diameter.

When using the joint sealing "Nullifire FJ203 Fire Resistant Rope" in vertical test setup (walls), the dimensioning must be selected depending on the required fire resistance class, the joint width (solid part) and the tested joint diameter.

5 Limitations

This classification report is valid as long as the test basis or the constructive regulations as well as the key elements of the components or the bases of the classification do not change.

The classification document is not a type approval or certification of the product.

This document does not replace any certificate of conformity or usability as defined by the building regulations (national/European).

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