ZAPP-ZIMMERMANN
INNOVATIVE BRANDSCHUTZSYSTEME

ZZ® 535 Fire Protection Joint Seal

Technical data sheet

Trade name:	**ZZ® 535 Fire Protection Joint Seal**
Description:	Compressible polyurethane-based joint seal tape with halogen-free intumescent fire retardants, which intumesces in the event of fire and is coated with a flexible silicone skin.
Implementation areas:	Linear fire protection sealing of tunnel joints to protect embedded joint sealing systems (typically rubber-based)
Approvals / certificates:	Tested in accordance with the RijksWaterStraat (RWS) fire curve (PB 3.2/09-068) MFPA Leipzig • Up to EI 120 when installed between concrete test specimens with 30 mm fibre-cement boards • Up to EI 240 in combination with fibre-cement boards
Color:	Red-brown
Quantity supplied:	Project-specific custom fabrication up to 20 m
Diameter:	20 to 80 mm (+/- 0.5 mm), other dimensions available on request
Transport / storage:	Dry, protected from dust, in original packaging only
Bulk density:	ρ = 290 kg/m³ bis 350 kg/m³

Behaviour in the event of fire

Building material class:	DIN 4102-B2
Classification of reaction to fire according to DIN EN 13501-1:	Class E (intumescent material)
Expansion pressure:	No measurable expansion pressure
Expansion factor:	1.6 – 4.5 x Tested on specimens at 450°C for 25 minutes under load. The expansion factor is a laboratory reference value. The expansion behavior in the installed state depends on the actual boundary conditions.

ZZ® 535 Fire Protection Joint Seal

Physical material / product characteristics

The following information does not represent guaranteed product properties. It is provided for guidance purposes only and should be considered as indicative values.

Thermal conductivity:
λ = 0,103 W/(m*K)
Test standard: DIN EN 12667

Compression hardness:
Cv (40%) = 18 kPa
Test standard: DIN EN ISO 3386-1

Surface resistance:
$R_0 = 2{,}39 \times 10^9\ \Omega$
Test standard: DIN EN 60079-0 (VDE 0170-1):2013-04 Section 7.4 including application of note 2 of Section 7.4.2, IEC 60079-0:2011 and modified + Cor.:2012, EN 60079-0:2012, EN 80079-36 und TRGS 727:2016-07-29

Approved in potentially explosive zones:

	0	1	2	20	21	22
grounded	✓	✓	✓	✓	✓	✓
ungrounded	×	×	×	×	×	×

ZZ® 535 Fire Protection Joint Seal

Hygiene, Health and Environmental Protection

Indoor air hygiene:

Requirements according to the AgBB 2015 scheme are met
Test standards: prEN 16516, ISO 16000-3, ISO 16000-6, ISO 16000-9

Testing lab: eco-INSTITUT Germany GmbH, Cologne
Date: 25.08.2017

	Result	Requirement	Requirement fulfilled
Emission rating			
Measurement after 3 days			
TVOC (C6 – C16)	0,008 mg/m³	≤ 10 mg/m³	✓
Carcinogens (EU Cat. 1A und 1B)	< 0,001 mg/m³	≤ 0,01 mg/m³	✓
Measurement after 28 days			
TVOC (C6 – C16)	0,014 mg/m³	≤ 1 mg/m³	✓
Σ SVOC (C16-C22)	< 0,005 mg/m³	≤ 0,1 mg/m³	✓
R (dimensionless)	0,02	≤ 1	✓
VOC without NIK	< 0,005 mg/m³	≤ 0,1 mg/m³	✓
Carcinogens	< 0,001 mg/m³	≤ 0,001 mg/m³	✓

VOC-Emission Class:

A+ according to French Decree No. 2011-321
Test standards: ISO 16000-3, ISO 16000-6, ISO 16000-9, ISO 16000-11, ISO 16017-1

Microbial Biodegradability:

Inert, fungistatic, or bacteriostatic
Test standard: DIN EN ISO 846

Safety instructions:

Contains the following Substances of Very High Concern (SVHC) listed in the REACH Candidate List, Article 59: Melamin.

ZZ® 535 Fire Protection Joint Seal

Assessment of Fire Protection Performance und Environmental Conditions

The assessment were carried out in accordance with the approval principles for intumescent building materials dated 24.11.2006 by the DIBt and the EOTA Guideline for European Technical Approvals ETAG No. 026-2 dated 01.101.2008.

Thermal stress:

Continuous contact or ambient temperature:	≤ 80 °C

Permissible Environmental Conditions:

According to ETAG 026-3:	Usage Category X Products for joint applications exposed to weathering.

Application Instructions:

Before using the ZZ® 535 Fire Protection Seal, the installer must ensure that the installation requirements (number of layers, seal oversize vs. Joint, substrate, etc.) comply with the corresponding test report.

The substrates must be clean, grease-free, dry and stable.

When installing ZZ® 535 Fire Protection Joint Seal into the construction joint, the seal must be compressed and inserted into the joint. The seal must not twist, warp or be overstretched in length. The silicone surface oft he tape must not be damaged. The ends and joints must be permanently sealed with a commercially available silicone sealant.