Sikafloor®-20 N PurCem®

Heavy duty, high strength, easy trowel, polyurethane screed

Sikafloor[®]-20 N PurCem[®] is a three part, resin rich, water dispersed, high strength, **Product** smooth trowel grade, coloured polyurethane modified, cement and aggregate Description screed suitable for floors subject to heavy loading, abrasion and chemical exposure. It has a textured aggregate surface providing medium to heavy profile slip resistance and is typically installed at 6 to 9 mm thick. Uses In areas subject to heavy loading, abrasion and high chemical exposure, to provide a hard wearing surface, such as in: Food processing plants, in wet or dry process areas, freezers and coolers, thermal shock areas Chemical plants Laboratories Workshops Suitable for physical resistance (Principle 5, method 5.1 of EN 1504-9) Suitable for chemical resistance (Principle 6, method 6.1 of EN 1504-9) Characteristics / Fluid consistency requires less labour to install than conventional heavy duty **Advantages** modified PU trowel grade screeds Excellent chemical resistance. Resists a wide range of organic and inorganic acids, alkalis, amines, salts and solvents. Please refer to the Chemical Resistance Chart or consult your local Technical Dept. Similar coefficient of thermal expansion to concrete, allowing movement with the substrate through normal thermal cycling. It will perform and retain its physical characteristics through a wide temperature range from -40°C (-40°F) up to +120°C (239°F) Steam cleanable at 9 mm thick Bond strength in excess of the tensile strength of concrete. Concrete will fail first

- Non taint, odourlessVOC free
- VOC free
- High mechanical resistance. Behaves plastically subject to impact. Will deform but will not crack or debond
- Slip resistance. Natural textured surface provides anti-slip traction
- High abrasion resistance resulting from its silica aggregate structure
- Rapid one step application. Normally, no concrete primer or sealer required
- It is possible to apply on to 7 to 10 day old concrete after adequate preparation and with a tensile bond strength in excess of 1.5 MPa (218 psi)
- Sikafloor® PurCem® screeds (19N 20N) and detailing mortar (29N) can withstand moisture vapor transmission values of 12 lbs/1000 ft2 when tested in accordance with the ASTM F 1869 Anhydrous Calcium Chloride Test Method



- Fast curing will allow foot traffic after twelve hours and full service after two days. Production downtime is cut to an absolute minimum.
- Jointless. Extra expansion joints are not necessary; simply maintain and extend existing expansion joints up through the Sikafloor® -PurCem® flooring system
- Easily maintained

Tests

Approval / Standards

Conforms to the requirements of EN 13813: 2002 as CT - C50 - F10 - AR0.5

Conforms to the requirements of EN 1504-2 for principles 5 (PR) and 6 (CR) as a Coating (C)

Concerning contact with foodstuffs, it conforms to the requirements of:

- EN1186, EN 13130, and prCEN/TS 14234 standards, and the Decree on Consumer Goods, representing the conversion of directives 89/109/EEC, 90/128/EEC and 2002/72/EC for contact with food stuffs, according to test report by ISEGA, Registered N° 24549 U 07, dated May 18th, 2007.
- USDA. Acceptance for use in food plants in the USA
- Canadian Food Inspection Agency acceptance for use in food plants in Canada
- British Standards Specifications (BSS) acceptance for use in the UK.
 Campden and Chorleywood Food Research Association, Ref.
 S/REP/98152/2A, dated March 6th, 2007

Test reports from Warrington Fire Research Centre for Sikafloor® -20N PurCem®: WFRC No. 163876, dated 7th of July, 2008 (BS EN ISO 11925-2:2002) and WFRC No. 163877, dated 7th of July, 2008 (BS EN ISO 9239-1:2002) for Fire rating

Fire classification report according to EN 13501-1 from Warrington Fire Research Centre for Sikafloor® -20N PurCem®: WFRC No.174965, dated 11th of July, 2008

Capillary absorption and permeability to water report from Taylor Woodrow Construction, Ref. 11069, dated Dec. 5th, 2008

All other values indicated are internal test results.

Product Data

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FORM		
Appearance / Colours	Part A: Part B: Part C:	coloured liquid brown liquid natural grey powder
	1006), Oxide	ours (all are approximate): Beige (~RAL 1001), Maize yellow (~RAL red (~RAL 3009), Sky blue (~RAL 5015), Grass green (~RAL 6010), RAL 7037), Agate grey (~RAL 7038), Telegrey2 (~RAL 7046).
Packaging	Part A+B+C:	31.0 kg ready to mix units
	Part A: Part B: Part C:	3.22 kg plastic drum2.78 kg plastic jerrycan25.0 kg plastic lined, double paper bags
Storage		
Storage Conditions / Shelf-Life		erly in original, unopened and undamaged sealed packaging, in dry temperatures between +10°C and +25°C.
	Parts A and B: 12 months from date of production. Must be protected from frost.	
	Part C : 6 mo	nths from date of production. Must be protected from humidity.
Technical Data		
Chemical Base	Part A: Part B: Part C:	Water borne polyol isocyanate Aggregates, cement and active fillers

Density	Part B: ~	1.07 kg/l (at +20°C) 1.24 kg/l (at +20°C) 1.58 kg/l (at +20°C)	(EN ISO 2811-1) & (ASTM C 905)
	Part A+B+C mixed: ~	2.08 kg/l ± 0.03 (at +20°C)	
Capillary Absorption	Permeability to water: 0.0 Class Low	026 kg /m ² h ^{0.5}	(EN 1062-3)
Layer Thickness	6 mm min. / 9 mm max.		
Thermal Expansion Coefficient	$\alpha \approx 2.7 \text{ x } 10^{-5} \text{ per }^{\circ}\text{C}$ (temperature range: -20°		, ASTM D-696, ISO 11359)
Water Absorption	0.22%		(ASTM C 413)
Permeability	To Water Vapour: 0.148 (6.1 mm)	g/h/m ²	(ASTM E-96)
Fire Rating	Class B _(fl) S1		(BS EN 13501-1)
Service Temperature	The product is suitable for dry, of up to +120°C.	or use when exposed to continuo	ous temperatures, wet or
	The minimum service ten	nperature is -40°C	
Mechanical / Physical Properties			
Compressive Strength	> 45 MPa after 28 days a	at +23°C / 50% r.h.	(ASTM C 579)
	> 50 N/mm ² after 28 days	s at +23°C / 50% r.h.	(BS EN 13892-2)
Flexural Strength	> (3 mm) 9.5 MPa after 28 days at +23°C / 50% r.h.		(ASTM C 580)
	>10 N/mm² after 28 days at +23°C / 50% r.h.		(BS EN 13892-2)
Tensile Strength	> 4.3 N/mm ² after 28 day	rs at +23°C / 50% r.h.	(ASTM C 307)
Bond Strength	> 1.75 N/mm² (failure in concrete) (EN 1542		
-	(1.5 N/mm² is the minimum pull off strength of the recommended concrete substrate)		
Shore D Hardness	80 - 85 (ASTM D 2240)		
Flexural Modulus	3750 MPa		(ASTM C 580)
Coefficient of Friction	Steel: 0.4 Rubber: 1.25		(ASTM D 1894-61T)
Slip Resistance	Slip Resistance Values		(BS 8204 Part 2)
	Substrate	SRV Dry	SRV Wet
	Sikafloor®-20N PurCem®	70	65
	TRRL Pendulum, Rapra	4S Slider	
Abrasion Resistance	Class "Special" Severe a AR 0.5 (Less than 0.05 mm weal		(BS 8204 Part 2) (EN 13892-4)
	2730 mg	eel / 1000 gr / 1000 cycles	(ASTM D 4060-01)
Indentation	≈ 0%		(MIL - PFR 24613)
Impact Resistance	Class A (Less than 1 mm indentation depth)		(BS 8204 Part 1)
	Class III 2 pounds / 45 inches (3		
Resistance			
Chemical Resistance	Resistant to many chemic	cals. Please ask for a detailed c	hemical resistance chart.
Thermal Resistance	The product is designed when thickness is 9 mm.	to withstand thermal shock caus	sed by steam cleaning
Resistance to Thermal Shock	Pass		(ASTM C 884)

Softening Point	130°C (266°F)	(ASTM D-1525 ISO 306)
USGBC LEED [®] Rating	Conforms Section EQ (Indoor Environmental Quality), Credit 4.2 Low-Emitting Materials Paints and Coatings Calculated VOC content ≤ 50 g / I	
System Information		
System Structure	Use the products mentioned below as indicat Sheets.	ted in their respective Product Data
	Substrate Priming Systems	
	Odboliate i filling Oystems	

System 1: moisture control on green concrete:

Scratch coat of Sikafloor®-21N PurCem® 1.5 mm thick, lightly broadcast with quartz sand 0.4 – 0.7 mm.

System 2: Inadequate substrate and moisture content between 4% and 6%

Primers:

Sikafloor®-155W N

fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor®-19N / 20N PurCem®.

System 3: Inadequate substrate and moisture content below 4%

Sikafloor®-155W N or Sikafloor®-156 or Sikafloor®-161 or Sikafloor®-159 for faster curing any of which must be fully blinded with quartz sand 0.4 - 0.7 mm for the subsequent application of Sikafloor®-19N / -20N PurCem®

On porous excessively absorbent substrates use Sikafloor®-155W N, in two coats, the first thinned with 10% water and the second broadcast to refusal.

Heavy duty screed

Layer thickness:

6 - 9 mm

Screed:

Sikafloor®-19N PurCem® or Sikafloor®-20N PurCem®

Medium to heavy duty screed:

Layer thickness:

4.5 – 6 mm (including scratch coat)

Priming for Sikafloor®-21N PurCem®:

Epoxy primer Sikafloor -156 / 161 lightly broadcast with quartz sand 0.4 -0.7 mm. or

Scratch coat:

A scratch coat 1.5 mm thick, lightly broadcast with quartz sand 0.4 - 0.7mm. will seal the surface and fill irregularities and improve appearance of the final laver.

Standard screed:

Sikafloor®-21N PurCem® or

High slip resistance screed:
Sikafloor®-22N PurCem® broadcast with quartz sand sealed with 4— 2 coats of Sikafloor®-31N PurCem® depending on the desired texture. (See build up Slip Resistance in Sikafloor®-22N PurCem® PDS) Sikafloor®-22N PurCem® does not normally require any priming.

Coving and detailing and vertical applications:

Sikafloor®-10N PurCem® Primer or Sikafloor®- 156 / -161 Reprime if no longer tacky.

Coving Mortar:

Sikafloor®-29N PurCem®

1 x Sikafloor®-31N PurCem®

Seal Coat:

 Base coat: Sikafloor[®]-20N or Sikafloor[®]-21N or Sikafloor[®]-29N PurCem[®]

- Seal Coat:

1 x Sikafloor®-31N PurCem®

 Base coat: Sikafloor[®]-22 N PurCem[®]

Seal Coat:

1 – 2 x Sikafloor®-31N PurCem®

Note: These system configurations must be fully complied with as described and may not be changed.

Application Details

Consumption / Dosage

Primer (If priming is necessary, see System Structure above and respective PDS)

Screed 6 - 9 mm:

Sikafloor®-20 N PurCem® (part A+B+C) ~ 2.0 kg/m² / mm layer thickness.

This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level or wastage etc.

Substrate Quality

The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm²) with a minimum pull off strength of 1.5 N/mm².

The substrate must be clean dry, or saturated surface dry (SSD) and free of all contaminants such as oil, grease, coatings and surface treatments, etc.

If in doubt, apply a test area first.

Substrate priming is normally not required under typical circumstances. However due to variations in concrete quality, surface conditions, surface preparation and ambient conditions, reference test areas are recommended to determine whether priming is required to prevent the possibility of blisters, debonding pinholes and other aesthetic variations.

Sikafloor[®] PurCem[®] can be applied onto recent concrete over 7 to 10 days old or onto old damp concrete (SSD) without having to prime first, as long as the substrate fulfils the above requirements.

Substrate Preparation

Concrete substrates must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove cement laitance and achieve an open textured surface to achieve CSP 3-6 according to the International Concrete Repair Institute.

Weak concrete must be removed and surface defects such as blow holes and voids must be fully exposed.

Repairs to the substrate, filling of blowholes/voids and surface levelling must be carried out using appropriate products from the Sikafloor[®], SikaDur[®] and Sikagard[®] range of materials. Also, filling of deep unevenness up to 30 mm deep can be done by adding aggregate to the pre-dosed set, 30% (9kg) of dry quartz sand 2 – 3 mm.

High spots can be removed by grinding.

All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum.

Edge terminations.

All free edges and working day joints of Sikafloor[®]-19N / 20N / 21N / 22N and 29N PurCem[®], whether at the perimeter, along gutters or at drains require extra anchorage to distribute mechanical and thermal stresses. This is best achieved by forming or cutting grooves in the concrete. Grooves must have a depth and width of twice the thickness of the Sikafloor[®]- PurCem[®]. Refer to the edge details provided in the Method Statement. If necessary, protect all free edges with mechanically attached metal strips. Never featheredge, always turn into an anchor groove.

Expansion joints.

Expansion joints must be provided in the substrates at the intersection of dissimilar materials. Isolate areas subject to thermal stresses, vibration movements or around load-bearing columns and at vessels sealing rings. Refer to the edge details provided in the Method Statement.

Application Conditions / Limitations

0 to (0.10 T	.4000 / :0000		
Substrate Temperature	+10°C min. / +30°C max.		
Ambient Temperature	+10°C min. / +30°C max.		
Substrate Humidity	dry or SSD).	damp with no free standing water (saturated surface	
	Sikafloor [®] - PurCem [®] screed moisture vapour transmissic ASTM F 1869 Anhydrous Ca	s (19N, 20N) and detailing mortar (29N) can withstand on values of around 12 lbs/1000 ft ² tested according to alcium Chloride test.	
	Refer to System Structure and options for substrate priming.		
Relative Air Humidity	85% max.		
Dew Point	Beware of condensation!		
	The substrate and uncured trisk of condensation or bloom	floor must be at least 3°C above dew point to reduce the ming on the floor finish.	
Application Instructions			
Mixing	Part A : B : C = 1 : 0.86 : 7.7	76 (packaging size = 3.22 : 2.78 : 25) by weight	
Mixing Time		rature will affect the mixing process. naterials for best use to 15°C – 21°C.	
	a low speed electric stirrer.	tely, make sure all pigment is uniformly distributed with and then B and blend for 30 seconds.	
	Gradually add part C (aggre seconds. DON'T DUMP! Allow part C to blend for furt a uniform moist mix is obtain	gate) to the mixed resin parts over a period of 15 her 2 minutes minimum, to ensure complete mixing and ned. During the operations, scrape down the sides and a flat or straight edge trowel at least once (parts	
	When adding aggregate to p 3 mm dry quartz sand after i	orepare a patching mortar, gradually add the 9 kg of 2 – mixing the full set.	
Mixing Tools		rer (300-400 rpm) for mixing parts A and B. r mix use a pan type revolving mixer.	
Application Method /	Prior to application, confirm	substrate moisture content, r.h. and dew point.	
Tools	the mix and CO ₂ from the re	he material to facilitate the release of entrapped air from action. Do so in every batch mixed in a consistent our differences due to increased temperatures in the	
	a rake or screed box to the r	ON PurCem® onto the substrate and spread evenly with required thickness. Take care to spread newly mixed on of previously applied mixes (wet edge), before the	
	Finish the surface using a fla	at, round edge steel trowel.	
	provide a more homogeneous Excessive backrolling or trov	ed once or twice, and always in the same direction, to us finish to the surface. No excessive backrolling! welling will bring up more resin to the surface, reducing exture which characterises this product.	
	wet surface and sealed with	selected mineral aggregates can be broadcast on the a top coat of 1 x Sikafloor®-31N PurCem® to lock in the allow a minimum of 36 hours cure period at 20°C	
	Flow check	(ASTM C 230-90 / EN 1015-3)	
	Top internal diam: Bottom internal diam.: Height:	70 mm 100 mm 60 mm	
	Flow =	210 mm ± 10 mm	
Cleaning of Tools		on equipment with Thinner C immediately after use. an only be mechanically removed.	

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Potlife

Temperature	Time
+10°C	~ 35 - 40 minutes
+20°C	~ 18 - 22 minutes
+30°C	~ 10 - 15 minutes

Waiting Time / Overcoating

If you have primed, before applying Sikafloor[®]-20 N PurCem[®] on Sikafloor[®]-155 WN or Sikafloor[®]-156 or Sikafloor[®]-157 (all fully blinded), allow:

_	Waitir	ng time
Substrate temperature	Minimum	Maximum
+10°C	24 hours	12 days
+20°C	12 hours	7 days
+30°C	6 hours	4 days

Always make sure primer is fully cured before application.

Before any subsequent application on Sikafloor®-20 N PurCem® allow:

	Waiting time		
Substrate temperature	Minimum	Maximum	
+10°C	16 hours	72 hours	
+20°C	8 hours	48 hours	
+30°C	4 hours	24 hours	

Times are approximate and will be affected be changing ambient and substrate conditions, particularly temperature and relative humidity.

This table above applies also for application on to the patching mortar made by aggregate addition.

Notes on Application / Limitations

A retaining groove must be placed at exposed edges along of the application area (perimeter, joints, connections, plinths, columns, covings and drains / gullies) as indicated in the application details of the Method Statement for Application, to prevent curling during curing. Width and depth must be twice the thickness of the floor finish.

If an added aggregate screed layer is applied, retaining grooves must also be created for this screed.

Do not apply to PCC (polymer modified cement mortars) that may expand due to moisture when sealed with an impervious resin.

Do not apply to water soaked, glistening wet concrete substrates.

Do not apply to porous surfaces where significant moisture vapour transmission (out-gassing) will occur during application.

Sika® Thinner C is flammable. NO NAKED FLAMES.

Always ensure good ventilation when using Sikafloor®-20 N PurCem® in a confined space, to prevent excessive ambient humidity.

Sikafloor®-20N PurCem® shares the resin (part A) and hardener (part B) with Sikafloor®-21N and 22N PurCem®. Make sure the correct pack sizes of aggregate are used.

Freshly applied Sikafloor®-20 N PurCem® must be protected from damp, condensation and water for at least 24 hours.

Improved slip resistance can be obtained by broadcasting the surface with aggregate of suitable granulometry and back rolling with a short pile roller (1 - 2 passes only).

For the highest hygienic demands, a subsequent top coat of Sikafloor®-31 PurCem® may be required. This must be applied within 48 hours after the initial Sikafloor®-20 N PurCem® application.

Always allow a minimum of 48 hours after product application prior to placing into

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service in proximity with food stuffs.

Products of the Sikafloor[®] -PurCem[®] product range are subject to yellowing when exposed to UV radiation. There are no measurable losses of other properties when this occurs and it is a purely aesthetical matter. Products can be used outside provided the change in appearance is acceptable by the customer.

Applications of less than the recommended 6 mm can result in unacceptably rough surfaces, particularly in food industries.

Curing Details

Applied Product ready for use

Substrate temperature	Foot traffic	Light traffic	Full cure
+10°C	~ 24 hours	~ 36 hours	~ 7 days
+20°C	~ 12 hours	~ 18 hours	~ 5 days
+30°C	~ 8 hours	~ 15 hours	~ 3 - 4 days

Note: Times are approximate and will be affected by changing ambient and substrate conditions.

Cleaning / Maintenance

Methods

To maintain the appearance of the floor after application, Sikafloor[®] -20N PurCem[®] must have all spillages removed immediately and must be regularly cleaned using rotary brushes, mechanical scrubbers, scrubber dryers, high pressure washers, wash and vacuum techniques, etc., using suitable detergents and waxes.

Value Base

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

Note

The following chapter is only mandatory for European countries.

CE Labelling

The harmonized European Standard EN 13 813 "Screed material and floor screeds - Screed materials - Properties and requirements"specifies requirements for screed materials for use in floor construction internally.

Structural screeds or coatings, i.e. those that contribute to the load bearing capacity of the structure, are excluded from this standard.

Resin floor systems as well as cementitious screeds fall under this specification. They have to be CE-labelled as per Annex ZA. 3, Tables ZA. 1.1 or 1.5 and Z.A. 3.3 and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):



Sika Limited Watchmead Welwyn Garden City Herts. AL7 1BQ England

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CT

NPD²⁾

NPD

C50

F10

AR0.5

NPD NPD

NPD

NPD

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EN 13813 CT - C50 - F10 - AR0.5

Cementitious screed material for indoors in buildings (systems as per Product Data Sheet)

Reaction to fire:

Release of corrosive substances

(Cementitious Screed):

Water vapour permeability

Compressive strength

Water permeability:

Flexural strength Abrasion:

Sound insulation:

Sound absorption:
Thermal resistance:

Chemical resistance:

1) Last two digits of the year in which the marking was affixed.

*) Please fill in your relevant producer address

EU Regulation 2004/42 VOC - Decopaint

Directive

According to the EU-Directive 2004/42, the maximum allowed content of VOC Product category IIA / $\bf j$ type $\bf wb$) is140 g/l (Limit 2010), for the ready to use product.

Sikafloor®-20 N PurCem, is VOC free for the ready to use product.

²⁾ No performance determined

The following chapter is only mandatory for European countries.

CE Labelling

The harmonized European Standard EN 1504-2 "Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 2 : Surface protection systems for concrete" gives specifications for products and systems based on methods "hydrophobic impregnation", "impregnation" and "coating" for the various principles presented under EN 1504-9.

Products which fall under this specification have to be CE-labelled as per Annex ZA. 1, Tables ZA1a to ZA 1g according to the scope and relevant clauses there indicated, and fulfil the requirements of the given mandate of the Construction Products Directive (89/106):

For flooring systems not dedicated to protect or reinstate the integrity of a concrete structure, EN 13813 applies. Products acc. EN 1504-2 used as flooring systems with mechanical loads also must fulfil EN 13813.

Here below indicated are the performance classes achieve according to the standard. For the specific performance results of the product to the particular tests, please see the actual values above in the PDS.

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Sika Limit Watchmea Welwyn Garde	ad	Ţ
Herts. AL7 1BQ	England	
09 1)		1)
0086 CPD - 541325		
EN 1504-2		
Surface Protection Syste Physical Resistance / Che		
Abrasion resistance	Class AR 0.5	
Capillary absorption and permeability to water	w < 0,1 kg/m ² · h ^{0,5}	
Resistance to severe chemical attack	Class 2	
Impact resistance	Class III: ≥ 20Nm	
Adhesion strength by pull-off test	≥ 2.00 N/mm2	
Reaction to fire	B _{fl} S1	

¹⁾ Last two digits of the year in which the marking was affixed.



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²⁾ No performance determined

³⁾ Tested as part of a full system

^{*)} Please fill in your relevant producer address