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Material Certificate

Order no.: 3263186
Employee in charge: Piehler

Client: Plasti Chemie Produktionsgesellschaft mbH
Falgardring 1
08223 Falkenstein

Manufacturer: Plasti Chemie Produktionsgesellschaft mbH
Falgardring 1
08223 Falkenstein

Name and identification or batch number of product: Coating:
Coating system Plastifloor® trowel on (TO) coating and Plastifloor® quartz/flake broadcast coating (hereinafter "broadcast coating")
Structure:
see application record for Plastifloor® broadcast coating and trowel on (TO) coating (Annex 2)

Date of delivery of the product: Sample received on 13 July 2020, Institute for Plastics, Ridlerstrasse 65, 80686 Munich (Annex 1, photos 1, 3, 5, 7, 9, 11) by forwarding agency

Date of testing: 14 July 2020 - 01 September 2020

Scope: Assessment of wear resistance as per BCA in accordance with EN 13813 (2003) clause 5.2.3 (BCA tester according to EN 13892-4 (2003))
Assessment of bond strength according to EN 13813 (2003), clause 5.2.12 (bond strength according to EN 13892-8 (2003))
Assessment of impact resistance according to EN 13813 (2003), clause 5.2.13
Assessment of reaction to fire in accordance with EN 13501-1 (2019), class E

Scope: Each coating system was applied to three concrete slabs with dimensions of approx. 350 x 50 x 50 mm and 13 fibre-reinforced cement slabs (dimensions 250 x 90 x 8 mm). The test specimens were handed over to the Institute for Plastics for testing.

Date: 2020-10-14

Our reference:
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Bericht BCA
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Report No. 3263186

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7 Pages and 4 Annexes.
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The test results refer exclusively
to the units under test.



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1. Test process

1.1 Testing of wear resistance according to BCA

Testing of wear resistance as outlined in EN 13892-4 (2003) using a BCA abrasion test machine was carried out in the Institute for Plastics.

The loss in volume caused by the steel wheels was measured after 2,850 cycles as specified in EN 13892-4 (2003).

Assessment of wear resistance was based on EN 13813 (2003), clause 5.2.3, Table 5.

Test scope:

- Testing with a BCA abrasion test machine over 2,850 cycles.
- Measuring of abrasion depth
- Visual examination



Test results:

Plastifloor® TO coating

Run period of 2850 cycles	Abrasion measurement [mm] specimen 1									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	-0.17	0.05	0.01	0.15	-0.22	0.44	0.02	-0.47	-0.02	-20
1	-0.20	0.02	0.00	0.15	-0.22	0.43	0.02	-0.47	-0.03	-30

Run period of 2850 cycles	Abrasion measurement [mm] specimen 2									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	-0.16	-0.20	-0.19	-0.51	0.05	0.23	-0.05	-0.22	-0.13	-130
1	-0.16	-0.20	-0.29	-0.51	0.05	0.23	-0.05	-0.22	-0.14	-140

Run period of 2850 cycles	Abrasion measurement [mm] specimen 3									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	-0.12	-0.34	0.01	0.24	-0.16	-0.16	0.29	-0.11	-0.04	-40
1	-0.09	-0.34	0.01	0.20	-0.13	-0.17	0.24	-0.10	-0.05	-50

$$AR = d_w - d_o$$

d_w Mean abrasion depth in µm determined at all eight measurement positions after completion of testing

d_o Mean abrasion depth in µm determined at all eight measurement positions before testing

	d_w [µm]	d_o [µm]	AR [µm]
Specimen 1	-30	-20	-10
Specimen 2	-140	-130	-10
Specimen 3	-50	-40	-10
Mean value			-10



Visual examination did not reveal any detachments, blowholes/voids or cracking after completion of the run test (Annex 1, photos 2, 4, 6)

Based on the depth of abrasion (mean depth 10 µm) measured after completion of the run test carried out with a BCA test machine with steel wheels (2,850 cycles = 8550 rotations of steel wheel over test position), the coating system "Plastifloor® TO coating" shall be classified in

Abrasion resistance class AR 0.5

in line with EN 13813 (2003) clause 5.2.3, Table 5.

Plastifloor® broadcast coating

Run period of 2850 cycles	Abrasion measurement [mm] specimen 1									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	0.06	-0.29	-0.28	-0.05	-0.28	-0.37	-0.56	-0.45	-0.28	-280
1	0.02	-0.32	-0.30	-0.10	-0.31	-0.47	-0.63	-0.53	-0.33	-330

Run period of 2850 cycles	Abrasion measurement [mm] specimen 2									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	0.12	-0.23	-0.33	-0.15	0.20	-0.22	-0.16	0.08	-0.9	-90
1	0.09	-0.25	-0.33	-0.15	0.02	-0.29	-0.20	0.06	-0.13	-130

Run period of 2850 cycles	Abrasion measurement [mm] specimen 3									
	Pos. 1:	Pos. 2:	Pos. 3:	Pos. 4:	Pos. 5:	Pos. 6:	Pos. 7:	Pos. 8:	Mean [mm]	Mean [µm]
0	-0.06	-0.21	-0.30	-0.18	-0.42	-0.25	0.17	0.13	-0.14	-140
1	-0.16	-0.23	-0.36	-0.18	-0.48	-0.29	0.11	0.09	-0.19	-190



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$$AR = d_w - d_o$$

- d_w Mean abrasion depth in μm determined at all eight measurement positions after completion of testing
- d_o Mean abrasion depth in μm determined at all eight measurement positions before testing

	d_w [μm]	d_o [μm]	AR [μm]
Specimen 1	-330	-280	-50
Specimen 2	-130	-90	-40
Specimen 3	-190	-140	-50
	Mean value		-47

Visual examination did not reveal any detachments, blowholes/voids or cracking after completion of the run test (Annex 1, photos 8, 10, 12).

Based on the depth of abrasion (mean depth 47 μm) measured after completion of the run test carried out with a BCA test machine with steel wheels (2,850 cycles = 8550 rotations of steel wheel over test position), the coating system "Plastifloor® broadcast coating" shall be classified in

Abrasion resistance class AR 0.5

in line with EN 13813 (2003) clause 5.2.3 Table 5.

1.2 Testing of tensile bond strength

The tensile bond strength of the coated concrete slab was tested as per prEN 13892-8 (2003) in the Institute for Plastics.

The tensile bond strength determined in N/mm^2 is classified as per Table 11 of EN 13813 (2003).

Tensile Bond strength is calculated at $0.1 \text{ N}/\text{mm}^2$ based on the mean of 5 individual values.



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Plastifloor® TO coating

	Tensile bond strength [N/mm ²]					
Slab number	Dolly 1	Dolly 2	Dolly 3	Dolly 4	Dolly 5	Mean value
1	3.3	3.3	3.3	3.3	3.3	3.3
Failure pattern	100 % X	100 % X	100 % X	100 % X	100 % X	

Plastifloor® broadcast coating

	Tensile bond strength [N/mm ²]					
Slab number	Dolly 1	Dolly 2	Dolly 3	Dolly 4	Dolly 5	Mean value
1	3.3	3.3	3.3	3.3	3.3	3.3
Failure pattern	100 % X	100 % X	100 % X	100 % X	100 % X	

The type of test specimen failure was determined by means of visual inspection.

Debonding: X = cohesion failure in substrate
 X/Y = adhesion failure between substrate and screed or first layer of coating
 Y = cohesion failure in screed and/or coating
 C = failure between adhesive layer and dolly

On the basis of the tensile bonding strength measured (mean bonding strength 3.3 N/mm²), the coating systems "Plastifloor® TO coating" (Annex 1, photo 13) and "Plastifloor® broadcast coating" (Annex 1, photo 14) shall be classified in

Bond strength class B 2.0

in line with EN 13813 (2003), clause 5.2.12, Table 11.

1.3 Testing of impact resistance

Impact resistance is tested in line with the classification procedure outlined in EN ISO 6272 (2011).

Mass of impactor:	20 N
Max. drop height:	0.6 m TO coating / 0.9 – 1.0 m broadcast coating
Layer thickness of broadcast coating	3.0 mm
Layer thickness of TO coating:	10.0 mm

Based on the determined drop height and the mass of the impactor of 20 N, the coating systems "Plastifloor® TO coating" (Annex 1, photos 15 and 16) and "Plastifloor® broadcast coating" (Annex 1, photo 17) had an impact strength of 12 Nm

Impact resistance IR 12

as per EN 13813 (2003) clause 5.2.13

1.4 Testing of reaction to fire in accordance with EN 13501-1 (2019), class E

Testing of reaction to fire in accordance with EN 13501-1 (2019) class E of the coating systems "Plastifloor® TO coating" and "Plastifloor® broadcast coating" was carried out at the Institute of Wood Research at Munich University, Winzerstrasse 45, 80797 Munich (accredited testing laboratory).

The results have been summarised in Annexes 3 and 4 (test report B20206 and classification report B20207).

Institute for Plastics



i. A. Schweizer



The authorised inspector

signed Piehler