5.2.3.15. Fungus resistance

DAkkS Deutsche Akkreditierungsstelle D-PL-11034-01-00

Labor für Umwelterprobung und Werkstoffprüfung
Telefon +49 (0) 3 41 / 4 84 32 - 25
Telefax +49 (0) 3 41 / 4 84 32 - 14
E-Mail umwelterprobung@tzoleipzig.de

TZO

Technologie-Zentrum für Oberflächentechnik und Umweltschutz Leipzig GmbH
Hornstraße 6 • D-04248 Leipzig
Telefon +49 (0) 3 41 / 4 84 32 - 0 • Fax +49 (0) 3 41 / 4 84 32 - 14
E-Mail info@tzoleipzig.de

TEST REPORT

No. 349/17

Client	DSG-Canusa GmbH Mr. Marc Schumann Boschstraße 17 D-53359 Rheinbach
Date of order	2017-10-05
Date of receiving the specimens	2017-10-10
Period of testing	2017-10-18 to 2017-12-13

1 TEST OBJECT

1.1 Designation / Number of pieces

Specimens of materials as follows:

1.1.1	Deray – KY 175 ¼ " nature-transp. batch 157023	/ 10 pieces
1.1.2	Deray – KYF 190 ½ " nature-transp. batch 154646	/ 10 pieces
1.1.3	Deray – I ½ " transparent batch 156564	/ 10 pieces
1.1.4	Deray – V25 ½ " black batch 156556	/ 10 pieces
1.1.5	Deray – VT 220 3/8 " black batch 153549	/ 10 pieces
1.1.6	Deray – I ½ " black batch 155512	/ 10 pieces

3 specimens with metal bolt, 7 pieces without

1.2 Manufacturer see client

2 TASK

Testing to determine the resistance against mould growth in accordance with ISO 846 : 1997–06, Method B "Determination of fungistatic effects"

3 TEST PROGRAMME

3.1 Initial visual inspection

3.2 Pre-treatment of the samples in accordance with sub-clause 1.1

Cleaning with Ethanol 70 % vol. and flashing off for at least 72 h. *given by the client*

3.3 Test fungi

Table 1 *Test fungi in accordance with ISO 846, method B*

Name	ATCC	DSM (DSMZ Braunschweig)
Aspergillus niger	6275	1957
Chaetomium globosum	6205	1962
Gliocladium virens	9645	1963
Paecilomyces variotii	18502	1961
Penicillium funiculosum	36839	1944

3.4 Testing in accordance with ISO 846

- Exposure of the samples — on mineral–salt agar plate in accordance with ISO 846, sub–clause 5.2.3.5 in Petri dishes ∅ 140 mm
- Spore suspension — in accordance with ISO 846, sub–clause 8.2.2.3 with a spore concentration of 1 to 2 · 10^6 spores / ml for each of the test fungi. Mixture of equal volumes of the single spores suspension
- Verifying the viability of the spores in accordance with ISO 846, sub–clause 8.2.2.4
- Method of inoculation — in accordance with DIN EN 60068–2–10 : 2006–03 annex B: atomisation of the spore suspension by the action of ultrasonic and settling the aerosol containing the spores to the samples and the mineral – salt agar
- Temperature of incubation — (29 ± 1) °C
- Duration — 56 d

4.3 Final visual inspection

Table 3 *Intensity (growth index)*

Specimen acc. sub–clause 1.1	Evaluation	Intensity	Figure
1.1.1	uniformly outspread mycelium, begin of sporulation	**1 to 2**	1, 2
1.1.2	uniformly outspread mycelium, begin of sporulation	**1 to 2**	3, 4
1.1.3	uniformly outspread mycelium, sporulation	**2**	5, 6
1.1.4	uniformly outspread mycelium, sporulation	**2**	7, 8
1.1.5	uniformly outspread mycelium, sporulation	**1 to 2**	9, 10
1.1.6	in places outspread mycelium, begin of sporulation	**1 to 2**	11, 12

After cleaning and disinfecting no changes are visible.

Remark: Corrosion of the metal bolts is visible through the transparent specimens.

Leipzig, 2018-01-10

Laboratory for Environmental Testing and Material Testing

Annex sheet 1 to 6

Dr.-Ing. Frank Erler
Laboratory Manager

Fungus resistance, Tensile strength

AS23053 insulation sleeving part number	Sample	Tensile strength / psi	Requirement /psi	Test procedure and condition	Deviation to test procedure	Assessment
M23053/16-003-0	1	2176	≥ 1700	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	2	2176	≥ 1700	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	3	2103	≥ 1700	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	4	2161	≥ 1700	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	5	2016	≥ 1700	5.13 ASTM D638	yes, comment 13	pass
	average	2126	≥ 1700			pass

Fungus resistance, Elongation

AS23053 insulation sleeving part number	sample	Elongation / %	requirement / %	test procedure and condition	deviation to test procedure	Assessment
M23053/16-003-0	1	516	≥ 250	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	2	514	≥ 250	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	3	485	≥ 250	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	4	506	≥ 250	5.13 ASTM D638	yes, comment 13	pass
M23053/16-003-0	5	474	≥ 250	5.13 ASTM D638	yes, comment 13	pass
	average	499	≥ 250			pass

Fungus resistance, Dielectric strength

AS23053 insulation sleeving part number	sample	Dielectric strength/ volts/mil	requirement / volts/mil	test procedure and condition	deviation to test procedure	Assessment
M23053/16-003-0	1	654	≥ 300	5.2 ASTM D2671	yes, comment 13	pass
M23053/16-003-0	2	703	≥ 300	5.2 ASTM D2671	yes, comment 13	pass
M23053/16-003-0	3	636	≥ 300	5.2 ASTM D2671	yes, comment 13	pass
	average	664	≥ 300			pass

Test parameters, which may affect the results	Requirement test condition	Actual test condition
Mandrel diameter (D)	6.4 ≤ D ≤ 7.6 mm	D = 7 mm

Date, when test was performed	February 2018
Equipment utilized	1: Oven (internal identification number: 16) 2: gage rod (internal identification number:02/03) 3: Micrometer (internal identification number: 03/06) 4: Tensile Testing Device/Extensometer (serial number: DO134390/823054) 5: Tensile Testing Device/Load cell U2B S3 (serial number: DO134390/820601) 6: Dielectric Strength Device (serial number: 8707001)
Equipment last calibrated on date	1: 03.03.2016 2: 30.09.2014 3: 06.06.2017 4: 04.10.2017 5: 04.10.2017 6: 25.10.2017
Date calibration is due	1: 03.03.2019 2: 12.2019 3: 08.2020 4: 10.2018 5: 10.2018 6: 10.2018
Person, who performed the test	Marc Schumann

5.2.3.16. Corrosion

AS23053 insulation sleeving part number	Sample	Result	Requirement	Test procedure and condition	Deviation to test procedure	Assessment
M23053/16-003-0	1	pass	5.10.2 (T oil=135±2; T test tube < 60° C)	5.10.2	yes, comment 14	pass
M23053/16-003-0	2	pass	5.10.2 (T oil=135±2; T test tube < 60° C)	5.10.2	yes, comment 14	pass
M23053/16-003-0	3	pass	5.10.2 (T oil=135±2; T test tube < 60° C)	5.10.2	yes, comment 14	pass
	Final Result	pass				pass

Date, when test was performed	March 2018
Equipment utilized	1: Steel Rule (internal identification number: 10/248) 2: Oven (internal identification number: 16) 3: Thermometer (internal identification number: GTH 1100/2 DIF/01) 4: Thermometer (internal identification number: GTH 1100/2 DIF/02)
Equipment last calibrated on date	1: 10.08.2017 2: 03.03.2016 3: 25.03.2014 4: 25.03.2014
Date calibration is due	1: --- 2: 03.03.2019 3: 25.03.2019 4: 25.03.2019
Person, who performed the test	Yadollah Teymouri