0390-L-19/5
11 August 2020

Test report

Cantex Siliconen dakcoating

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Cantex Siliconen dakcoating

Kiwa BDA Testing B.V.
Avelingen West 35-37
P.O. Box 389
4200 AJ Gorinchem
The Netherlands

Tel. +31 183 669 690
testing@bda.nl
www.kiwabda.nl

Commercial register Registered by Chamber of Commerce
Midden Nederland 23059445

Details

Principal	Cantex Dakrenovatie B.V. Milrooijseweg 47a 5258 KG Berlicum Nederland
Contact person	Maarten Kuijpers
Email	info@cantex.eu
Date of order	21 October 2019
Project number	0390-L-19/5
Author	K. van Zee
Subject	determination of resistance to artificial weathering

Contents

1 Introduction

By order of Cantex Dakrenovatie B.V. Kiwa BDA Testing B.V. has determined the resistance to artificial weathering of the roof waterproofing product **Cantex Siliconen dakcoating**.

On 21 October 2019 a sample, provided by Mr Maarten Kuijpers of Cantex Dakrenovatie B.V., has been received at Kiwa BDA Testing B.V. for the purpose of testing.

On the sample no data were found regarding product name, manufacturer and/or production date/code.

See annex I for a photo of the delivered sample.

2 Investigation

The investigation has been performed in coherence with the stipulations mentioned in EN 13956:2012 – Flexible sheets for waterproofing – Plastic and rubber sheets for roof waterproofing – Definitions and characteristics.

The investigation has been performed in the period from week 48, 2019 up to and including week 19, 2020.

EN 13956:2012 states that when the product is tested for purposes other than initial type testing or factory production control, the tests to determine product characteristics indicated in this standard shall be started within one month of delivery from the manufacturer.
For the sample concerned the moment of delivery from the manufacturer for the sample concerned has not been revealed. Nevertheless, by request of the principal the investigation has been performed.

3 Test methods and results

The investigation into the tensile stress and elongation has been performed according to EN 12311-2:2013 – Flexible sheets for waterproofing – Determination of tensile properties – Part 2: Plastic and rubber sheets for roof waterproofing, Method B, with rectangular test specimens. The actual elongation of the test specimens has been measured with an optical extensometer; the constant separation speed has been set at 100 $mm.min^{-1}$. See photos of the test in annex II.

The effective thickness of the test specimens has indicatively been determined according to the principles of EN 1849-2:2001 – Flexible sheets for waterproofing – Determination of thickness and mass per unit area – Part 2: Plastic and rubber sheets for roof waterproofing.

The test has been performed on the test specimens in initial condition and after 1000 h, 2000 h and 3000 h of artificial weathering (UV-B) respectively of a test piece according to the expired European draft standard prEN 1297-1:1994 – Flexible sheets for roofing – Determination of resistance to UV and water ageing, Part 1 – Bitumen sheeting.

The testing equipment used for artificial weathering has been a BDA Ponding Tester®, type N. See a photo of the BDA Ponding Tester in annex II.

The test method consists in alternately exposing the test sample under an angle of 5° to UV light and condensation, combined with the action of demineralized ponding water, in repetitive cycles. The prescribed exposure cycle has a duration of 480 minutes and consists of dry period with UV-B radiation at 70 °C for 240 minutes, followed by 240 minutes with condensation on the test sample at 40 °C. During the artificial weathering a ponding waterfront moves over approximately 20 mm at circa 50% of the width of the test sample. At the dry period some of the water evaporates which causes tensions in the test sample and at the beginning of the condensation period the evaporated amount of water is filled up again with demineralized water.

American calculations and correlation investigations by Kiwa BDA Testing B.V. give a rough calculation that 1000 hours of artificial weathering according to the aforementioned method equals about five years in the Western European climate. This can only be a rough indication, since the real correlation among other depends on the thickness and the type of material as well as on the climate differences within Western Europe per year and per area.
Therefore, this correlation may not be used for official statements about lifetime expectancy.

Table 1 – Tensile stress and elongation, initial

Test specimen	Tensile stress [N.mm^{-2}]	Elongation [% (*L*/*L*)]
1	0,92	169
2	0,97	157
3	0,81	133
4	0,90	152
5	0,95	150
Mean	**0,91**	**152**
Standard deviation s ($\sigma_{(n-1)}$)	0,06	12
Measured effective thickness: 1,37 mm.		

Table 2 – Tensile stress and elongation after 1000 h of artificial weathering

Test specimen	Tensile stress [N.mm^{-2}]	Elongation [% (*L*/*L*)]
1	0,86	63,4
2	0,98	71,9
3	0,80	65,8
4	0,77	67,9
5	0,77	69,4
Mean	**0,84**	**68**
Standard deviation s ($\sigma_{(n-1)}$)	0,09	3
Change compared to initial	-8%	-55%
Measured effective thickness: 1,13 mm.		

Table 3 – Tensile stress and elongation after 2000 h of artificial weathering

Test specimen	Tensile stress [N.mm^{-2}]	Elongation [% (*L*/*L*)]
1	0,69	51,8
2	0,71	54,3
3	0,69	52,0
4	0,64	47,4
5	0,68	51,6
Mean	**0,68**	**51**
Standard deviation s ($\sigma_{(n-1)}$)	0,03	2
Change compared to initial	-25%	-66%
Measured effective thickness: 1,25 mm.		

Table 4 – Tensile stress and elongation after 3000 h of artificial weathering

Test specimen	Tensile stress [N.mm^{-2}]	Elongation [% (*L*/*L*)]
1	0,83	50,8
2	0,82	47,4
3	0,90	54,4
4	0,79	49,1
5	0,79	51,0
Mean	**0,83**	**51**
Standard deviation s ($\sigma_{(n-1)}$)	0,04	3
Change compared to initial	-9%	-66%
Measured effective thickness: 1,14 mm.		

4 Discussion

The roof waterproofing product Cantex Siliconen dakcoating shows a significant decrease of tensile stress and elongation at break due to the first 1000 h of artificial weathering. In the following 2000 h there is a stabilisation of the level of the tensile stress and elongation.

The thickness of the sample showed quite some fluctuations, which makes it difficult to compare the test results and to draw up more unambiguous conclusions.

Remarks:

The results are only related to the investigated samples, products and/or systems. Kiwa BDA Testing B.V. is not liable for interpretations or conclusions that are made in consequence of the results obtained.

The uncertainty of measurement can be retrieved at Kiwa BDA Testing B.V.

If sampling was not performed by Kiwa BDA Testing B.V., no judgement can be given with regard to the origin and representativeness of the samples.

Gorinchem, 11 August 2020

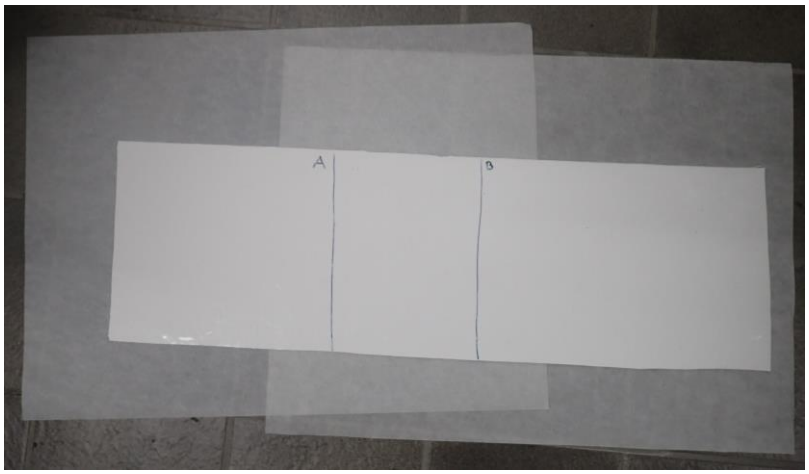
The laboratory

K. van Zee
manager

Kiwa BDA Testing B.V.

C.W. van der Meijden MSc
technical director

I Photo of the delivered sample



II Photos of the test

Met opmerkingen [ZKv1]: Photo 1 – BDA Ponding Tester

Photo 1 – BDA Ponding Tester

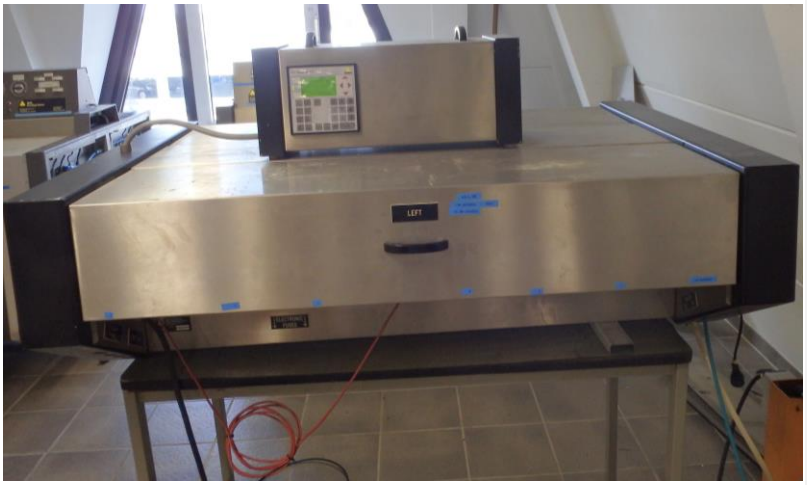


Photo 2 – Determination of the tensile stress and elongation

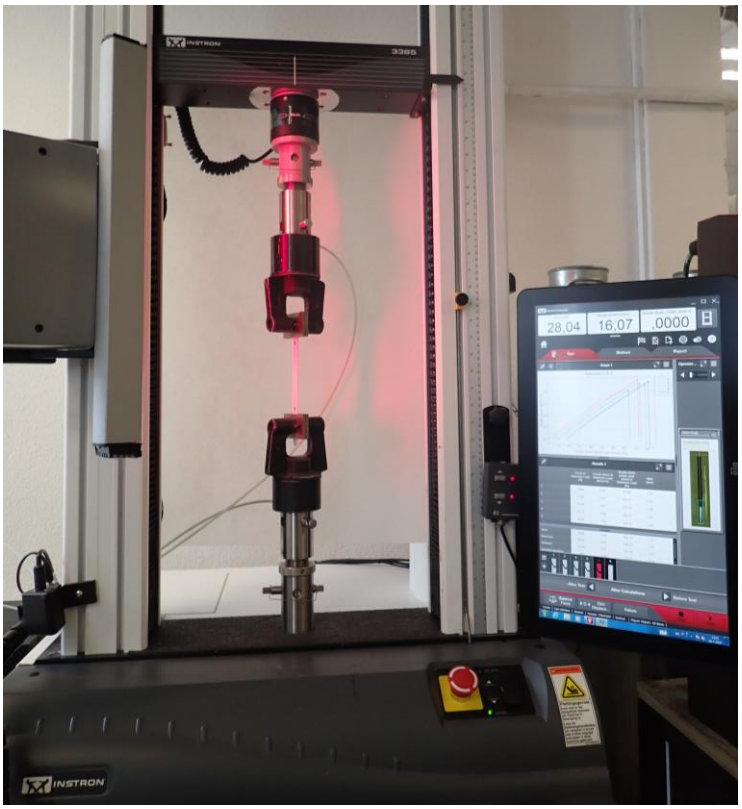
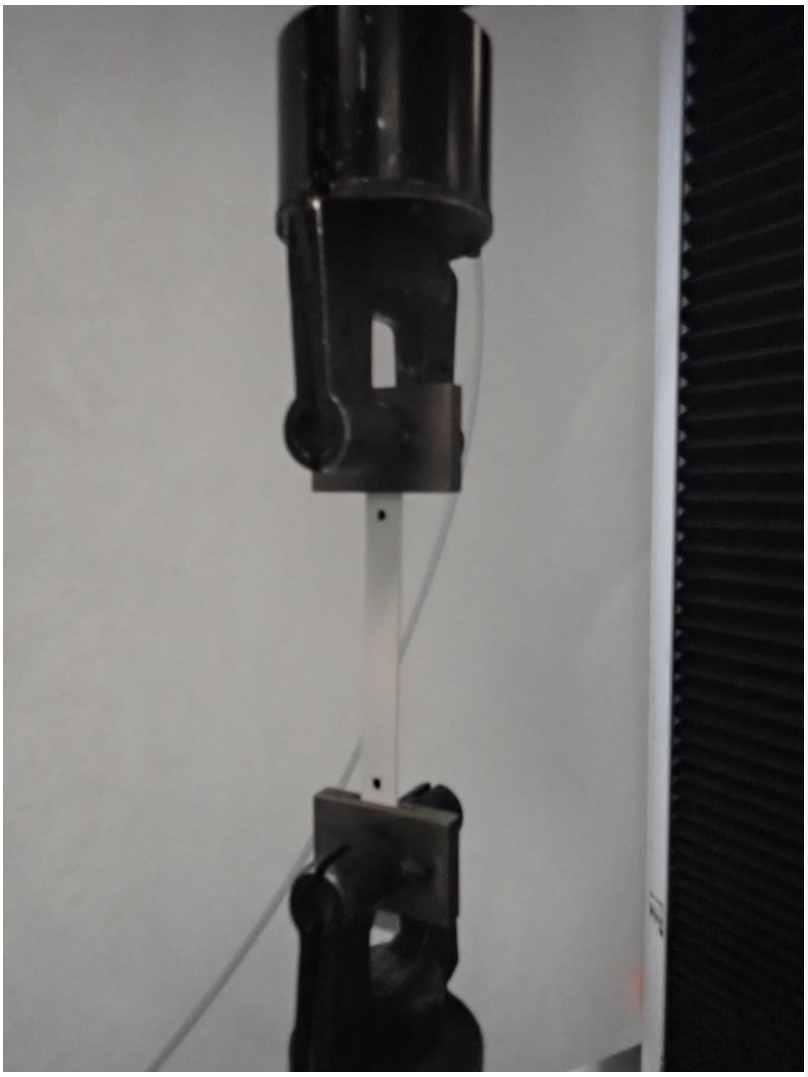


Photo 3 – Determination of the tensile stress and elongation



Met opmerkingen [ZKv3]: Photo 3 Tensile test (detail)