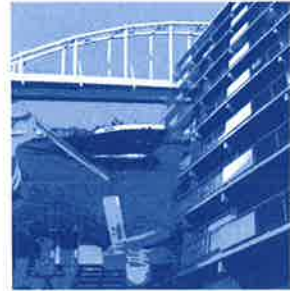




COT bv
Independent advice,
research and
management for
construction and
industry



REPORT

Testing of Rooftopcoat on bitumen roof material
for resistance to water and resistance to temperature changes

Haarlem, 24 September 2019

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1 INTRODUCTION

1.1 Order

By order of RAW Paints in Heemstede, The Netherlands, the Centrum voor Onderzoek en Technisch advies (COT bv) in Haarlem, The Netherlands, has tested Rooftopcoat on bitumen substrate for resistance against corrosion and resistance to cyclic temperature changes.

The order has been confirmed in the email message dated May 20th 2019 and by bringing the samples.

1.2 General information

Table 1: Received samples

COT sample number	Sample	Dimensions	Colour	Received
25-05-19/0225	3 samples bitumen coated with Rooftopcoat 3 samples bitumen coated with Rooftopcoat	40 x 40 cm 40 x 30 cm	White	20-05-2019

The coating system has been applied to the test panels by RAW Paints.

Substrate

Bitumen roof material

Coating system build up and specified dry film thickness (DFT)

1 coat applied (roller application) resulting in a DFT of approx. 100 till 300 microns.



2 PROCEDURE

2.1 Resistance to water according ISO 2812-3

The resistance to water according ISO 2812-3 has been tested on two test pieces (50 x 50 cm) in triplicate.

Absorbance material has been soaked with demineralized water, placed on the coating material and covered with a watch glass. During the whole test period the absorbance material has been kept wet.

Three weeks after starting the test the coating has been inspected for visual defects. After 80 days the test has been terminated.

Adhesion has been tested according to ASTM D 3359 method A, directly upon removal of the absorbance material, after 1 hour and 24 hours conditioning.

2.2 Resistance to cyclic temperature changes

Three test pieces with the dimensions 35 x 50 cm have been tested for the following temperature cycle:

- a. 1 hour: Heating from +20 °C to +60 °C
- b. 6 hours: Exposure +60 °C
- c. 1 hour: Ambient cooling from +60 °C to +20 °C
- d. 16 hours: Conditioning at +20 °C
- e. 1 hour: Cooling from +20 °C to -20 °C
- f. 6 hours: Exposure at -20 °C
- g. 1 hour: Warming from -20 to +20 °C
- h. 16 hours: Conditioning at +20 °C

A visual inspection had been done after 21 days exposure.

The total test period has been 80 days. Adhesion according to ASTM D 3359 method A, has been performed directly upon termination of the test.

3 RESULTS

3.1 Resistance to water according ISO 2812-3

No defects have been observed with the visual inspection after 21 and 80 days exposure.

Table 2: Adhesion according to ASTM D3359 method A

COT sample number	20-05-19/0225-1	20-05-19/0225-2	20-05-19/0225-3
Recovery period (hours)			
	Rating (class)		
Reference	Not exposed	5A, 5A	5A, 5A
0		3A, 3A, 3A	5A, 4A, 4A
1		3A, 4A, 4A	4A, 4A, 4A
24		5A, 4A, 4A	5A, 4A, 5A

- 5A No Peeling or removal
- 4A Trace peeling or removal along incisions or at their intersection
- 3A Jagged removal along incisions up to 1.6 mm on either side
- 2A Jagged removal along most of incisions up to 3.2 mm on either side
- 1A Removal from most of the area of the X under the tape
- 0A Removal beyond the area of the X

3.2 Resistance to cyclic temperature changes

No visual defects have been observed after 80 days cyclic exposure.
The adhesion after 80 days cyclic temperature exposure has been rated as Class 5A.

4 DISCUSSION


The coating system shows no visual defects. The adhesion rating directly after the exposure period was slightly lower, but still acceptable. 80 days continued exposure to water is quite extreme for a roof. There is a difference of the adhesion rating directly after exposure between the two exposed panels. This might be due to differences in dry film thickness, but this has not been investigated. After 24 hours conditioning the adhesion recovered almost completely.

No visual defects have been observed upon termination of the cyclic temperature test and after 24 hours conditioning

6 CONCLUSION

The coating system shows good resistance to longer periods of exposure to water and cyclic temperature changes.

CENTRUM VOOR ONDERZOEK
EN TECHNISCH ADVIES (COT bv)



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ANNEX

Photographs



Photo 1: Watch glasses according to ISO 2812-1

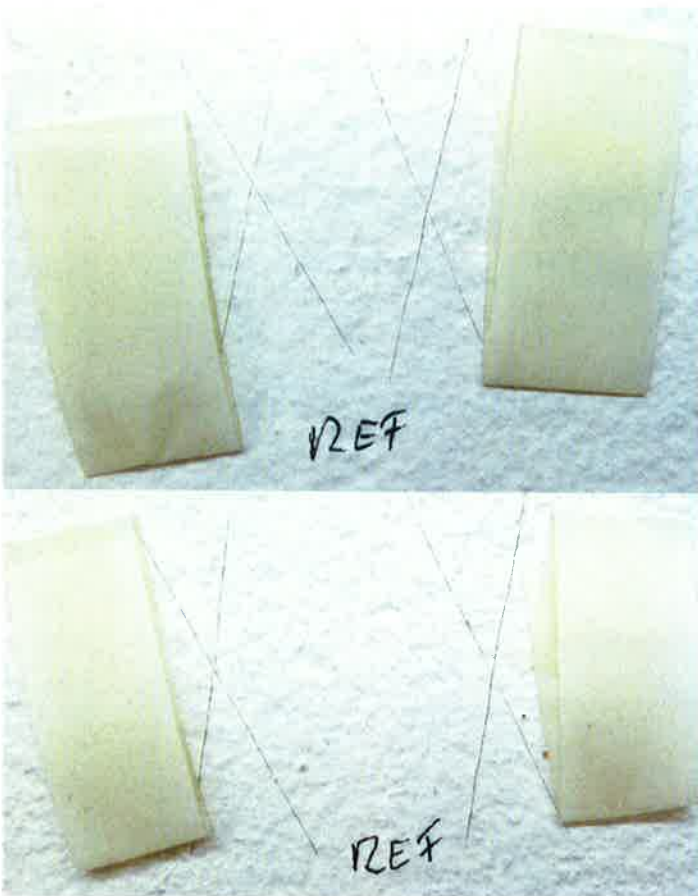


Photo 2: Reference adhesion

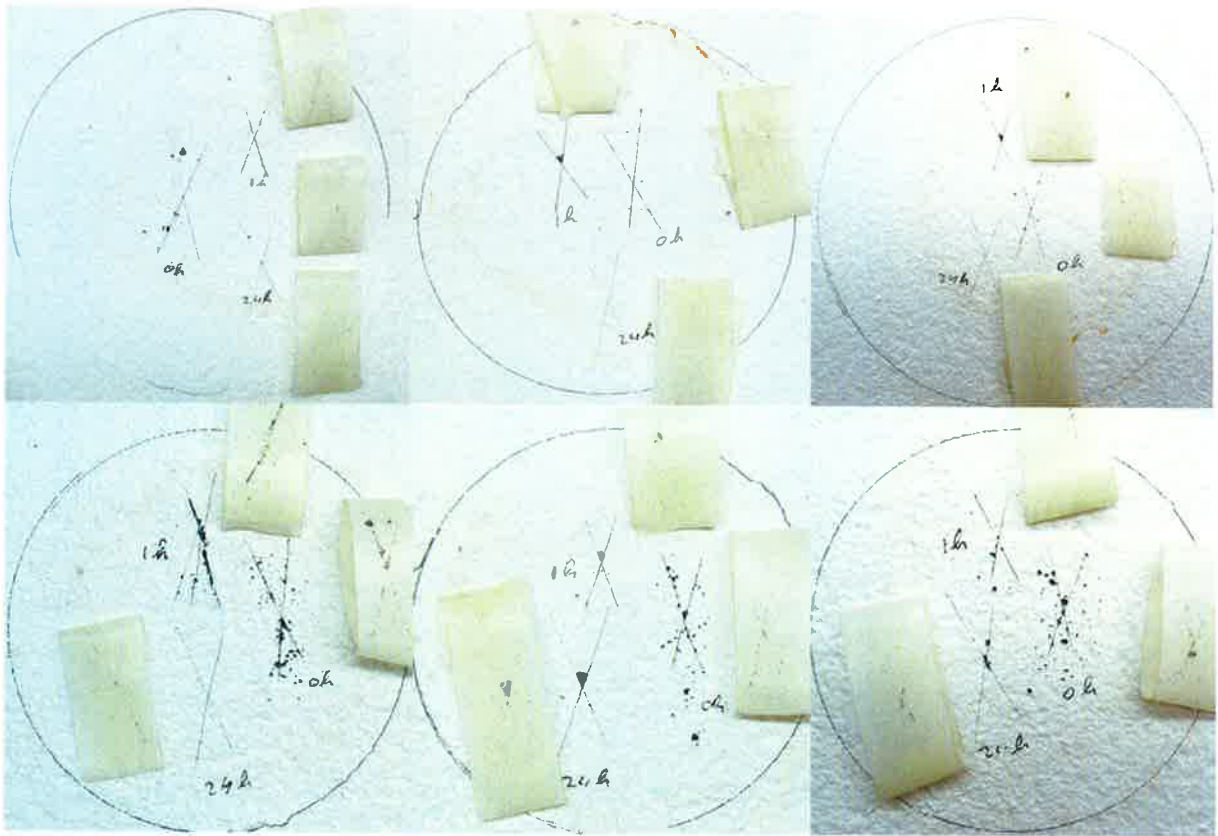


Photo 3: Adhesion after water exposure



Photo 4: Adhesion after cyclic temperature test Panel 4



Photo 5: Adhesion after cyclic temperature test Panel 5

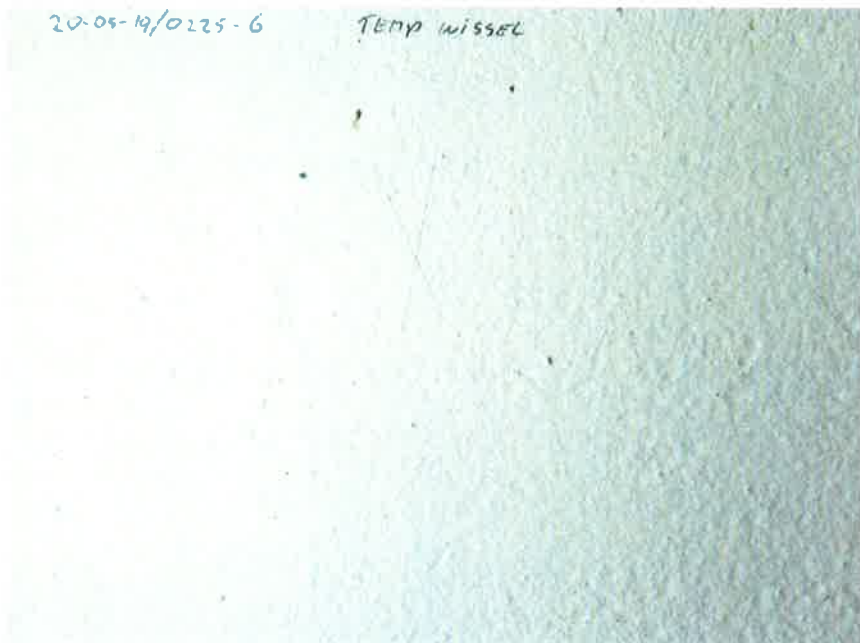


Photo 6: Adhesion after cyclic temperature test Panel 6