

Dörken GmbH & Co KG  
Wetterstrasse. 58  
DE-58313 HERDECKE  
TYSKLAND

## Evaluation of resistance to prolonged exposure to heat with accelerated air-speed of 5 m/s on a flexible roof underlay membrane


(1 appendix)

### Commission

To perform a determination of resistance to water penetration, Class W1\* (EN 13859-1:2010), before and after prolonged exposure to heat 70 °C for 64 weeks, with accelerated air-speed of 5 m/s, on a flexible roof underlay membrane.

### Test material

The test material was chosen and sent by the commissioner to RISE Research Institutes of Sweden (RISE). The history of the test object or sampling is not known by RISE. The material consisted of one roll of the product.

Product Name / Traceability	Object	Size Length/width	Mass per unit area [g/m <sup>2</sup> ]**	Material arrived at RISE Polymeric Products and Service Life Technology
DELTA Unterdeckbahn LIGHT / 269-19-717-51538 10:32 10		50 m 1,5 m	115	Week 10, year 2020

\*\*= Measured value EN 1849-2:2019

### Test Method and Performance

#### Artificial ageing, prolonged exposure to heat with accelerated air-speed of 5 m/s

The test method used for artificial ageing by prolonged exposure to heat of 70±2 °C with air-speed of 5±2 m/s, is based at test standard EN 1296:2000 *Flexible sheets for waterproofing- Bitumen, plastic and rubber sheets for roofing- Method of artificial ageing by long term exposure to elevated temperature* with following modifications:

#### RISE Research Institutes of Sweden AB

Postal address  
Box 857  
501 15 BORÅS  
SWEDENOffice location  
Brinellgatan 4  
504 62 Borås  
SWEDENPhone / Fax / E-mail  
+46 10-516 50 00  
+46 33-13 55 02  
info@ri.se

Confidentiality level

C3 - Sensitive

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The specimens were placed in a vertical position with a constant air-flow speed of  $5 \pm 2$  m/s flushed over the flexible roof underlay membrane. The air-flow speed were measured over the surface of the specimens. An air change rate of more than 10 changes per hours was used. The flexible roof underlay membrane was exposed in the same equipment as other products at the same time. The exposure time was 64 weeks during the period of 13<sup>th</sup> October 2020 to 12<sup>th</sup> of January 2022. EN 1296 is an accredited method. The described modification of EN 1296 is not performed under accreditation decision.

Sample specimens, to be exposed, were cut out distributed over the width of the sample roll and placed into heat chamber equipment rack holders in a vertical position. The upper side of the sheet, as used in situ (the inside of the rolls), printed side, was exposed to the air flow. The backside of the sample specimens were covered.



Picture 1-3. Example of sample specimen rack holder and the heat chamber equipment for 70 °C with air-speed of 5 m/s.

The resistance to artificial ageing of the flexible roof underlay membrane, was evaluated by determination of resistance to water penetration, water tightness, Class W1\* (EN 13859-1:2010), before and after the exposure.

### Resistance to water penetration (water tightness, Class W1\*)

The determination of resistance to water penetration, class W1\* was performed according to standard EN 13859-1:2010 *Flexible sheets for waterproofing- Definitions and characteristics of underlays- Part 1: Underlays for discontinuous roofing* 5.2.3 referring to EN 1928:2000 method A, *Flexible sheets for waterproofing-Bitumen, plastic and rubber sheets for roof waterproofing- Determination of watertightness* with following modifications:

The water tightness was performed with equipment in accordance with EN ISO 811:2018 *Textiles - Determination of resistance to water penetration - Hydrostatic pressure test (ISO 811:2018)* without cover plate and used test area of 100 cm<sup>2</sup>. The water leakage was in this case deemed as, first visible droplet is a failure. No eosin indicator in the water was used. Conditioning and testing climate was according to SS-EN ISO 139:2005,  $20 \pm 2$  °C and  $65 \pm 4$  % RH. The static water column pressure was 200 mm height and the test duration used was 2 hours. The test was made as a triple test. The exposed surface was faced towards the water pressure. EN 1928 and EN ISO 811 are accredited method. The described modification of EN 1928 using EN ISO 811 equipment is not performed under accreditation decision. The test was performed at RISE department of Chemistry, biomaterials and textiles facility in Gothenburg.

Pass= watertight, Fail= not watertight

**Result**

Resistance to water penetration, water tightness, Class W1\* (EN 13859-1)

Product name	Water tightness, Class W1* before exposure	Water tightness, Class W1* after exposure in 70°C for 64 weeks air-speed of 5 m/s
DELTA Unterdeckbahn LIGHT (269-19-717-51538 10:32 10)	<b>Pass</b>	<b>Pass</b>

\* modified as above

The test results are only valid for the material tested.

**RISE Research Institutes of Sweden AB**  
**Polymers, fibers and composites - Polymeric Products and Service Life Technology**

Performed by



Jörgen Romild

Examined by



Mia Sjöqvist

**Appendix:** Results in detail, individual results

Appendix 1

**Results in detail, individual results**

Resistance to water penetration, water tightness, Class W1\* (EN 13859-1)

Date of test	Test Material	Resistance to water penetration, water tightness, Class W1*		
		Specimen		
		1	2	3
2022-02-28- -03-03	DELTA Unterdeckbahn LIGHT (269-19-717- 51538 10:32 10)	Pass	Pass	Pass
Date of test	Test Material	Resistance to water penetration after exposure, water tightness, Class W1*		
		Specimen		
		1	2	3
2022-02-28- -03-03	DELTA Unterdeckbahn LIGHT (269-19-717- 51538 10:32 10)	Pass	Pass	Pass

\* modified as above.


# Verifikat

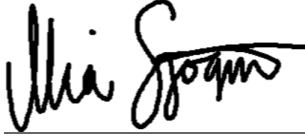
Transaktion 09222115557464569959

## Dokument

O100106-16236 C Dörken GmbH DELTA LIGHT  
Huvuddokument  
4 sidor  
Startades 2022-03-08 12:47:54 CET (+0100) av Jörgen  
Romild (JR)  
Färdigställt 2022-03-08 15:51:28 CET (+0100)

## Signerande parter

Jörgen Romild (JR)  
RISE Research Institutes of Sweden AB  
Org. nr 556464-6874  
jorgen.romild@ri.se  
  
Signerade 2022-03-08 15:51:28 CET (+0100)

Mia Sjöqvist (MS)  
RISE Research Institutes of Sweden  
mia.sjoqvist@ri.se  
  
Signerade 2022-03-08 14:09:31 CET (+0100)

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