

Test report

Test of resistance to wind uplift according to the Guideline for European technical approval of systems of partially bonded roof waterproofing membranes.

EOTA guideline TR 005 (edition 2004)

Project number:	20160914-121-2
Report date:	2016-09-24
Roof system:	Mechanical attached insulation with torched multilayer roof cover
Membrane type:	UNIFLEX Express +TECHNOELAST EKP
Bonding type:	TECHNONICOL plastic tube Ø50 TECHNONICOL roofing screw Ø4,8
Client:	LLC TECHNONICOL - Construction Systems Gilyarovskogo str. 47 page 5 129110 Moscow Russian Federation
Contact:	Konstantin Kozetov

Chief of controlling and testing Fredrik Rundgren

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1. Introduction

Constructech Sweden AB has, on request of the client, carried out windload testing of the Roof system TECHNOROOF N30 + TECHNOROOF PROF G+ UNIFLEX EXPRESS+TECHNOELAST EKP

The purpose of the testing was to determine the windload capacity of the partially bonded roof system and define a characteristic load according to the standard EOTA TR 005.

The installation and welding has been carried out by the client in cooperation with Constructech's test engineer. The installation has been carried out according to the general installation guide for the membrane system.

2. Investigation – Wind load tester

The wind uplift has been carried out according to the Guideline for European technical approval of systems of partially bonded roof waterproofing membranes. EOTA guideline TR 005 (edition 2004).

Wind load tester size: 4,90 m x 2,65 m

Pitch $0 \pm 2^\circ$

The wind load tester fulfills the requirements according to the standard.

The pressure load cells have been calibrated in line with Constructech's quality management routines. Last calibration performed 20160616.



Wind load tester 4,90 m x 2,65 m

3. Test model

Test model dimensions: 4,90 m x 2,65 m

Substructure: Steel 0,75mm.
Arcelor TP 127 profile

Thermal insulation: TECHNONICOL TECHNOROOF N30 50 mm + TECHNOROOF PROF G 50 mm

Bonding method: stone wool Mechanically attached

Pattern: 320 x300mm

Roof system:

Membrane:	Base: UNIFLEX Express Cap: TECHNOELAST EKP
Membrane width (M _w):	1000mm
Overlap width (O _w):	100mm
Bonding pattern:	Fully torched
Bonding method:	
	0,00

Temperature:

Temperature during test was between +21°C and +23°C.

A photo report of the buildup and the failure mode is given in annex A.

A drawing of the test model is given in annex C.

4. Results

At the failure cycle of $W_{\max 100\%}$ (theoretical load) the test was stopped. According to EN-16002:2010 the approved test result is $W_{\max 100\%}$ (theoretical load) for the fulfilled cycle prior the failed cycle, which results in:

$W_{\text{test}} =$	5500 N/mm ²
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Failure mode

Below you will find a short description of the failure mode:

At the peak load of 6000 N/mm² the roof cover was delaminated from the insulation boards. The tissue facing on the insulation board was peeled off.

The design value is calculated according to the formula in annex C and the results for this test are as follows:

W_{test}	5500 N/mm ²
ΔW_{char}	5500 N/mm ²

A graph of the loads in load cycle, W_{test} , is given in annex B

Note: ΔW_{char} is the characteristic value and not the design value.

$W_{\text{adm}} = W_{\text{char}}/\gamma_m$ is the design value.

γ_m = Material correction factor (determined on national level)

Remark

The indicated test data are valid under test conditions only. A successful application under other than the reported test conditions are not proven with this test report. It shall be emphasized that this investigation is only an indication at a given moment of the properties of the investigated material and does not provide information on the scope of the variations over course of time.

Strängnäs 2016-09-24

Constructech Sweden AB

A handwritten signature in blue ink, appearing to read 'Fredrik Rundgren', written over a light blue grid background.

Fredrik Rundgren

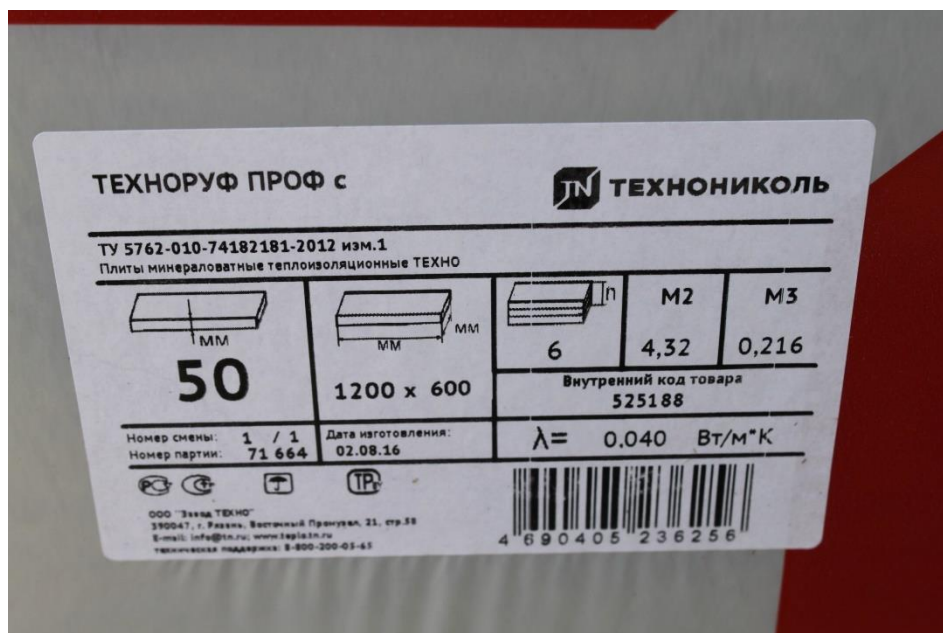
Constructech Sweden AB

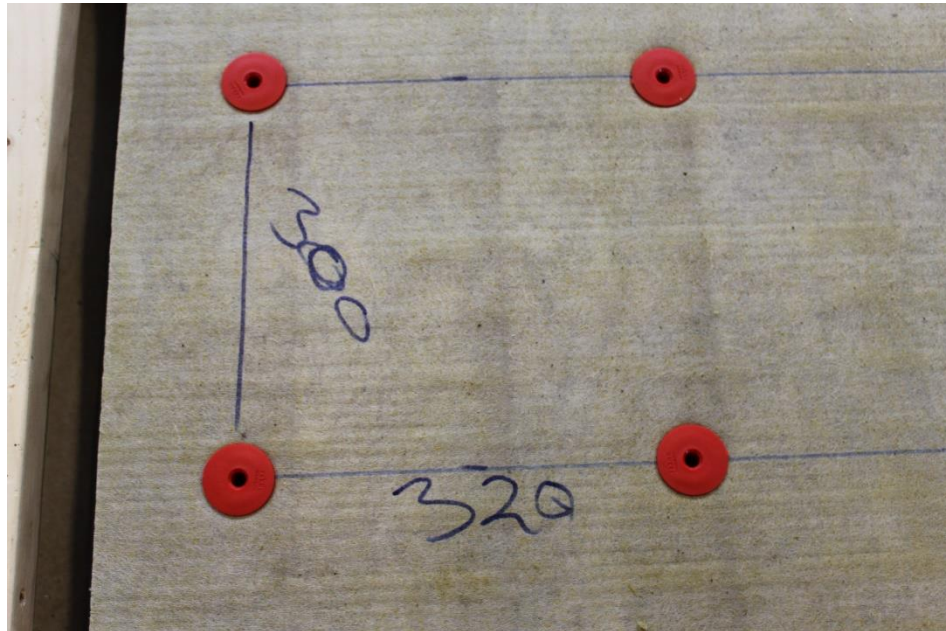
A handwritten signature in blue ink, appearing to read 'Sofie Rundgren', written over a light blue grid background.

Sofie Rundgren

Annex A

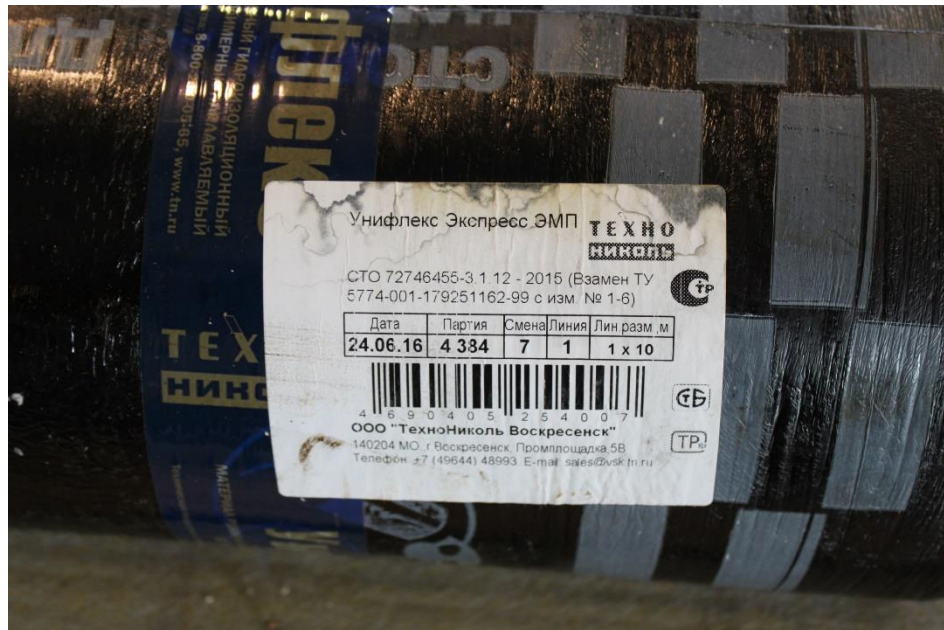
Pictures from test sample

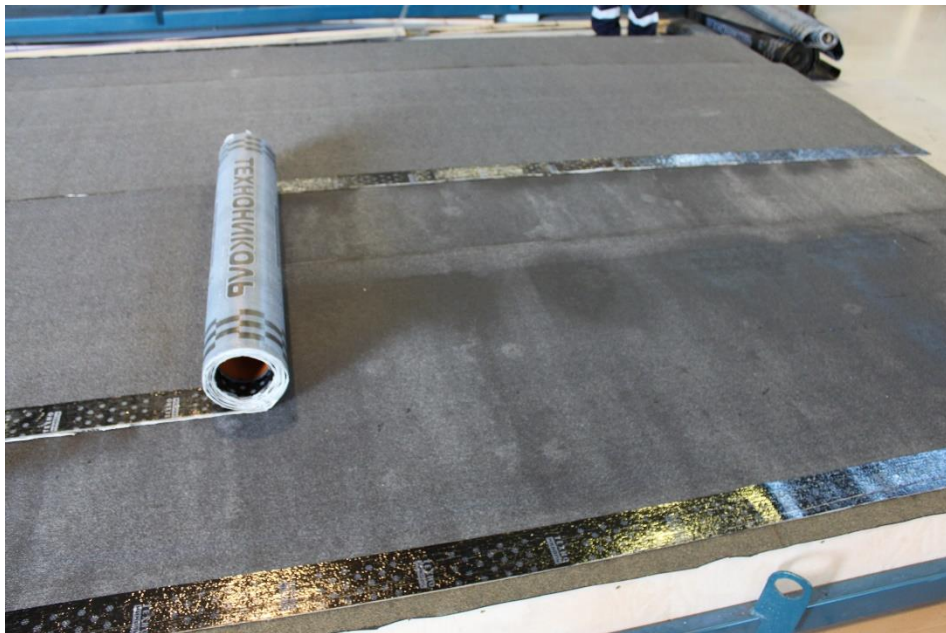
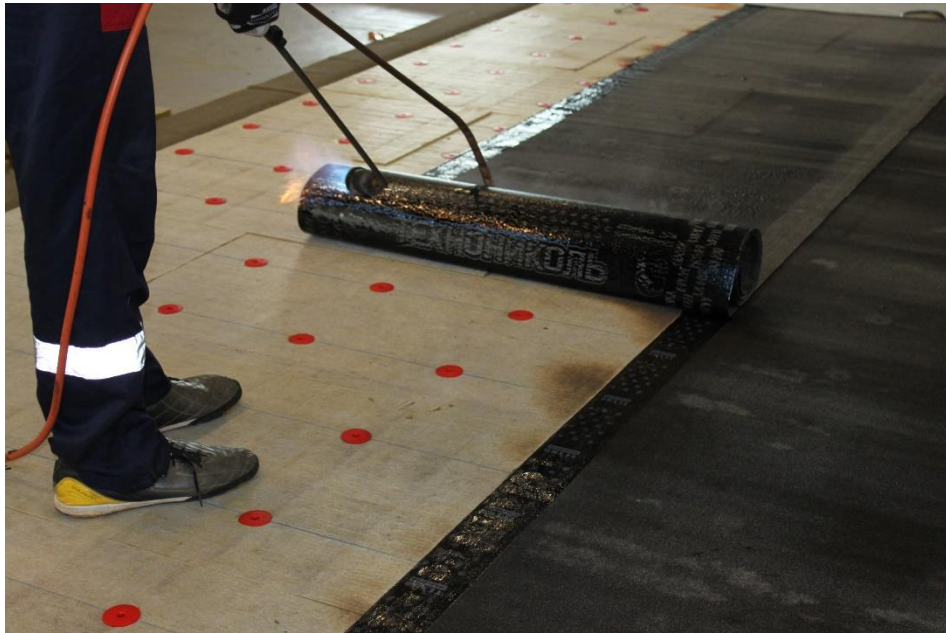




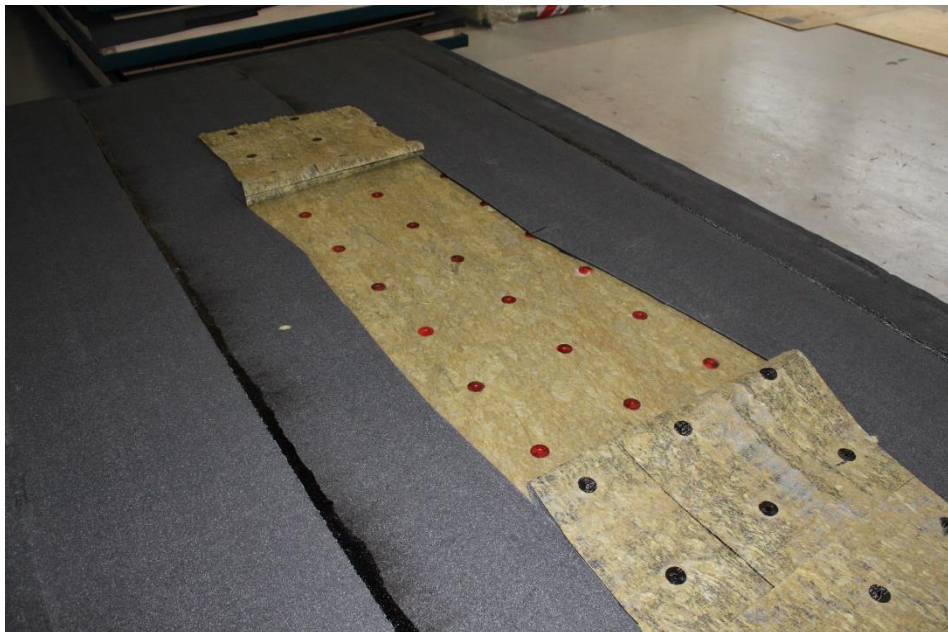








Pictures from test sample Description of failure







Annex B

Graph over the loads in cycle W_{test}
At cycle 14, 6000 N/m^2 the test failed
Approved cycle number 13, 5500 N/m^2

