

Test report

REPORT NUMBER:
837563-1



**DANISH
TECHNOLOGICAL
INSTITUTE**

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Page 1 of 6
Appendices: 2
Init.: MFRI/MJLD

SPECIMEN: "Svalehaleprofiler - uden lodrette fuger" / steelpanels, further details can be found on page 2.

SAMPLING: The test material was forwarded by the client and received at the Danish Technological Institute on 2018-10-17. The test material was labelled 837563-1.

TEST PERIOD: The testing was carried out on 2018-10-29 to 2018-10-30.

METHOD: hEN 13830:2015 Curtain walling – Product standard
EN 12153:2000 Curtain walling – Air permeability – Test method

EN 12865:2001 Hygrothermal performance of building components and building elements – Determination of the resistance of external wall systems to driving rain under pulsating air pressure

RESULTS: Classification of the test specimen according to EN 13830 4.15 and EN 12865 and the standards mentioned below:

Air permeability: **Class A4** at ± 600 Pa
EN 12152:2002 – Curtain walling – Air permeability – Performance requirements and classification

Watertightness: **1200 Pa, Method B**
Only connection between panels are evaluated
EN 12865 – Hygrothermal performance of building components and building elements – Determination of the resistance of external wall systems to driving rain under pulsating air pressure

The results of the test are given on page 3-6.

STORAGE: The sample will be destroyed after 2 months if nothing else has been agreed in writing.

TERMS: The test has been performed according to the conditions laid down by DANAK (The Danish Accreditation), cf. www.danak.dk, and the general terms and conditions of The Danish Technological Institute. The results from DTI's work in this report, i.e. analyses, assessments and instructions may only be used or reported in their entirety. The customer may not mention or refer to DTI or DTI's employees for advertising or marketing purposes unless the DTI has granted its written consent in each case.

LOCATION: 2018-11-16, Danish Technological Institute, Building & Construction.

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Description of test specimen

The test specimen consists of 8 panels, made of metal, see drawings in Appendix 1.

Before delivery a subframe was prepared and mounted around the element by the client. The subframe does not hinder the normal functioning of the element. The test conditions and the dimensions of the test specimen are measured by the laboratory and are given in the table below.

Width [mm]	Height [mm]	Area [m ²]	Length of joint [m]	Temperature [°C]	Relative humidity [%]	Atmospheric pressure [hPa]
1967	1965	3.87	13.76	21.3	32	1008

The client has provided the following information about the construction of the test specimen:

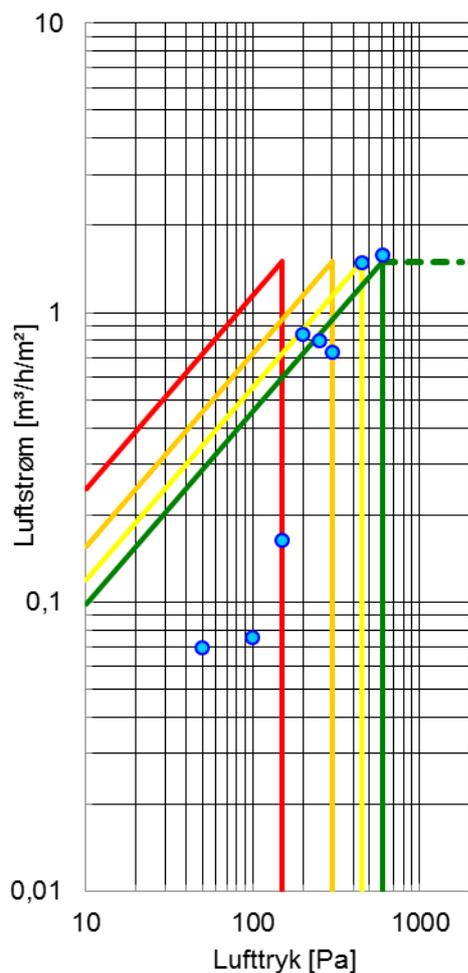
Product name	Nordic Build – Svalehaleprofiler. Without sealant/joint filler at the vertical connections between profiles.
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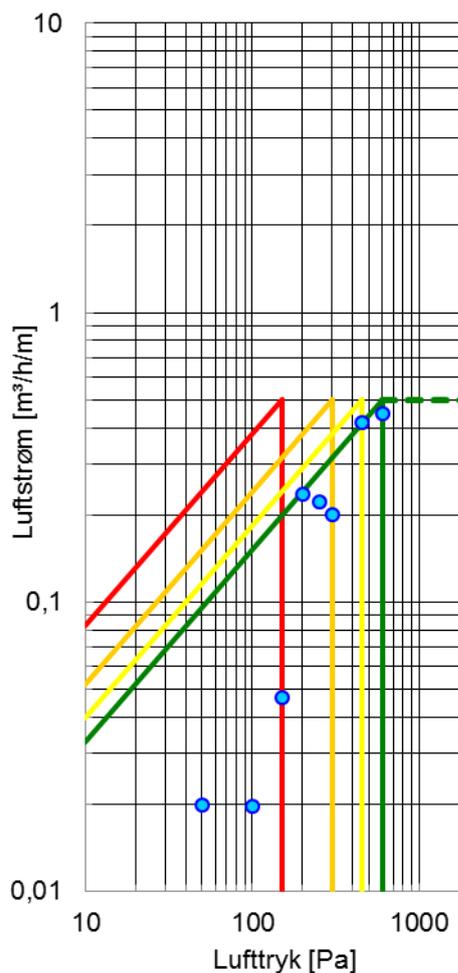
Test specimen during testing

Test results – Air permeability – Positive air pressure

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0,27	0,07	0,02	A4	A4
100	0,29	0,08	0,02	A4	A4
150	0,63	0,16	0,05	A4	A4
200	3,24	0,84	0,24	A3	A4
250	3,08	0,80	0,22	A4	A4
300	2,82	0,73	0,20	A4	A4
450	5,73	1,48	0,42	A3	A3
600	6,13	1,59	0,45	A3	A4



Air permeability related to area.

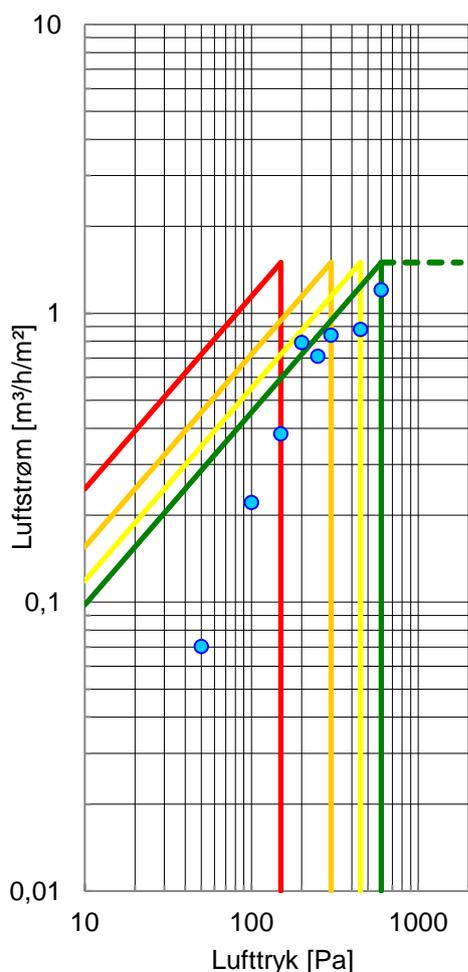


Air permeability related to length of joint.

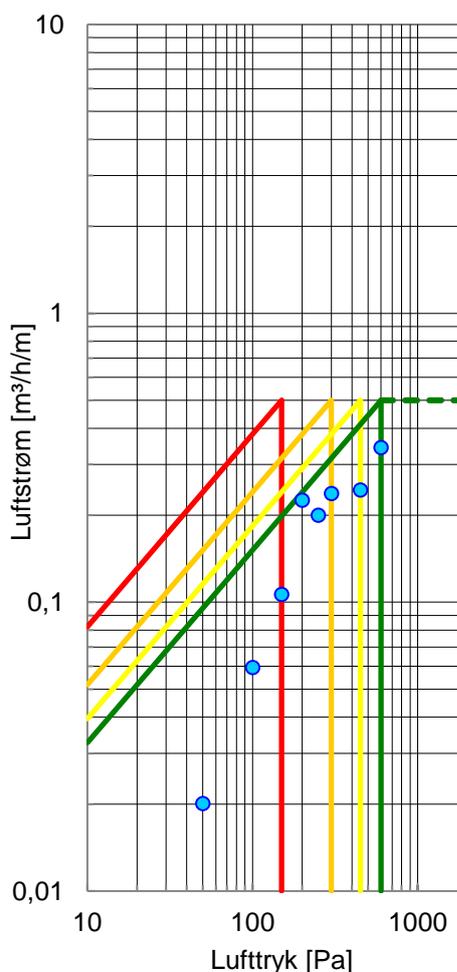
*The graphs show the classification in relation to the area and the length of joint.
Classes 1-4 are indicated by red, orange, yellow and green fields respectively.*

Test results – Air permeability – Negative air pressure

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0,26	0,07	0,02	A4	A4
100	0,85	0,22	0,06	A4	A4
150	1,48	0,38	0,11	A4	A4
200	3,06	0,79	0,23	A3	A4
250	2,75	0,71	0,20	A4	A4
300	3,25	0,84	0,24	A4	A4
450	3,39	0,88	0,24	A4	A4
600	4,66	1,21	0,34	A4	A4



Air permeability related to area.

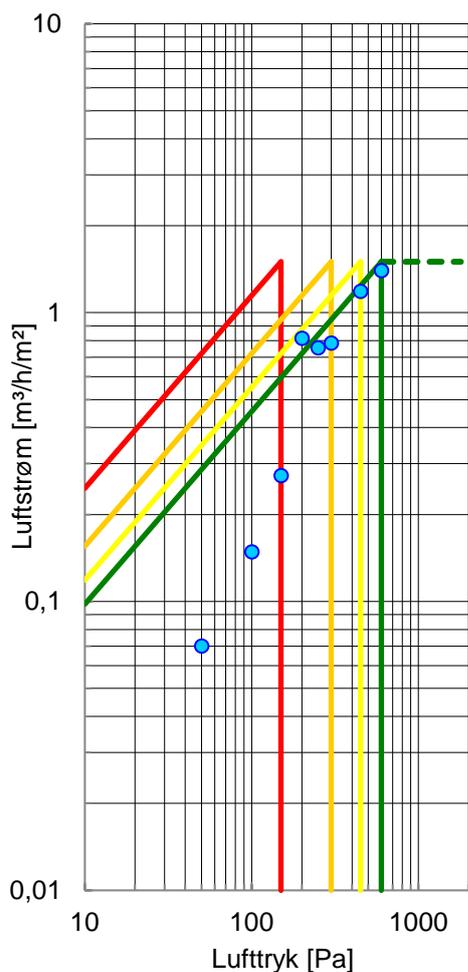


Air permeability related to length of joint.

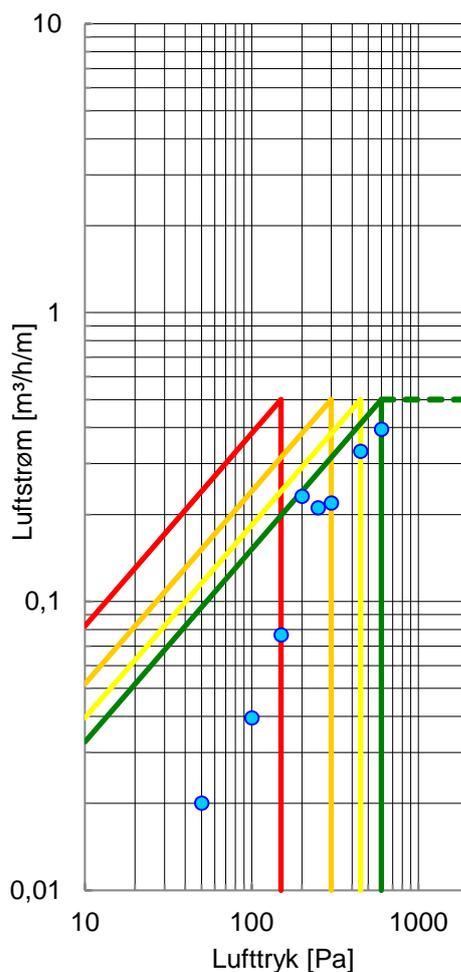
*The graphs show the classification in relation to the area and the length of joint.
Classes 1-4 are indicated by red, orange, yellow and green fields respectively.*

Test results – Average air permeability

Air pressure [Pa]	Air flow Total [m ³ /h]	Air flow Area [m ³ /h/m ²]	Air flow Length of joint [m ³ /h/m]	Class Area [-]	Class Length of joint [-]
50	0,26	0,07	0,02	A4	A4
100	0,57	0,15	0,04	A4	A4
150	1,06	0,27	0,08	A4	A4
200	3,15	0,82	0,23	A3	A4
250	2,92	0,75	0,21	A4	A4
300	3,04	0,78	0,22	A4	A4
450	4,56	1,18	0,33	A4	A4
600	5,40	1,40	0,39	A4	A4



Air permeability related to area.



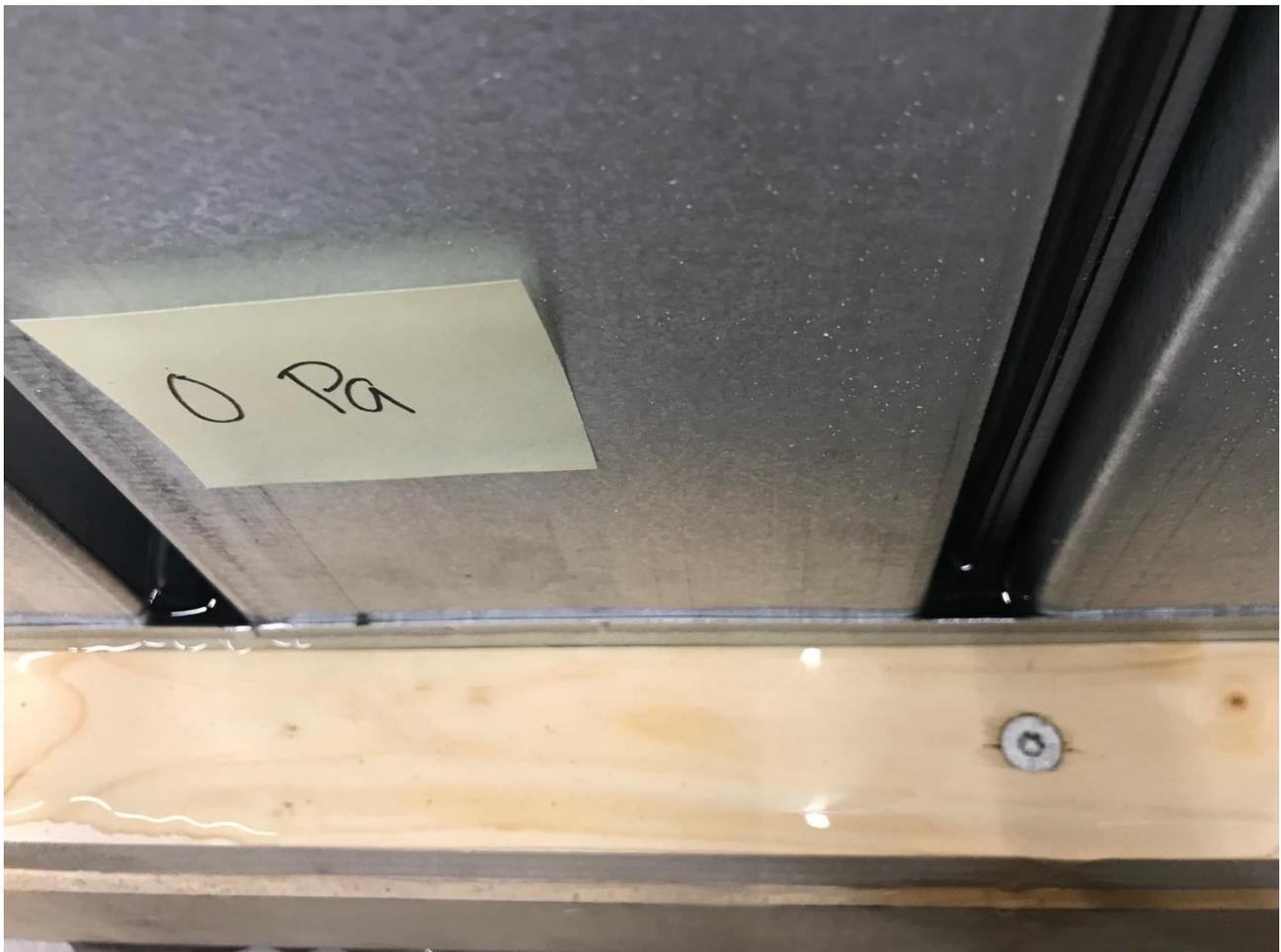
Air permeability related to length of joint.

The graphs show the classification in relation to the area and the length of joint.
Classes 1-4 are indicated by red. orange. yellow and green fields respectively.

Test results – Watertightness under pulsating air pressure

Air pressure [Pa]	Duration [min]	Observations [-]	Class [-]
0	60	No water penetration between panels	0 Pa
0-150	60	No water penetration between panels	150 Pa
0-300	60	No water penetration between panels	300 Pa
0-450	60	No water penetration between panels	450 Pa
0-600	60	No water penetration between panels	600 Pa
0-750	60	No water penetration between panels	750 Pa
0-900	60	No water penetration between panels	900 Pa
0-1200	60	No water penetration between panels	1200 Pa

During the test an increasing amount of water penetrated the framing material, but as far as the frame is not part of the end-product this is ignored in the evaluation (see photo below).



Test specimen during testing

Appendix 1: Drawings and photos

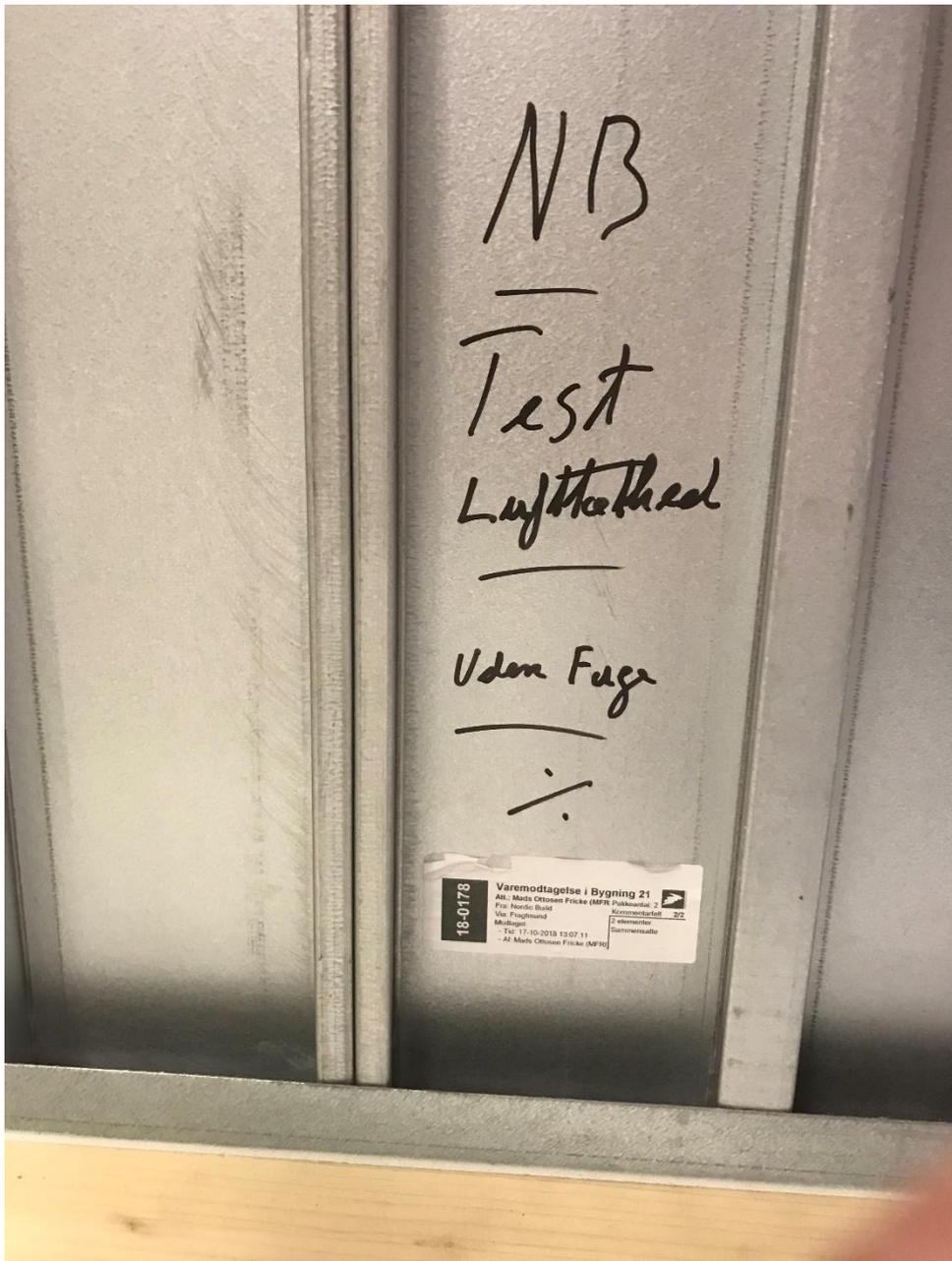


Photo 1- Marking by client

Test vedr. lufttæthed



Nodic Build: Svalehaleprofiler. 8 stk.]



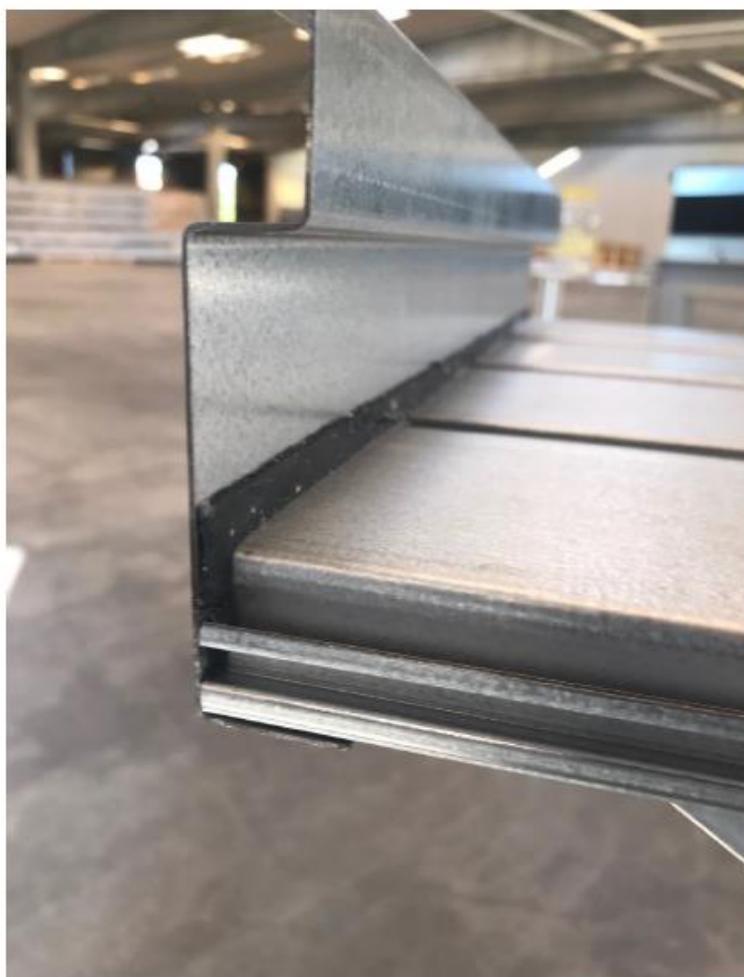


Øverst: Stålramme / U-profil med butyl.
Nederst: Afsluttende træramme.





Eksempel: Butylfuge



The general conditions pertaining to assignments accepted by Danish Technological Institute shall apply in full to the technical testing or calibration at Danish Technological Institute and to the completion of test reports or calibration certificates within the relevant field.

Construction Product Regulation:

The Danish Technological Institute guarantees that employees carrying out tests to be used together with harmonized standards under notification no. 1235 according to EU regulation 305/2011. article 43. satisfy all the requirements made for capability. integrity and impartiality. You find the CPR here: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:088:0005:0043:EN:PDF>

September 2017