BUILDING RESEARCH INSTITUTE - NISI
NOTIFIED LABORATORY
Identification number **NB 2032** of the European Commission
Bulgaria, 1618 Sofia, 86 Nikola Petkov Blvd. , tel: +359 28561082, fax: +359 29559638, e-mail: nisi@nisi.bg, web: www.nisi.bg

TEST REPORT
PRODUCT TYPE DETERMINATION
PTD-16.47 / 17.03.2017

The tests are carried out in compliance with the ***Regulation (EU) № 305/2011 (CPR) of the European Parliament and the Council of the European Union.***

Product:	**Facade System "CW 50" standard and structural facade**
Producer:	Production site of "Aluplast JTG" Ltd. Burgas, Southern Industrial Zone
Applicant:	"Aluplast JTG" Ltd. Lazur, bl. 72, fl. 3, Burgas, Bulgaria
Document for assignment:	Annex to the Contract № 28/2016
Test samples:	Fragment of facade system "CW 50" with dimensions (2550x1750) mm, produced in January and February 2017. Details of the test fragment of the facade system are given in Annex 1.
Test period:	From 13.02.2017 to 07.03.2017
Assessment of the performance:	**The presented specimen standard and structural of façade system "CW 50" meet following requierements: class R7 Watertightness, air permeability class 4, class I5 and E5 for impact resistance; withstand wind load ± 800 Pa of maximum deflection ± 0,79 mm; has a weighted sound reduction index R_w (C; C_{tr}) = 31 (-1; -2) dB and thermal transmittance U = 0,673W / (m^2.K).**

Head of Test Laboratory
Res. Ass. Eng. Tsvetana Gyurova

General Manager of NISI
Eng.Vesselin Davidov

Testing data:

No	Characteristic	Unit of measu-rement	Test method	Test result	Requirement according to EN ……..
1	*2*	*3*	*4*	*5*	*6*
1.	Watertight in static pressure * P = 600 Pa	class	EN 12155	**R7**	EN 12154 The requirements are given in Annex 2 of the protocol.
* Detailed test results are given in Annex 2.					
2.	Wind resistance *				
2.1	Deformations (f) the main load profiles of wind pressure P = ± 800 Pa: - Vertical axis (item 2); - Vertical axis (item 5); - Horizontal axis (item 7); - Wing profile (item 9).	mm	EN 12179	**+0,79 / -0,79** **+0,73 / -0,65** **+0,02 / -0,12** **+0,13 / -0,08**	EN 13116: P = ± 800 Pa and f < 1/200 L < ±8,50 < ±8,50 < ±4,15 < ±4,38
2.2	Safety storm once at 1200 Pa pressure	-	EN 12179	**Functional qualities reserved**	EN 12210 Save the functional qualities
* Detailed test results are given in Annex 3.					
3.	Impact resistance *	class	EN 12600	**I5; E5**	EN 14019 No residual deformities and defects in the glass.
* Detailed test results are given in Annex 4.					
4.	Airborne sound insulation * - Weighted sound reduction index, R_w (C; C_{tr}) **	dB	EN ISO 10140-2	**31 (-1; -2)**	-
* Detailed test results are given in Annex 5. ** Weighted sound reduction index, R_w (C; C_{tr}) is determined in accordance with EN ISO 717-1.					
5.	Thermal transmittance coefficient of: - profiles; - glass; - fragment façade.	W/(m^2 .K)	EN ISO 12631	**1,3495** **0,5649** **0,6726**	- - -
6.	Air permeability	class	EN 12153	**4**	EN 12152 The requirements are given in Annex 6 of the protocol.
* Detailed test results are given in Annex 6.					

Technical documentation:

EN 13830:2003	Curtain walling - Product standard
EN 12154:2003	Curtain walling - Watertightness - Performance requirements and classification
EN 12153:2003	Curtain walling - Air permeability - Test method
EN 12152:2003	Curtain walling - Air permeability - Performance requirements and classification
EN 14019:2016	Curtain Walling - Impact resistance - Performance requirements
EN ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 717-1:2013	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation
EN ISO 12567-1:2010	Thermal performance of windows and doors - Determination of thermal transmittance by the hot-box method - Part 1: Complete windows and doors

Tests are carried out by

1. Eng. O. Savov
2. Res. Assoc. Eng. K. Glushkova

Head of Test Laboratory

Res. Ass. Eng. Tsvetana Gyurova

Annex 1

Data of facade for testing

Name of product: Facade System „CW 50“ standard and structural façade

Producer: „Aluplast JTG“ Ltd.
Address of the production base: „Aluplast JTG“ Ltd., Burgas, Southern Industrial Zone
Address management: Burgas, Southern Industrial Zone

Description of test specimen: Fragment of facade system "CW50"

Type of opening: one wing single-axle opening out on a horizontal axis.

Dimensions: 2550/1750 mm

Glazing: triple glazing – 6 mm iplus Energy NT; 14,5 mm aluminum spacer polysulfide, gas Argon; 4 mm Planibel clear vision; 14,5 mm aluminum spacer polysulfide, gas Argon; 4 mm Float clear.

Percentage of glazing fragment facade system "CW50" - 0,86%.

Used Al profiles :

- column - 01:01:01;
- rail - 01.0302;
- pressure plate - 01.0500;
- cap - 01.0501;
- valve - 01.0602; 01.0603;
- Fund - 01:06:07;
- finish - 01.1630;

Seals: EPDM

- sealant column - 11.1008;
- sealant for rail - 11.1003;
- sealant pressure plate - 11.1000;
- sealant valve - 11.1400;
- sealant for safe - 11.1403; 01.1506.

Hardware: ordinary hardware for valve "Siegenia"

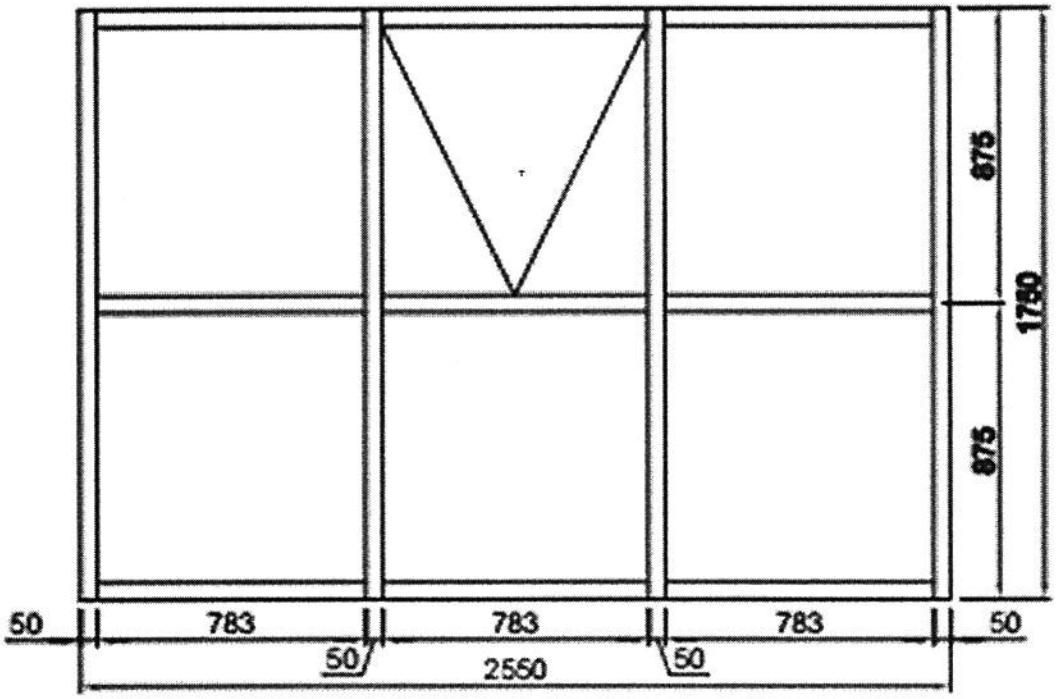
Note: Detailed drawings of the test specimen are shown on p. 5 to p. 9.

ALTEST

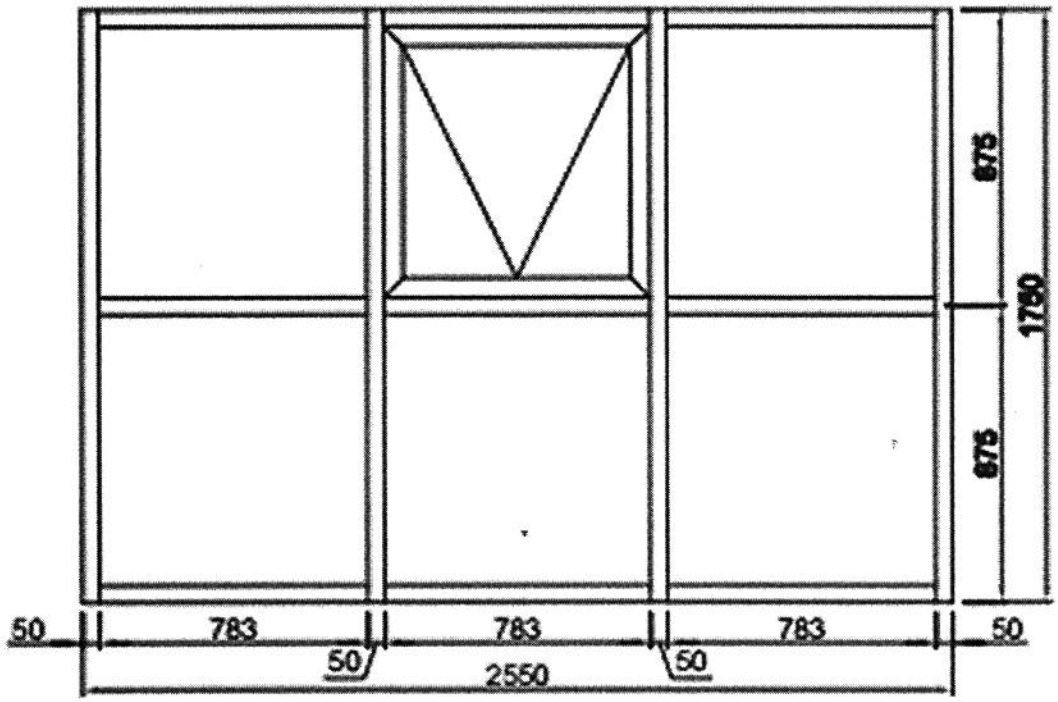
CW 50

КОНСТРУКТИВНА СХЕМА

Поглед отвън



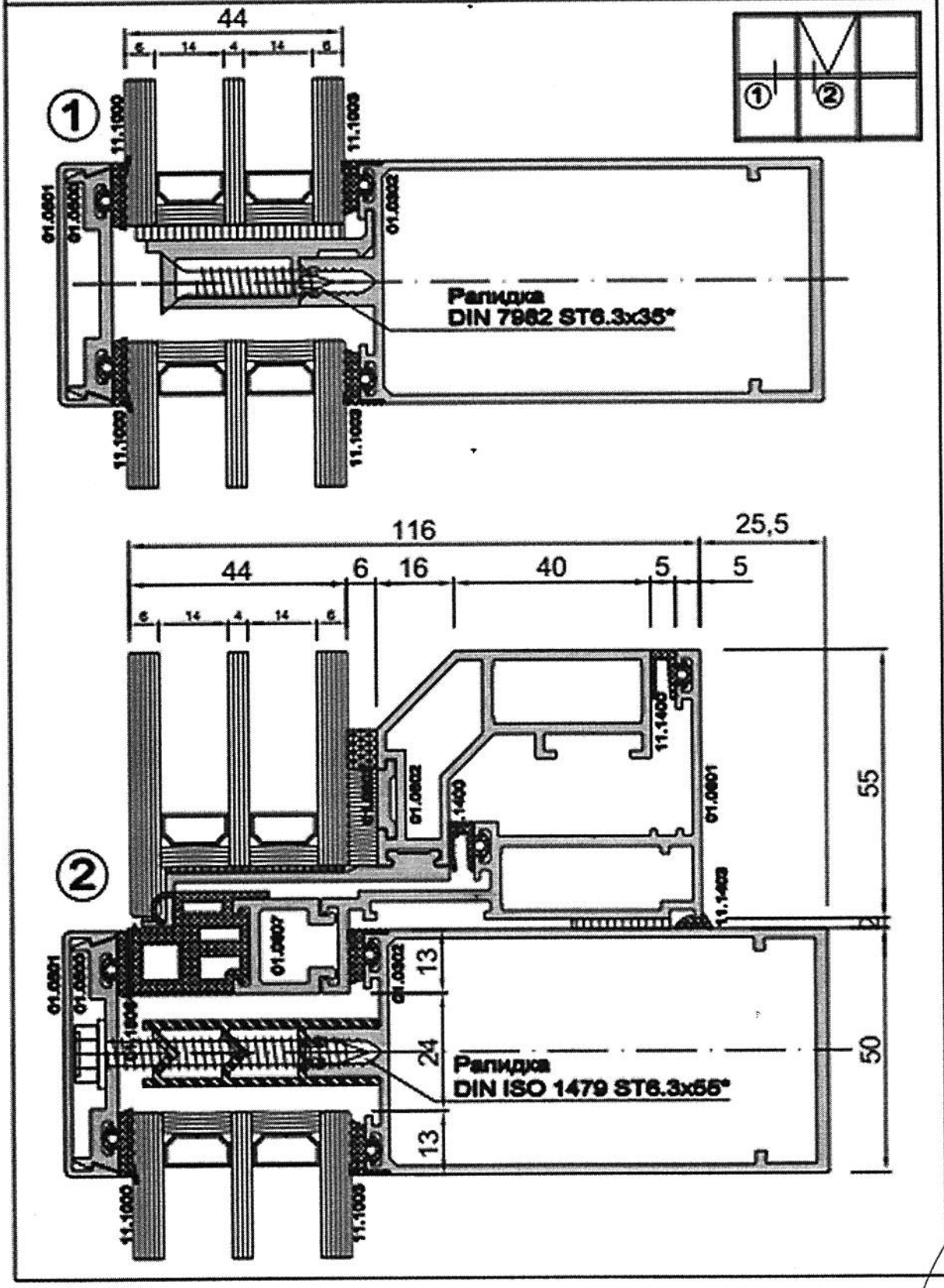
Поглед отвътре

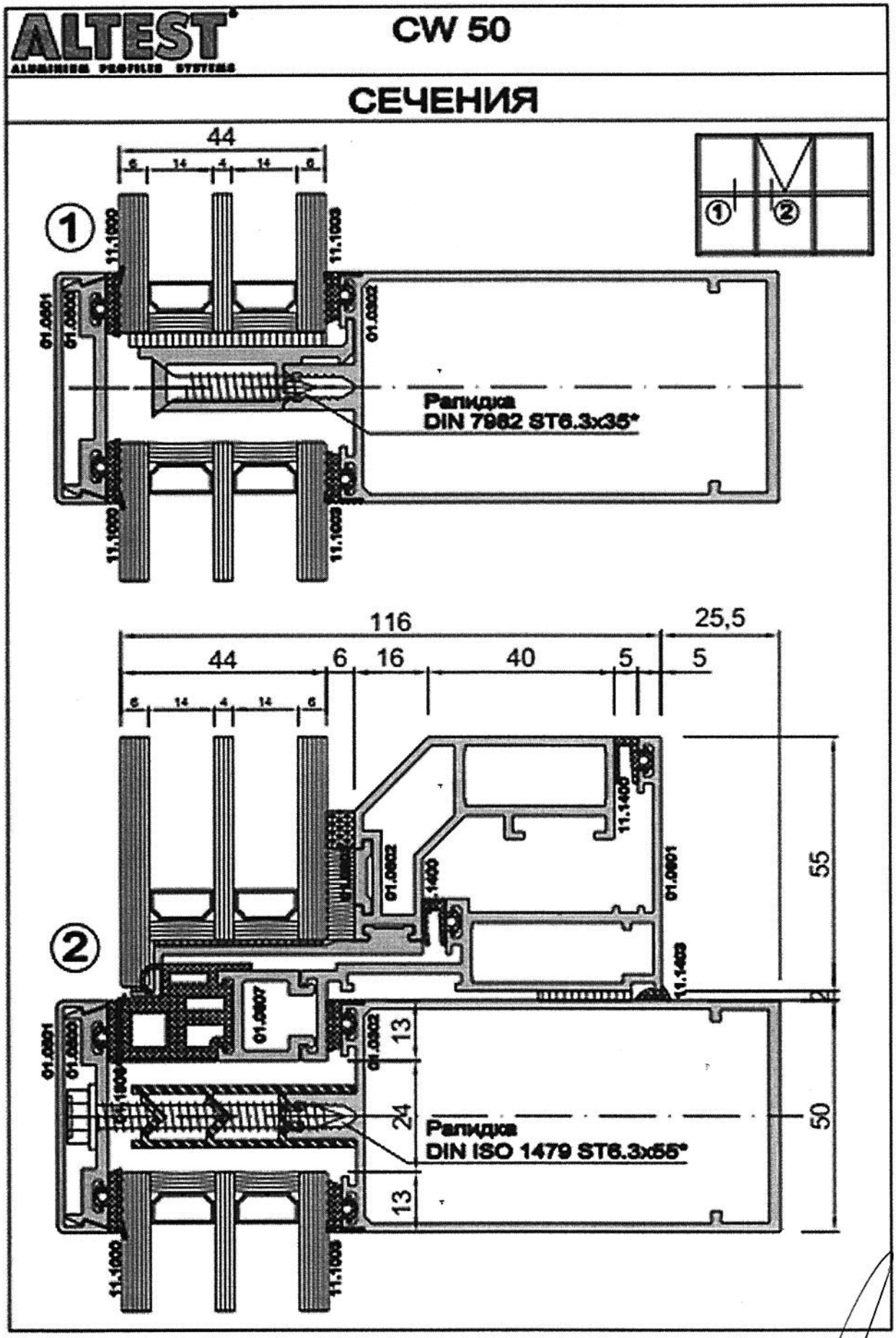


ALTEST
ALUMINIUM PROFILES SYSTEMS

CW 50

СЕЧЕНИЯ

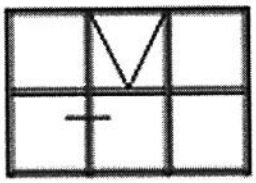


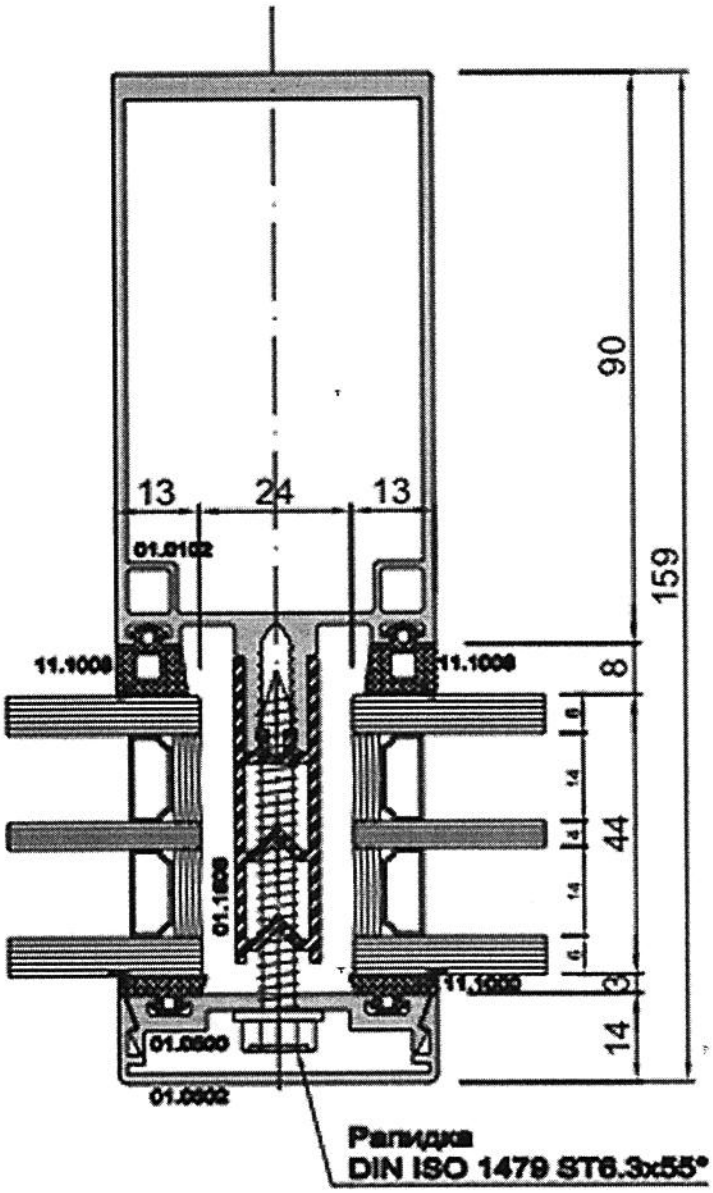

ALTEST
ALUMINIUM PROFILES SYSTEMS
CW 50
СЕЧЕНИЯ
44
6 14 4 14 6
1
2
Рапидка
DIN 7982 ST6.3x35*
116
25,5
44
6
16
40
5
5
55
50
13
24
13
Рапидка
DIN ISO 1479 ST6.3x55*

ALTEST
ALUMINIUM PROFILES SYSTEMS

CW 50

СЕЧЕНИЯ

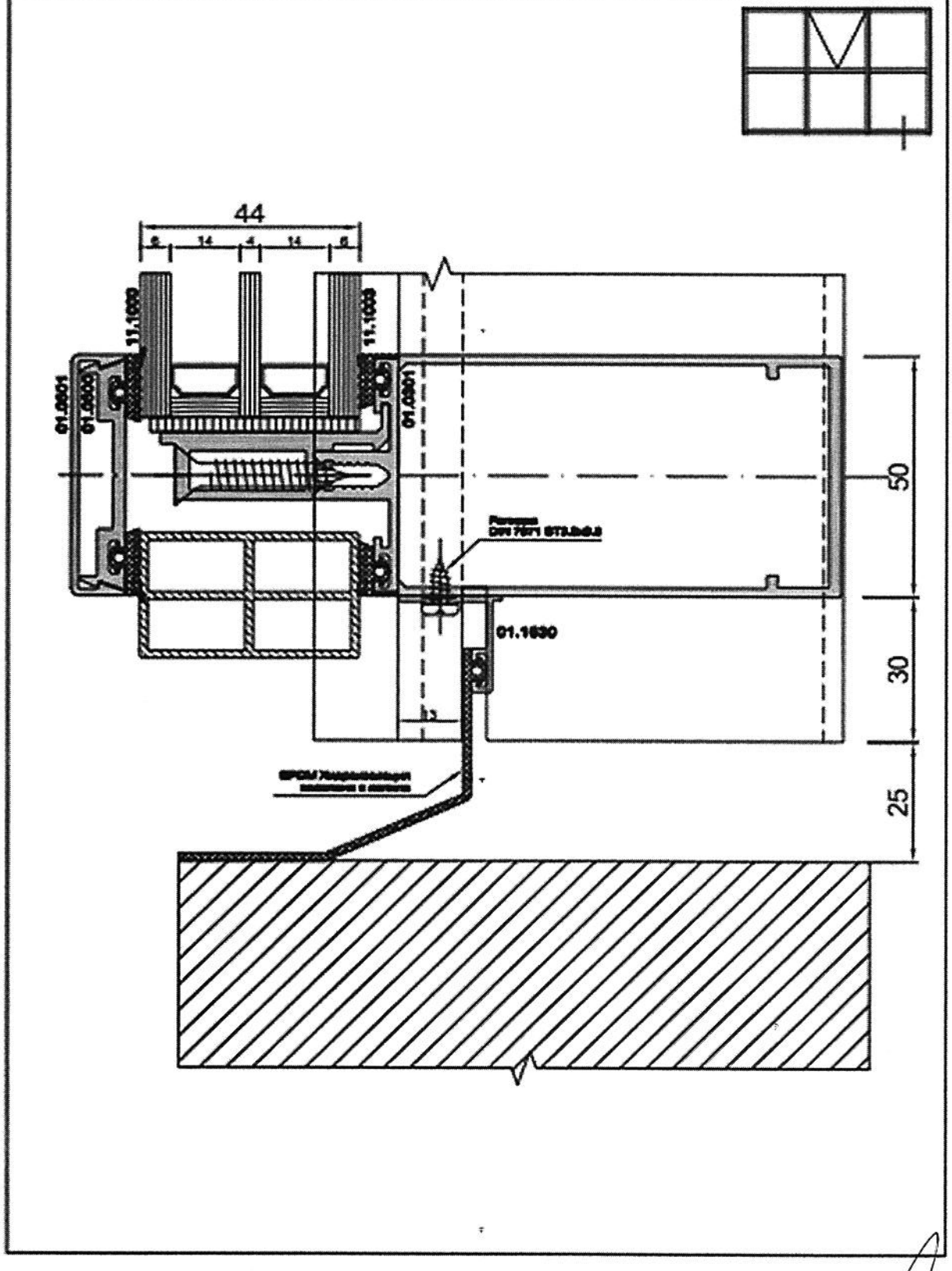




ALTEST
ALUMINIUM PROFILES SYSTEMS

CW 50

ВЕНТИЛАЦИЯ И ОТВОДНЯВАНЕ



Annex 2

Watertight in static pressure – EN 12155

1. Test conditions and test equipment data

The test is carried out on a stand system "Rosenheim" type "VH AE" of HOLTEN located in the Laboratory "Building Physics" at NISI Ltd. The stand consists of a chamber and control and measurement desk. The chamber is airtight and only one of the sides is open. This side is closed by appropriate fixing of testing window that is oriented to the outside of the chamber.

The testing window is fixed to the spacers (the chamber sides) by manual clamps. Microporous rubber seals are used between the window frame and the chamber walls for good seal.

Water quantity – 2 dm^3 per 1 m^2/min.

Air temperature in the chamber and the laboratory is 20 °C.

Relative humidity in the chamber and the laboratory is 50 %.

2. Test results

Test pressure, Pa	**Continuance, min**	**Results of the monitoring on the internal face of the test specimen**	**Classification**	**Requirements according to EN 12154**
				Do not leaking, Pa/min
0	15	Water resistant	-	0/15
50	5	Water resistant	-	0/15; 50/5
100	5	Water resistant	-	0/15; 50/5; 100/5
150	5	Water resistant	**R4**	0/15; 50/5; 100/5; 150/5
300	5	Water resistant	**R5**	0/15; 50/5; 100/5; 150/5; 200/5; 300/5
450	5	Water resistant	**R6**	0/15; 50/5; 100/5; 150/5; 200/5; 300/5; 450/5
600	5	Water resistant	**R7**	0/15; 50/5; 100/5; 150/5; 200/5; 300/5; 450/5; 600/5

Annex 3

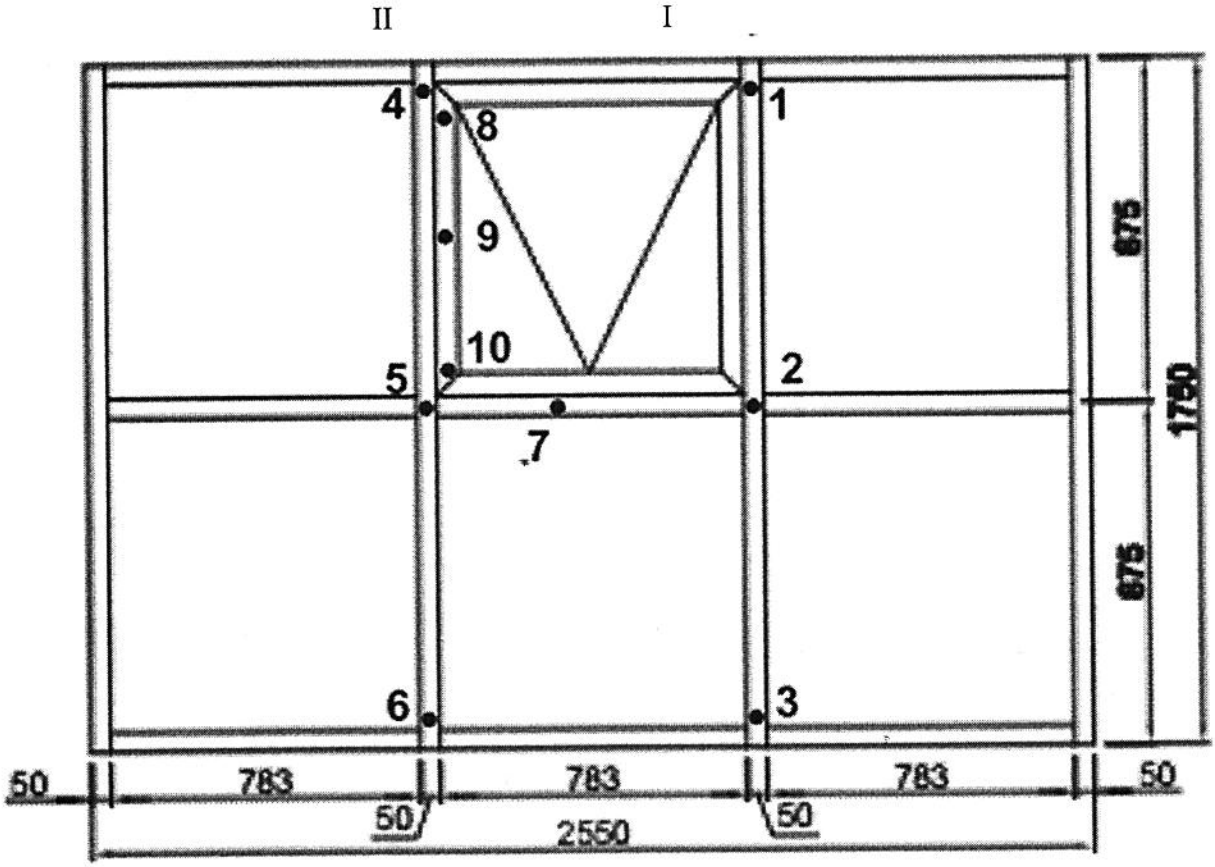
Resistance to wind load – EN 12179

1. Test conditions and equipment data

The test equipment and the chamber are in accordance with Annex 2 of the test report.
Air temperature in the chamber and the laboratory is 15 °C.
Relative humidity in the chamber and the laboratory is 64 %.

2. Testing of deformation (deflections)

Measurement of deformations (deflections) of the linear elements in height of the window wings is made using measuring devices type TGL 7682 accurate to 0,01 mm (produced of SUHL, Germany).



Disposition scheme of measuring points on the window

Test results:

Test pressure, Pa	Measuring points		
	f ($f_{p\ res}$*.) в т.1, mm	**f ($f_{p\ res.}$) в т.2, mm**	**f ($f_{p\ res.}$) в т.3, mm**
+800 / -800	+0,10 / -0,08 (+0,01/-0,02)	+1,01 / -1,04 (+0,09/-0,10)	+0,34 / -0,42 (+0,03/-0,04)
	f ($f_{p\ res.}$) в т.4, mm	**f ($f_{p\ res.}$) в т.5, mm**	**f ($f_{p\ res.}$) в т.6, mm**
+800 / -800	+0,06 / -0,08 (0,00/-0,02)	+0,87 / -0,79 (+0,06/ 0,00)	+0,21 / -0,20 (0,01/-0,02)
	f ($f_{p\ res.}$) в т.7, mm	**f ($f_{p\ res.}$) в т.8, mm**	**f ($f_{p\ res.}$) в т.9, mm**
+800 / -800	+0,96 / -1,04 (+0,02/-0,02)	+0,12 / -0,12 (0,00/-0,01)	+0,68 / -0,55 (0,00/-0,02)
	f ($f_{p\ res.}$) в т.10, mm	-	-
+800 / -800	+0,98 / -0,82 (0,00/-0,04)	-	-

* $f_{p\ res}$ is residual deflection.

3. Repeated pressure test

The test is implemented at a pressure of ± 400 Pa, repeated 50 times.

At the repeated 50 cycles test including negative and positive pressure of 400 Pa, that simulate the window behavior at the wind blows (pressure and suction) defects and damages that deteriorate the window performance are not detected.

4. Safety test at triple pressure

The test is carried out at positive and negative pressure ± 1200 Pa only once.

Damages that deteriorate the window performance are not detected during the safety test at triple pressure.

Annex 4

Impact resistance – EN 12600

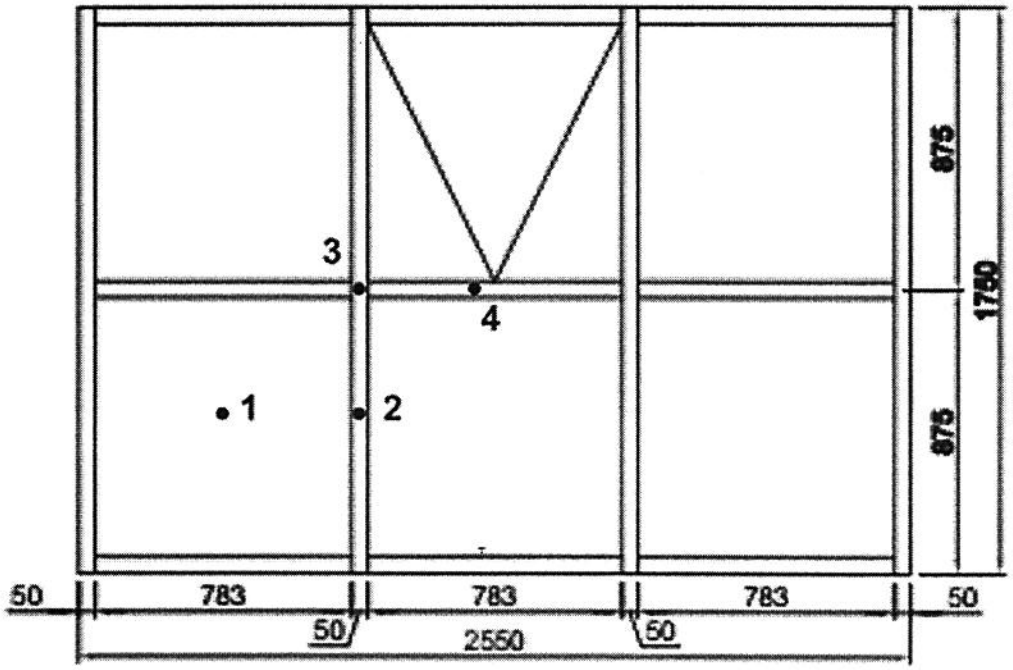


Illustration of impact load positions

Height of drop, mm	Test items				Klass (impact inside)	Klass (impact outside)
	1	2	3	4		
1	*2*	*3*	*4*	*5*	*6*	*7*
200	withstands	withstands	withstands	withstands	**I1**	**E1**
300	withstands	withstands	withstands	withstands	**I2**	**E2**
450	withstands	withstands	withstands	withstands	**I3**	**E3**
700	withstands	withstands	withstands	withstands	**I4**	**E4**
950	withstands	withstands	withstands	withstands	**I5**	**E5**
1200	withstands	withstands	withstands	withstands	-	-

Annex 5

Airborne sound insulation – EN ISO 10140-2, EN ISO 717-1

1. Test conditions, test facilities and equipment data

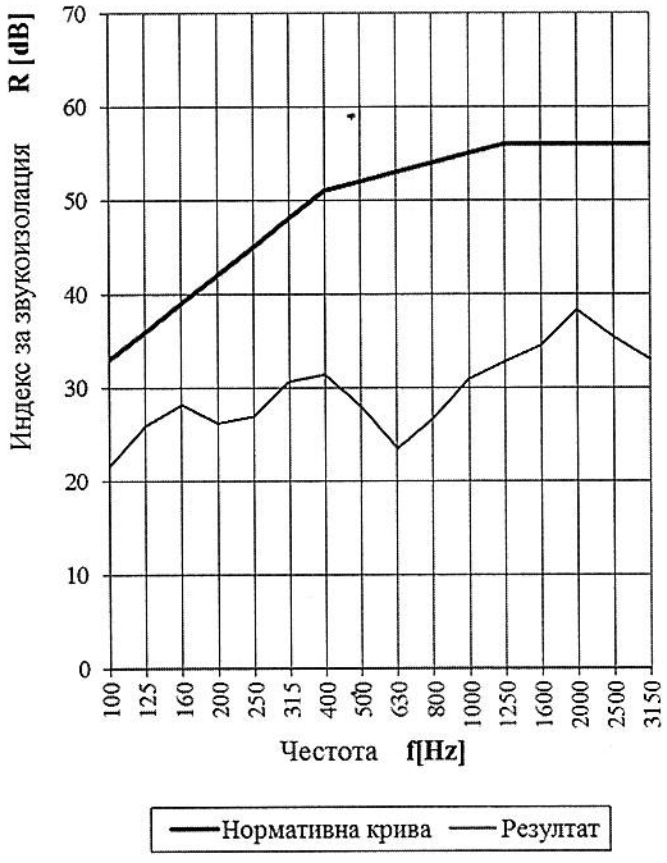
The test is carried out at "Building physics" laboratory:

- Air temperature 14 °C; relative humidity 60 %
- Source room V = 170 m³;
- Receiving room V = 119 m³;;
- Filling wall with Rw = 50 dB;
- Acoustic equipment "Brüel & Kjær" - Denmark:
  - Analyzer for building acoustics Type 4418;
  - Microphone Type 4943;
  - Preamplifier Type 2916;
  - Source noise Type 4224;
  - Sound calibration Type 4230.

The test specimen is installed by the specialists of Applicant.

2. Test results

f, Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
R, dB	21,6	26,0	28,2	26,2	26,9	30,6	31,4	27,9	23,5	26,7	30,8	32,8	34,5	38,3	35,3	33,0



WEIGHTED SOUND REDUCTION INDEX
R_w (C; C_{tr}) = 31 (-1; -2) dB

Annex 6

Air permeability – EN 12153

1. Test conditions and test equipment data

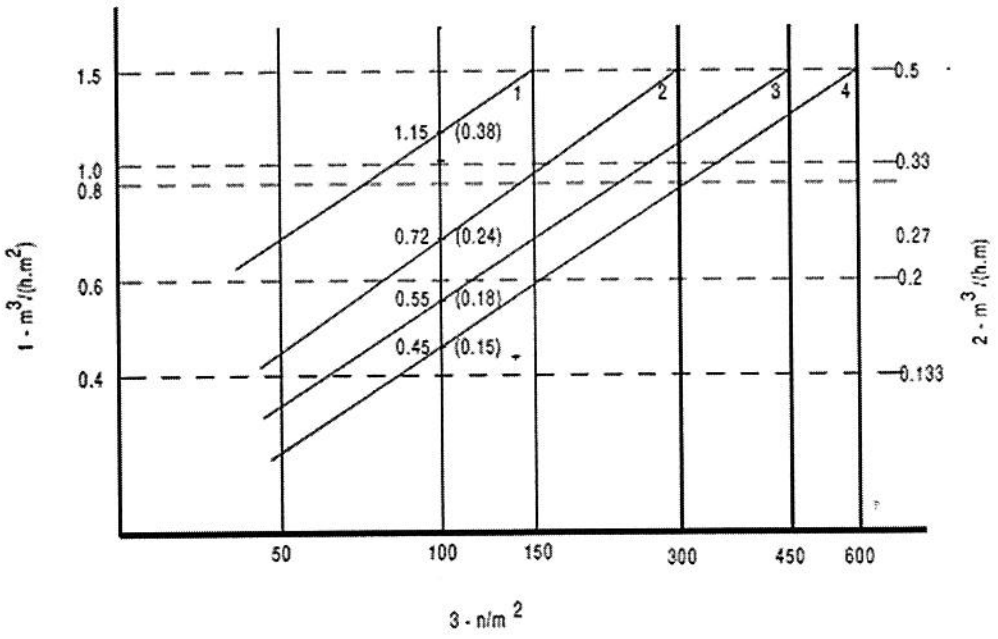
The test equipment is in accordance with Annex 2 of the test report.

Air temperature in the receiving room is 20 °C.
Relative humidity in the receiving room is 50 %.

2. Test results

P, Pa	50	100	150	300	450	600
V, m^3/h	1,20	1,60	1,90	2,60	3,30	6,90
V_1, m^3/hm	0,05	0,07	0,09	0,12	0,16	0,28
V_w,m^3/hm^2	0,22	0,35	0,42	0,58	0,72	1,23

Air permeability – classification:
- overall area – **class 4**;
- fixed length (candybar) joints – **class 4**.



Classification