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Laboratory for glass and building products testing

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*Testing laboratory No.1139 accredited by Czech Accreditation Institute, o.p.s.
acc. to ČSN EN ISO/IEC 17025:2018*

TEST REPORT

No. : 267 / 2022

Test item :

Thermally toughened safety glass

- type tests according to ČSN EN 12150-2:

- fragmentation test acc. to ČSN EN 12150-1

- bending strength test acc. to ČSN EN 1288-3

Client (address):

MILKANA OOD

1 Karo Kolyo Str, West Industrial Zone, Pleven, Bulgaria

Producer (address):

MILKANA OOD

2 Maxim Gorki Str., Pordim, Bulgaria

Place of test performance :

IKATES, s.r.o., Teplice, Czech Republic

Date of sample receiving :

2022-10-20

Date of test performance :

2022-11-01 to 2022-11-03

Date of issue :

2022-11-04

Number of pages :

4

Page No. :

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Manager of testing laboratory :

Jiří Stránský



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Normative documents :

ČSN EN 1288-3 (2001): Glass in building – Determination of bending strength of glass -
Part 3 : Test with specimen supported on two points (four points bending)

ČSN EN 12150 Glass in building – Thermally toughened soda lime silicate safety glass –
Part 1+A1 (2020): Definition and description
Part 2 (2005): Evaluation of conformity/Product standard

Sampling :

Following test specimens of thermally toughened safety glass with dimensions 360x1100 mm manufactured using of horizontal process were used to testing:

from float glass:

thicknesses 4 mm; 6 mm; 8 mm a 10 mm – per 8 pcs.

from coated glass ($\epsilon < 0,10$):

6 mm Guardian Sunguard 60/40 – 5 pcs.

8 mm Guardian SN70S HT – 5 pcs.

Metrological provision of tests :

Calibrated measuring gauges were used for testing. The bending strength test was carried out using of universal machine ZHL 30 with metrological traceability to Czech Metrology Institute.

Test results :

1. Fragmentation test (according to ČSN EN 12150-1 art. 8)

Test specimen No. / Nominal thickness	particles count (pcs.) / the longest particle (mm)				
	1	2	3	4	5
4 mm	43 / 28	47 / 32	42 / 31	52 / 26	47 / 26
6 mm	104 / 19	96 / 27	109 / 19	110 / 18	105 / 17
8 mm	62 / 23	74 / 30	74 / 20	73 / 25	79 / 24
10 mm	74 / 21	71 / 16	67 / 23	63 / 18	72 / 19



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2. Bending strength test (according to ČSN EN 1288-3/ČSN EN 12150-2)

Note: E = edge; S = surface; ↑ in compression zone; ↓ in tension zone

Specimen / stamp position	Average thickness (mm)	Width (mm)	Max. load (N)	Time (s), point of breakage		Bending strength (MPa)
clear thermally toughened safety glass						
1↑	3,88	360	817	96,4	E	185,6
2↓	3,90	360	825	89,2	E	185,5
3↑	3,88	360	834	105,6	S	189,8
4↓	5,88	360	1964	92,4	S	192,5
5↑	5,86	360	1820	85,5	E	179,8
6↓	5,86	360	2323	108,4	S	228,6
7↑	7,96	360	3248	80,2	E	173,3
8↓	7,94	360	3164	90,4	S	169,8
9↑	7,87	360	2623	66,9	S	143,6
10↓	9,79	360	4339	67,9	S	152,9
11↑	9,82	360	4064	63,3	S	142,4
12↓	9,75	360	4206	70,0	S	149,4

Specimen / stamp position	Average thickness (mm)	Width (mm)	Max. load (N)	Time (s), point of breakage		Bending strength (MPa)
coated thermally toughened safety glass ($\epsilon < 0,10$)						
1↑	5,86	360	1740	80,4	E	171,9
2↓	5,87	360	2018	96,0	E	198,2
3↑	5,87	360	1938	89,2	S	190,9
4↓	5,85	360	1792	84,7	S	178,0
5↑	5,85	360	1676	74,9	E	166,4
6↓	7,89	360	3312	76,6	E	179,8
7↑	7,86	360	3235	76,9	S	177,0
8↓	7,87	360	3469	89,4	S	189,1
9↑	7,88	360	2789	65,2	S	152,0
10↓	7,89	360	3533	83,7	S	191,5



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Expert viewpoint:

The results of fragmentation test and bending strength test comply with requirements of the standard EN 12150-1+A1.

Statement : Test results, given in this report, apply only to the tested items as received. Test report does not replace other documents, e.g. administrative characters, issued from other bodies, according to particular regulations. The official version is in the Czech language.

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**Test results approved and for correctness
of the report is responsible :**

_____ end of the test report _____

Jiří Stránský

