

RAPPORTO DI PROVA / TEST REPORT N. 180563

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Marghera 10/11/2020 rif. Your e-mail dated October 22nd, 2020

richiedente
proposer GMT-BULGARIA LTD
38A, PARKOVA STR - 07200 RAZGRAD

campione
sample Laminated safety glass prova eseguita dal / from 27/10/2020
test date al / to 10/11/2020

contrassegnato
reference Bulsafe L 44.2

ricevuto il
received 22/10/2020 by carrier

CE EN12543BUE r9 27/11/2019

Test according to EN ISO 12543-4:2011

point 5: High temperature test and point 6: Humidity test

Producer: Bulcorp Ltd;
Site of production: Bulgaria, 7200 Razgrad, Kazanlak Str.1;
Type of product: Laminated safety glass (EN ISO 12543-2:2011);
Declared product name: Bulsafe L 44.2
Family of interlayer: Ethylene vinyl acetate (EVA) (EN 14449:2005);
Subtype: EvaShine L (VE-TE) - transparent (China E&N Film Technology Co.,Ltd)
Sampling: under responsibility of the Producer;
Date of sampling: 09/10/2020; line of production: FD-J-5-4L;
Personnel involved: GianLuca Negri, Fabrizio Comiati; Test carried out at: Marghera laboratories.

We decline every responsibility about production site and sampling declared.

Tests have been carried out according to points 5 (**point 5.3.2 Procedure A - 16h**) and 6.3.1 of EN ISO 12543-4:2011 on 6 specimens of laminated safety glass with a nominal thickness of 8.6 mm.

Declared structure of laminated glass (mm)	SGG PlaniClear 3.9 mm / 0.76 mm EvaShine L (VE-TE) / SGG PlaniClear 3.9 mm
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Type of specimen: specimens manufactured to the test size
Edge work: polished edge
Protection at the edge: no edge protection
Dimension of the specimens: 300 mm x 300 mm
Method of supporting: one edge supported by test frame

Visual Examination before test

According to EN ISO 12543-4:2011 each specimen has been inspected prior to the test at a distance between 300 mm to 500 mm in front of a white diffuse background. Only samples free of faults (bubbles, delamination, cloudiness) have been used for the test:

Specimens undergone to:	Bubbles	Delamination	Cloudiness
High Temperature Test	None	None	None
Humidity Test	None	None	None

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The results stated in this test report refer exclusively to the examined sample. The laboratory is not responsible for those information contained in said report that have been provided by the customer. This test report may not be reproduced in part without our written authorization.



RAPPORTO DI PROVA / TEST REPORT N. 180563

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Marghera 10/11/2020 rif. Your e-mail dated October 22nd, 2020

richiedente GMT-BULGARIA LTD
proposer 38A, PARKOVA STR - 07200 RAZGRAD

campione Laminated safety glass
sample

prova eseguita dal / from 27/10/2020
test date al / to 10/11/2020

contrassegnato Bulsafe L 44.2
reference

ricevuto il 22/10/2020 by carrier
received

CE EN12543BUE r9 27/11/2019

1 High Temperature Test

After High Temperature Test according to point 5 (point 5.3.2 Procedure A) of EN ISO 12543-4:2011 a visual inspection has been carried out (see point 5.4 of EN ISO 12543-4:2011):

Specimen number	Mean measured thickness (mm)	Bubbles	Delamination	Cloudiness
1	8.40	None	None	None
2	8.39	None	None	None
3	8.41	None	None	None

2 Humidity Test

After Humidity Test according to point 6 (6.3.1 test with condensation) of EN ISO 12543-4:2011 a visual inspection has been carried out (see point 6.4 of EN ISO 12543-4:2011):

Specimen number	Mean measured thickness (mm)	Bubbles	Delamination	Cloudiness
1	8.45	None	None	None
2	8.48	None	None	None
3	8.44	None	None	None

3 Test Results

Conformity to High Temperature Test: YES NO

Conformity to Humidity Test: YES NO

--- END OF THE TEST REPORT ---

THE HEAD OF THE LABORATORY
Ennio Mognato

THE TECHNICAL DIRECTOR
Dr. Nicola Favaro

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RAPPORTO DI PROVA / TEST REPORT N. 183194

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Murano 3/03/2021 rif. Your e-mail dated October 22nd, 2020

richiedente GMT-BULGARIA LTD
proposer 38A, PARKOVA STR - 07200 RAZGRAD

campione Laminated glass
sample

prova eseguita dal / from 24/11/2020
test date al / to 3/03/2021

contrassegnato BULSAFE L 44.2
reference

ricevuto il 22/10/2020 by carrier
received

CE EN12543UVE r.9 16/6/2020

Type of test: Solar radiation durability test according to EN ISO 12543-4: 2011
Producer: BULCORP Ltd
Site of production: Bulgaria, 7200 Razgrad, Kazanlak Str.1
Type of product: Laminated safety glass (EN ISO 12543-2:2011)
Family of interlayer: Ethylene vinyl acetate (EVA) (EN 14449:2005)
Sampling: under responsibility of the Producer
Marking of the sample: date of sampling: 9/10/2020
line of production: FD-J-5-4L
Personnel involved: Gianluca Negri, Fabrizio Comiati and Antonio Giulio Daneo

For the details of the product description and of the laminated process see Producer Technical File.

RADIATION TEST ACCORDING TO EN ISO 12543-4: 2011

The radiation tests has been carried out according to EN ISO 12543-4: 2011 "Glass in building - Laminated glass and laminated safety glass - Part 4: Test methods for durability (ISO 12543-4:2011)" on your 3 samples of laminated glass labelled BULSAFE L 44.2 consisting of:

3.9 mm SGG PlaniClear / 0.76 mm EVAShine L (VE-TE) / 3.9 mm SGG PlaniClear

The samples, 30 x 30 cm in size, 8.6 mm average thickness, showed no particular edge treatment or protection. The samples were submitted, at Marghera laboratories, to the radiation test with 16 OSRAM ULTRAVITALUX 300 W lamps for 2000 h, at a temperature of 45±5 °C, according to the prescriptions of the standard EN ISO 12543-4: 2011 . The following light transmittance values were measured, at Murano laboratories, according to method LPO/MI/10-01 r.4 and calculated according to EN 410: 2011 before and after radiation:

Sample	Light transmittance (%) before exposure ($\tau_{v, be}$)	Light transmittance (%) after exposure ($\tau_{v, ae}$)	% Relative difference $\left(\frac{\tau_{v, ae} - \tau_{v, be}}{\tau_{v, be}} \right)$
1	88.3	88.1	-0.2
2	88.8	88.5	-0.3
3	88.4	88.0	-0.5

No delamination was observed in the samples after exposure to radiation.

The above test results indicate that the samples are in compliance with the requirements described in point 5.3 of the standard EN ISO 12543-2: 2011.

--- END OF THE TEST REPORT ---

THE ANALYST

Antonio Giulio Daneo



THE TECHNICAL DIRECTOR

Dr. Nicola Favaro



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