

Test report

Test report relating to a glass product according to European standard EN 12150-1, fragmentation and mechanical strength, concerning the product marked as: Low iron solar textured glass thickness 2.8, 2.5 and 2.0mm, manufactured by: Gujarat Borosil LTD.

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Contents

1	Introduction	3
1.1	Purpose	3
1.2	Description of the test specimen	3
1.3	Sampling procedure	3
1.4	Application	3
1.5	Method of testing	3
1.6	Put out to contract	3
1.7	Privacy statement	3
1.8	Notifications, accreditations, designations	4
2	Test results	5
3	Conclusion	8
4	References	9
5	Signatures	10

1 Introduction

1.1 Purpose

The tests have been performed in order to establish whether or not the product meets the requirements of the European standard EN 12150-1 [1].

1.2 Description of the test specimen

General

Name of the manufacturer	Gujarat Borosil, LTD
Address of the manufacturer	Govali, Ankleshwar Rajpipala Road Jhagadia Taluka, Dist. : Bharuch, Gujarat INDIA
Production plant of the samples	Govali, Ankleshwar Rajpipala Road Jhagadia Taluka, Dist. : Bharuch, Gujarat INDIA
Line ID where the samples are made	-
Production date	-
Sampling date	-
The product was marked as	Low iron solar textured glass thickness 2.8, 2.5 and 2.0mm
Dimensions of the samples	1100 x 360 mm

Specific

Kind of glass	Thermally toughened safety glass
Nominal thickness	2.8, 2.5 and 2.0 mm
Number of samples, fragmentation	5 per thickness
Number of samples, 4-point bending	≥ 2 per thickness, in total minimum 10
Edge work according to EN 12150-1 § 7.2	Arrissed edge

1.3 Sampling procedure

TÜV Rheinland B.V., acting as Notified Test Laboratory, has had no influence on the selection of the sample. All test specimen within the sample were test-worthy and were received on 3rd September 2017.

1.4 Application

The request for testing was submitted by the manufacturer on 12th October 2017, order or reference number or name: -. Assignment Form number: 17.A217.

1.5 Method of testing

All applicable tests have been performed according to the European standards EN 12150-1 [1] and EN 1288-3 [2].

1.6 Put out to contract

No tests were performed at third parties.

1.7 Privacy statement

Due to privacy reasons, the names of involved personnel that executed the tests, are not disclosed in the report. However, this information is available on internal work sheets, test forms etc. in the project file.

1.8 Notifications, accreditations, designations

TÜV Rheinland Nederland B.V. has been notified by the Dutch Minister for Housing and the Central Government Sector as Notified Laboratory (number 1750) and Notified (Factory Production Control) Certification Body (number 0336) for the European Construction Products Regulation 305/2011 (EU).

TÜV Rheinland Nederland B.V. has been accredited by the Dutch Accreditation Council (RvA) as ISO 17025 Test Laboratory (nr. L 484) and ISO 17065 Certification Body (nr. C078).

TÜV Rheinland Nederland B.V. has been designated as Technical Service (Laboratory) by the Approval Authorities for Germany (KBA – E1) and the Netherlands (RDW – E4) for automotive safety glass (ECE R43, 92/22/EC, 2009/144/EC).

TÜV Rheinland Nederland B.V. has been recognised by the German Institute for building technics (DIBt) under number NL005 as test, control and certification body.

Remark

The reported tests were performed under ISO 17025 accreditation.

2 Test results

Test results after performing all applicable tests according to § 8, Fragmentation when tested according to EN 12150-1 [1] and § 9.4, Mechanical strength of the European standard EN 12150-1 [1] when tested according to EN 1288-3 [2].

Requirements fragmentation:

EN 12150-1[1] § 8.5 and 8.7	
Thickness of glass	Minimum number of particles
2 and 3 mm float	15
4 mm up to and including 12 mm float	40
15 mm up to and including 25 mm float	30
The length of the longest particle shall not exceed	100 mm (all thicknesses)

Requirements mechanical strength:

EN 12150-1 [1] § 9.4	
Type of glass	Minimum values mechanical strength (N/mm²)
Float: Clear, Tinted and Coated	120
Float: enamelled	75
Patterned glass and drawn sheet, others	90

Test results Fragmentation test (number of particles and length of longest particles) according to EN 12150-1 [1]:

Thickness [mm]	2,8	2,5	2,0
Minimum allowed number of particle within the gauge (25 cm ²)	15	15	15
Maximum allowed length of het longest particle after fragmentation (in mm)	100	100	100
Test Specimen 1			
	"2,8"	"2,5"	"2,0"
Number of fragments within the gauge (25 cm ²)	197	215	50
length of the longest particle in the body of the test specimen after fragmentation.	9	8	56
Assessment between 4 and 5 minutes [Y/N]	y	y	y
Test Specimen 2			
	"2,8"	"2,5"	"2,0"
Number of fragments within the gauge (25 cm ²)	210	222	63
length of the longest particle in the body of the test specimen after fragmentation.	8	7	36
Assessment between 4 and 5 minutes [Y/N]	y	y	y
Test Specimen 3			
	"2,8"	"2,5"	"2,0"
Number of fragments within the gauge (25 cm ²)	198	218	45
length of the longest particle in the body of the test specimen after fragmentation.	8	7	38
Assessment between 4 and 5 minutes [Y/N]	y	y	y
Test Specimen 4			
	"2,8"	"2,5"	"2,0"
Number of fragments within the gauge (25 cm ²)	211	216	43
length of the longest particle in the body of the test specimen after fragmentation.	7	7	52
Assessment between 4 and 5 minutes [Y/N]	y	y	y
Test Specimen 5			
	"2,8"	"2,5"	"2,0"
Number of fragments within the gauge (25 cm ²)	209	215	42
length of the longest particle in the body of the test specimen after fragmentation.	8	6	58
Assessment between 4 and 5 minutes [Y/N]	y	y	y
Evaluation of Conformity			
	"2,8"	"2,5"	"2,0"
The minimum required number of fragments is not exceeded	OK	OK	OK
The maximum allowed length of het longest particle is not exceeded	OK	OK	OK

Test results Four point bending test according to EN 1288-3 [2]:

Sample number	facing upwards ↑ or downwards ↓	Thickness (mm)	Length (mm)	Width (mm)	Max. Force (N)	Mech. strength (N/mm ²)	Breakage between rollers [Yes/No]	Time to breakage (s)
1	↑	2,13	1100	360	170	134,1	Yes	97
2	↓	2,13	1100	360	162	128,2	Yes	83
3	↓	2,11	1100	360	167	133,8	Yes	88
4	↑	2,15	1100	360	165	128,1	Yes	88
5	↑	2,65	1100	360	310	154,7	Yes	86
6	↓	2,64	1100	360	280	140,6	Yes	76
7	↓	2,72	1100	360	355	167,0	Yes	88
8	↓	2,71	1100	360	320	151,8	Yes	85
9	↑	2,70	1100	360	309	148,1	Yes	81
10	↑	2,70	1100	360	324	155,2	Yes	87

Period of testing

The fragmentation tests took place on 20-10-2017.

Other thicknesses were not tested regarding the bending strength because the standard describes the specific sample distribution over a range of thicknesses. This implies that when more than 5 thicknesses, not all thicknesses need to be tested. Not-tested thicknesses can be regarded as complying with the requirements.

3 Conclusion

The tested glass product, marked by the client or manufacturer as Low iron solar textured glass thickness 2.8, 2.5 and 2.0mm, manufactured by: Gujarat Borosil, LTD, meets the applicable requirements concerning § 8, Fragmentation and § 9.4, Mechanical strength as stated in the European standard EN 12150-1 [1] when tested according to EN 12150-1 [1] and EN 1288-3 [2].

The test results exclusively relate to the tested objects.

Remark 1

When and if changes are made in production method and/or equipment, assessment according to this standard shall be reconsidered and re-tests shall be performed when the changes can lead to different specifications of the glass. The decision and responsibility lies at the manufacturer.

Remark 2

If no reference of the product description was supplied by the manufacturer, than that document shall be added to this test report by the manufacturer. It was to the manufacturer's responsibility that the samples delivered for initial type test are representative to the production and deviations from perfection were included in the delivered test samples.

4 References

- 1 European standard EN 12150-1:2015 (E),
Glass in building – Thermally toughened soda lime silicate safety glass – Part 1: Definition and description,
European Committee for Standardization, September 2015.
- 2 European standard EN 1288-3:2000 (E),
Glass in building – Determination of the bending strength of glass – Part 3: Test with specimen supported at two points (four point bending),
European Committee for Standardization, June 2000.

5 Signatures

Author Mr. R. Brandhorst	Signature 
Specialist	
Peer review Mr. M.A.A.M. Schets, B.Sc.	Signature 
Specialist	
Approved by Mrs. C.C.M. van Houten	Signature 
Manager operations	

(This is the end of this report).