



AB ONAYLANMIŞ KURULUŞ

2271

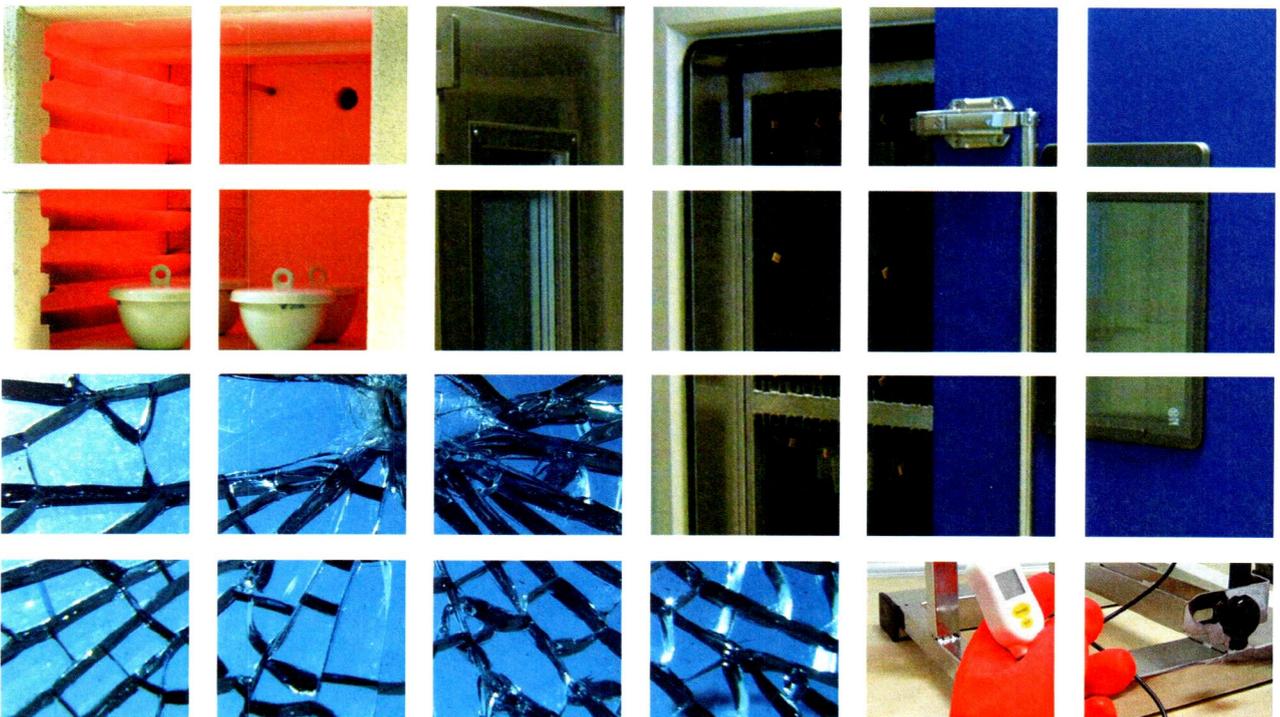
EU NOTIFIED BODY

PERFORMANCE ASSESSMENT REPORT

Işık Cam San. Tic. Ltd. Şti.

TS EN 12150-1:2015+A1:2019 Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description

Test Report No: DY05-231-0



Summary of Performance Assessment Report

This certificate was issued according to the Annex-5 Clause 1.4 of the regulation published in the Official Gazette dated 2 October 2014 related to the revision of Construction Products Regulation (305/2011/EC) published in the Official Gazette No. 28703 dated 10 July 2013.

Client and Product Information

Client	Işık Cam San. Tic. Ltd. Şti.
Client Address (Head Office)	Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir
Manufacturer Name	Işık Cam San. Tic. Ltd. Şti.
Manufacturer Address	Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir
Product Name / Trade Name	Işık Cam / 4-5-6-8-10 mm Thermally toughened flat glass
Specimen Data Form No. / Date	NBF.12150 / 09.02.2022
Date of Manufacture	9.02.2022
Test Report	DY05-231-0
Test Standard	TS EN 12150-1:2015+A1:2019 Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description
Product Standard	TS EN 12150-2:2006+D1:2019 Glass in building - Thermally toughened soda lime silicate safety glass - Part 2: Evaluation of conformity / Product standard

Assessment of Test Findings (TS EN 12150-1:2015+A1:2019)

Assessment Criteria	Test Result	Reference	Assessment
Number of Fragments (Minimum)	56 pcs	≥ 40 pcs	SUCCESSFUL
Length of Largest Fragment (Maximum)	16,12 mm	≤ 100 mm	SUCCESSFUL
Mechanical Strength (Minimum)	127,27 N/mm ²	≥ 120 N / mm ²	SUCCESSFUL

Performance Assessment Result	SUCCESSFUL
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Remarks:

- (1) These test results apply only to the particular specimens tested. This certificate contains only the summary of the test results given in the relevant test report detailed above.
- (2) This certificate confirms that the thermally toughened soda lime silicate safety glass specimens of which client and product information are given above have been tested for fragmentation and mechanical strength tests according to the relevant standard.
- (3) This certificate can only be used as the evidence of the test result and is an integral part of the relevant test report but it cannot be used on its own.
- (4) This certificate has been prepared to demonstrate the characteristics of the product related to the specified standard. The manufacturer can use the results found for CE marking of its product, but it should take into account the requirements of the relevant product standard when CE marking.

Mehmet Yakut
Technical Manager



SBG laboratory issues this report against the request of the client which is the manufacturer of the specimens (The request by client is in scope of notified body). This report is published in accordance with the provisions of the Construction Products Regulation (305/2011) and the relevant regulations and standards. The notified body number of the SBG is "2271".

Standart Belgelendirme Denetim Deney Muayene ve Teknik Kontrol Ltd. Şti.

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PDR.12150-1 (B) / 01 / 01.11.2021

Standart Belgelendirme Denetim Deney
Muayene ve Teknik Kontrol Ltd. Şti.

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PERFORMANCE ASSESSMENT REPORT

TEST REQUESTED BY

Client No.: 662
Client Contract No.: 4
Date of Contract: 9.02.2022
Client: Işık Cam San. Tic. Ltd. Şti.
Address: Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir
Telephone: (232) 281 36 32

DEFINITION AND DESCRIPTION OF SPECIMENS

Manufacturer of Specimens: Işık Cam San. Tic. Ltd. Şti.

Address of Manufacturer of Specimens: Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir

Type of Specimens / Product: Glass in Building - Thermally toughened soda lime silicate safety glass

Trade Name and Description of Product: Işık Cam / 4-5-6-8-10 mm Thermally toughened flat glass

Specimen Data Form No. / Date: NBF.12150 / 09.02.2022

Total Number of Specimens: 35

Date of Manufacture of Specimens: 9.02.2022

Date of Delivery of Specimens: 14.02.2022

Date of Completion of Tests: 17.03.2022

Test Standard Used: TS EN 12150-1:2015+A1:2019 Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description

Product Standard: TS EN 12150-2:2006+D1:2019 Glass in building - Thermally toughened soda lime silicate safety glass - Part 2: Evaluation of conformity / Product standard

Total Number of Pages of Report: 6 pages (Except cover page) + Annexes

Standart Belgelendirme Denetim Deney Muayene ve Teknik Kontrol Ltd. Şti. is accredited by TÜRKAK under the registration number AB-0411-T for TS EN 17025:2017 as a test laboratory.

Turkish Accreditation Agency (TÜRKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.



Report Date

28.03.2022

Person in charge of test

Gürcan ŞAHİN
Laboratory Chief

Approval

Mehmet YAKUT
Technical Manager
28.03.2022

PERFORMANCE ASSESSMENT REPORT

CONDITIONS OF ISSUE AND USE OF THE REPORT

- 1.This report is issued in accordance with the provisions of the Laboratory Test Contract approved in the specified date. The reports are invalid if not signed and stamped properly.
- 2.These results contained herein apply only to the particular specimens tested and to the specific measurements, tests and calculations carried out, as detailed in this report.
- 3.The issuing of this report does not indicate any measure of approval, certification, supervision, technical control and surveillance by SBG of any product.
- 4.This report is not a 'Product Certificate' and may not be used as a 'Product Certificate'
- 5.Any part of this report must not be copied or reproduced in any form without the written permission of the SBG laboratory. No extract, abridgement or abstraction from this report may be published or used to advertise a product without the written consent of the managing director, SBG. SBG reserves the absolute right to agree or reject all or any part of the details of any item or publicity for which consent may be sought.

SBG laboratory issues this report against the request of the client which is the manufacturer of the specimens. This report is published in accordance with the provisions of the Construction Products Regulation (305/2011) and the relevant legislations and standards. The notified body number of the SBG laboratory is "2271".

(SBG is the abbreviation of Standart Belgelendirme Denetim Deney Muayene ve Teknik Kontrol Ltd. Şti.)

INTRODUCTION

According to "TS EN 12150-2 Glass in building – Thermally toughened soda lime silicate safety glass - Part 2: Evaluation of conformity / Product standard", the product type testing shall be carried out to establish if glass used in building conforms to the definition of thermally toughened soda lime silicate safety glass. The product type testing shall consist of:

- a)Fragmentation test in accordance with TS EN 12150-1 Standard,
- b)Mechanical strength test in accordance with TS 12150-1 which, in turn, refers to TS EN 1288-3 Standard.

The SBG laboratory is to determine the fragmentation and the mechanical strength properties of the glasses defined in the standard and based on the test results to assess if the glasses conform to the requirements of the relevant standard.

Upon the request of the client, the performance assessment method was explained to the client and the client agreed on the test method. The Laboratory Test Contract was signed and approved on the specified date between the client and SBG. The specimens of which technical specifications submitted by the client were detailed below were tested and assessed according to the applicable requirements of the relevant standard. The performance assessment results were shown on the following pages of this report.

The report is related to the actual units that have been tested and does not provide information on the ongoing production. The manufacturer may use the performance assessment results for "CE" marking but it must also take the requirements of the relevant product standard into consideration for "CE" marking.

DEFINITION AND TECHNICAL SPECIFICATIONS OF SPECIMENS (Clause 6.2 and 8)

SBG has not taken any responsibility and has not been involved in sampling and/or preparing and/or delivering the test items. The test items were delivered at the laboratory address. All information taking place in this report regarding the identity of the product, sampling method and test specimens are based on the information provided by the manufacturer.

The technical specifications of the test items were identified and recorded under the following laboratory project number. The test specimens have the following properties as declared by the manufacturer.

PERFORMANCE ASSESSMENT REPORT

Laboratory Project No.: DY05-231
Manufacturer of Specimens: Işık Cam San. Tic. Ltd. Şti.
Address of Manufacturer of Specimens: Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir
Plant Name of Manufacturer: Işık Cam San. Tic. Ltd. Şti.
Plant Address of Manufacturer: Fatih Mah. 1195.Sokak No:3 Sarnıç Gaziemir - İzmir
Type of Specimens / Product: Glass in Building - Thermally toughened soda lime silicate safety glass
Trade Name and Description of Product: Işık Cam / 4-5-6-8-10 mm Thermally toughened flat glass
Specimen Data Form No. / Date: NBF.12150 / 09.02.2022
Date of Manufacture of Specimens: 9.02.2022
Dimensions of Specimens: 360 mm x 1100 mm
Nominal Thicknesses: 4 - 5 - 6 - 8 - 10 mm
Number of Specimens For Fragmentation Test: 25
Number of Specimens For 4-Point Bending Test: 10
Surface of Glass: Flat glass
Surface On Which Force Is Exerted: Flat surface
Type of Edge Work: Arrissed edge
Notches (If any): None
Delikler (Varsa): None
No: 0
Dia (mm): 0

TEST METHOD

Conditioning and Dimensional Measurements (Clauses 8 and 9.4)

The thermally toughened soda lime silicate safety glass units are delivered at the SBG laboratory, kept in the special shelves and stored in the standard laboratory conditions of $(23\pm 5)^\circ\text{C}$ temperature and $\%(40-70)$ relative humidity for a period of not less than 4 hours before performing the tests. The test specimens are kept within $\pm 1^\circ\text{C}$ temperature variation during testing to have no thermal stress inside the glass.

During this period each glass unit is measured for length, width and thickness and is assessed against the requirements of the standard. The measurement results are given in the following pages of this report.

Fragmentation Test (Clause 8)

After measuring the dimensions, the fragmentation tests are conducted according to the requirements of TS EN 12150-1 Standard Clause 8 which is the performance assessment test.

The test results are given in the following pages of this report.

Mechanical Strength Test (Clause 9.4 and TS EN 1288-3)

Later, if the fragmentation test results are successful, 4-point bending tests are conducted according to the TS EN 12150-1 Standard Clause 9.4 and TS EN 1288-3 Standard. The bending strength is determined according to the TS EN 1288-3 test standard and assessed based on the values given in TS EN 12150-1 Standard.

These two tests are the product-type tests required for the evaluation of the conformity. The test results are given in the following pages of this report.

PERFORMANCE ASSESSMENT REPORT**PRODUCT CONFORMITY REQUIREMENTS ACCORDING TO TS EN 12150-1 STANDARD****(1) The Minimum Number Of Fragments For The Fragmentation Test (Clauses 8.4; 8.5; 8.6 and 8.7)**

According to the standard, to establish if a product conforms to the definition of thermally toughened soda lime silicate safety glass, the number of fragments shall meet or exceed the number of fragments given in the following table:

Type of Glass	Nominal Thickness (mm)	Minimum Number of Fragments	Shower Enclosures (See EN 14428)
All Glass Types	2	15	Not applicable
All Glass Types	3	15	40
All Glass Types	4 - 12	40	40
All Glass Types	15 - 25	30	30

(2) Mechanical Strength Values For The Mechanical Strength Test (Clause 9.4 and Table-11)**(2.a) The minimum mechanical strength values according to the types of glass:**

The minimum values of the mechanical strength can only be given with a particular type of loading, i.e. four point bending test according to TS EN 1288-3. The characteristic values for different types of glass are listed in the following table:

Type of Glass	Minimum Mechanical Strength Values (N/mm ²)
Float Glass: <ul style="list-style-type: none"> •Clear •Tinted •Coated 	120
Enameled Glass (Based on the enameled surface in tension)	75
Others (According to Clause 4)	90

(2.b) Calculation of bending strength and bending stress (TS EN 1288-3 Clause 8.1)

The bending strength (σ_{bB}) is calculated using the formula given in the Clause 8.1 of TS EN 1288-3 Standard:

$$\sigma_{bB} = k \left[F_{en\check{c}ok} \frac{3(L_s - L_b)}{2Bh^2} + \sigma_{bG} \right]$$

The bending stress (σ_{bG}) due to its own weight of the test specimens is calculated using the formula given in the Clause 8.1 of TS EN 1288-3 Standard:

$$\sigma_{bG} = \frac{3\rho g L_s^2}{4h}$$

TEST FINDINGS AND ASSESSMENTS**(1) Results of Dimensional Measurements (Clause 8)**

The measurement results of the dimensions and their assessments based on the standard are given below:

Results of Dimensional Measurements

Specimen code	Nominal thickness (mm)	Length (mm)	Width (mm)	Thickness (mm)	FOR PATTERNED GLASS		Dimensions appropriate?
					Maximum thickness (mm)	Minimum thickness (mm)	
4A	4,00	1100	360	3,92	0,00	0,00	YES
4B	4,00	1100	360	3,90	0,00	0,00	YES
4C	4,00	1100	360	3,87	0,00	0,00	YES
4D	4,00	1100	360	3,90	0,00	0,00	YES
4E	4,00	1100	360	3,88	0,00	0,00	YES
6A	6,00	1100	360	5,80	0,00	0,00	YES
6B	6,00	1100	360	5,86	0,00	0,00	YES
6C	6,00	1100	360	5,92	0,00	0,00	YES
6D	6,00	1100	360	5,88	0,00	0,00	YES
6E	6,00	1100	360	5,92	0,00	0,00	YES

PERFORMANCE ASSESSMENT REPORT

8A	8,00	1100	360	7,82	0,00	0,00	YES
8B	8,00	1100	360	7,90	0,00	0,00	YES
8C	8,00	1100	360	7,86	0,00	0,00	YES
8D	8,00	1100	360	7,81	0,00	0,00	YES
8E	8,00	1100	360	7,87	0,00	0,00	YES
10A	10,00	1100	360	9,82	0,00	0,00	YES
10B	10,00	1100	360	9,80	0,00	0,00	YES
10C	10,00	1100	360	9,82	0,00	0,00	YES
10D	10,00	1100	360	9,84	0,00	0,00	YES
10E	10,00	1100	360	9,84	0,00	0,00	YES
4F	4,00	1100	360	3,86	0,00	0,00	YES
4G	4,00	1100	360	3,85	0,00	0,00	YES
5F	5,00	1100	360	4,86	0,00	0,00	YES
5G	5,00	1100	360	4,86	0,00	0,00	YES
6F	6,00	1100	360	5,87	0,00	0,00	YES
6G	6,00	1100	360	5,82	0,00	0,00	YES
8F	8,00	1100	360	7,82	0,00	0,00	YES
8G	8,00	1100	360	7,80	0,00	0,00	YES
10F	10,00	1100	360	9,97	0,00	0,00	YES
10G	10,00	1100	360	9,94	0,00	0,00	YES

(2) Results of Fragmentation Tests (Clause 8)

The fragmentation test and performance assessment results based on the standard are given below:

Specimen code	Thickness (mm)	Assessed within 4-5 mins?	Number of fragments	Number of fragments appropriate?	Maximum length of fragment measured (mm)	Maximum fragment length below 100 mm?	Appropriate?
4A	3,92	YES	68	YES	14,90	YES	YES
4B	3,90	YES	61	YES	15,25	YES	YES
4C	3,87	YES	71	YES	14,10	YES	YES
4D	3,90	YES	59	YES	15,36	YES	YES
4E	3,88	YES	60	YES	15,45	YES	YES
5A	4,92	YES	90	YES	11,77	YES	YES
5B	4,88	YES	85	YES	12,10	YES	YES
5C	4,90	YES	95	YES	12,20	YES	YES
5D	4,88	YES	92	YES	11,90	YES	YES
5E	4,94	YES	87	YES	11,95	YES	YES
6A	5,80	YES	58	YES	15,90	YES	YES
6B	5,86	YES	65	YES	15,12	YES	YES
6C	5,92	YES	61	YES	15,44	YES	YES
6D	5,88	YES	63	YES	15,36	YES	YES
6E	5,92	YES	60	YES	15,88	YES	YES
8A	7,82	YES	61	YES	15,82	YES	YES
8B	7,90	YES	56	YES	15,97	YES	YES
8C	7,86	YES	62	YES	15,50	YES	YES
8D	7,81	YES	57	YES	16,12	YES	YES
8E	7,87	YES	60	YES	15,84	YES	YES
10A	9,82	YES	68	YES	14,40	YES	YES
10B	9,80	YES	62	YES	14,30	YES	YES
10C	9,82	YES	58	YES	15,26	YES	YES
10D	9,84	YES	60	YES	15,10	YES	YES
10E	9,84	YES	57	YES	15,44	YES	YES

PERFORMANCE ASSESSMENT REPORT

(3) Results of 4-Point Bending Tests (Clause 9.4)

The mechanical strength test and performance assessment results based on the standard are given below:

Specimen code	Thick-ness (mm)	Length (mm)	Width (mm)	Maximum force (N)	Mechanical strength (N/mm ²)	Fractured at the center? (Yes / No)	Fracture time (s)	Appropriate ?
4F	3,86	1100	360	720	165,84	YES	141	YES
4G	3,85	1100	360	640	148,70	YES	120	YES
5F	4,86	1100	360	1200	173,13	YES	109	YES
5G	4,86	1100	360	1220	175,96	YES	111	YES
6F	5,87	1100	360	1440	142,44	YES	76	YES
6G	5,82	1100	360	1420	142,90	YES	75	YES
8F	7,82	1100	360	2670	147,89	YES	60	YES
8G	7,80	1100	360	2280	127,27	YES	52	YES
10F	9,97	1100	360	4750	161,13	YES	52	YES
10G	9,94	1100	360	4640	158,39	YES	52	YES

ASSESSMENTS AND CONCLUSION

The test findings for both fragmentation test and mechanical strength test if requested by the client were shown above. As a conclusion the specimens having the following test results in meeting the requirements of the Clause 8.5/8.6/8.7 for the fragmentation test and the Clause 9.4 for the mechanical strength test of TS EN 12150-1 Standard are assessed as follows:

Nominal thickness (mm)	Conformity assessment according to the fragmentation test	Conformity assessment according to the mechanical strength test	Conclusion (Conformity Assessment)
4	SUCCESSFUL	SUCCESSFUL	SUCCESSFUL
5	SUCCESSFUL	SUCCESSFUL	SUCCESSFUL
6	SUCCESSFUL	SUCCESSFUL	SUCCESSFUL
8	SUCCESSFUL	SUCCESSFUL	SUCCESSFUL
10	SUCCESSFUL	SUCCESSFUL	SUCCESSFUL

Remarks:

- 1) The conformity assessment was made taking into account the expanded uncertainty of measurement calculated. Please contact the laboratory to find out the measurement uncertainty. The decision rule was applied according to PR.16 Decision Rule Procedure. The procedure is available on our website.
- 2) If and when there is a change in the production method and/or equipment and/or the materials and components used, assessment according to this standard shall be reconsidered and re-tests shall be performed when changes can lead to different specifications. The decision and responsibility in this matter belong to the manufacturer.

OTHER EXPLANATIONS (REASONS OF REVISIONS, OPINIONS AND INTERPRETATIONS)

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ANNEXES

Annex-1: Complaint and feedback form

Annex-2: Information letter for disposal of remaining and used specimens