

Test report

Test report relating to a glass product according to European standard EN 1096-2, Coated glass, concerning the product marked as: GroGlass AR Anti Reflective coated glass, manufactured by: SIA GroGlass

Report number	11697R-11-33013
Date	19 October 2011
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Project number	11-33013
Project name	GroGlass EN 1096-2 class A
Number of pages	9

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Contents

1	Introduction	3
1.1	Purpose	3
1.2	Description of the samples	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 and accreditations	4
2	Test results	5
3	Conclusion	7
4	References	8
5	Signatures	9

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 1096-2 [1].

1.2 Description of the samples

General

Name of the manufacturer	SIA GroGlass
Address of the manufacturer	Katlakalna iela 4B Rīga LV-1073, Latvia
Production plant of the samples	Katlakalna iela 4B Rīga LV-1073, Latvia
Line ID where the samples are made	Line 1
Production date	April, 2011
Sampling date	July, 2011
The product was marked as	GroGlass AR
Dimensions of the samples	300 x 300 mm

Specific

Class of the coating	A
Commercial name of the coating	GroGlass AR
Method of spectrophotometric measurement (for toughened or heat-strengthened coated glass)	Not applicable

1.3 Sampling procedure

The test house, acting as notified test body, has had no influence on the sampling procedure.

1.4 Application

The request for testing was submitted by the manufacturer on 21 July 2011, Assignment Form number: 11.A262.

1.5 Method of testing

All applicable tests have been performed according to the European standard EN 1096-2 [1].

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 and accreditations

TÜV Rheinland Nederland B.V. has been notified by the Dutch Ministry of VROM as Notified Test Body (number 1750) and Notified Certification Body (number 0336) for the European Construction Products Directive 89/106/EEC.

TÜV Rheinland Nederland B.V. has been accredited by the Dutch Accreditation Council (RvA) as ISO 17025 Test Laboratory (accreditation number L 484) and EN 45011 Certification Body (accreditation number C058).

TÜV Rheinland Nederland B.V. has been accredited as Technical Service (Laboratory) by RDW competent Administrative Department (Approval Authority) for the Netherlands to grant approvals as mentioned in Directive 70/156/etc. and the 1958 Agreement of the Economic Commission for Europe of the United Nations (UN-ECE) for glass as used in the automotive sector: ECE Regulation 43, safety glazing; EC Directive 92/22, Safety glass; EC Directive 2009/144, Glazing cat. T. (accreditation number RDW-99050043 01).

2 Test results

Test results after performing all applicable tests according to European standard EN 1096-2 [1].

Description of the requirement	Required	Value of the test	Pass / fail
Requirements The coated glass complying with this European Standard shall respect the requirements related to the different characteristics given in table 1 of the Standard.			
Visual inspection			
Condensation resistance	<ul style="list-style-type: none"> No defect > 3 mm Max. 1 defect between 2 and 3 mm Max. 5 defects between 1 and 2 mm No scratches, staining of the coating or clusters of pinholes > 1 mm When compared with the reference test piece, in both reflection and transmission, no significant colour change 	<ul style="list-style-type: none"> No defect > 3 mm Number: 0 Number: 0 No scratches, staining of coating, clusters of pinholes > 1 mm No significant colour change 	Initial pass Final pass
Acid resistance	No requirements	--	not applicable
Neutral salt spray resistance	<ul style="list-style-type: none"> No defect > 3 mm Max. 1 defect between 2 and 3 mm Max. 5 defects between 1 and 2 mm No scratches, staining of the coating or clusters of pinholes > 1 mm When compared with the reference test piece, in both reflection and transmission, no significant colour change 	<ul style="list-style-type: none"> No defect > 3 mm Number: 0 Number: 0 No scratches, staining of coating, clusters of pinholes > 1 mm No significant colour change 	Initial pass Final pass
Abrasion resistance	No requirements other than to ensure that the abraded area is uniform	Abraded area is uniform	pass

Description of the requirement	Required	Value of the test	Pass / fail
Spectrophotometric measurements			
Condensation resistance Acid resistance Neutral salt spray resistance	Transmittance measured at 550 and 900 nm shall differ no more than $\pm 0,03$ from the corresponding measured value on the reference test piece. For a glass claimed to have a low emissivity coating, the reflectance at 8 μm shall decrease by no more than 0,02.	Difference $< \pm 0,03$ Decrease of reflectance at 8 μm $< 0,02$	pass not applicable
Abrasion resistance	Total (diffuse plus direct) transmittance measured at 550 and 900 nm shall differ no more than $\pm 0,05$ from the corresponding measured value on the reference test piece.	Difference $< \pm 0,05$	pass

Information relating to the tests

Number of tested samples	<ul style="list-style-type: none"> Condensation resistance: 4 Acid resistance: 4 Neutral salt spray resistance: 4 Abrasion resistance: 4 Spectrophotometric measurements: 4
Condensation resistance test	<ul style="list-style-type: none"> Total area of pieces tested at the same time: 600 cm^2 Daily temperature: 20 °C Weekly pH: week 1: 6.5; week 2: 6; week 3: 6.5 Observation of condensation on reference glass piece: yes
Acid resistance test	<ul style="list-style-type: none"> Total area of pieces tested at the same time: 600 cm^2 Daily temperature in high temp. phase of the test: 40 °C pH at the end of the cycle: 1.5-2 Interruption time between tests: 8 hours
Neutral salt spray resistance test	<ul style="list-style-type: none"> Total area of pieces tested at the same time: 600 cm^2 Daily temperature: 22 °C
Abrasion resistance test	<ul style="list-style-type: none"> Uniformity of abraded area: yes Number and frequency of strokes: 500, 55/min.

3 Conclusion

The tested glass product, marked by the client or manufacturer as: GroGlass AR Anti Reflective coated glass,, manufactured by: SIA GroGlass, meets the applicable requirements as stated in the European standard EN 1096-2 [1].

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

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 1096-2:2001 (E),
Glass in building – Coated glass – Part 2: Requirements and test methods for class A, B and S
coatings,
European Committee for Standardization, January 2001.

5 Signatures

Author Mr. M.J.R. Luppens	Signature 
Specialist	
Peer review Mr. T.R. Cruijff	Signature 
Specialist	
Approved by Mr. A.J. Piers, B.Sc.	Signature 
Manager Industrial Services	

(This is the end of this report).