

Bologna, 26/07/2016

Messrs

*SICIS S.r.l.*  
*Via Canala 75/79*  
*48123 Ravenna RA*

**ADVANCED TECHNICAL CERAMICS LABORATORY**

**TEST REPORT No. 0151/16**

(translation of test report Nr.0130/16 dated 26/07/2016)

Requested by:	SICIS S.r.l. Via Canala 75/79 48123 Ravenna RA
On (date):	07/07/2016
For the sample marked:	"Sicis Vetrite Collection".

**The results reported relate only to the samples tested.**

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Description of the sample:	Specimens of glass, prepared by the customer, <i>vide</i> Picture 1, marked "Sicis Vetrite Collection".
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	06/07/2016

TEST PERFORMED:

<input checked="" type="checkbox"/>	Determination of linear thermal expansion coefficient	Date of starting	Date of ending
		07/07/16	21/07/16



Picture 1: Specimens of glass.



**Determination of linear thermal expansion coefficient**

The test has been performed with a push-rod dilatometer NETZSCH mod. 402 E, using two specimens of adequate dimensions, and suitably made out of the delivered specimens.

The thermal cycle, like ISO 10545-8:2014 Standard, was:

- From ambient temperature to 100 °C at a rate of 5 °C/ min., with a 20 min. dwell time.

Linear thermal expansion coefficient  
from 27.2 °C to 100.0 °C ( $10^{-6} \text{ } ^\circ\text{C}^{-1}$ )

8.4	7.8
-----	-----

Technical verification  
Dr Giovanni Ridolfi



Prof. Maria Chiara Bignozzi

DIRECTOR



CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5141/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5141/16

Date 26/07/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE: Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".		10771 0430X7
Manufacturer:	-----	
Sampling details		18*
- Where:	-----	
- Date:	-----	
- By whom:	CUSTOMER	
- How (methods):	-----	
Date of receipt in laboratory:	05/07/16	

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 – 3 :1997	Determination of water absorption, apparent porosity, apparent relative density and bulk density	11/07/16   12/07/16



**EN ISO 10545-3 : 1997 - Determination of water absorption, apparent porosity, apparent relative density and bulk density**

**6.1 – VACUUM METHOD**

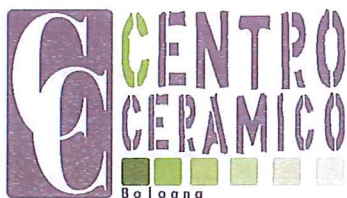
Water absorption (%) of each tiles:

Sample	1	2	3	4	5
E(v)	0.01	0.01	0.01	0.01	0.01

E(v) medio (%):

 Pietro Bruzzi  
Technical verification

Prof. Maria Chiara Bignozzi  
Director  
  

CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5142/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5142/16

Date 26/07/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE: Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".	
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	05/07/16

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 – 4 :2014 Determination of modulus of rupture and breaking strength	07/07/16	08/07/16



**EN ISO 10545 - 4 : 2014 - Determination of modulus of rupture and breaking strength**

d - diameter of rods (mm):

T - thickness of rubber (mm):

l<sub>1</sub> - overlap of tile beyond the edge supports (mm):

l<sub>2</sub> - span between the support rods (mm):

	1	2	3	4	5	6	7
F - Breaking load (N)	488	390	503	492	417	456	516
S - Breaking strength (N)	455	364	469	459	389	426	482
R - Modulus of rupture (N/mm <sup>2</sup> )	18.4	14.7	18.9	18.5	15.7	17.2	19.4

F - Average breaking load (N):

S - Average breaking strength (N):

R - Average modulus of rupture (N/mm<sup>2</sup>):

 Pietro Bruzzi  
Technical verification  


Prof. Maria Chiara Bignozzi  
Director









CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5143/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5143/16

Date 26/07/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE: Glass slabs 14 x 14 x 0.6 cm marked "SICIS VETRITE COLLECTION".	
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	05/07/16

## TESTS PERFORMED :

			Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 - 6 : 2012	Determination of resistance to deep abrasion - Unglazed tiles	11/07/16	11/07/16



**EN ISO 10545 – 6 : 2012 - Determination of resistance to deep abrasion - Unglazed tiles**

	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
I, chord length (mm)	31.5	31.5	31.5	31.5	31.5	31.0	31.5	31.0	31.5	31.5
V, abraded volume (mm <sup>3</sup> )	262	262	262	262	262	250	262	250	262	262

Average volume, Vm:

 Pietro Bruzzi  
Technical verification  


Prof. Maria Chiara Bignozzi  
Director







CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5146/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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DESCRIPTION OF THE SAMPLE: Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".	
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	05/07/16

TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 – 12 :1997	Determination of frost resistance	11/07/16   22/07/16





**EN ISO 10545 - 12 : 1997- Determination of frost resistance.**

Number of tiles in the test sample:

Water content before the freeze-thaw test:

Water content after the freeze-thaw test:

Description of defects before the test:

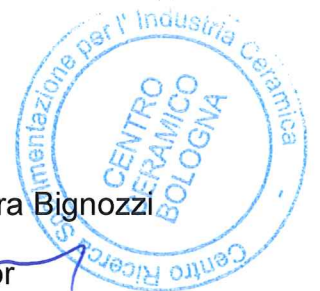
Damages on the glaze or proper surface and the edges of tiles after the freeze-thaw test:

Number of damaged tiles after 100 cycles from -5° C to +5° C:

  
Pietro Bruzzi  
Technical verification  


Prof. Maria Chiara Bignozzi

Director



Bologna, 26/07/2016

*SICIS s.r.l.*  
*Via Canala 75/79*  
*48010 RAVENNA*

## TEST LABORATORY

### TEST REPORT No. 5147/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5147/16

Date 26/07/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE: Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".	
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	05/07/16

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 - Determination of chemical resistance - Glazed tiles 13 § 8	11/07/16	15/07/16



**EN ISO 10545 - 13 § 8 : 1997 - Determination of chemical resistance -  
Glazed tiles**

Test solution used	RESISTANCE CLASS				
<b>Household Chemicals:</b> Ammonium Chloride 100 g/l	GA (V)	GA (V)	GA (V)	GA (V)	GA (V)
<b>Swimming pool salts:</b> Sodium hypochlorite 20 mg/l	GA (V)	GA (V)	GA (V)	GA (V)	GA (V)
<b>Acids:</b> Hydrochloric acid 3 % V/V Citric acid 100 g/l	GLA (V)	GLA (V)	GLA (V)	GLA (V)	GLA (V)
<b>Alkali:</b> Potassium Hydroxide 30 g/l	GLA (V)	GLA (V)	GLA (V)	GLA (V)	GLA (V)
<b>Acids:</b> Hydrochloric acid 18 % V/V Lactic acid 5 % V/V	GHA (V)	GHA (V)	GHA (V)	GHA (V)	GHA (V)
<b>Alkali:</b> Potassium Hydroxide 100 g/l	GHA (V)	GHA (V)	GHA (V)	GHA (V)	GHA (V)

Pencil test is applicable:

Reflexion test is applicable:

**CLASSIFICATION**

U = Unglazed tiles	
G = Glazed tiles	
L = Low concentration chemicals	
H = High concentration chemicals	
<b>Pencil test and/or reflection test are applicable:</b>	
Class A	no visible effect
Class B	definitive change in appearance
Class C	partial or complete loss of the surface
<b>Pencil test and/or reflection test not applicable:</b>	
Class A (V)	no visible effect
Class B(V)	definitive change in appearance
Class C (V)	partial or complete loss of the surface

P  
Pietro Bruzzi  
Technical verification

Prof. Maria Chiara Bignozzi

Director





CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5148/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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DESCRIPTION OF THE SAMPLE:

Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".

Manufacturer: -----

Sampling details

- Where: -----
- Date: -----
- By whom: CUSTOMER
- How (methods): -----

Date of receipt in laboratory: 05/07/16

TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	EN ISO 10545 - 14 :1997	Determination of stain resistance	
		11/07/16	12/07/16



**EN ISO 10545 -14 : 1997 - Determination of stain resistance**

Test solutions	RESISTANCE CLASS				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
<b>Stains</b>					
Chrome green in light oil	5	5	5	5	5
Iodine (alcoholic solution 13g/l)	5	5	5	5	5
Olive oil (def. Olive Oil Agreement - 1979)	5	5	5	5	5

Stain resistance class - References

- Resistance class 1: Stain not removed.
- Resistance class 2: Stain removed by dipping in a suitable solvent for 24 hours.
- Resistance class 3: Stain removed by mechanical cleaning and strong cleansing agent.
- Resistance class 4: Stain removed by manual cleaning with weak cleansing agent.
- Resistance class 5: Stain removed by means of hot current water for 5 min.

 Pietro Bruzzi  
 Technical verification  


Prof. Maria Chiara Bignozzi  
 Director







CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 26/07/2016

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5149/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5149/16

Date 26/07/2016

Page 2 of 3

## DESCRIPTION OF THE SAMPLE:

Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".

Manufacturer: -----

### Sampling details

- Where: -----
- Date: -----
- By whom: CUSTOMER
- How (methods): -----

Date of receipt in laboratory: 05/07/16

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	Determination of scratch hardness according to Mohs	26/07/16	26/07/16



**Determination of scratch hardness of surface**  
**according to Mohs**

Samples	1	2	3
Mohs hardness	5	5	5

 Pietro Bruzzi  
Technical verification  


Prof. Maria Chiara Bignozzi  
Director







Bologna, 30/08/2016

*SICIS s.r.l.*  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5154/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	06/07/16
For the sample marked:	"SICIS VETRITE COLLECTION".

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# CENTRO CERAMICO

Test Report No. 5154/16

Date 30/08/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE: Glass slabs 30 x 30 x 0.6 cm marked "SICIS VETRITE COLLECTION".		CENTRO CERAMICO
Manufacturer:	-----	
Sampling details		
- Where:	-----	
- Date:	-----	
- By whom:	CUSTOMER	
- How (methods):	-----	
Date of receipt in laboratory:	05/07/16	

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	DIN 51094:1996 Resistance of the colours to the light	29/07/16	29/08/16



**DIN 51094:1996 - Resistance of the colours to the light**

VISUAL EXAMINATION:

Any colour variation

Pietro Bruzzi  
Technical verification



Prof. Maria Chiara Bignozzi

Director

Bologna, 28/07/2016

Spett.le

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## SEZIONE CERAMICI INDUSTRIALI

### RAPPORTO DI PROVA N° 5618/16

(Traduzione del rapporto di prova 5151/16 datato 26/07/16)

Richiesto da:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
In data:	06/07/16
Per il prodotto contrassegnato:	"SICIS VETRITE COLLECTION".

**I risultati riportati si riferiscono solo ai campioni esaminati.**

**Non si assume alcuna responsabilità sull'accuratezza del campionamento salvo che questo non sia stato effettuato sotto la nostra diretta supervisione.**

**La riproduzione del presente rapporto di prova è autorizzata solo in forma di fotocopia completa. Per ogni riproduzione parziale è necessaria la nostra autorizzazione scritta.**

**Il presente rapporto di prova è costituito da 3 pagine compresa questa copertina.**



Descrizione del campione:	Lastre di vetro 30 x 30 x 0,6 cm contrassegnate "SICIS VETRITE COLLECTION".
Produttore:	-----
Campionamento	
- Luogo:	-----
- Data:	-----
- Effettuato da:	COMMITTENTE
- Come (metodi):	-----
Data di ricevimento in laboratorio:	05/07/16

PROVE EFFETTUATE PRESSO IL LABORATORIO DI BOLOGNA

		Data inizio	Data fine
<input checked="" type="checkbox"/>	ANSI A137.1 : 2012 § 9.6.1	Coefficiente di attrito dinamico bagnato (DCOF)	
		14/07/16	14/07/16

**ANSI A 137.1:2012 § 9.6.1 - Coefficiente di attrito dinamico bagnato (DCOF)**

Dispositivo (modello): Bot 3000E – Regan Scientific  
Tipo di elemento scivolante: SBR  
Soluzione acquosa: 0,05% SLS water

**Condizioni di prova:**

Temperatura (°C): 25 ± 2  
Umidità relativa (%): 56 ± 5

**DCOF sulla piastrella standard:**

Prima della prova 0,28  
Dopo la prova 0,28

N° di campioni testati: Tre ( 3 )

**RISULTATI:**

Valori di DCOF					
Piastrella numero	Direzione 1	Direzione 2	Direzione 3	Direzione 4	Media
1	0,56	0,53	0,49	0,47	<b>0,51</b>
2	0,52	0,54	0,50	0,52	<b>0,52</b>
3	0,51	0,51	0,49	0,53	<b>0,51</b>

**REQUISITO (ANSI A137.1-2012):** DCOF  $\geq$  0,42 for level interior spaces expected to be walked upon when wet

Verifica Tecnica

Pietro Bruzzi

Il Direttore

Prof.ssa Maria Chiara Bigozzi





Bologna, 21/09/2016

Messrs

SICIS s.r.l.

Via Canala 75/79

48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5726/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	31/08/16
For the sample marked:	"VETRITE SICIS COLLECTION"

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# CENTRO CERAMICO

Test Report No. 5726/16

Date 21/09/2016

Page 2 of 3

DESCRIPTION OF THE SAMPLE:	Glass slab 10 x 10 x 0.6 cm marked "VETRITE SICIS COLLECTION"
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	30/08/16

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	ASTM C 373:16	08/09/16	09/09/16
	Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products1.		



**ASTM C 373:16 - Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products1.**

Operative conditions: the samples was dried at  $60 \pm 1$  °C

**- WATER ABSORPTION**

Water absorption (%) of each individual tile:

Sample	1	2	3	4	5
A	0.03	0.05	0.08	0.05	0.08

Average water absorption (%):

0.06



Pietro Bruzzi  
Technical verification

Prof. Maria Chiara Bignozzi  
Director



CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 21/09/16

Messrs

*SICIS s.r.l.*  
*Via Canala 75/79*  
*48010 RAVENNA*

## TEST LABORATORY

### TEST REPORT No. 5727/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	31/08/16
For the sample marked:	"VETRITE SICIS COLLECTION"

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DESCRIPTION OF THE SAMPLE:	Glass slab 10 x 10 x 0.6 cm marked "VETRITE SICIS COLLECTION"
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	30/08/16

TESTS PERFORMED :

			Date of starting	Date of ending
<input checked="" type="checkbox"/>	ASTM C 650-04 (R-14)	Resistance of ceramic tile to chemical substances	07/09/16	09/09/16



**ASTM C 650-04 (R-14) - Resistance of ceramic tile to chemical substances**

• TEST SPECIMENS

Preparation: ---  
Number of test specimens for each test solution: 1

• TEST SOLUTIONS

For the concentrations of the test solution, refer to § 1.2 of the Standard

• CONDITIONS OF THE SOLUTION APPLICATION:

Temperature (°C): 20±2  
Duration of the contact (h): 24





# CENTRO CERAMICO

Test Report No. 5727/16

Date 21/09/16

Page 4 of 4

## RESULTS:

Pencil test:

applicable

not applicable

RESULTS

Pencil

Test solution	Visual test (damaged / not damaged)	Pencil test (damaged / not damaged)	Number of specimens damaged
<b>Common Household and Cleaning Chemicals:</b>			
Acetic acid 3 % (V/V)	not damaged	---	0
Acetic acid 10 % (V/V)	not damaged	---	0
Ammonium chloride 100 g/l	not damaged	---	0
Citric acid 30 g/l	not damaged	---	0
Citric acid 100 g/l	not damaged	---	0
Lactic acid 5 % (V/V)	not damaged	---	0
Phosphoric acid 3 % (V/V)	not damaged	---	0
Phosphoric acid 10 % (V/V)	not damaged	---	0
Sulfamic acid 30 % (V/V)	not damaged	---	0
Sulfamic acid 100 % (V/V)	not damaged	---	0
<b>Swimming Pool Chemicals:</b>			0
Sodium hypochlorite 20 mg/l	not damaged	---	0
<b>Acids:</b>			0
Hydrochloric acid 3 % (V/V)	not damaged	---	0
Hydrochloric acid 18 % (V/V)	not damaged	---	0
<b>Bases:</b>			0
Potassium hydroxide 30 g/l	not damaged	---	0
Potassium hydroxide 100 g/l	not damaged	---	0

NOTE: ASTM C 650-04 (2014), § 10. Precision and Bias:

"10.1 Qualitative Procedure - This is a qualitative or pass - fail test; hence, precision and bias are not applicable".

 Pietro Bruzzi  
Technical verification

 Prof. Maria Chiara Bignozzi  
Director





CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 21/09/2016

Messrs

*SICIS s.r.l.*  
*Via Canala 75/79*  
*48010 RAVENNA*

## TEST LABORATORY

### TEST REPORT No. 5728/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	31/08/16
For the sample marked:	"VETRITE SICIS COLLECTION"

**The results reported relate only to the samples tested.**

**No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.**

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DESCRIPTION OF THE SAMPLE:	Glass slab 30 x 60 x 0.6 cm marked "VETRITE SICISU 0 COLLECTION"		
Manufacturer:	-----		
Sampling details			
- Where:	-----		
- Date:	-----		
- By whom:	CUSTOMER		
- How (methods):	-----		
Date of receipt in laboratory:	30/08/16		

TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	ASTM C 648:04 (Reapp. 2014) Breaking strenght of ceramic tile.	12/09/16	12/09/16



**ASTM C 648:04 (Reapproved 2014) – Breaking strenght of Ceramic Tile**

**OPERATIVE CONDITIONS:**

-Length of the sides of the triangular support used in testing (mm):

76.6

-Range of the gage used (N):

0-9810

-Number of specimens in the sample:

10

**RESULTS:**

-Breaking strength mean (N):

1819

Pietro Bruzzi  
Technical verification



Prof. Maria Chiara Bignozzi

Director

Bologna, 21/09/16

CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Messrs

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

## TEST LABORATORY

### TEST REPORT No. 5730/16

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	31/08/16
For the sample marked:	"VETRITE SICIS COLLECTION"

**The results reported relate only to the samples tested.**

**No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.**

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DESCRIPTION OF THE SAMPLE:	Glass slab 10 x 10 x 0.6 cm marked "VETRITE SICIS COLLECTION"
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	3/08/16

TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	ASTM C 1378-04 (R14) Determination of resistance to staining	07/09/16	09/09/16





**ASTM C 1378-97 (R14)- Determination of resistance to staining**

• TEST SPECIMENS

Preparation: by cutting  
Number of test specimens for each test solution: 1

• TEST SOLUTIONS

For the concentrations of the test solution, refer to § 2 of the Standard

• CONDITIONS OF THE SOLUTION APPLICATION:

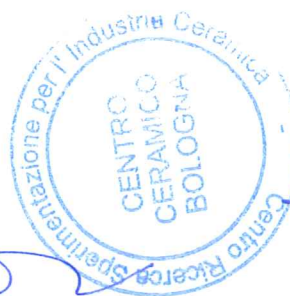
Temperature (°C): 20±2  
Duration of the contact (h): 24

STAINING AGENT	Visual test (affected/not affected)	Number of specimens affected
Contrasting grout	not affected	0
Carbon lamp black	not affected	0
Waterproof ink black	not affected	0
Washable ink	not affected	0
Potassium permanganate 1%	not affected	0
Methylene blue 1%	not affected	0

NOTE: ASTM C 1378-04 (2014), § 8. Precision and Bias:

"8.1 Qualitative Procedure - This is a qualitative or pass - fail test; hence, precision and bias are not applicable".

Pietro Bruzzi  
Technical verification



Prof. Maria Chiara Bignozzi

Director



CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 17/05/2019

*SICIS s.r.l.*  
*Via Canala 75/79*  
*48010 RAVENNA*

**TEST LABORATORY**  
**TEST REPORT No. 4577/19**

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	08/05/19
For the sample marked:	As the list.

**The results reported relate only to the samples tested.**

**No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.**

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CENTRO CERAMICO

Test Report No. 4577/19

Date 17/05/2019

Page 2 of 3

Description of the sample:	Multilayer panels made by mosaic tesserae assembled on panel by fixing material, marked: <u>SAMPLE 1</u> : "Sicis Vetrite/Gem Glass Collection: Satin finish – sample 103 – size 400x400 mm"; <u>SAMPLE 2</u> : "Sicis Vetrite/Gem Glass Collection: Satin finish – sample 138 – size 600x600 mm"; <u>SAMPLE 3</u> : "Sicis Vetrite/Gem Glass Collection: Satin finish – sample 139 – size 600x600 mm";
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	08/05/19

TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	ANSI A326.3 : Wet Dynamic Coefficient of Friction (DCOF) 2017 § 8	08/05/19	09/05/19



**ANSI A326.3 : 2017 § 8 - Wet Dynamic Coefficient of Friction (DCOF)**

Test device: Bot 3000E – Regan Scientific  
 Sensor material: SBR  
 Cleaning chemicals used: Equivalent Renovator #120  
 Wetting solution: 0.05% SLS water

Test laboratory conditions:  
 Temperature (°C): 22 ± 2  
 Relative Humidity (%): 36 ± 5

DCOF of Standard Surface:  
 Before the test 0.53  
 After the test 0.50

No. of tested sample: one ( 1 )

**TEST RESULT:**

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
1	0.64	0.60	0.60	0.62	0.62

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
2	0.51	0.49	0.47	0.46	0.48

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
3	0.53	0.50	0.50	0.49	0.51

REQUIREMENTS (ANSI A326.3-2017): DCOF ≥ 0,42 for level interior spaces expected to be walked upon when wet  
 REQUIREMENTS DCOF of Standard surface: 0.53 ±0.03

Pietro Bruzzi  
 Technical verification



Prof. Maria Chiara Bignozzi  
 Director



CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 17/05/2019

*SICIS s.r.l.*  
*Via Canala 75/79*  
*48010 RAVENNA*

## TEST LABORATORY

### TEST REPORT No. 4575/19

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	08/05/19
For the sample marked:	As the list.

**The results reported relate only to the samples tested.**

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# CENTRO CERAMICO

Test Report No. 4575/19

Date 17/05/2019

Page 2 of 3

Description of the sample:	Multilayer panels made by mosaic tesserae assembled on panel by fixing material, marked: <u>SAMPLE 1</u> : "Sicis Vetrite/Gem Glass Collection with Sicisgrip treatment – sample 135 – size 600x600 mm"; <u>SAMPLE 2</u> : "Sicis Vetrite/Gem Glass Collection with Sicisgrip treatment – sample 136 – size 600x600 mm"; <u>SAMPLE 3</u> : "Sicis Vetrite/Gem Glass Collection with Sicisgrip treatment – sample 137 – size 600x600 mm";
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	08/05/19

## TESTS PERFORMED :

		Date of starting	Date of ending
<input checked="" type="checkbox"/>	ANSI A326.3 : Wet Dynamic Coefficient of Friction (DCOF) 2017 § 8	08/05/19	09/05/19





**ANSI A326.3 : 2017 § 8 - Wet Dynamic Coefficient of Friction (DCOF)**

Test device: Bot 3000E – Regan Scientific  
 Sensor material: SBR  
 Cleaning chemicals used: Equivalent Renovator #120  
 Wetting solution: 0.05% SLS water

Test laboratory conditions:  
 Temperature (°C): 22 ± 2  
 Relative Humidity (%): 36 ± 5

DCOF of Standard Surface:  
 Before the test 0.53  
 After the test 0.50

No. of tested sample: one ( 1 )

**TEST RESULT:**

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
1	0.49	0.51	0.51	0.53	0.51

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
2	0.52	0.52	0.50	0.51	0.51

DCOF Values					
SAMPLE	Direction 1	Direction 2	Direction 3	Direction 4	Average
3	0.49	0.52	0.49	0.51	0.50

REQUIREMENTS (ANSI A326.3-2017): DCOF ≥ 0,42 for level interior spaces expected to be walked upon when wet  
 REQUIREMENTS DCOF of Standard surface: 0.53 ±0.03

Pietro Bruzzi  
 Technical verification



Prof. Maria Chiara Bignozzi  
 Director



CENTRO DI RICERCA E SPERIMENTAZIONE  
PER L'INDUSTRIA CERAMICA

Bologna, 19/04/2017

SICIS s.r.l.  
Via Canala 75/79  
48010 RAVENNA

**TEST LABORATORY**  
**TEST REPORT No. 3939/17**

Requested by:	SICIS s.r.l. Via Canala 75/79 48010 RAVENNA
On (date):	07/04/17
For the sample marked:	" Vetrite con trattamento Sicisgrip 1D ".

**The results reported relate only to the samples tested.**

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## CENTRO CERAMICO

Test Report No. 3939/17

Date 19/04/2017

Page 2 of 3

Description of the sample:	Glass slabs 50 x 94 x 1.0 cm marked " Vetrite con trattamento Sicisgrip 1D ".
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	07/04/17

### TESTS PERFORMED :

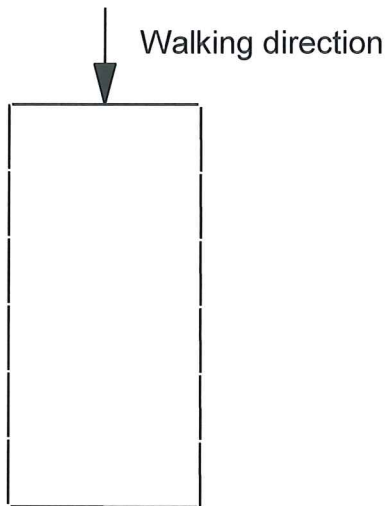
			Date of starting	Date of ending
<input checked="" type="checkbox"/>	DIN 51130 (06/2004)	Determination of the anti - slip properties – Workrooms and fields of activities with raised slip danger, walking method – ramp test	10/04/17	10/04/17



**DIN 51130 (06/2004)- Determination of the anti - slip properties – Workrooms and fields of activities with raised slip danger, walking method – ramp test**

- Surface characteristics
- Smooth
  - Profiled
  - Structured
  - Rough

**OPERATIVE CONDITIONS**



**RESULTS**

Average total acceptance angle:

10.1°

Movement area (cm<sup>3</sup>/dm<sup>2</sup>):

---

**CLASSIFICATION (BGR 181- 10/2003)**

Group of anti - slip properties:

R10

Movement area evaluation group:

---

Pietro Bruzzi  
Technical verification



Prof. Maria Chiara Bignozzi

Director

Bologna, 19/09/2016

Spett.le

*SICIS S.r.l.*  
*Via Canala, 75/79*  
*48123 Ravenna*

## ADVANCED TECHNICAL CERAMICS LABORATORY

### TEST REPORT N° 0164/16

Requested by:	SICIS S.r.l. Via Canala, 75/79 48123 Ravenna
On (date):	27/06/2016
For the sample marked:	"VETRITE not fixed"

**The results reported relate only to the samples tested.**

**No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.**

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Description of the sample:	Vitreous mosaic tesserae marked "VETRITE" not fixed (about 45x45 mm) – see Photo 1
Manufacturer:	-----
Sampling details	
- Where:	-----
- Date:	-----
- By whom:	CUSTOMER
- How (methods):	-----
Date of receipt in laboratory:	12/09/2016

TEST PERFORMED:

<input checked="" type="checkbox"/>	Determination of photocatalytic activity of surfaces in an aqueous medium by degradation of methylene blue (ISO 10678)	Date of starting 13/09/16	Date of ending 16/09/16
-------------------------------------	--	------------------------------	----------------------------

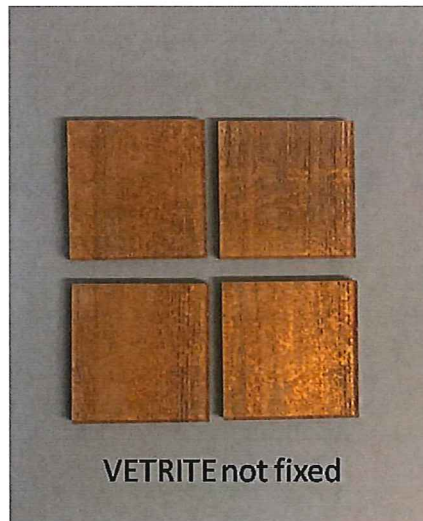


PHOTO 1



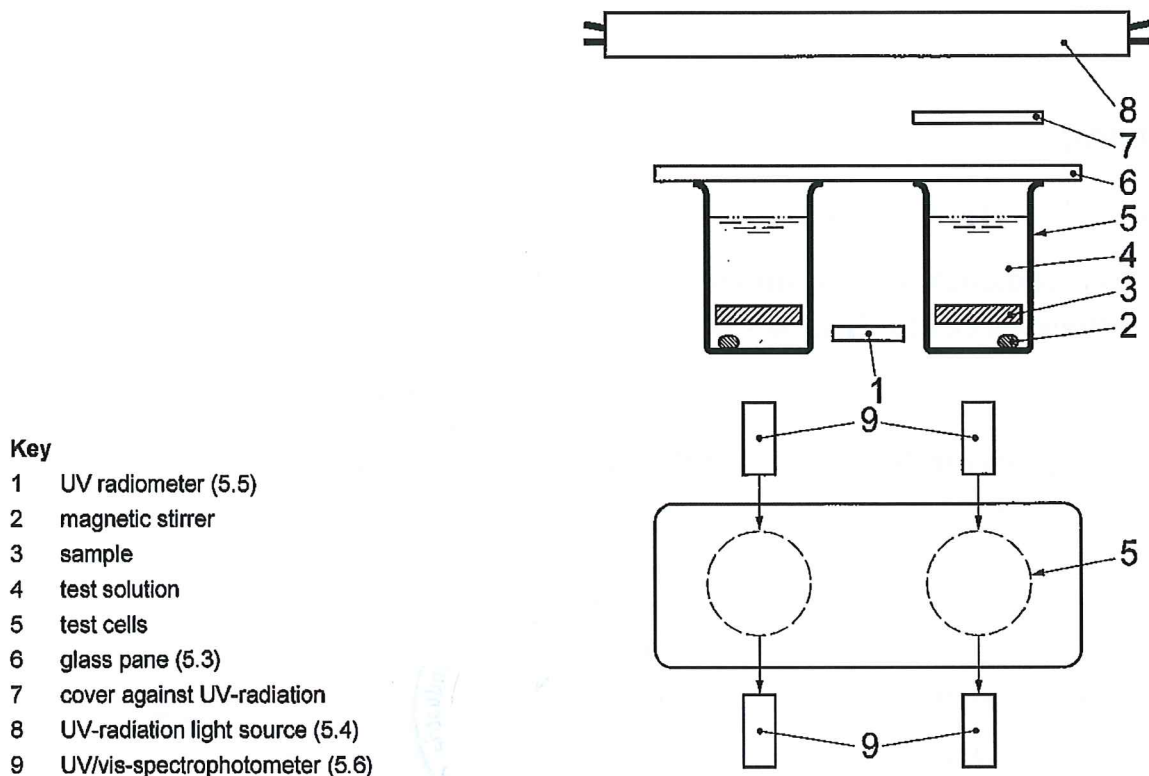
**Photocatalytic test in aqueous medium: degradation of methylene blue**

The test was performed on the basis of ISO 10678 "Fine ceramics (Advanced ceramics, advanced technical ceramics - Determination of photocatalytic activity of surfaces in an aqueous medium by degradation of methylene blue.

Methylene blue (MB) is degraded in an aqueous solution that is in contact with the potentially photocatalytically active surface by UV radiation of this surface through the solution, with the overall result being the decolourization of the solution. The amount of dye remaining in the solution is determined at regular intervals during the UV- radiation period (20 min) using an UV/visible spectrophotometer (Jasco V-670). The total duration of the UV radiation is 3 hours. A reference measurement is either performed with the same sample without UV radiation. The results are used to calculate the specific degradation rates and the respective photonic efficiencies characteristic of the surface tested.

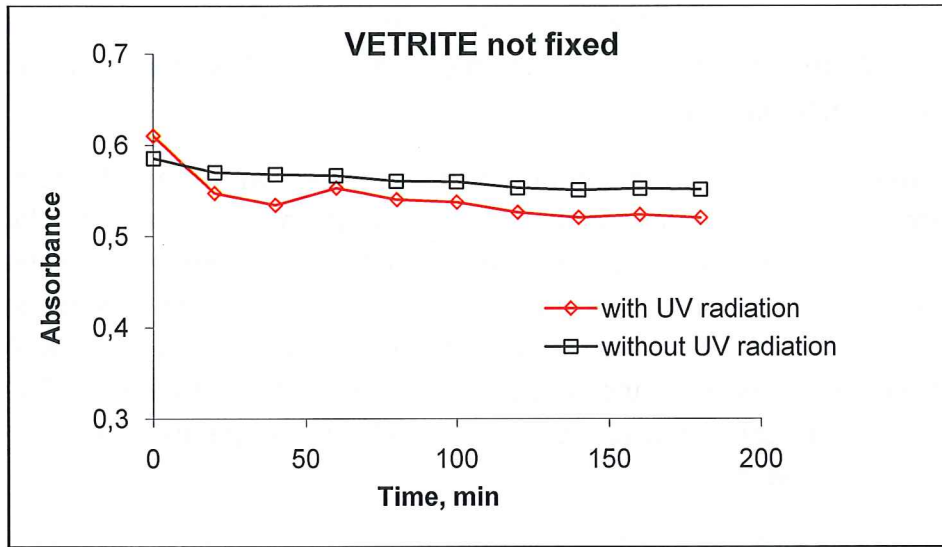
The experimental device suggested in the standard, is reported in Fig. 1. The cylindrical glass reactor contains about 130 ml of solutions. The average temperature is about 23°C. The UVA lamp is a Blacklight Blue (Philips PL-S 9W/08/2P, NL) with  $\lambda_{max} = 370$  nm. The surface of the test sample was placed at a proper distance from the light source, to reach a UV-radiation intensity, E, of 10 W/m<sup>2</sup> (measured with a radiometer Delta OHM, HD 2102.2).

Before the test, the samples were illuminated for 24 h by UV light (UV radiation of 10 W/m<sup>2</sup>). Afterwards, 2 similar samples were conditioned by placing each of them in a separate vessel with conditioning solution of MB (20 µmol/l) for 12 h in the dark.



**Figure 1:** Schematic diagram of the measuring device using a testing cell.

Results are reported here following in terms of measuring curves (absorbance-time):



Results are reported here following in terms of specific parameters:

		VETRITE not fixed
Specific degradation rate with UV radiation	$R_{irr}, \text{mol}/(\text{m}^2\text{h})$	0.00077
Specific degradation rate without UV radiation	$R_{dark}, \text{mol}/(\text{m}^2\text{h})$	0.00029
Photonic UV-radiation intensity	$E_p, \text{mol}/(\text{m}^2\text{h})$	0.002

### CONCLUSION

The photocatalytic activity is expressed in term of:

- Specific photoactivity,  $P_{MB}, \text{mol}/(\text{m}^2\text{h}) = R_{irr} - R_{dark}$
- Phototonic efficiency,  $\zeta_{MB}, \% = (P_{MB}/E_p) \times 100$

		VETRITE not fixed
Specific photoactivity	$P_{MB}, \text{mol}/(\text{m}^2\text{h})$	0.00048
Photonic efficiency	$\zeta_{MB}, \%$	24

Technical verification

Dr. Elisa Rambaldi



The Director

Prof. Maria Chiara Bignozzi

**TEST REPORT No. 381211/13975/CPR**

Customer

**SICIS S.r.l.**

Via Canala, 75/79 - 48123 RAVENNA (RA) - Italy

Item\*

**decorative laminated glass**

**named "SICIS COLLECTION VETRITE/GEMGLASS 44.2 EVA"**

"Activity

**hard body drop test**

**in accordance with standard UNI EN 356:2002**

**with reference to harmonised standard**

**UNI EN 14449:2005/EC 1-2008**

Results

**EN 356 P1A**

Order:  
87450

Item origin:  
sampled and supplied by the customer

Identification of item received:  
2021/0325 dated 10 February 2021

Activity date:  
23 February 2021

Activity site:  
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 -  
47043 Gatteo (FC) - Italy

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Method	2
Environmental conditions	3
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The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

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Chief Test Technician:

Dott. Andrea Bruschi

Head of Security and Safety Laboratory:

Dott. Andrea Bruschi

Technical Manager:

Dott. Ing. Giuseppe Persano Adorno

Compiler: Paolo Bonito

Reviewer: Dott. Andrea Bruschi

Page 1 of 3

(\*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 25 March 2021

Chief Executive Officer

### Description of item\*

The item under examination consists of No. 3 specimens of decorative laminated glasses, having the dimensional characteristics stated in the following table:

<b>nominal width</b>	900 mm
<b>nominal height</b>	1100 mm
<b>nominal thickness</b>	8,76 mm

More specifically, the item consists of:

- glass float layer, nominal thickness 4 mm;
- No. 2 layers of EVA, total nominal thickness 0,76 mm;
- glass float layer, nominal thickness 4 mm.

### Manufacturing site\*

Sicis S.r.l. - Via Canala, 75/79 - 48123 Ravenna (RA) - Italy.

### Normative references

Standard	Title
UNI EN 14449:2005	Vetro per edilizia - Vetro stratificato e vetro stratificato di sicurezza - Valutazione della conformità/Norma di prodotto ( <i>Glass in building - Laminated glass and laminated safety glass - Evaluation of conformity/Product standard</i> )
EC 1-2008 UNI EN 14449:2005	//
UNI EN 356:2002	Vetro per edilizia - Vetro di sicurezza - Prove e classificazione di resistenza contro l'attacco manuale ( <i>Glass in building - Security glazing - Testing and classification of resistance against manual attack</i> )

### Apparatus

Description	In-house identification code
specimen support equipment	//
steel ball with a diameter of 100 mm and a mass of 4.11 kg	//
impact body support equipment	//

### Method

Prior to testing, the item was subjected to ambient laboratory conditions for 24 h.

The test was carried out in accordance with the requirements of clause 8 "Metodo di prova per la prova di caduta di un corpo duro" ("*Test method for drop test*") of standard UNI EN 356:2002.

The item was tested for category of resistance "P2A".

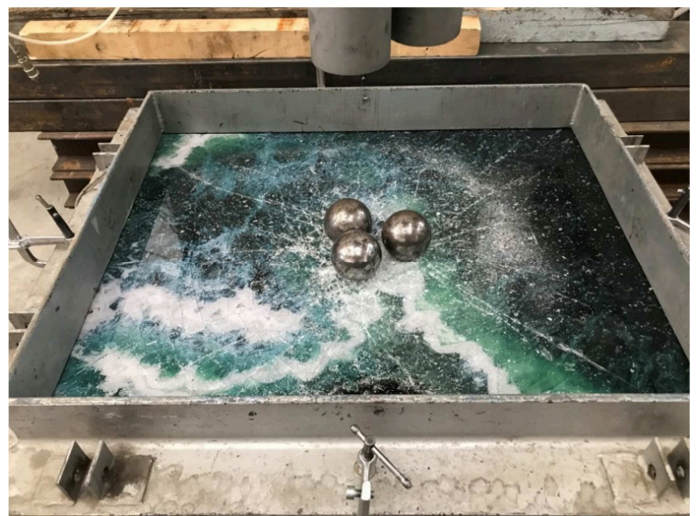
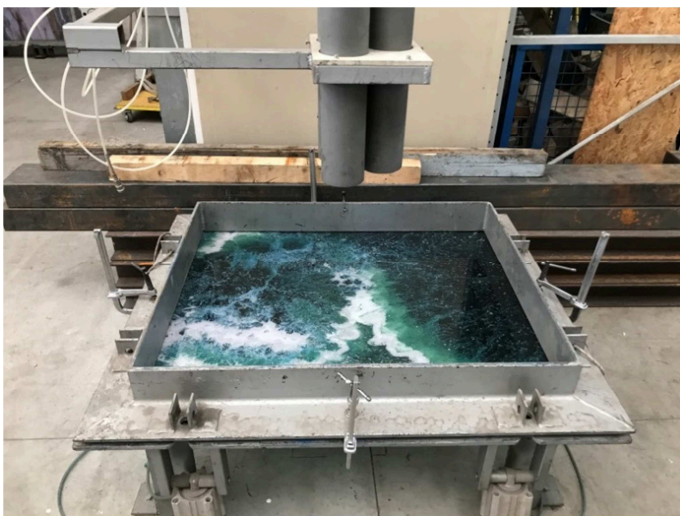
(\*) according to that stated by the customer; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.

**Environmental conditions**

Temperature	(15 ± 1) °C
Relative humidity	(50 ± 5) %

**Results**

Laminated glass [No.]	Measured thickness [mm]	Drop height [m]	Impacts [No.]	Result
1	8,42	1,50	3	no penetration
2	8,61	1,50	3	no penetration
3	8,60	1,50	3	no penetration



Photographs of a specimen before and after the test

**Findings**

The item **meets** the requirements of clause 10.1 “Prova di caduta” (“Drop test”) of standard UNI EN 356:2002 and in accordance with table 4 “Tabella di classificazione per la resistenza delle vetrazioni di sicurezza” (“Classification table for the resistance of safety glazing”) may therefore be awarded the following category of resistance

**EN 356 P1A**

Chief Test Technician  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Head  
of Security and Safety Laboratory  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Technical Manager  
(Dott. Ing. Giuseppe Persano Adorno)

*Giuseppe Persano Adorno*



## TEST REPORT No. 381212/13976/CPR

Customer

**SICIS S.r.l.**

Via Canala, 75/79 - 48123 RAVENNA (RA) - Italy

Item\*

**decorative laminated glass**

**named "SICIS COLLECTION VETRITE/GEMGLASS 44.4 EVA"**

"Activity

**impact test**

**in accordance with standard UNI EN 12600:2004**

**with reference to harmonised standard**

**UNI EN 14449:2005/EC 1-2008**

Results

**Class 1 (B) 1**

Order:  
87450

Item origin:  
sampled and supplied by the customer

Identification of item received:  
2021/0325 dated 10 February 2021

Activity date:  
23 February 2021

Activity site:  
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 -  
47043 Gatteo (FC) - Italy

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Chief Test Technician:

Dott. Andrea Bruschi

Head of Security and Safety Laboratory:

Dott. Andrea Bruschi

Technical Manager:

Dott. Ing. Giuseppe Persano Adorno

Compiler: Paolo Bonito

Reviewer: Dott. Andrea Bruschi

Page 1 of 4

(\*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 23 March 2021

Chief Executive Officer



**Description of item\***

The item under examination consists of No. 4 specimens of decorative laminated glasses, having the dimensional characteristics stated in the following table:

<b>nominal width</b>	876 mm
<b>nominal height</b>	1938 mm
<b>nominal thickness</b>	9,52 mm

More specifically, the item consists of:

- glass float layer, nominal thickness 4 mm;
- No. 4 layers of EVA, total nominal thickness 1,52 mm;
- glass float layer, nominal thickness 4 mm.



**Photograph of a specimen before the test**

**Manufacturing site\*.**

Sicis S.r.l. - Via Canala, 75/79 - 48123 Ravenna (RA) - Italy.

(\*) according to that stated by the customer; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.

### Normative references

Standard	Title
UNI EN 14449:2005	Vetro per edilizia - Vetro stratificato e vetro stratificato di sicurezza - Valutazione della conformità/Norma di prodotto ( <i>Glass in building - Laminated glass and laminated safety glass - Evaluation of conformity/Product standard</i> )
EC 1-2008 UNI EN 14449:2005	//
UNI EN 12600:2004	Vetro per edilizia - Prova del pendolo - Metodo della prova di impatto e classificazione per il vetro piano ( <i>Glass in building - Pendulum test - Impact test method and classification for flat glass</i> )

### Apparatus

Description	In-house identification code
main frame for pendulum test on glass	EDI011
dual tyre impactor, mass 50 kg	EDI012
Würth "mEssfix" telescopic measuring rod, measuring range 0-5 m	EDI083
Kern & Sohn "PBJ 4200-2M" precision balance, measuring range 0-4200 g and resolution 0,01 g	EDI130
Sauter FH 50 hand-held force gauge, measuring range 0-50 N	EDI093
Mitutoyo "500-162U / CD-20DC" digital caliper, measuring range 0-200 mm and resolution 0,01 mm	FT365

### Method

The item was stored in the laboratory for 24 h before testing in accordance with clause 5.3 "Procedimento della prova di impatto" (*"Impact test procedure"*) of standard UNI EN 12600:2004, then it was subjected to an impact test.

### Environmental conditions

Temperature	(15 ± 1) °C
Relative humidity	(50 ± 5) %

### Test results

Glass pane [No.]	Width [mm]	Height [mm]	Thickness [mm]	Drop height [mm]	Result
1	876	1938	9,17	1200	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
2	876	1938	9,32	1200	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
3	876	1938	9,16	1200	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
4	876	1938	9,21	1200	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles



Photograph of a specimen after the test

### **Findings**

The item **meets** the requirements of clause 4 "Requisiti di prova" ("Test requirements") of standard UNI EN 12600:2004 and in accordance with the provisions therein may therefore be assigned

**Class 1 (B) 1**

Chief Test Technician  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Head  
of Security and Safety Laboratory  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Technical Manager  
(Dott. Ing. Giuseppe Persano Adorno)

*Giuseppe Persano Adorno*

**TEST REPORT No. 381213/13977/CPR**

Customer

**SICIS S.r.l.**

Via Canala, 75/79 - 48123 RAVENNA (RA) - Italy

Item\*

**decorative laminated glass**

**named "SICIS COLLECTION VETRITE/GEMGLASS 33.2 EVA"**

Activity

**impact test**

**in accordance with standard UNI EN 12600:2004**

**with reference to harmonised standard**

**UNI EN 14449:2005/EC 1-2008**

Results

**Class 2 (B) 2**

Order:  
87450

Item origin:  
sampled and supplied by the customer

Identification of item received:  
2021/0325 dated 10 February 2021

Activity date:  
23 February 2021

Activity site:  
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 -  
47043 Gatteo (FC) - Italy

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Environmental conditions	3
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This document is made up of 4 pages and shall not be reproduced except in full without extrapolating parts of interest at the discretion of the customer, with the risk of favoring an incorrect interpretation of the results, except as defined at contractual level.

The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

The original of this document consists of an electronic document digitally signed pursuant to the applicable Italian Legislation.

Chief Test Technician:

Dott. Andrea Bruschi

Head of Security and Safety Laboratory:

Dott. Andrea Bruschi

Technical Manager:

Dott. Ing. Giuseppe Persano Adorno

Compiler: Paolo Bonito

Reviewer: Dott. Andrea Bruschi

Page 1 of 4

(\*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 23 March 2021

Chief Executive Officer



**Description of item\***

The item under examination consists of No. 4 specimens of decorative laminated glasses, having the dimensional characteristics stated in the following table:

<b>nominal width</b>	876 mm
<b>nominal height</b>	1938 mm
<b>nominal thickness</b>	6,76 mm

More specifically, the item consists of:

- glass float layer, nominal thickness 3 mm;
- No. 2 layers of EVA, total nominal thickness 0,76 mm;
- glass float layer, nominal thickness 3 mm.



**Photograph of a specimen before the test**

**Manufacturing site\***

Sicis S.r.l. - Via Canala, 75/79 - 48123 Ravenna (RA) - Italy.

(\*) according to that stated by the customer; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.

### Normative references

Standard	Title
UNI EN 14449:2005	Vetro per edilizia - Vetro stratificato e vetro stratificato di sicurezza - Valutazione della conformità/Norma di prodotto ( <i>Glass in building - Laminated glass and laminated safety glass - Evaluation of conformity/Product standard</i> )
EC 1-2008 UNI EN 14449:2005	//
UNI EN 12600:2004	Vetro per edilizia - Prova del pendolo - Metodo della prova di impatto e classificazione per il vetro piano ( <i>Glass in building - Pendulum test - Impact test method and classification for flat glass</i> )

### Apparatus

Description	In-house identification code
main frame for pendulum test on glass	EDI011
dual tyre impactor, mass 50 kg	EDI012
Würth "mEssfix" telescopic measuring rod, measuring range 0-5 m	EDI083
Kern & Sohn "PBJ 4200-2M" precision balance, measuring range 0-4200 g and resolution 0,01 g	EDI130
Sauter FH 50 hand-held force gauge, measuring range 0-50 N	EDI093
Mitutoyo "500-162U / CD-20DC" digital caliper, measuring range 0-200 mm and resolution 0,01 mm	FT365

### Method

The item was stored in the laboratory for 24 h before testing in accordance with clause 5.3 "Procedimento della prova di impatto" (*"Impact test procedure"*) of standard UNI EN 12600:2004, then it was subjected to an impact test.

### Environmental conditions

Temperature	(15 ± 1) °C
Relative humidity	(50 ± 5) %

### Test results

Glass pane [No.]	Width [mm]	Height [mm]	Thickness [mm]	Drop height [mm]	Result
1	876	1938	6,61	450	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
2	876	1938	6,60	450	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
3	876	1938	6,61	450	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles
4	876	1938	6,60	450	broke in accordance with clause 4 a) of standard UNI EN 12600:2004 with no detachment of particles





Photograph of a specimen after the test

**Findings**

The item **meets** the requirements of clause 4 "Requisiti di prova" ("Test requirements") of standard UNI EN 12600:2004 and in accordance with the provisions therein may therefore be assigned

**Class 2 (B) 2**

Chief Test Technician  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Head  
of Security and Safety Laboratory  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

Technical Manager  
(Dott. Ing. Giuseppe Persano Adorno)

*Giuseppe Persano Adorno*

## TEST REPORT No. 381214

Customer

**SICIS S.r.l.**

Via Canala, 75/79 - 48123 RAVENNA (RA) - Italy

Item\*

**decorative laminated glass**

**named "SICIS COLLECTION VETRITE/GEMGLASS 44.2 EVA"**



Activity

**impact test**

**in accordance with standard ANSI Z97.1-2015**

Results

<b>SICIS COLLECTION VETRITE/GEMGLASS 44.2 EVA</b>	
<b>SICIS S.r.l.</b>	<b>ANSI Z97.1-2015 UA</b>

Order:  
87450

Item origin:  
sampled and supplied by the customer

Identification of item received:  
2021/0325 dated 10 February 2021

Activity date:  
23 February 2021

Activity site:  
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 -  
47043 Gatteo (FC) - Italy

Contents	Page
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This document is made up of 4 pages and shall not be reproduced except in full without extrapolating parts of interest at the discretion of the customer, with the risk of favoring an incorrect interpretation of the results, except as defined at contractual level.

The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

The original of this document consists of an electronic document digitally signed pursuant to the applicable Italian Legislation.

Chief Test Technician:

Dott. Andrea Bruschi

Head of Security and Safety Laboratory:

Dott. Andrea Bruschi

Compiler: Paolo Bonito

Reviewer: Dott. Andrea Bruschi

Page 1 of 4

(\*) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 23 March 2021

Chief Executive Officer

### **Description of item\***

The item under examination consists of No. 4 specimens of decorative laminated glasses, having the dimensional characteristics stated in the following table:

<b>nominal width</b>	863 mm
<b>nominal height</b>	1930 mm
<b>nominal thickness</b>	8,76 mm

More specifically, the item consists of:

- glass float layer, nominal thickness 4 mm;
- No. 2 layers of EVA, total nominal thickness 0,76 mm;
- glass float layer, nominal thickness 4 mm.

### **Normative references**

<b>Standard</b>	<b>Title</b>
ANSI Z97.1-2015	American national standard for safety glazing materials used in buildings - safety performance specifications and methods of test

### **Apparatus**

<b>Description</b>	<b>In-house identification code</b>
main frame for pendulum test on glass	EDI011
impactor consisting in a leather bag filled with lead shot, overall mass $(45,4 \pm 0,2)$ kg	EDI014
Würth "mEssfix" telescopic measuring rod, measuring range 0-5 m	EDI083
Kern & Sohn "PBJ 4200-2M" precision balance, measuring range 0-4200 g and resolution 0,01 g	EDI130
Mitutoyo "500-162U / CD-20DC" digital caliper, measuring range 0-200 mm and resolution 0,01 mm	FT365

### **Method**

The test was carried out in accordance with the requirements of clause 5.1 "Impact test" of standard ANSI Z97.1-2015.

### **Environmental conditions**

<b>Temperature</b>	$(15 \pm 1) ^\circ\text{C}$
<b>Relative humidity</b>	$(50 \pm 5) \%$

(\*) according to that stated by the customer; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.

**Test results**

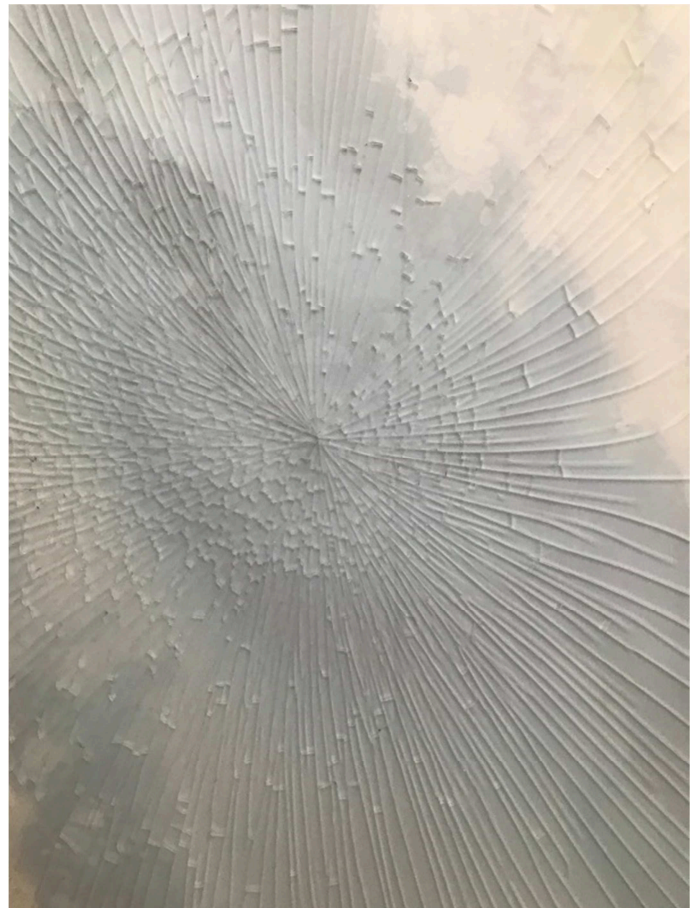
Glass pane	Glass thickness [mm]	Drop height of impactor [mm]	Effect	Result*	Class**
1	8,65	457-470	no break	4	A
		1219-1232	no break	1 in the back	
2	8,55	457-470	no break	4	
		1219-1232	no break	1 in the back	
3	8,76	457-470	no break	4	
		1219-1232	no break	1 in the back	
4	8,66	457-470	no break	4	
		1219-1232	no break	1 in the back	

(\*) possible results according to clause 5.1.4 "Interpretation of results" of standard ANSI Z97.1-2015:

- type 1 = one or more cracks may appear;
- type 2 = the specimen shatters like tempered glass;
- type 3 = the specimen breaks like plastic glazing.;
- type 4 = the specimen does not break.

(\*\*) possible class according to clause 5.1.2 "Impact classification" of standard ANSI Z97.1-2015:

- class A = glazing material that complies with the requirements of clause 5.1.4 "Interpretation of results" of standard ANSI Z97.1-2015 when tested by the procedure of clause 5.1.3 "Impact procedure" of standard ANSI Z97.1-2015 at a drop height between 1219 mm and 1232 mm (48" and 48,5") using an impact specimen appropriate to the size classification;
- class B = glazing material that complies with the requirements of clause 5.1.4 "Interpretation of results" of standard ANSI Z97.1-2015 when tested by the procedure of clause 5.1.3 "Impact procedure" of standard ANSI Z97.1-2015 at a drop height of between 457 mm and 470 mm (18" and 18,5") using an impact specimen appropriate to the size classification.



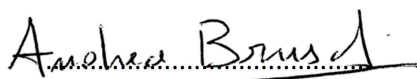
**Photographs of a specimen, front and back, after the test**

**Findings**

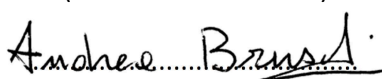
In accordance with clause 6.1 "Mark information" of standard ANSI Z97.1-2015 the item can be marked as

<b>SICIS COLLECTION VETRITE/GEMGLASS 44.2 EVA</b>	
<b>SICIS S.r.l.</b>	<b>ANSI Z97.1-2015 UA</b>

Chief Test Technician  
(Dott. Andrea Bruschi)



Head  
of Security and Safety Laboratory  
(Dott. Andrea Bruschi)





## RAPPORTO DI PROVA N. 380516/13936/CPR

emesso da Istituto Giordano in qualità di laboratorio di prova notificato (n. 0407) ai sensi del Regolamento 305/2011/UE del Parlamento Europeo e del Consiglio del 9 marzo 2011

Cliente


**SICIS S.r.l.**

Via Canala, 75/79 - 48123 RAVENNA (RA) - Italia

Oggetto\*

**vetro stratificato denominato  
"Gemglass/Vetrite 6 mm"**

Attività



**resistenza ad alta temperatura e all'umidità con  
condensazione secondo la norma  
UNI EN ISO 12543-4:2011 con riferimento alla norma  
armonizzata UNI EN 14449:2005/EC 1-2008**

Risultati

**al termine della prova  
sull'oggetto in esame  
non è stata riscontrata  
l'insorgenza di difetti**

(\*) secondo le dichiarazioni del cliente.

Bellaria-Igea Marina - Italia, 4 marzo 2021

L'Amministratore Delegato

Commessa:  
86795

Provenienza dell'oggetto:  
campionato e fornito dal cliente

Identificazione dell'oggetto in accettazione:  
2021/0325 del 10 febbraio 2021  
2021/0373 del 11 febbraio 2021

Data dell'attività:  
dal 10 febbraio 2021 al 2 marzo 2021

Luogo dell'attività:  
Istituto Giordano S.p.A. - Blocco 1 - Via Gioacchino Rossini, 2 - 47814 Bellaria-Igea Marina (RN) - Italia

Indice	Pagina
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Sito produttivo*	2
Riferimenti normativi	2
Apparecchiature	2
Modalità	3
Risultati	3

Il presente documento è composto da n. 3 pagine e non può essere riprodotto parzialmente, estrapolando parti di interesse a discrezione del cliente, con il rischio di favorire una interpretazione non corretta dei risultati, fatto salvo quanto definito a livello contrattuale.

I risultati si riferiscono solo all'oggetto in esame, così come ricevuto, e sono validi solo nelle condizioni in cui l'attività è stata effettuata.

L'originale del presente documento è costituito da un documento informatico firmato digitalmente ai sensi della Legislazione Italiana applicabile.

**Responsabile Tecnico di Prova:**

Dott. Alessandro Trevisani

**Responsabile del Laboratorio di Tecnologia del Legno/Condizionamenti:**

Dott. Alessandro Trevisani

**Direttore Tecnico:**

Dott. Ing. Giuseppe Persano Adorno

**Compilatore:** Agostino Vasini

**Revisore:** Dott. Alessandro Trevisani

Pagina 1 di 3



**Descrizione dell'oggetto\***

L'oggetto in esame è costituito da n. 6 vetri stratificati, dimensioni nominali 300 mm × 100 mm.



**Fotografia di un vetro**

**Sito produttivo\***

SICIS S.r.l. - Via Canala, 75/79 - 48123 RAVENNA (RA) - Italia.

**Riferimenti normativi**

Norma	Titolo
UNI EN ISO 12543-4:2011	Vetro per edilizia - Vetro stratificato e vetro stratificato di sicurezza - Parte 4: Metodi di prova per la durabilità
UNI EN 14449:2005	Vetro per edilizia - Vetro stratificato e vetro stratificato di sicurezza - Valutazione della conformità/Norma di prodotto
EC 1-2008 UNI EN 14449:2005	//

**Apparecchiature**

Descrizione	Codice di identificazione interna
Camera climatica modello "UY 300" della ditta Angelantoni	FT137
Box climatico ad alta umidità della ditta Istituto Giordano	TDL020

(\*) secondo le dichiarazioni del cliente, ad eccezione delle caratteristiche espressamente indicate come rilevate. Istituto Giordano declina ogni responsabilità sulle informazioni e sui dati forniti dal cliente che possono influenzare i risultati.

## **Modalità**

La prova è stata eseguita secondo le prescrizioni dei paragrafi 5 “Prova ad alta temperatura” e 6 “Prova all’umidità” (prova con condensazione) della norma UNI EN ISO 12543-4:2011.

### **Prova ad alta temperatura**

N. 3 vetri sono stati posti all’interno della stufa termostatica e riscaldati alla temperatura di  $(100 \pm 2)$  °C. Tale temperatura è stata mantenuta per 16 h, dopodiché i vetri sono stati raffreddati fino a temperatura ambiente, secondo quanto prescritto dal paragrafo 5.3.2 della norma UNI EN ISO 12543-4:2011.

Al termine della prova i vetri sono stati esaminati ad una distanza tra 30 cm e 50 cm contro uno sfondo bianco diffuso, per verificare l’insorgenza di difetti verificatisi nell’intercalare (bolle, delaminazioni, opacità), secondo quanto prescritto dal paragrafo 5.4 della norma UNI EN ISO 12543-4:2011.

### **Prova all’umidità con condensazione**

N. 3 vetri sono stati posti per due settimane verticalmente al di sopra dell’acqua contenuta all’interno di un recipiente chiuso ermeticamente, in grado di mantenere una temperatura di  $(50 \pm 5)$  °C, secondo quanto prescritto dal paragrafo 6.3.1 della norma UNI EN ISO 12543-4:2011.

Al termine della prova i vetri sono stati esaminati ad una distanza tra 30 cm e 50 cm contro uno sfondo bianco diffuso, per verificare l’insorgenza di difetti verificatisi nell’intercalare (bolle, delaminazioni, opacità), secondo quanto prescritto dal paragrafo 6.4 della norma UNI EN ISO 12543-4:2011.

**Nota1:** in deroga al metodo di prova indicato nella norma UNI EN 14449:2005, per l’esecuzione della prova è stata utilizzata la versione 2011 della norma UNI EN ISO 12543-4.

## **Risultati**


### **Prova ad alta temperatura**

Al termine della prova sull’oggetto in esame, non è stata riscontrata l’insorgenza di difetti.

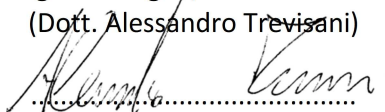
### **Prova all’umidità con condensazione**

Al termine della prova sull’oggetto in esame, non è stata riscontrata l’insorgenza di difetti.

Il Responsabile Tecnico di Prova  
(Dott. Alessandro Trevisani)



Il Responsabile del Laboratorio di Tecnologia del Legno/Condizionamenti  
(Dott. Alessandro Trevisani)



Il Direttore Tecnico  
(Dott. Ing. Giuseppe Persano Adorno)

