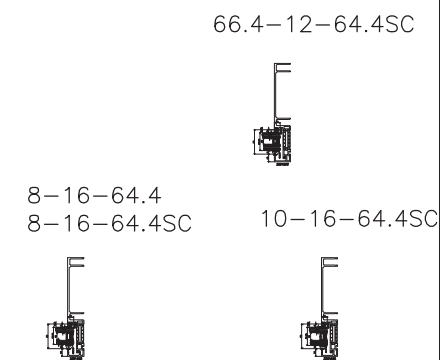
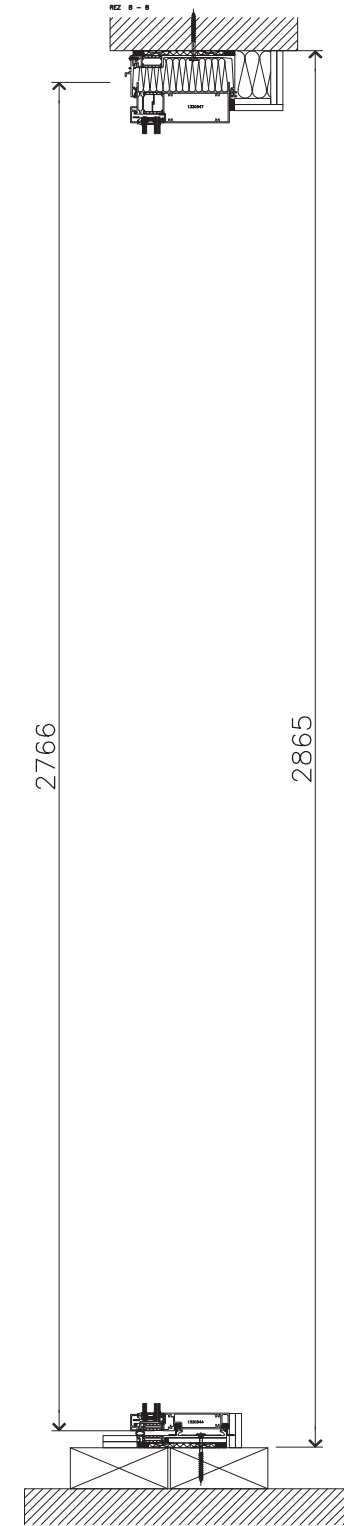
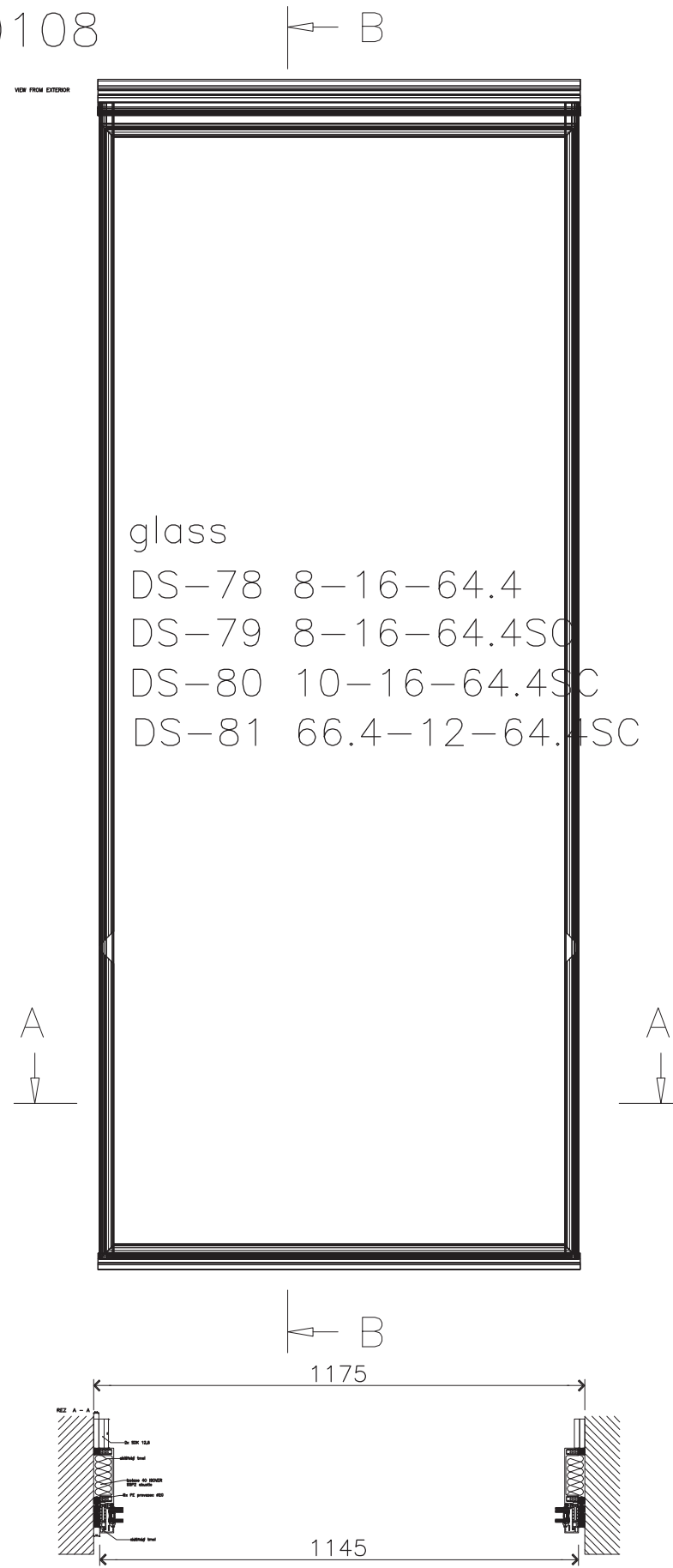


FIX
1pcs
M-00108

Rw+Ctr 35dB



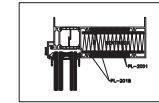
ACOUSTICAL TEST

FIX
1pcs
M-00109

Rw+Ctr 41dB

VIEW FROM EXTERIOR

← B

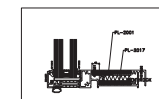


glass
88.4SC-15-66.4SC

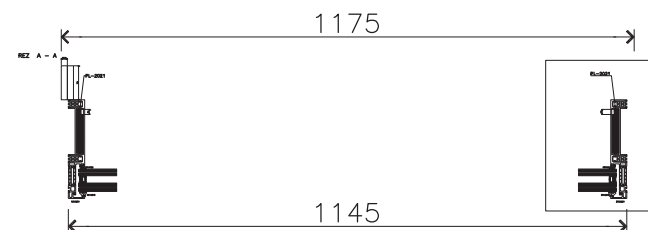
DS-95

A
↓

A
↓



← B



88.4SC-15-66.4SC



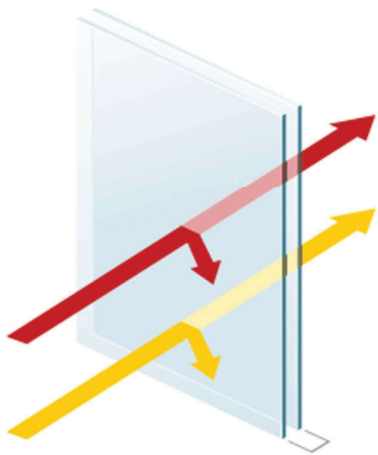
ACOUSTICAL TEST

Your composition:

6 mm Planibel Clearlite - 16 mm Argon 90% - 55.4 Stratobel 2x Planibel Clearlite

Personal notes:

LIGHT		ENERGY	
Transmission	79	Solar factor	74
Reflection	14	Reflection	13



THERMAL PROPERTIES		EN 673
Ug [W/(m².K)] - Vertical		2.5

LIGHT PROPERTIES		EN 410
Light transmittance - τv (%)		79
Light reflectance - ρv (%)		14
Internal light reflection - ρvi (%)		14
Colour Rendering - RD65 - Ra (%)		98

ENERGY PROPERTIES		EN 410	ISO 9050
Solar factor (g-value) - g (%)		74	74
Energy Reflection - ρe (%)		13	12
Direct Energy Transmission - τe (%)		62	61
Solar abs. Glass 1 - αe (%)		8	9
Solar abs. Glass 2 - αe (%)		17	18
Total Energy absorption - αe (%)		25	27
Shading coefficient - SC		0.86	0.85
UV Transmission - UV (%)		0	
Selectivity		1.07	1.07

OTHER PROPERTIES	
Resistance to fire - EN 13501-2	NPD
Reaction to fire - EN 13501-1	NPD
Bullet resistance - EN 1063	NPD
Burglar resistance - EN 356	P3A - P4A
Pendulum body impact resistance - EN 12600	NPD / 1B1

ACOUSTIC PROPERTIES	
Direct airborne sound insulation (dB)(Rw (C;Ctr) - ESTIMATED) - dB	39 (-1; -4) ⁽²⁾
With acoustic PVB (Stratophone) (RW(C;Ctr)) - dB	41 (-2; -5) ⁽²⁾

THICKNESS AND WEIGHT	
Nominal thickness (mm)	33.52
Weight (kg/m²)	42

The data are calculated using spectral measurements that are conform to standards EN 410, ISO 9050 (1990). The Ug-value (formerly k-value) is calculated according to standard EN 673. The emissivity measurement complies with standards EN 673 (Annex A) and EN 12898. This document is no evaluation of the risk of glass breakage due to thermal stress. For tempered glass: the risk of spontaneous breakage due to Nickel-Sulfide is not covered by AGC Glass Europe. The Heat Soak Test is available on request. Specifications, technical and other data are based on information available at the time of preparation of this document and are subject to change without notice. AGC Glass Europe can not be held responsible for any deviation between the data introduced and the conditions on site. This document is only informative, in no way it implies an acceptance of the order by AGC Glass Europe. While the AGC Glass Configurator allows for accurate measurement of the above performances, the AGC Glass Configurator does not create any supplementary liability on the part of AGC with regard to the AGC products delivered to customers. AGC's liability remains limited to the AGC products manufactured and delivered by AGC only. The user of the AGC Glass Configurator undertakes to provide clear and comprehensive information and to refrain from any misleading commercial practice which would be likely to deceive the customers as to the manufacturer of the products it purchases. The user of the AGC Glass Configurator undertakes to indemnify and hold harmless AGC from and against any and all claims, costs and damages arising out of, or relating to improper / misleading use of the AGC Glass Configurator. See also conditions of use. (1) These sound reduction indexes correspond to glazings which are 1,23 by 1,48m according to EN ISO 10140-3 and are tested in laboratory conditions. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is not better than +/- 1dB. (2) These sound reduction indexes are estimated (no test). They correspond to glazings which are 1,23m. by 1,48 m. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is +/- 2dB.

Your composition:

8 mm Planibel Clearlite - 16 mm Argon 90% - 55.4 Stratobel 2x Planibel Clearlite

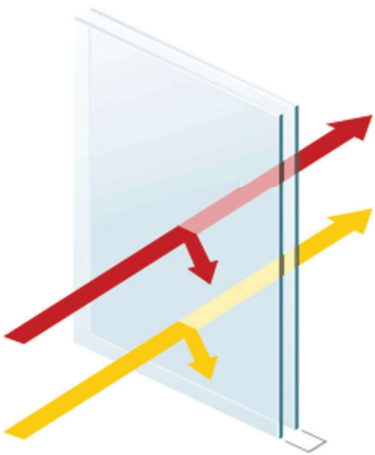
Personal notes:

LIGHT

Transmission	78
Reflection	14

ENERGY

Solar factor	73
Reflection	12



THERMAL PROPERTIES

EN 673

Ug [W/(m².K)] - Vertical	2.5
--------------------------	-----

LIGHT PROPERTIES

EN 410

Light transmittance - τ_v (%)	78
Light reflectance - ρ_v (%)	14
Internal light reflection - ρ_{vi} (%)	14
Colour Rendering - RD65 - Ra (%)	97

ENERGY PROPERTIES

EN 410

ISO 9050

Solar factor (g-value) - g (%)	73	72
Energy Reflection - ρ_e (%)	12	12
Direct Energy Transmission - τ_e (%)	61	59
Solar abs. Glass 1 - α_e (%)	11	11
Solar abs. Glass 2 - α_e (%)	16	18
Total Energy absorption - α_e (%)	27	29
Shading coefficient - SC	0.84	0.83
UV Transmission - UV (%)	0	
Selectivity	1.07	1.08

OTHER PROPERTIES

Resistance to fire - EN 13501-2	NPD
Reaction to fire - EN 13501-1	NPD
Bullet resistance - EN 1063	NPD
Burglar resistance - EN 356	P3A - P4A
Pendulum body impact resistance - EN 12600	NPD / 1B1

ACOUSTIC PROPERTIES

Direct airborne sound insulation (dB)(Rw (C;Ctr) - ESTIMATED) - dB	41 (-2; -4) ⁽²⁾
With acoustic PVB (Stratophone) (RW(C;Ctr)) - dB	43 (-2; -5) ⁽²⁾

THICKNESS AND WEIGHT

Nominal thickness (mm)	35.52
Weight (kg/m²)	47

The data are calculated using spectral measurements that are conform to standards EN 410, ISO 9050 (1990). The Ug-value (formerly k-value) is calculated according to standard EN 673. The emissivity measurement complies with standards EN 673 (Annex A) and EN 12898. This document is no evaluation of the risk of glass breakage due to thermal stress. For tempered glass: the risk of spontaneous breakage due to Nickel-Sulfide is not covered by AGC Glass Europe. The Heat Soak Test is available on request. Specifications, technical and other data are based on information available at the time of preparation of this document and are subject to change without notice. AGC Glass Europe can not be held responsible for any deviation between the data introduced and the conditions on site. This document is only informative, in no way it implies an acceptance of the order by AGC Glass Europe. While the AGC Glass Configurator allows for accurate measurement of the above performances, the AGC Glass Configurator does not create any supplementary liability on the part of AGC with regard to the AGC products delivered to customers. AGC's liability remains limited to the AGC products manufactured and delivered by AGC only. The user of the AGC Glass Configurator undertakes to provide clear and comprehensive information and to refrain from any misleading commercial practice which would be likely to deceive the customers as to the manufacturer of the products it purchases. The user of the AGC Glass Configurator undertakes to indemnify and hold harmless AGC from and against any and all claims, costs and damages arising out of, or relating to improper / misleading use of the AGC Glass Configurator. See also conditions of use. (1) These sound reduction indexes correspond to glazings which are 1,23 by 1,48m according to EN ISO 10140-3 and are tested in laboratory conditions. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is not better than +/- 1dB. (2) These sound reduction indexes are estimated (no test). They correspond to glazings which are 1,23m. by 1,48 m. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is +/- 2dB.

Your composition:

88.2 Stratobel 2x Planibel Clearlite - 15 mm Argon 90% - 66.2 Stratobel 2x Planibel Clearlite

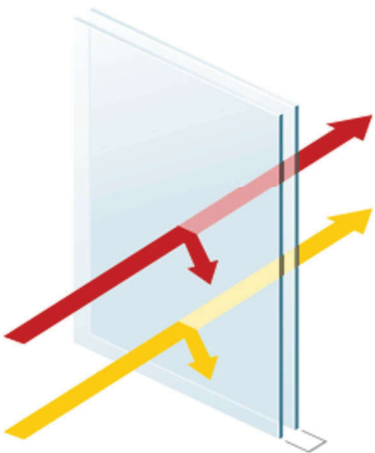
Personal notes:

LIGHT

Transmission	75
Reflection	13

ENERGY

Solar factor	64
Reflection	10



THERMAL PROPERTIES

EN 673

Ug [W/(m².K)] - Vertical	2.4
--------------------------	-----

LIGHT PROPERTIES

EN 410

Light transmittance - τv (%)	75
Light reflectance - ρv (%)	13
Internal light reflection - ρvi (%)	14
Colour Rendering - RD65 - Ra (%)	96

ENERGY PROPERTIES

EN 410

ISO 9050

Solar factor (g-value) - g (%)	64	62
Energy Reflection - ρe (%)	10	10
Direct Energy Transmission - τe (%)	54	53
Solar abs. Glass 1 - αe (%)	26	27
Solar abs. Glass 2 - αe (%)	10	10
Total Energy absorption - αe (%)	36	37
Shading coefficient - SC	0.73	0.71
UV Transmission - UV (%)	0	
Selectivity	1.17	1.21

OTHER PROPERTIES

Resistance to fire - EN 13501-2	NPD
Reaction to fire - EN 13501-1	NPD
Bullet resistance - EN 1063	NPD
Burglar resistance - EN 356	P1A - P2A
Pendulum body impact resistance - EN 12600	1B1 / 1B1

ACOUSTIC PROPERTIES

Direct airborne sound insulation (dB)(Rw (C;Ctr) - EN 12758) - dB	46 (-1; -5) ⁽¹⁾
With acoustic PVB (Stratophone) (RW(C;Ctr)) - dB	51 (-1; -4) ⁽¹⁾

THICKNESS AND WEIGHT

Nominal thickness (mm)	44.52
Weight (kg/m²)	72

The data are calculated using spectral measurements that are conform to standards EN 410, ISO 9050 (1990). The Ug-value (formerly k-value) is calculated according to standard EN 673. The emissivity measurement complies with standards EN 673 (Annex A) and EN 12898. This document is no evaluation of the risk of glass breakage due to thermal stress. For tempered glass: the risk of spontaneous breakage due to Nickel-Sulfide is not covered by AGC Glass Europe. The Heat Soak Test is available on request. Specifications, technical and other data are based on information available at the time of preparation of this document and are subject to change without notice. AGC Glass Europe can not be held responsible for any deviation between the data introduced and the conditions on site. This document is only informative, in no way it implies an acceptance of the order by AGC Glass Europe. While the AGC Glass Configurator allows for accurate measurement of the above performances, the AGC Glass Configurator does not create any supplementary liability on the part of AGC with regard to the AGC products delivered to customers. AGC's liability remains limited to the AGC products manufactured and delivered by AGC only. The user of the AGC Glass Configurator undertakes to provide clear and comprehensive information and to refrain from any misleading commercial practice which would be likely to deceive the customers as to the manufacturer of the products it purchases. The user of the AGC Glass Configurator undertakes to indemnify and hold harmless AGC from and against any and all claims, costs and damages arising out of, or relating to improper / misleading use of the AGC Glass Configurator. See also conditions of use. (1) These sound reduction indexes correspond to glazings which are 1,23 by 1,48m according to EN ISO 10140-3 and are tested in laboratory conditions. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is not better than +/- 1dB. (2) These sound reduction indexes are estimated (no test). They correspond to glazings which are 1,23m. by 1,48 m. In-situ performances may vary according to the effective glazing dimensions, frame system, noise sources etc. The accuracy of the given indexes is +/- 2dB.

SOUND REDUCTION INDEX ACCORDING TO EN ISO 10140-2
Laboratory measurements of airborne sound insulation of building elements

Product: Panel opening SIPRAL V 00039 - thickness 67,5 mm

Description Dimensions of test sample 1420 mm x 1200 mm. Composition of solid panels:
of test specimen: - aluminum sheet 2 mm + plate CETRIS 8 mm
- mineral wool ISOVER UNI 40 mm
- steel plate 6 mm
- aluminum sheet 2 mm + plate CETRIS 8 mm
Steel plate and aluminum sheet glued over CETRIS plates.
The sample was mounted in wooden test frame and sealed with a sealant around the perimeter.

Manufacturer and client: SIPRAL a.s. - Praha 10

Date of mounting: 13. 2. 2019

Test rooms: K4-->K3

Date of test: 13. 2. 2019

Area of test specimen: 1.71 m²

Mass per unit area: -

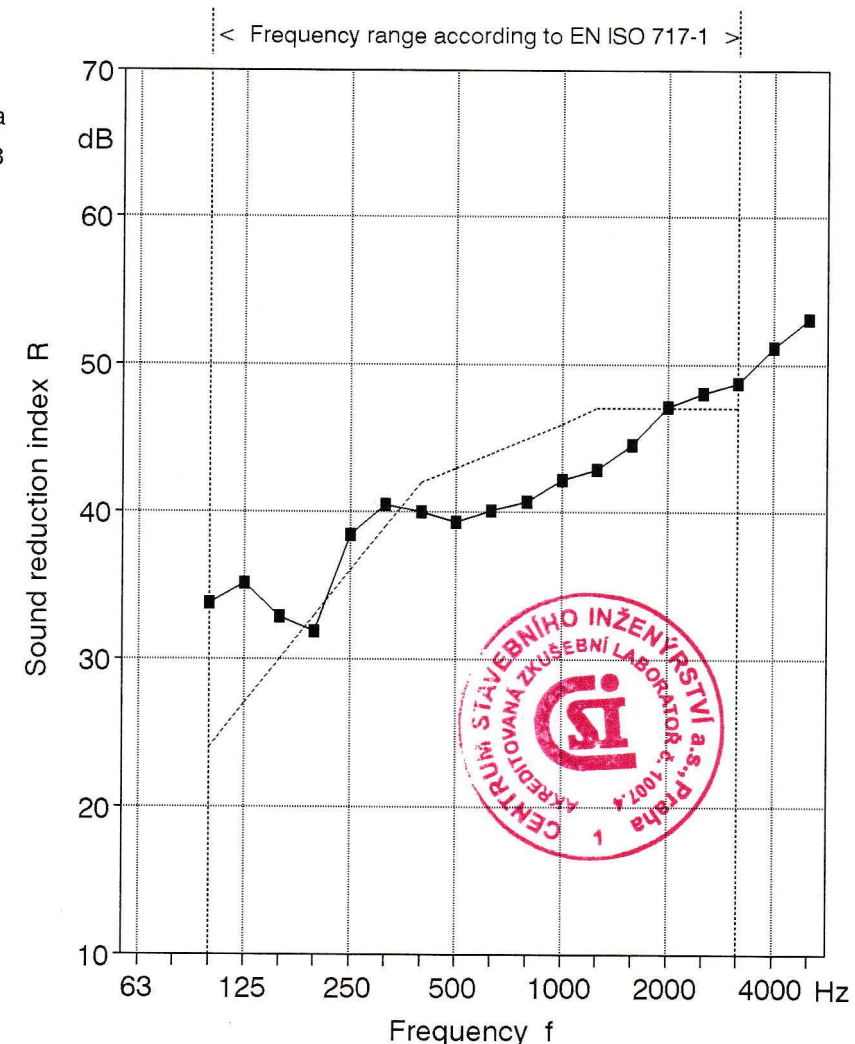
Temperature: 15.5 °C

Relative humidity: 39 %

Static pressure 1012 hPa

Receiving room volume: 80.25 m³

Freq. Hz	R dB
50	----
63	----
80	----
100	33.8
125	35.1
160	32.9
200	31.9
250	38.4
315	40.5
400	40.0
500	39.3
630	40.1
800	40.7
1000	42.2
1250	42.9
1600	44.6
2000	47.1
2500	48.0
3150	48.7
4000	51.2
5000	53.1



Rating according to EN ISO 717-1:

Weighted sound reduction index and spectrum adaptation terms

R_w (C;Ctr) = 43 (-1;-3) dB

C(100-5000) = 0 dB; Ctr(100-5000) = -3 dB

Evaluation based on laboratory measurement results obtained by an engineering method.

No. of test: **OK-1007**

Ing. M. Meller, CSc.
Technical laboratory chief

Centre of Building Construction Engineering - laboratory of Acoustics
Test laboratory of physical properties, structures and buildings
Accredited Test Laboratory No. 1007,4
Pražská 16, Praha 10 - Hostivař

E. Podium Glazing Specifications and Supporting Test Data



LABORATORIO TECNOLOGICO
LEGNOLEGNO

LegnoLegno s.c.
Via Pio La Torre, 11
42015 Correggio (RE) Italy
Tel. +039 0522 733011
Fax +039 0522732836
C.F. P.IVA e N.ISCRIZ. REG.IMPRESSE REGGIO E. 01244480354

Testing Laboratory
Notified Body number 1709
n. albo artigiani 900037
n. albo coop.ve A106083
REA 170723

SINTESI DI RAPPORTO DI PROVA N° 0028R/19
SUMMARY OF THE TEST REPORT No.

Luogo, data: Correggio, 18/07/2019
Place, date

Committente: UNIFORM SPA
Client VIA DELL'AGRICOLTURA, 36 - MINERBE (VR)

Per conto della Ditta: UNIFORM SPA
On behalf of the Company VIA DELL'AGRICOLTURA, 36 - MINERBE (VR)

Denominazione commerciale del modello / Product trade name:
UNI_ONE FORMAT38 VETRATA FISSA / UNI_ONE FORMAT38 FIXED LIGHT

Dimensioni campione / Sample dimensions:
Superficie totale / Overall area: 1,95 m²

PROVE ESEGUITE E RISULTATI CONSEGUITI
PERFORMED TESTS AND RESULTS

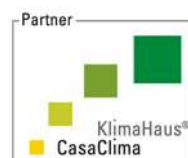
Indice di valutazione del potere fonoisolante: $R_w (C; C_{tr}) = 46 (-3; -8)$ dB
(UNI EN ISO 10140-2:2010 - UNI EN ISO 717-1:2013)
Weighted sound reduction index

Tutti i risultati di prova, con valori misurati sperimentalmente, indicati nella presente sintesi sono contenuti nel rapporto di prova n° 0028R/19 del 18/07/2019 emesso da questo Laboratorio.
All test results, with experimentally measured values, listed in this test report summary are included in the test report No. 0028R/19 dated 18/07/2019 issued by this Laboratory.

Il Responsabile Prove / *Test Technician*
Geom. Davide Barbato

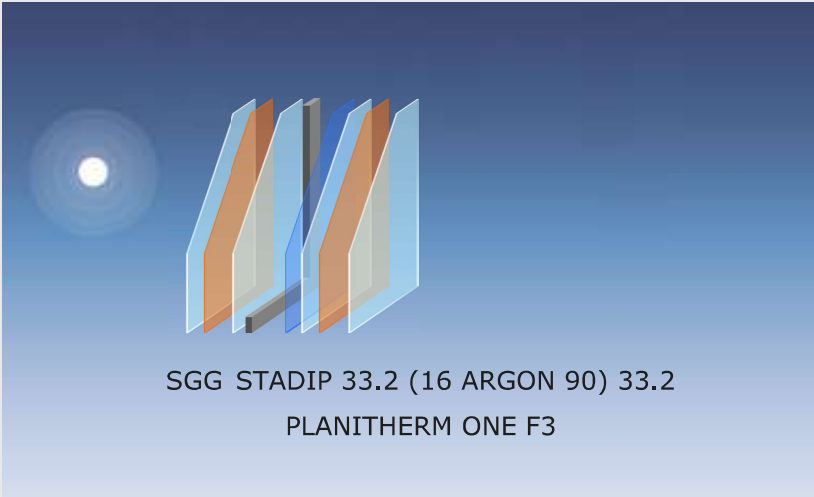


Il Direttore Tecnico / *Technical Manager*
Ing. Antonio D'Albo



Codice Cliente: 690
Rapporto n° 0028R/19
Pagina 10 di 10

Rev. 20
Data: 16/01/2019



Pane 1	PLANICLEAR 3 mm
PVB	PVB STANDARD 0.76 mm
Pane 1'	PLANICLEAR 3 mm
Cavity 1	16 ARGON 90%
Coating 3	PLANITHERM ONE
Pane 2	PLANICLEAR 3 mm
PVB	PVB STANDARD 0.76 mm
Pane 2'	PLANICLEAR 3mm

Name : Lucian Mihaila
Country : Romania

Notes:

	LUMINOUS FACTORS	EN410 (2011-04)		ENERGY FACTORS	EN410 (2011-04)
	Light Transmittance (TL)	70%		Transmittance (TE)	41%
	Outdoor Reflectance (RLe)	22%		Outdoor Reflectance (Ree)	32%
	Indoor Reflectance (RLi)	23%		Indoor Reflectance (REi)	33%
	THERMAL TRANSMISSION	EN673-2011		Absorptance A1(AE1)	20%
	Ug	1.0 W/(m ² .K)		Absorptance A2	7%
	0° related to vertical position			Absorptance A3	
	MANUFACTURING SIZES			SOLAR FACTORS	EN410 (2011-04)
	Nominal Thickness	29.52 mm		Solar Factor (g)	48%
	Weight	31 kg/m ²		Shading Coefficient (SC)	0.55
	ACOUSTICS	EN 12758		COLOR RENDERING	
	Rw(C;Ctr)	39.0000 (-1; -6) dB		Ra Light Transmittance	97
				Ra Outdoor Reflectance	97
	UV FACTORS	EN410 (2011-04)		ANTI-BURGLARY	EN356
	TUV	0%		Burglar Resistance	P1A/P1A
	SAFETY CLASS	EN 12600			
	Pendulum Body Resistance	1B1/1B1			

These values are calculated according to EN410 (2011-04) and EN673-2011 standards, the international standard ISO 9050, the Japanese standard JIS R 3106/3107, the Korean standard KS L 2514/2525 and the NFRC-2010 standards. For European norms, tolerances are defined according to EN1096-4 standard. Nevertheless, user must check the feasibility of the combination of glazing, particularly in terms of thickness and color. Furthermore, it is the user's responsibility to check that the resulting combination of glazing meets regulatory requirements at national, local or regional level. Computed values standards are indicative. Please use NFRC certified software for certified values. Calculation rules for EN410 (2011-04), EN673-2011, ISO 9050 (2003) m1.5 and ISO 9050 (1990) m1.0 standards and functional output of Calumen Live use Calumen 1.2.4 calculation engine, and have been validated by TUV Rheinland Quality Report 11923R-11-33705. Sg Values are calculated according to the French thermal regulation 2012 (RT2012). Acoustic indexes are representative of performances tested in laboratory conditions of a glazing of size 1.23x1.48m (EN ISO 10140-3 and EN 12758). In situ measurements may differ depending on the glazing size, environment, quality of the window frame, of the installation, source of noise, etc. The accuracy of the given indexes is in the range +/- 1dB (EN 12758).All glazing images are illustrative.



Evidence of Performance
Airborne sound insulation of building components

Test Report
No. 14-002633-PR01
(PB 14-H01-04-en-01)

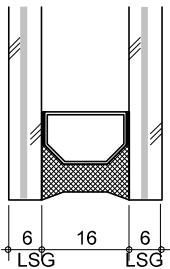


Client **SAINT-GOBAIN POLSKA Sp.Z.o.o.**
ODDZIAL GLASSOLUTIONS
ul. Kolejowa 1
32-312 Jaroszewiec
Poland

Basis
EN ISO 10140-1: 2010
+A1: 2012
EN ISO 10140-2: 2010
EN ISO 717-1: 2013

Product	Insulating glass unit
Designation	SGG Climaplust Safe
Dimensions (w x h)	1,230 mm x 1,480 mm
Construction	6 LSG/16/6 LSG
Gas filling	Argon
Are related mass	29.9 kg/m²
Special features	-/-

Representation



Instructions for use

This test report serves to demonstrate the airborne sound insulation of a building component.

Applicable for Germany.

R_w corresponds to R_{w,P} for DIN 4109, Annex 1, Table 40

Validity

The data and results given relate solely to the tested and described specimen.

Testing the sound insulation does not allow any statement to be made on further characteristics of the present construction regarding performance and quality.

Weighted sound reduction index R_w
Spectrum adaptation terms C and C_{tr}



$R_w (C; C_{tr}) = 39 (-1;-6) \text{ dB}$

ift Rosenheim
07.11.2014

J. Hessinger

Dr. Joachim Hessinger, Dipl.-Phys.
Head of Testing Department
Building Acoustics

Bernd Saß

Bernd Saß, Dipl.-Ing. (FH)
Operating Testing Officer
Building Acoustics

Notes on publication

The ift-Guidance Sheet "Conditions and Guidance for the Use of ift Test Documents" applies. The cover sheet can be used as abstract.

Contents

The test report contains a total of 7 pages:

- 1 Object
- 2 Procedure
- 3 Detailed results
- 4 Instructions for use
- Data sheet (1 page)



1 Object

1.1 Description of test specimen (All dimensions in mm)

Component	Insulating glass unit
Product designation	SGG Climaplust Safe
External dimensions (W x H)	1,230 mm × 1,480 mm
Visible size (W x H)	1,200 mm × 1,450 mm
Total thickness	
On the edge	28.5 mm
In the middle of pane	28.0 mm
Area related mass kg/m ²	29.9 kg/m ²
Construction	6 LSG/16/6 LSG
Configuration of laminated glass	3 mm Float, 0.76 mm PVB-film, 3 mm Float 3 mm Float, 0.76 mm PVB-film, 3 mm Float
Type, manufacturer of interlayer	SGG Stadip 33.1 (manufacturer specifications) SGG Stadip 33.1 (manufacturer specifications)
Pane temperature in °C	23°C
Spacer	
Material	Aluminium
Manufacturer	ALU-PRO
Edge seals	Two planes, total width 11-12 mm
External type	Poliver
Manufacturer	Fenzi
Internal type	PIB
Manufacturer	Fenzi
Edge cover	Edge cover 5-6 mm
Gas filling in cavity	According to analysis at ift
Type of gas	Argon
Volume in %	94%

The description is based on inspection of the test specimen at **ift** Laboratory for Building Acoustics. Item designations / numbers as well as material specifications were provided by the client.

1.2 Mounting in test rig

Test rig	Window test rig with suppressed flanking transmission acc. to EN ISO 10140-5: 2010; the test rig includes a 5 cm continuous acoustic break which is sealed in the test opening with closed-cell permanently resilient sealant.
Mounting of test specimen	Test specimen mounted by ift Laboratory for Building Acoustics

Airborne sound insulation of building components

Test Report 14-002633-PR01 (PB 14-H01-04-en-01) dated 07.11.2014

Client **SAINT-GOBAIN POLSKA Sp.Z.o.o.**
ODDZIAŁ GLASSOLUTIONS, 32-312 Jarosław (Poland)

Mounting conditions	The unit was fitted at a distance of 5 mm into a wooden frame of 25 mm x 25 mm cross section. The cavity between test rig and glazing beads was completely filled with plastic sealant type Perennator 2001 S grey.
Mounting position	According to EN ISO 10140-1:2010+A1:2012 Annex D
Preparation	Storage of the glazing one day before testing in the test rig for conditioning.

2 Procedure**2.1 Sampling**

Sampling	The test specimen were selected by the client
Quantity	1
Manufacturer	Saint-Gobain Polska Sp z o.o. Oddział GLASSOLUTIONS in Jarosław Ul. Szklanych Domów 1 42-530 Dąbrowa Górnicza
Manufacturing plant , Site of manufacturing	Ul. Kolejowa 1 32-312 Jarosław
Date of manufacture / date of sampling	15 th to 30 th September 2014, Position 16
Responsible for sampling	Mrs. Anna Pustul
Delivery at ift	13 th October 2014 by the client via forwarding agency
ift Registration Number	37966/14

2.2 Process**Basis**

EN ISO 10140-1:2010 + A1 : 2012	Acoustics; Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1:2010+Amd.1:2012)
EN ISO 10140-2:2010	Acoustics; Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010)
EN ISO 717-1: 2013	Acoustics; Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

Corresponds to the national German standard:

DIN EN ISO 10140-1:2012-05, DIN EN ISO 10140-2:2010-12 and DIN EN ISO 717-1 : 2013-06



Procedure and scope of measurement are in conformity with the principles of the working group of sound insulation testing bodies approved by the national building supervisory authorities in cooperation with the standardization committee NA 005-55-75-AA (subcommittee UA 1 - DIN 4109).

Boundary conditions	As required in the standard.
Deviation	There are no deviations from the test procedure and/or test conditions.
Test noise	Pink noise
Measuring filter	One-third-octave band filter
Measurement limits	
Low frequencies	The dimensions of the receiving room full fills the recommended size for testing in the frequency range from 50 Hz to 80 Hz as per EN ISO 10140-4:2010 Annex A (informative). A moving loudspeaker was used.
Background noise level	The background noise level in the receiving room was determined during measurement and the receiving room level L_2 corrected by calculation as per EN ISO 10140-4: 2010 Clause 4.3.
Maximum sound insulation	The maximum sound insulation of the test set-up was at least 15 dB higher than the measured sound reduction index of the test specimen. Not corrected by calculation.
Measurement of reverberation time	Arithmetical mean: two measurements each of 2 loudspeaker and 3 microphone positions (a total of 12 independent measurements).
Measurement equation A	$A = 0,16 \cdot \frac{V}{T} \text{ m}^2$
Measurement of sound level difference	Minimum of 2 loudspeaker positions and rotating microphones.
Measurement equation R	$R = L_1 - L_2 + 10 \cdot \lg \frac{S}{A} \text{ in dB}$

KEY	
A	Equivalent absorption area in m^2
L_1	Sound pressure level source room in dB
L_2	Sound pressure level receiving room in dB
R	Sound reduction index in dB
T	Reverberation time in s
V	Volume of receiving room in m^3
S	Testing area of the specimen in m^2



2.3 Test equipment

Device	Type	Manufacturer
Integrating sound meter	Type Nortronic 840	Norsonic-Tippkemper
Microphone preamplifiers	Type 1201	Norsonic-Tippkemper
Microphone unit	Type 1220	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Dodecahedron loudspeakers	Type 229, 96 Ohm	Norsonic-Tippkemper
Amplifier	Type 235, 100 W	Norsonic-Tippkemper
Rotating microphone boom	Type 231-N-360	Norsonic-Tippkemper

The **ift** Laboratory for Building Acoustics participates in comparative measurements at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig every three years, the last one was in April 2013. The sound level meter used, Series No. 17848, was calibrated by the Dortmund Eichamt (calibration agency) on 19 January 2012. The calibration is valid until 31 December 2014. The sound level meter used was DKD calibrated by the company Norsonic Tippkemper (DKD - Deutscher Kalibrierdienst "German Calibration_Service") on 25 March 2013.

2.4 Testing

Date 15th of October 2014

Operating Testing Officer Mr. Bernd Saß

3 Detailed results

The values of the measured sound reduction index of the tested insulating glass unit are plotted as a function of frequency in the annexed data sheet and tabled.

As per EN ISO 717-1 the weighted sound reduction index R_w and the spectrum adaptation terms C and C_{tr} for the frequency range 100 Hz to 3150 Hz obtained by calculation are as follows:

$$R_w(C; C_{tr}) = 39 (-1; -6) \text{ dB}$$

According to EN ISO 717-1 the following additional spectrum adaptation terms are obtained

$C_{50-3,150}$	=	-1 dB	$C_{100-5,000}$	=	0 dB	$C_{50-5,000}$	=	0 dB
$C_{tr,50-3,150}$	=	-6 dB	$C_{tr,100-5,000}$	=	-6 dB	$C_{tr,50-5,000}$	=	-6 dB



4 Instructions for use

4.1 Test value

Basis

DIN 4109:1989-11 Sound insulation in buildings, requirements and verifications

DIN 4109 Bb1/A1:2003-09 Sound insulation in buildings, examples and calculation methods correction A1

For verification of sound insulation according to DIN 4109, Annex 1 : A1:2003-09, Table 40 the weighted sound reduction index R_w corresponds to the test value $R_{w,P, GLASS}$

$$R_{w,P, GLASS} = 39 \text{ dB}$$

4.2 Laminated glass

The sound reduction of laminated glass depends on the temperature of the environment. If the temperature is lower than the test temperature the sound reduction index may be reduced.

4.3 Test standards

The standard series EN ISO 10140:2010 supersedes those parts of the standard series EN ISO 140 that were applicable until the respective date and describe laboratory tests. According to the two standard series, the test methods are identical.

ift Rosenheim
Laboratory for Building Acoustics
07.11.2014

Sound reduction index according to ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building elements

Client: **SAINT-GOBAIN POLSKA Sp.Z.o.o.**
ODDZIAL GLASSOLUTIONS, 32-312 Jaroszwiec (Poland)

Product designation SGG Climaplus Safe



Design of test specimen

Insulating glass unit

External dimensions 1,230 mm × 1,480 mm

Pane configuration 6 LSG/16/6 LSG

Gas filling in cavity Argon

Area related mass 29.9 kg/m²

Pane temperature 23°C

Test date 15th of October 2014

Test surface S 1.25 m × 1.50 m = 1.88 m²

Test rig as per EN ISO 10140-5

Partition wall Double-leaf concrete wall

Test noise pink noise

Volumes of test rooms V_S = 109.9 m³

V_R = 101.3 m³

Maximum sound reduction index

R_{w,max} = 62 dB (related to test surface)

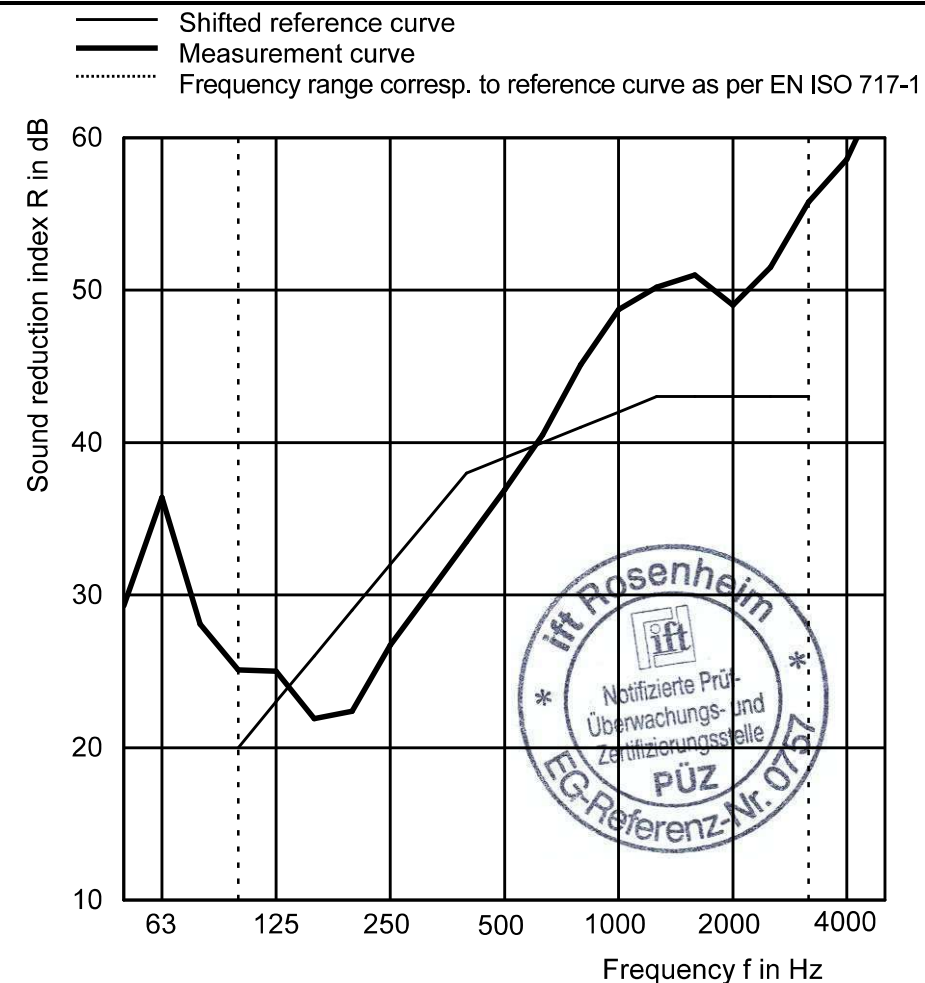
Mounting conditions

Glass mounted in test opening and held on both sides by glazing beads (25 mm × 25 mm); gap between test rig, glazing and glazing beads was completely filled with plastic sealant

Climate in test rooms 22 °C / 65 % RH

Static air pressure 957 hPa

f in Hz	R in dB
50	29.3
63	36.4
80	28.1
100	25.1
125	25.0
160	21.9
200	22.4
250	26.7
315	30.1
400	33.5
500	36.9
630	40.5
800	45.1
1,000	48.7
1,250	50.2
1,600	51.0
2,000	49.0
2,500	51.5
3,150	55.8
4,000	58.6
5,000	63.9



Rating according to EN ISO 717-1 (in third-octave bands):

R_w (C; C_{tr}) = 39 (-1;-6) dB
C_{50-3,150} = -1 dB; C_{100-5,000} = 0 dB; C_{50-5,000} = 0 dB
C_{tr,50-3,150} = -6 dB; C_{tr,100-5,000} = -6 dB; C_{tr,50-5,000} = -6 dB

Test report no.: 14-002633-PR01 (PB 14-H01-04-en-01)

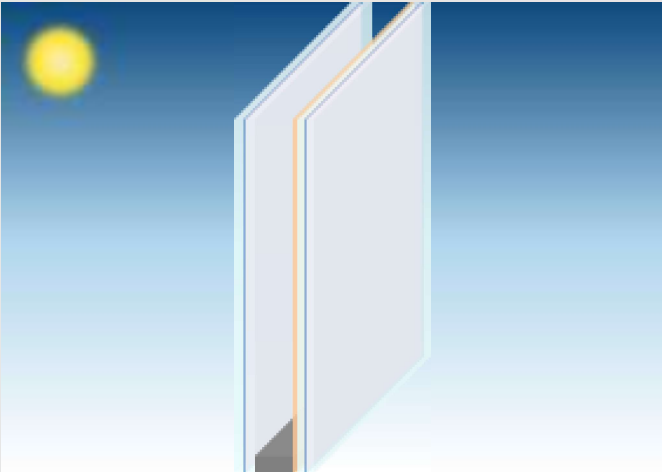
Page 7 of 7, Data Sheet no. 14

ift Rosenheim

Laboratory for Building Acoustics

7. November 2014

Bernd S.
Dipl. Ing. (FH) Mr. Bernd Saß
Operating Testing Officer



Pane 1	PLANICLEAR (4 mm) PVB silence (1 x 0.38 mm) PLANICLEAR (4 mm)
Cavity 1	ARGON (90%) / AIR (10%) / 16 mm
Pane 2	PLANITHERM ONE PLANICLEAR (3 mm) PVB silence (1 x 0.38 mm) PLANICLEAR (3 mm)

sc olin srl
MARIUS NECULA

MARIUS.NECULA@OLIN.RO



LUMINOUS
FACTORS

CIE (15-2004)

Light transmission (TL %)	70.1 %
Outdoor reflection (RLe %)	21.7 %
Indoor (RLi %)	22.7 %



SOLAR FACTORS

EN410 (2011-04)

Solar factor (g)	0.4809
Shading Coefficient (SC)	0.5528



COLOR RENDERING

CIE (15-2004)

Transmission (Ra)	96.9
Reflection (Ra)	96.9



BURGLAR RESIST

EN356

Result :	NPD
----------	-----



ENERGY FACTORS

EN410 (2011-04)

Transmission (Te)	41.6 %
Reflection (Ree)	32.1 %
Indoor (Rei)	34.6 %
Absorption (AE1)	19.8 %
Absorption (AE2)	6.5 %



THERMAL
TRANSMISSION

EN673 (2011-04)

Ug	1.034 W/m².K
0° related to vertical position	



MANUFACTURING
SIZES

Nominal thickness	30.8 mm
Weight	35.8 kg/m²



PENDULUM
RESISTANCE

EN12600

Result :	2B2/2B2
----------	---------



ACOUSTICS

EN12758

Acoustic simulated values	Rw(C;Ctr) = 42(-2;-7) dB
---------------------------	--------------------------

Evidence of Performance
Airborne sound insulation of building components

Test Report
No. 16-003401-PR01
(PB 2-H01-04-en-01)

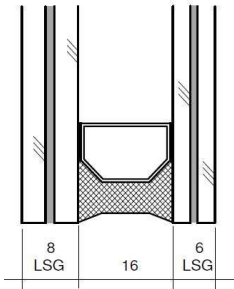


Client **SAINT-GOBAIN POLSKA Sp. z o.o.**
Oddział GLASSOLUTIONS
Szkłanych Domów 1
42-530 Dąbrowa Górnicza
Poland

Basis
EN ISO 10140-1: 2010
+A1: 2012 + A2:2014
EN ISO 10140-2 : 2010
EN ISO 717-1 : 2013

Product	Insulating glass unit
Designation	SGG Climaplust Safe Silence (no. 31836322)
External Dimensions (W x H)	1,230 mm x 1,480 mm
Construction	8 LSG SI / 16 / 6 LSG
Gas filling	Argon
Area related mass	34.7 kg/m²
Special features	-/-

Representation



Instructions for use

This test report serves to demonstrate the airborne sound insulation of a building component.

Applicable for Germany. Weighted sound reduction index R_w can be used for evaluation of sound insulation of windows according to DIN 4109-35:2016.

Validity

The data and results given relate solely to the tested and described specimen.

Testing the sound insulation does not allow any statement to be made on further characteristics of the present construction regarding performance and quality.

Notes on publication

The ift-Guidance Sheet "Conditions and Guidance for the Use of ift Test Documents" applies. The cover sheet can be used as abstract.

Contents

The test report contains a total of 8 pages:

- 1 Object
 - 2 Procedure
 - 3 Detailed results
 - 4 Instructions for use
- Data sheet (1 page)

Weighted sound reduction index R_w
Spectrum adaptation terms C and C_{tr}



$$R_w (C; C_{tr}) = 41 (-2;-6) \text{ dB}$$

ift Rosenheim
13.12.2016


Dr. Joachim Hessinger, Dipl.-Phys.
Head of Testing Department
Building Acoustics


Markus Schramm, M.Eng., Dipl.-Ing. (FH)
Operating Testing Officer
Building Acoustics



1 Object

1.1 Description of test specimen (All dimensions in mm)

Component	Insulating glass unit
Product designation	SGG Climaplust Safe Silence (no. 31836322)
External dimensions (W x H)	1,230 mm x 1,480 mm
Visible size (W x H)	1,200 mm x 1,450 mm
Total thickness	31 mm
On the edge	30.4 mm
In the middle of pane	29.9 mm
Area related mass kg/m ²	34.7 kg/m ²
Construction	8 LSG SI / 16 / 6 LSG
Construction of laminated glass	4mm float – 0.50mm SILENCE foil – 4mm float 3mm float – 0.38mm PVB foil – 3mm float
Type / Manufacturer of interlayer	For 8 LSG SEKISUI / for 6 LSG TROSIFOL
Pane temperature in °C	20.4°C
Spacers	Spacer bar
Material	Aluminium
Manufacturer	PROFIGLASS
Edge seals	Two planes, total width 9 mm
External type	Polyurethane
Manufacturer	TREMCO
Internal type	PIB
Manufacturer	FENZI
Edge cover	Edge cover 4mm
Gas filling in cavity	According to analysis at ift
Type of gas	Argon
Volume in %	92.4 %

The description is based on inspection of the test specimen at **ift** Laboratory for Building Acoustics. Item designations / numbers as well as material specifications were provided by the client.

1.2 Mounting in test rig

Test rig	Window test rig with suppressed flanking transmission acc. to EN ISO 10140-5: 2010+A1:2014; the test rig includes a 5 cm continuous acoustic break which is sealed in the test opening with elastic sealant.
Mounting of test specimen	Test specimen mounted by ift Laboratory for Building Acoustics
Mounting conditions	The unit was fitted at a distance of 5 mm into a wooden frame of 25 mm x 25 mm cross section. The cavity between test rig

Airborne sound insulation of building components

Test Report 16-003401-PR01 (PB 2-H01-04-en-01) dated 13.12.2016

Client **SAINT-GOBAIN POLSKA Sp. z o.o.**
Oddział GLASSOLUTIONS, 42-530 Dabrowa Górnicza (Poland)

and glazing beads was completely filled with plastic sealant type Perennator 2001 S grey.

Mounting position according to EN ISO 10140-1:2010+A1:2012+A2:2014 Annex D

Preparation Storage of the glazing one day before testing in the test rig for conditioning.

2 Procedure**2.1 Sampling**

Sampling	The test specimen were selected by the client
Quantity	1
Manufacturer	SAINT-GOBAIN POLSKA Sp. z o.o. Oddział GLASSOLUTIONS
Manufacturing plant , Site of manufacturing	JAROSZOWIEC
Date of manufacture / date of sampling	03/11/2016
Production line	Linia F
Responsible for sampling	Łukasz Biel
Delivery at ift	24 November 2016 by the client via forwarding agency
ift Registration Number	42574/2

2.2 Process**Basis**

EN ISO 10140-1: 2010 + A1: 2012 + A2: 2014 Acoustics; Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1: 2010+Amd. 1: 2012+Amd. 2: 2014)

EN ISO 10140-2:2010 Acoustics; Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010)

EN ISO 717-1: 2013 Acoustics; Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

Corresponds to the national German standard:

DIN EN ISO 10140-1: 2014-09, DIN EN ISO 10140-2:2010-12 and DIN EN ISO 717-1 : 2013-06



Procedure and scope of measurement are in conformity with the principles of the Working Group of sound insulation testing bodies approved by the national building supervisory authorities in cooperation with the standardization committee NA 005-55-75-AA (subcommittee UA 1 - DIN 4109).

Boundary conditions	As required in the standard.
Deviation	There are no deviations from the test procedure and/or test conditions.
Test noise	Pink noise
Measuring filter	One-third-octave band filter
Measurement limits	
Low frequencies	The dimensions of the receiving room full fills the recommended size for testing in the frequency range from 50 Hz to 80 Hz as per EN ISO 10140-4:2010 Annex A (informative). A moving loudspeaker was used.
Background noise level	The background noise level in the receiving room was determined during measurement and the receiving room level L ₂ corrected by calculation as per EN ISO 10140-4: 2010 Clause 4.3.
Maximum sound insulation	The maximum sound insulation of the test set-up was at least 15 dB higher than the measured sound reduction index of the test specimen. Not corrected by calculation.
Measurement of reverberation time	arithmetical mean: two measurements each of 2 loudspeaker and 3 microphone positions (a total of 12 independent measurements).
Measurement equation A	$A = 0.16 \cdot \frac{V}{T} \text{ m}^2$
Measurement of sound level difference	Minimum of 2 loudspeaker positions and rotating microphones.
Measurement equation R	$R = L_1 - L_2 + 10 \cdot \lg \frac{S}{A} \text{ in dB}$

KEY

A	Equivalent absorption area in m²
L ₁	Sound pressure level source room in dB
L ₂	Sound pressure level receiving room in dB
R	Sound reduction index in dB
T	Reverberation time in s
V	Volume of receiving room in m³
S	Testing area of the specimen in m²



2.3 Test equipment

Device	Type	Manufacturer
Integrating sound meter	Type Nortronic 840	Norsonic-Tippkemper
Microphone preamplifiers	Type 1201	Norsonic-Tippkemper
Microphone unit	Type 1220	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Dodecahedron loudspeakers	Type 229, 96 Ohm	Norsonic-Tippkemper
Amplifier	Type 235, 100 W	Norsonic-Tippkemper
Rotating microphone boom	Type 231-N-360	Norsonic-Tippkemper

The **ift** Laboratory for Building Acoustics participates in comparative measurements at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig every three years, the last one was in April 2016. The sound level meter used, Series No. 17848, was calibrated by the Dortmund Eichamt (calibration agency) on 12th of March 2015. The calibration is valid until 31st of December 2017. LBME NW (Eichamt Dortmund) complies with the requirements of DIN EN ISO / IEC 17025 regarding to the measurement traceability.

2.4 Testing

Date7 December 2016

Operating Testing OfficerMarkus Schramm

3 Detailed results

The values of the measured sound reduction index of the tested Insulating glass unit are plotted as a function of frequency in the annexed data sheet and tabled.

As per EN ISO 717-1 the weighted sound reduction index R_w and the spectrum adaptation terms C and C_{tr} for the frequency range 100 Hz to 3150 Hz obtained by calculation are as follows:

$R_w (C;C_{tr}) = 41 (-2;-6) \text{ dB}$

According to EN ISO 717-1 the following additional spectrum adaptation terms are obtained

$C_{50-3,150}$	=	-2 dB	$C_{100-5,000}$	=	-1 dB	$C_{50-5,000}$	=	-1 dB
$C_{tr,50-3,150}$	=	-7 dB	$C_{tr,100-5,000}$	=	-6 dB	$C_{tr,50-5,000}$	=	-7 dB



4 Instructions for use

4.1 Application for DIN 4109: 2016-07

Basis

DIN 4109-1: 2016-07	Sound insulation in buildings - Part 1: Minimum requirements
DIN 4109-35: 2016-07	Sound insulation in buildings – Part 35: Data for verification of sound insulation (component catalogue) – Elements, windows, doors, curtain walling
DIN EN 14351-1:2010-08	Windows and doors - Product standard, Performance characteristics - Part 1: Windows and external pedestrian doorsets with-out resistance to fire and/or smoke leakage characteristics

Weighted sound reduction index R_w as given in section 3 can be used for evaluation of sound insulation of windows and doors together with tables in DIN 4109-35 or DIN EN 14351-1. R_w refers to $R_{w, GLAS}$ in table 1 of DIN 4109-35 resp. to $R_{w, Verglasung}$ in table 5 of DIN 4109-35.

4.2 Uncertainty of measurement, single number ratings in $1/10$ dB

Basis

EN ISO 12999-1: 2014	Acoustics; Determination and application of measurement uncertainties in building acoustics, part 1: sound insulation (ISO 12999-1: 2014)
----------------------	---

The resulting weighted sound reduction index (in $1/10$ dB with measurement uncertainty), determined on the basis of EN ISO 717-1:2013-06 is:

$$R_w = 41.1 \text{ dB} \pm 1.2 \text{ dB}$$

The specified measurement uncertainty is the average standard deviation of laboratory measurements (standard measurement uncertainty σ_R for measurement situation A: Characterisation of a building component by laboratory measurements as per EN ISO 12999-1: 2014, Table 3 $\sigma_R = 1.2$ dB).

The product declaration for CE marking must use the integral value of the sound reduction index and the spectrum adaptation terms as given in section 3,

$$R_w (C; C_{tr}) = 41 (-2; -6) \text{ dB}$$

Airborne sound insulation of building components
Test Report 16-003401-PR01 (PB 2-H01-04-en-01) dated 13.12.2016

Client **SAINT-GOBAIN POLSKA Sp. z o.o.**
Oddział GLASSOLUTIONS, 42-530 Dąbrowa Górnicza (Poland)



4.3 Laminated glass

The sound reduction of laminated glass depends on the temperature of the environment. If the temperature is lower than the test temperature the sound reduction index may be reduced.

ift Rosenheim
Laboratory for Building Acoustics
13.12.2016

Sound reduction index according to ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building elements

Client: **SAINT-GOBAIN POLSKA Sp. z o.o.**
Oddzial GLASSOLUTIONS, 42-530 Dabrowa Górnicza
(Poland)



Product designation SGG Climaplus Safe Silence (no. 31836322)

Design of test specimen

Insulating glass unit

External dimensions 1,230 mm × 1,480 mm

Pane configuration 8 LSG SI / 16 / 6 LSG

Gas filling in cavity Argon

Area related mass 34.7 kg/m²

Pane temperature 20.4°C

Test date 7 December 2016

Test surface S 1.25 m × 1.50 m = 1.88 m²

Test rig as per EN ISO 10140-5

Partition wall Double-leaf concrete wall

Test noise pink noise

Volumes of test rooms $V_S = 109.9 \text{ m}^3$

$V_R = 101.3 \text{ m}^3$

Maximum sound reduction index

$R_{w,max} = 62 \text{ dB}$ (related to test surface)

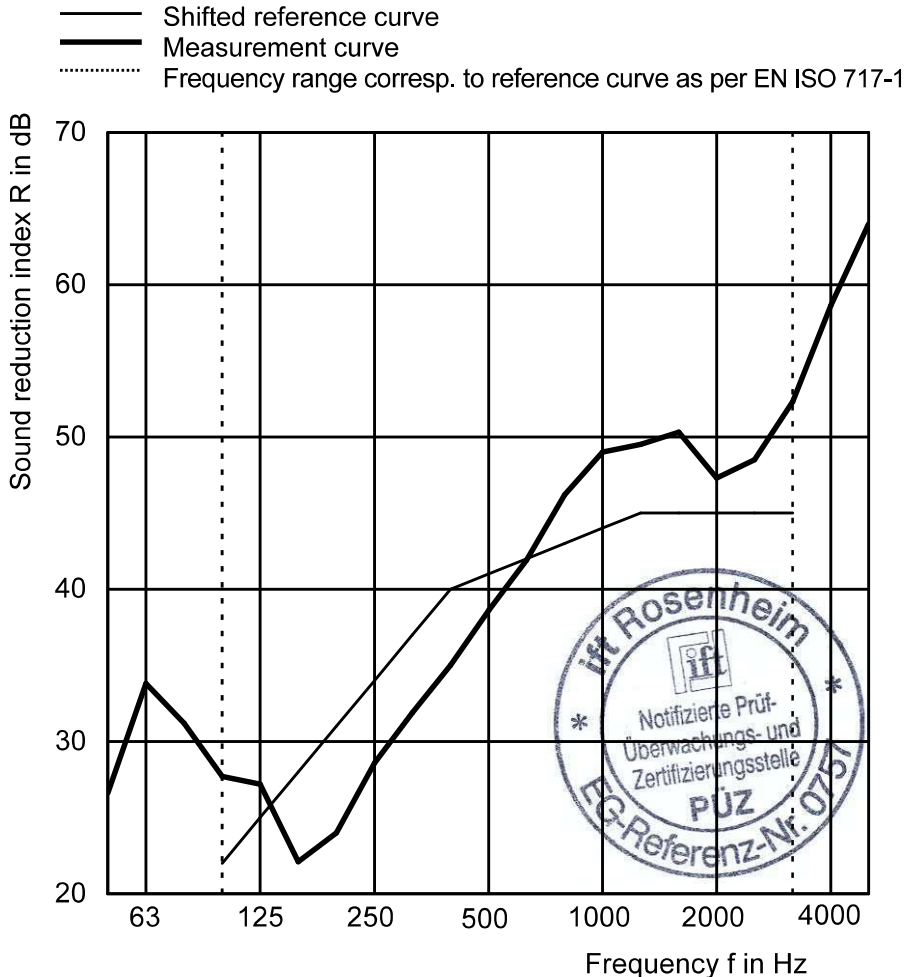
Mounting conditions

Glass mounted in test opening and held on both sides by glazing beads (25 mm × 25 mm); gap between test rig, glazing and glazing beads was completely filled with plastic sealant

Climate in test rooms 20 °C / 38 % RH

Static air pressure 980 hPa

f in Hz	R in dB
50	26.6
63	33.8
80	31.2
100	27.7
125	27.2
160	22.1
200	24.0
250	28.6
315	31.9
400	35.0
500	38.6
630	41.9
800	46.2
1.000	49.0
1.250	49.5
1.600	50.3
2.000	47.3
2.500	48.5
3.150	52.3
4.000	58.6
5.000	64.0



Rating according to EN ISO 717-1 (in third-octave bands):

$R_w(C;C_{tr}) = 41 (-2;-6) \text{ dB}$ $C_{50-3,150} = -2 \text{ dB}$; $C_{100-5,000} = -1 \text{ dB}$; $C_{50-5,000} = -1 \text{ dB}$
 $C_{tr,50-3,150} = -7 \text{ dB}$; $C_{tr,100-5,000} = -6 \text{ dB}$; $C_{tr,50-5,000} = -7 \text{ dB}$

Test report No.: 16-003401-PR01 (PB 2-H01-04-en-01)

Page 8 of 8. Data Sheet No. 2

ift Rosenheim

Laboratory for Building Acoustics

13. December 2016

Markus Schramm

M.Eng.;Dipl. Ing. (FH) Mr. Markus Schramm
Operating Testing Officer



Pane 1	PLANICLEAR 6 mm
PVB	PVB SILENCE 0.76 mm
Pane 1'	PLANICLEAR 4 mm
Cavity 1	24 ARGON 90%
Coating 3	PLANITHERM ONE
Pane 2	PLANICLEAR 8 mm
PVB	PVB SILENCE 0.76 mm
Pane 2'	PLANICLEAR 6mm

Name : Lucian Mihaila
Country : Romania

Notes:

	LUMINOUS FACTORS	EN410 (2011-04)		ENERGY FACTORS	EN410 (2011-04)
	Light Transmittance (TL)	67%		Transmittance (TE)	38%
	Outdoor Reflectance (RLe)	21%		Outdoor Reflectance (Ree)	29%
	Indoor Reflectance (RLi)	22%		Indoor Reflectance (REi)	27%
	THERMAL TRANSMISSION	EN673-2011		Absorptance A1(AE1)	24%
	Ug	1.1 W/(m ² .K)		Absorptance A2	9%
	0° related to vertical position			Absorptance A3	
	MANUFACTURING SIZES			SOLAR FACTORS	EN410 (2011-04)
	Nominal Thickness	49.52 mm		Solar Factor (g)	47%
	Weight	61 kg/m ²		Shading Coefficient (SC)	0.53
	ACOUSTICS	EN 12758		COLOR RENDERING	
	Rw(C;Ctr)	51.0000 (-1; -4) dB		Ra Light Transmittance	95
	UV FACTORS	EN410 (2011-04)		ANTI-BURGLARY	EN356
	TUV	0%		Burglar Resistance	P2A/P2A
	SAFETY CLASS	EN 12600			
	Pendulum Body Resistance	1B1/1B1			

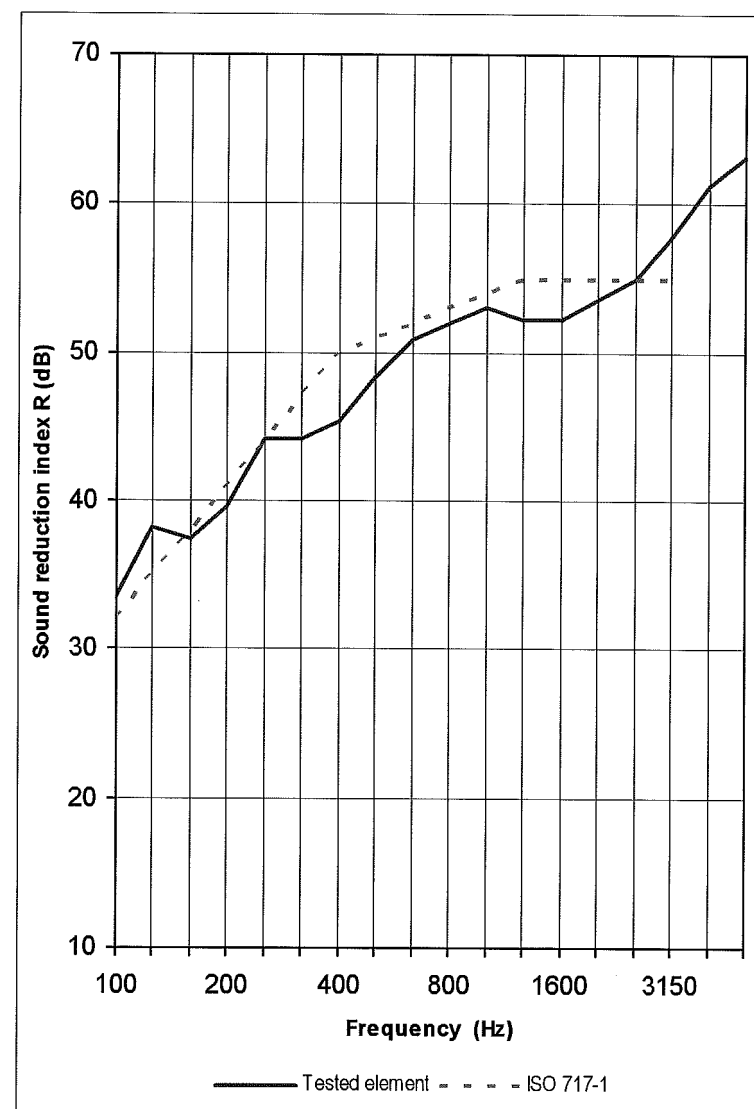
These values are calculated according to EN410 (2011-04) and EN673-2011 standards, the international standard ISO 9050, the Japanese standard JIS R 3106/3107, the Korean standard KS L 2514/2525 and the NFRC-2010 standards. For European norms, tolerances are defined according to EN1096-4 standard. Nevertheless, user must check the feasibility of the combination of glazing, particularly in terms of thickness and color. Furthermore, it is the user's responsibility to check that the resulting combination of glazing meets regulatory requirements at national, local or regional level. Computed values standards are indicative. Please use NFRC certified software for certified values. Calculation rules for EN410 (2011-04), EN673-2011, ISO 9050 (2003) m1.5 and ISO 9050 (1990) m1.0 standards and functional output of Calumen Live use Calumen 1.2.4 calculation engine, and have been validated by TUV Rheinland Quality Report 11923R-11-33705. Sg Values are calculated according to the French thermal regulation 2012 (RT2012). Acoustic indexes are representative of performances tested in laboratory conditions of a glazing of size 1.23x1.48m (EN ISO 10140-3 and EN 12758). In situ measurements may differ depending on the glazing size, environment, quality of the window frame, of the installation, source of noise, etc. The accuracy of the given indexes is in the range +/- 1dB (EN 12758).All glazing images are illustrative.



Tested element: **SGG STADIP SILENCE 64-2 (24) SGG STADIP SILENCE 86-2**

 Sample surface area S = 1,9 m²
 Volume of receiving room V = 86 m³
 Volume of source room 98 m³

FREQ. Hz	R dB
100	33,6
125	38,3
160	37,4
200	39,6
250	44,2
315	44,2
400	45,4
500	48,3
630	50,9
800	52,0
1000	53,0
1250	52,3
1600	52,3
2000	53,6
2500	55,0
3150	57,8
4000	61,3
5000	63,2



Rating according to ISO 717-1 (in the band 100 ÷ 3150 Hz) based on laboratory measurements:

R_w (C; C_{tr}) = 51 (-1 ; -4) dB

F. Statement on Enhancements to Glazing Specifications from Uniform Architectural Limited.

From: Chris Dixon <chris.dixon@uniform-arch.co.uk>
Sent: 01 October 2019 16:32
To: James Daycock <JamesDaycock@renakerbuild.com>
Cc: Dan Worrall <DanWorrall@renakerbuild.com>; Adrian Youd <adrian.youd@uniform-arch.co.uk>; John Williams <JohnWilliams@renakerbuild.com>; Paul Gregory <PaulGregory@renakerbuild.com>
Subject: RE: Crown Street-UA-MM Asite Comments
Importance: High

Hi James,

Further to the comments from Adrian Morgan, below - and in view of the critical manufacturing timetable, I have had a most productive discussion with Adrian (M) and explained how we have now re-appraised the 3 glazing specifications, in order to maximise the acoustic performance, whilst preserving the rebate dimensions for which the anodized aluminium profiles have now already been manufactured. This has resulted in some proposed modifications, which I discussed with Adrian, in order to ascertain if we were going in the right direction, which Adrian has kindly acknowledged, subject to confirmation, as follows:-

Rw 30 [*Sic. R_w+C_{tr} 30*] – From the St Gobain Glass “SGG” technical data sheet, ‘Calumen’ report – we have provided a glass unit specification providing Rw 33 [*Sic. R_w+C_{tr} 30*] after Ctr adjustment, for the framed window performance of Rw 30 [*Sic. R_w+C_{tr} 30*]. It is known that a frame will detract from the glass unit performance by circa 3 dB, but in addition, our frames use a high density timber frame of >500Kg/M3, which would tend to minimize the reduction of the timber, to better achieve the required Rw 30 [*Sic. R_w+C_{tr} 30*].

Rw 35 [*Sic. R_w+C_{tr} 35*] – We have re-assessed the glass unit specification which currently achieves only Rw 35 [*Sic. R_w+C_{tr} 35*]. after Ctr without there being any tolerance for loss of performance through the frame. This glass unit consisted of both panes being laminated, of which one included an acoustic SGG ‘Silance’ PVB interlayer, whilst the other used only a standard

PVB. Checking with SGG Technical Office, we were assured that changing one PVB from standard to Acoustic would improve the overall performance by 3-5 dB. This would therefore, provide a tolerance of 3-5 dB for the frame deduction, which should place it into the area of acceptable marginality.

Rw 40 – Our current glass spec is $Rw\ 49 - 6\ Ctr = Rw\ 43$ [*Sic. $R_w + C_{tr}\ 43$*], which being a more onerous rating may not be sufficiently acceptable. Therefore, we now propose to change that glass unit to one achieving $Rw\ 50 - 4\ Ctr = Rw\ 46$ [*Sic. $R_w + C_{tr}\ 46$*], which should provide an acceptable tolerance for the frame.

We agreed that I would confirm this to you all at Renaker, with a copy to Adrian M, who would then advise if he was in agreement, or needed to make further comments.

We must now order the glass units, ASAP, if the delivery dates of the windows are to be optimized, so may I please request your urgent confirmation for the above course of action.

Kind regards,

Chris

Chris Dixon

Sales & Marketing Director

uniformarchitectural

M: 07530 421327



This e-mail, and any attachments thereto, is intended only for use by the addressee(s) named herein and may contain legally privileged and/or confidential information. If you are not the intended recipient, please

note that any review, dissemination, disclosure, alteration, printing, copying or transmission of this e-mail and/or any file transmitted with it, is strictly prohibited and may be unlawful. If you have received this e-mail by mistake, please delete it immediately.

