



BRAIDEN ACOUSTICS LTD

Innovation Forum // 51 Frederick Road // Salford // Manchester // M6 6FP

NOISE VERIFICATION REPORT

Prepared for : Watson Homes

Date : 26 Apr 2024

Site : Moston Campus, Ashley Lane, Manchester M9 4WU

Report No. : 11217revA

1 INTRODUCTION

Braiden Acoustics has been commissioned by Watson Homes to undertake a Verification Noise Survey at the site of Moston Campus, Ashley Lane, Manchester M9 4WU in order to discharge noise-related planning conditions.

1.1 PLANNING PERMISSION

Planning application 128835/FO/2020 proposed “Erection of 50, two storey dwellinghouses and erection of three storey apartment building to form 10no. apartments with associated car parking, boundary treatment and other associated works following demolition of existing college building.”. The application was approved with conditions on the 28 May 2021.

The relevant conditions are:

18) (a) Notwithstanding the Noise Impact Assessment stamped as received by the City Council, as Local Planning Authority 4 December 2020, prior to the first occupation of the development a scheme for acoustically insulating the proposed residential accommodation against noise from the local traffic network shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved noise insulation scheme shall be completed before the first occupation of the development.

Noise survey data must include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB L Aeq (individual noise events shall not exceed 45 dB L Amax,F by more than 15 times)

Living Rooms (daytime - 07.00 - 23.00) 35 dB L Aeq

Gardens and terraces (daytime) 55 dB L Aeq

(b) Prior to the first occupation of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.

Reason: To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance pursuant to policies SP1, H1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

19) (a) Prior to the first occupation of the development, details of any externally mounted ancillary plant, equipment and servicing shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt, externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 db (L_{aeq}) below the typical background (L_{a90}) level at the nearest noise sensitive location.

(b) Prior to the first occupation of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter be retained and maintained in situ.

Reason - To minimise the impact of plant on the occupants of the development pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

This report deals only with the ‘verification assessment’ as outlined in bold in the above conditions for

- i. internal noise levels
- ii. external plant noise levels.

1.2 AIM

This report details internal noise levels at completed dwellings on site, to assess conformity to relevant standards and guidance for internal noise levels and to fully discharge the above noise conditions.

2 DESCRIPTION OF SITE

2.1 PROPOSED USE

The proposed site layout is shown in Figure 1.



Figure 1
Proposed site layout showing monitored plots

Three houses were chosen for the internal noise measurements – plot 03, plot 15 & plot 50, as shown in red Figure 1.



Two different flats were chosen for the internal noise measurements - plots 65 & 67 on the top floor, as shown in red Figure 1.

The whole site is surrounding by housing, so there are no obvious adjacent noise sources to the site.

Moston Lane is approximately 150m north of the site.

Ashley Lane is 30m to the west.

2.2 GLAZING

The original noise assessment recommended standard (4mm) double glazing.

The glazing that has been installed is

4-20-4 Clear Low E : 20mm Warm Edge	Argon	33(-1; -5) dB R_w	28 dB $R_w + C_{tr}$
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See the Appendix for further details.

3 ACOUSTIC CRITERIA AND METHODOLOGY

This is a residential development that may be susceptible to environmental noise. Potential mitigation measures are determined by recommended indoor noise levels from BS 8233 “Sound insulation and noise reduction for buildings” [1] which, in turn, takes guidance from the research-based World Health Organisation “Guidelines for Community Noise”.

Noise level thresholds are usually given for the night-time – 2300-0700 hrs and day time – 0700-2300 hrs.

3.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework is the current document for planning guidance. Paragraph 123 of the NPPF says that planning decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

3.2 BS 8233: 2014

The British Standard BS 8233:2014 “Guidance on sound insulation and noise reduction for buildings” gives guidance on recommended indoor ambient noise levels for residential dwellings.



Room	Criterion	$L_{Aeq,T}$	
		night	day
Bedroom	Sleeping	30	35
Dining Room/Area	Dining	--	40
Living Room	Resting	--	35

Table 1

Recommending indoor ambient noise level thresholds from anonymous noise (taken from Table 4, BS 8233:2014)

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

Internal noise levels in habitable rooms are calculated using either the simple or rigorous method as described in Annex G in BS 8233:2104.

3.2.1 Noise levels in external living areas

For external living areas such as gardens and balconies, BS 8233:2014 § 7.7.3.2 recommends an upper limit of 55dB $L_{Aeq,day}$ although there is a caveat:

However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.2.2 Maximum noise levels

In the 2014 edition of the Standard, the criterion of 45dB L_{AFMax} inside bedrooms has been removed although there is Note 4:

NOTE 4 regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,P}$ depending on the character and number of events per night. Sporadic noise events could require separate values.

The use of the phrases ‘may be set’ and ‘could require’ imply that this is a discretionary criterion.

3.3 COUNCIL CRITERIA

It is usual that Councils adhere to noise levels given in BS 8233.

L_{Aeq} 35 dB 16 hours – indoors, daytime (07.00-23.00)

L_{Aeq} 30 dB 8 hours – indoors, night-time (23.00-07.00)

4 MONITORING DETAILS

4.1 MONITORING OVERVIEW

Personnel: John Braiden, BSc & MSc Acoustics, MIOA.

Equipment: NTi XL2 integrated real time analyser & B&K 4231 calibrator.



4.2 VISIT 1 – 27TH OCT 2023

The first visit monitored internal levels were within two houses: Plot 02 & Plot 50

Noise measurements focussed on noise within a habitable ground floor room at two different plots.

Date / time: Friday 27th October at 16:00 for 48 hours.

The sound level meter was calibrated before after the measurements with no significant drift reported.

Monitoring was unmanned but audio was recorded.

4.2.1 Location

The microphone was approximately 1.2 m from local ground and placed in the middle of a ground-floor habitable room with the doors and windows closed *but with trickle vents open*.

NB It should be noted that the room was unfurnished and without carpets so reverberation noise contributed to the measured noise levels. When the room is fully furnished then the reverberation noise will decrease and therefore the overall noise level in the rooms will also decrease.**

4.2.2 Results

Noise monitoring took place during a busy weekday (Friday), that included Friday evening rush hour traffic, and throughout the weekend.

4.2.2.1 Plot 03

Plot 03 is at the south western part of the site, near to Princedom Street and Ashley Lane.

The internal noise levels within the habitable room of Plot 03 are shown in Figure 2.

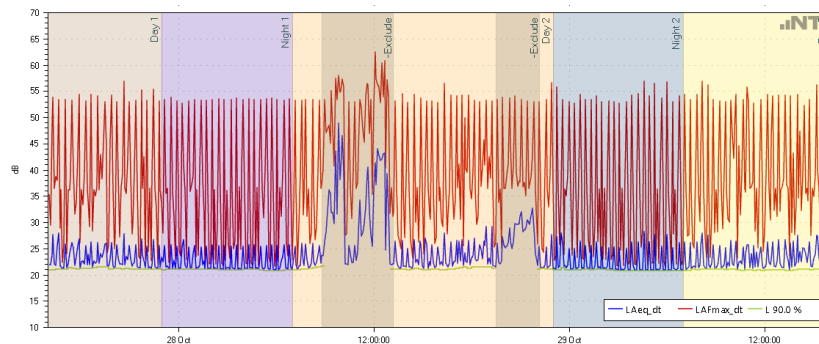


Figure 2
Internal time history – Plot 03

The large impulsive spikes in Figure 2 are a kind of ‘popping’ sound, the origin of which has not yet been determined.



Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	16:00:00	23:00:00	07:00:00	day	21.1	23.7	56.8
Sat	23:00:00	07:00:00	08:00:00	night	20.9	22.8	53.8
	07:00:00	23:00:00	16:00:00	day	21.0	23.8	56.6
Sun	23:00:00	07:00:00	08:00:00	night	20.8	23.0	56.9
	07:00:00	16:00:00	09:00:00	day	20.9	23.8	56.9

Table 2
Summary of internal noise monitoring results

A summary of the night and day noise levels is:

Night 23dB(A)
Day 23 dB(A)

The night and day noise levels were the same due to the influence of the ‘popping’ noise.

4.2.2.2 Plot 50

Plot 50 is to the south eastern side of the site.

The internal noise levels within the habitable room of Plot 50 are shown in Figure 3.

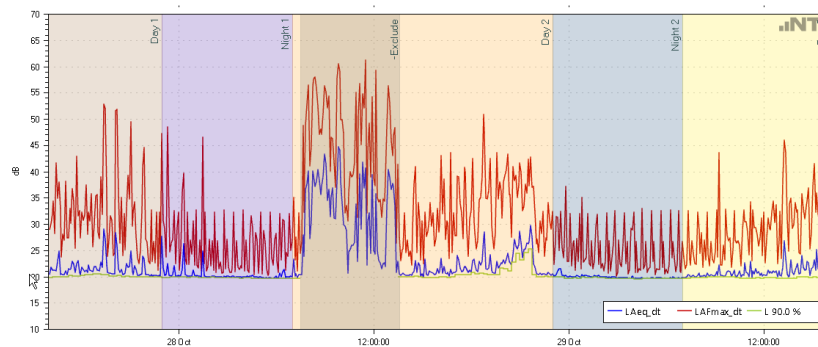


Figure 3
Internal time history – Plot 50

The time history graph for Plot 50 is not as ‘noisy’ than Plot 03 but the popping sound¹ was still evident.

¹ Maybe the popping sound was some sort of security alarm.



Date	Time		Duration	Time Period	L _{A90} dB	L _{Aeq} dB	L _{Amax} dB
	Start	Finish					
Fri	16:00:00	23:00:00	07:00:00	day	20.0	22.1	52.8
Sat	23:00:00	07:00:00	08:00:00	night	19.7	20.4	48.4
	07:00:00	23:00:00	16:00:00	day	19.9	22.7	50.9
Sun	23:00:00	07:00:00	08:00:00	night	19.6	19.9	37.2
	07:00:00	16:00:00	09:00:00	day	19.8	21.2	46.0

Table 3
Summary of internal noise monitoring results for Plot 20

Again, the internal noise levels were very low.

A summary of the night and day noise levels is:

Night 20dB(A)

Day 22dB(A)

4.3 VISIT 2 – 5TH APR 2024

The second visit monitored internal levels within one house, Plot 15 and two flats, Plots 65 & 67.

Date / time: Friday 5th April 2024 at 16:00 for 48 hours.

The sound level meter was calibrated before after the measurements with no significant drift reported.

Monitoring was unmanned but audio was recorded.

4.3.1 Location

The microphone was approximately 1.2 m from local ground and placed in the middle of a ground-floor habitable room with the doors close but with a window slightly open and trickle vents open.

NB It should be noted that the room was unfurnished and without carpets so reverberation noise contributed to the measured noise levels. When the room is fully furnished then the reverberation noise will decrease and therefore the overall noise level in the rooms will also decrease.**

4.3.2 Results

Noise monitoring took place during a busy weekday (Friday), that included Friday evening rush hour traffic, and throughout the weekend.

4.3.2.1 Plot 15

Plot 15 is at the north eastern part of the site.

The internal noise levels within the habitable room of Plot 15 are shown in Figure 2.



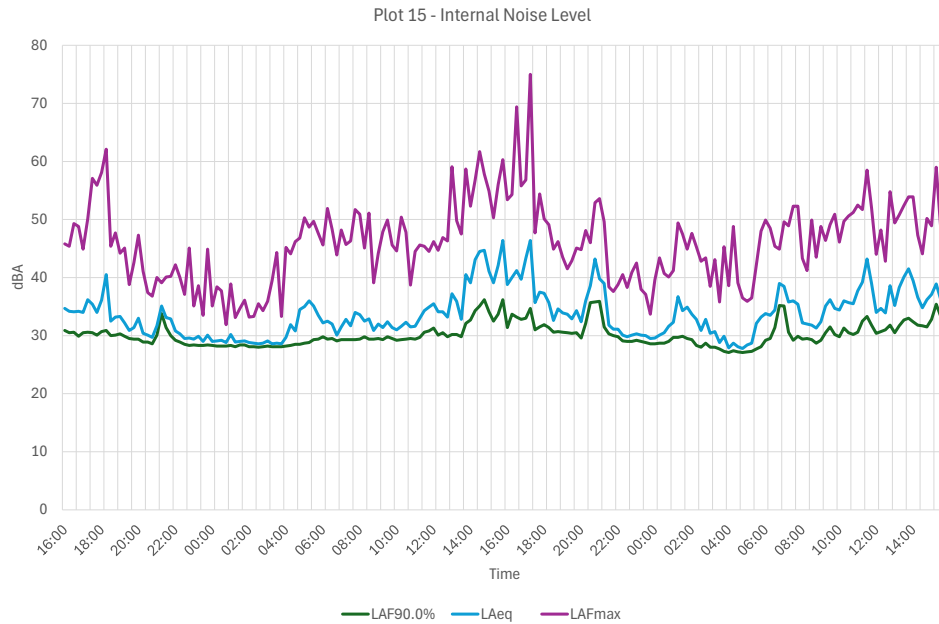


Figure 4
Internal time history – Plot 15

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	16:00:00	23:00:00	07:00:00	day	30.0	33.8	62.1
Sat	23:00:00	07:00:00	08:00:00	night	28.7	31.1	51.9
	07:00:00	23:00:00	16:00:00	day	31.2	38.3	75.0
Sun	23:00:00	07:00:00	08:00:00	night	28.4	32.4	49.9
	07:00:00	16:00:00	09:00:00	day	32.3	37.1	59.0

Table 4
Summary of internal noise monitoring results for Plot 15

A summary of the night and day noise levels is:

Night 32 dB(A)
Day 37 dB(A)

4.3.2.2 Plot 65

Plot 65 is a flat on the top floor of the apartment block, on the Northern elevation.

One of the windows was slightly open and trickle vent open.

The internal noise levels within the habitable room of Plot 65 are shown in Figure 2.



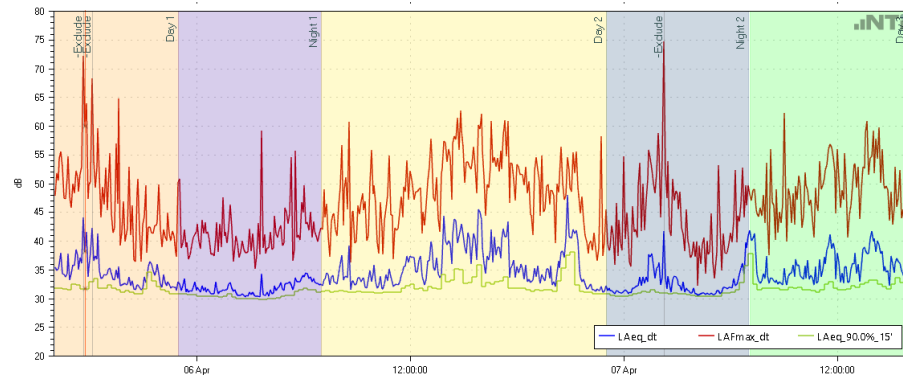


Figure 5
Internal time history – Plot 65

There was some erroneous impulsive noise, such as beeping horns, that were edited out.

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	16:00:00	23:00:00	07:00:00	day	31.2	35.3	72.1
Sat	23:00:00	07:00:00	08:00:00	night	30.1	31.9	59.2
	07:00:00	23:00:00	16:00:00	day	31.2	37.5	62.7
Sun	23:00:00	07:00:00	08:00:00	night	30.5	33.2	58.8
	07:00:00	16:00:00	09:00:00	day	31.7	36.3	62.3

Table 5
Summary of internal noise monitoring results

A summary of the night and day noise levels is:

Night 33dB(A)
Day 36 dB(A)

4.3.2.3 Plot 67

Plot 15 is at the north eastern part of the site.

The internal noise levels within the habitable room of Plot 67 are shown in Figure 2.



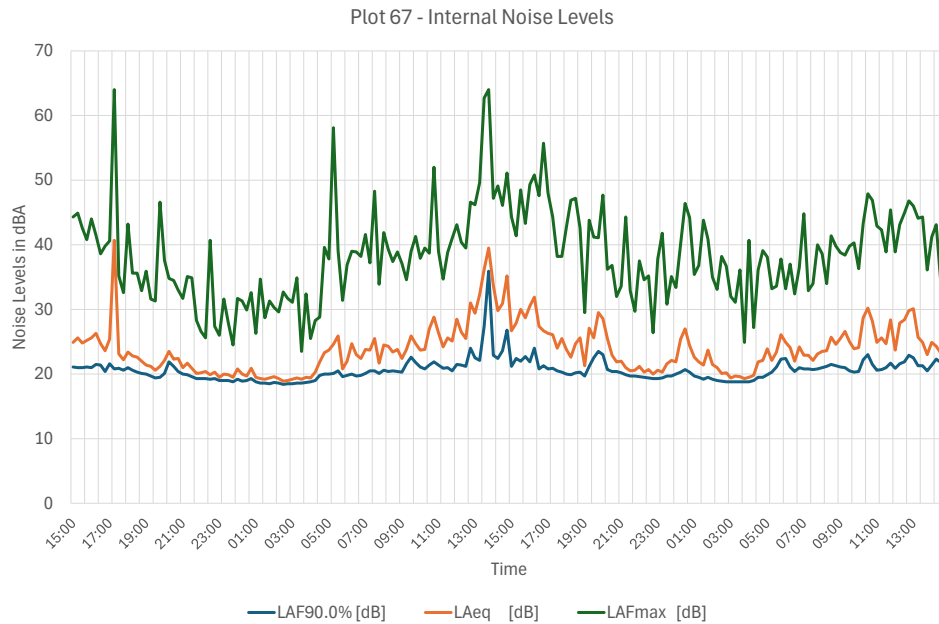


Figure 6
Internal time history – Plot 67

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	16:00:00	23:00:00	07:00:00	day	20.3	27.5	64.0
Sat	23:00:00	07:00:00	08:00:00	night	19.2	21.2	58.1
	07:00:00	23:00:00	16:00:00	day	21.2	28.5	64.0
Sun	23:00:00	07:00:00	08:00:00	night	19.6	22.6	46.4
	07:00:00	16:00:00	09:00:00	day	23.0	26.1	47.9

Table 6
Summary of internal noise monitoring results

A summary of the night and day noise levels is:

Night 22dB(A)
Day 27 dB(A)

4.4 EXTERNAL PLANT NOISE MONITORING

There were no external plant.

Ventilation of the properties will be achieved by open windows.



5 ACOUSTIC ASSESSMENT

5.1 INTERNAL NOISE LEVELS

5.1.1 Results overview

Plot	period	room	Internal Levels L_{Aeq} (dB)		Result	
			Limit	Meas	Diff	Discussion
03	night	bedroom	30	23	-7	under the limit
	day	lounge	35	23	-12	under the limit
15	night	bedroom	30	32	+2	Just over limit
	day	lounge	35	37	+2	Just over limit
50	night	bedroom	30	20	-10	under the limit
	day	lounge	35	22	-13	under the limit
65	night	bedroom	30	33	+3	Just over limit
	day	lounge	35	36	+1	Just over limit
67	night	bedroom	30	22	-8	under the limit
	day	lounge	35	27	-8	under the limit

Table 7
Measured noise level compared with day and night limits.

Internal noise levels easily met the thresholds for plots 03, 50 & 67.

Noise levels for plots 15 & 65 were between 1 – 3dB over the internal limit. This is acceptable as the rooms are unfurnished so reverberation noise is high. Once the accommodations is furnished with carpets, then the internal noise levels will easily be within the recommended limits.

6 CONCLUSION

A verification acoustic survey has taken place at Moston Campus, Ashley Lane, Manchester M9 4WU to discharge noise conditions of planning application 128835/FO/2020 for the erection of residential dwellings.

Condition 18 – internal noise levels

Internal noise levels met the relevant thresholds.

Condition 19 – external plant noise levels

There are no external plant, and ventilation to the accommodation will be achieved via open windows.

7 REFERENCES

- [1] BS8233: 2014
Sound Insulation and noise reduction for buildings – Code of Practice,
British Standards Institute, 2014.



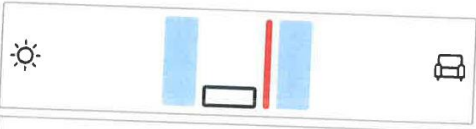
Appendix

A1 GLAZING SPEC



4 (20 Argon 90) 4
PLANITHERM TOTAL+ FG #3
Computed by: Sarah McMurtrie
Computed on: 26/09/2023
Location: United Kingdom

Glazing type



Glazing 1
PLANICLEAR (4mm) - Annealed

Cavity 1
Argon 90% 20 mm

Glazing 2
PLANITHERM TOTAL+ FG
PLANICLEAR (4mm) - Annealed

Simulated performance datas

Luminous Factors **CIE (15-2004)**
Light Transmittance (TL) 79%
Outdoor Reflectance (RLe) 13%
Indoor Reflectance (RLi) 13%

Energy Factors **EN410 (2011-04)**
Transmittance (TE) 62%
Outdoor Reflectance (Ree) 22%
Indoor Reflectance (Rei) 21%
Absorptance A1 (AE1) 6%
Absorptance A2 (AE2) 10%

Solar Factors **EN410 (2011-04)**
Solar Factor (g) 0.71
Shading Coefficient (SC) 0.81

Thermal Transmission (Ug) **EN673-2011**
Ug 1.2 W/(m2.K)
Angle relative to the vertical 0°

Acoustics **EN 12758**
Acoustic simulated values
Rw 33 (-1; -5) dB
STC (ASTM E413) 34
OTC (ASTM E1332) 26

Color Rendering **CIE (15-2004)**
Transmission (Ra) 99
Reflection (Ra) 92.2

Safety Class **EN 12600**
Pendulum Body Resistance NPd

Anti-Burglary **EN 356**
Burglar Resistance NPd

Manufacturing Sizes
Nominal Thickness 28.0 mm
Weight 20 kg/m²

Sustainability
Carbon footprint
The value is calculated regarding the composition computed based on the standard EN 15804+A2 (2019)
Global Warming Potential (GWP) - A1-A3 (kg, CO₂ eq./m²) European average 34



Verified Results
EN 410
EN 673
www.tuv.com
ID: 0000038889

Calumen® calculates the photometric characteristics and thermal transmission of glass using calculation algorithms which comply with the following standards: the European standards EN 410 and EN 673, the international standard ISO 9050, the Japanese standard JIS R 3106/1307 and the Korean standard KS L 2514/2525. The functional output and standards are provided for information only and are subject to amendment.
Only the values entered in the performance declaration available on the CE marking are official.
The simulated performance values are measured under laboratory conditions according to the standards EN 12758 and EN 12759. The calculated values are provided for information only. The accuracy for the values is within a range of ±2.5dB. The glass thickness calculations comply with the 2017 version of the EN 12758-14 description. The user is responsible for ensuring that the correct calculation hypothesis is used and the EN 12758 is applied appropriately for the project concerns.

