eco-scan bvba
Industrieweg 114H
B-9032 Wondelgem
Belgium
BTW nr.: BE 0887 763 992

www.eco-scan.be

NOISE LAB
REPORT Number ASTM-2018_ES_211-I105_43432_E

Customer : **Kinetics Middle East, LLC**
P.O. Box: 37670
Dubai
United Arab Emirates

Contacts : Client : Karim Abouseda
Noise lab : Volker Spessart

Tests : Laboratory measurement of airborne sound insulation of building elements
Product name : **KINLAYMENT 4mm**

Reference norm :
ASTM E 90 - 04 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

Various other related norms:
ASTM E 413 - 10 Classification for Rating Sound Insulation

NBN EN ISO 10140-1:2010 Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products
NBN EN ISO 10140-4:2010 Acoustics - Laboratory measurement of sound insulation of building elements - Part 4: Measurement procedures and requirements
NBN EN ISO 10140-5:2010 Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment

To perform the above ISO measurements, the laboratory of eco-scan is accredited by BELAC "The Belgian Accreditation Body"
BELAC is a signatory of all existing MLAs (multilateral agreements) and MRAs (multilateral recognition agreements) of EA (European co-operation for Accreditation), ILAC (International Laboratory Accreditation Cooperation) and IAF (International Accreditation Forum).
In this way, reports and certificates issued by BELAC accredited bodies are internationally accredited.

Date and reference of the request:	8-Nov-2018	2018_ES_211
Date of receipt of the specimen (s):	27-Nov-2018	SONI105
Date of tests:	28-Nov-2018	
Date of preparation of the report:	30-Nov-2018	

This test report together with its annexes contains : 7 pages and must be multiplies only in its entirety

Technical Manager,

Volker Spessart

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MEASURING EQUIPMENT

Sound Sources
Omnidirectional Sound Source: OUTLINE model GSR Globe Source
Extension Range Subwoofer: OUTLINE model GSS-SP

Microphone and data acquisition system:
Brüel & Kjaer - 4189 : 1/2" free field microphone, 6Hz to 20kHz, prepolarized
Brüel & Kjaer - ZC-0032 : 1/2" microphone preamplifier
Brüel & Kjaer - JP 1041 : dual 10-pole adaptor JP-1041
Brüel & Kjear - 3923 : rotating microphone boom
Brüel & Kjaer - 4231 : Sound calibrator 94&114dB SPL-1000Hz, Fulfils IEC 60942(2003)Class1
Brüel & Kjaer - 2270 : Sound level meter - dual channel instrument (measuring both channels simultaneously)
Conforms with IEC 61672-1 (2002-05) Class 1

Two rotating microphone systems, one in the receiving room, one in the source room

Number of source positions:	3	
Minimum 3m between the different source positions		
Number of microphone positions for each source position:	3	
Microphone position with a rotating microphone		
Number of rotations:	3	
Rotation speed:	16	s/tr
Minimum rotation time:	30	s
Just not a rotation angle <10 ° to the chamber surfaces		

Data processing
Brüel & Kjaer - BZ-5503 : utility software for hand-held analyzers
Brüel & Kjaer - BZ-7229 : dual-channel building acoustics software
Brüel & Kjaer - 7830 :Qualifier Software for reporting of results
A computer with proprietary software

Averaging Time per measurement:	48	s
Number of reverberation time measurements (with graphic control):	27	

Test chambers

Volume source room:	144	m^3	=	5084.6 ft^3
Volume receiving room:	51.4	m^3	=	1814.9 ft^3
Total partition wall area:	12.00	m^2	=	129.1 ft^2
Surface test opening:	12.00	m^2	=	129.1 ft^2

There is absorption material applied in the test rooms

Partition wall
n/a

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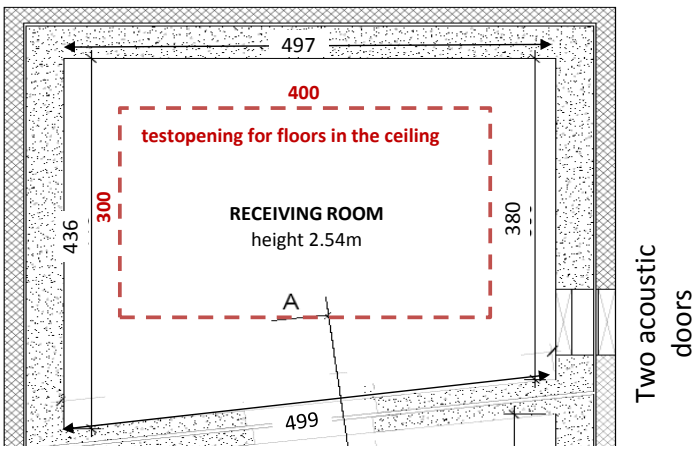
SPECIAL MEASUREMENT CONDITIONS

Receiving Room volume < 80 m³

Sound insulation test facilities

The test rooms meet the requirements of ISO 10140-5
Both rooms are isolated for vibrations by using a so called room-in-room construction.



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Sound Transmission Loss Test Data

Test: ASTM E 90 - 04 / ASTM E 413 - 10

Client: **Kinetics Middle East, LLC** — Date of test: 28 November 2018

Description of the test setup:

45 mm	= (1.77 inch)	prefab anhydrite screed slab
4 mm	= (0.16 inch)	KINLAYMENT 4mm
140 mm	= (5.51 inch)	heavyweight standard floor = solid reinforced concrete slab

Source room:				***Receiving room:***			
Temperature:	19.3 °C	=	66.7 °F	Temperature:	18.6 °C	=	65.5 °F
Atmospheric pressure:	57 hPa	=	0.827 psi	Atmospheric pressure:	60 hPa	=	0.87 psi
Relative humidity:	1012 %RH			Relative humidity:	1012 %RH		
Volume:	144 m³	=	5084.6 ft³	Volume:	51.4 m³	=	1814.9 ft³
Reference floor area:	12.0 m²	=	129.1 ft²				
Tested floor area:	12.0 m²	=	129.1 ft²				

f (Hz)	R (dB)	(*)	(**)	STL (dB)
50		b		
63				
80				
100	39.7			**40**
125	32.3			**32**
160	38.3			**38**
200	41.1			**41**
250	47.7			**48**
315	51.4			**51**
400	55.5			**56**
500	61.2			**61**
630	64.0			**64**
800	69.0	b		**69**
1000	70.2	b		**70**
1250	72.6	b		**73**
1600	69.3			**69**
2000	65.9			**66**
2500	67.5			**68**
3150	69.5	b		**70**
4000	73.4	b		**73**
5000	74.8	B		**75**

ASTM E 413 - 10	**Sound Transmission Class STC (dB)**	**56**	Sum of Unfavorable Deviations [dB] -20
			Max. Unfavorable Deviation [dB]: -8 at 125 Hz

(*) b : background noise correction used
B : Maximum background noise correction used
(**) m : flanking transmission correction used
M : Maximum flanking transmission correction used
B or M : R >= value shown

R:
STL : Sound Transmission Loss

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STL

Sound Transmission Loss Test Data

ASTM E 90 - 04 / ASTM E 413 - 10

Client: **Kinetics Middle East, LLC** Date of test: 28 November 2018

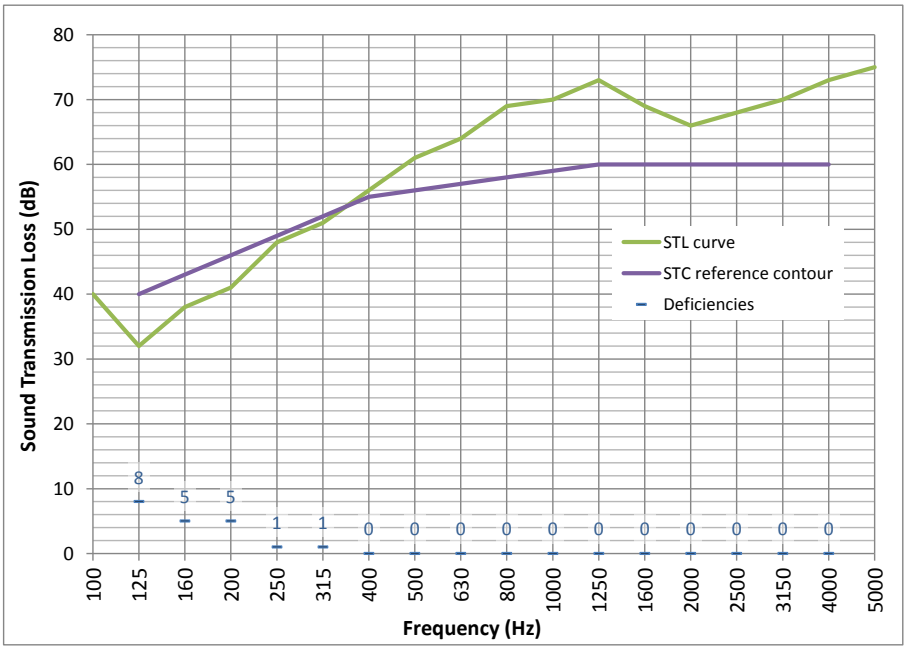
Description of the test setup:

45 mm	= (	1.77 inch)	prefab anhydrite screed slab
4 mm	= (	0.16 inch)	KINLAYMENT 4mm
140 mm	= (	5.51 inch)	heavyweight standard floor = solid reinforced concrete slab

Area S of separating element: 12.00 m² = 129.1 ft²

Receiving room volume: 51.4 m³ = 1814.9 ft³
Source room volume: 144 m³ = 5084.6 ft³

frequency Hz	STL one third octave dB
50	
63	
80	
100	**40**
125	**32**
160	**38**
200	**41**
250	**48**
315	**51**
400	**56**
500	**61**
630	**64**
800	**69**
1000	**70**
1250	**73**
1600	**69**
2000	**66**
2500	**68**
3150	**70**
4000	**73**
5000	**75**



Sound Transmission Class STC (dB):	56

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ANNEX 2: Description test items by manufacturer

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Description of the test element as a layered structure

	Thickness (mm)	ρ (kg/m³)	m" (kg/m²)	m" (PSF)	Description of the layer
1	45		90	18.4	prefab anhydrite screed slab
2	4				KINLAYMENT 4mm
3	140	2300	322	65.9	heavyweight standard floor = solid reinforced concrete slab
4					
5					
6					
7					
8					
9					
10					

Total thickness = 189 mm = (7.44 inch)

KINLAYMENT 4mm
It is a floating floor underlayer product for impact and airborne sound isolation.

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ANNEX 4: photographs of the test element or the test arrangement

Description of the assembly or drawing or photo

The floating floor underlayer product was placed on the standard concrete floor.
Then a prefab anhydrite screed slab was placed on top.
The topfloor had no rigid contact with the test opening construction. Gaps between the topfloor and the test opening were filled-up with sound-absorbing material.
Additionally sandbags were placed around the perimeter edges

Remark: the sound-absorbing material and sandbags are not a part of the floating floor product.