ACOUSTICAL GUIDE

ACOUSTIC RESEARCH REPORT ON

MASS TIMBER BUILDINGS BY

AcoustiTECH

PERFORMANCE CREDIBILITY EXPERTISE

Final report

R&D Project
Date: March 15th, 2018

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

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INTRODUCTION

AcoustiTECH is a North American leader in acoustic solutions and has quickly become the reference standard in the industry. For 25 years, AcoustiTECH has teamed up with architects, builders, general contractors, acoustic consultants and other stakeholders to help them achieve their vision by providing proven acoustical solutions and expertise. AcoustiTECH looks at the specific requirements of each individual project, evaluates the requirements, determines the needs and provides personalized solutions. AcoustiTECH's approach is unique, efficient and reliable.

We possess our own acoustic laboratory that we use for our research and development in order to recommend the best acoustic solutions by type of structure. Thousands of tests have been performed including over 300 on heavy timber assemblies.

The principal objective of creating this document is for the professionals to compare and choose from 25 assemblies the ones that suit their needs the best. The most interesting and popular assemblies have been selected and compared side by side in the same environment, built and tested by the same professional using the same flooring materials.

The acoustical tests have been carried out in a cast-in-place concrete laboratory where flanking and leaking was minimized. The receiving room volume being too small to carry the full ASTM E492 methodology, we applied the ASTM E1007 methodology in a controlled environment. The resulting calculated indexes can be considered an interesting combination of Apparent (AIIC) and Laboratory (IIC) tested.

It is important to note that the quality of construction can affect the performance. Construction standards and assembly recommendations must be followed in order to reach the wanted performance.

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TEST REPORTS

BARE CLT

Measured Impact Insulation Class (AIIC/IIC)	**23**
Projected Sound Transmission Class (ASTC/STC)	**39**

Element	Thickness (mm)	Area density (lbs/ft2)
CLT panel	131	13.7
TOTAL	**131**	**13.7**

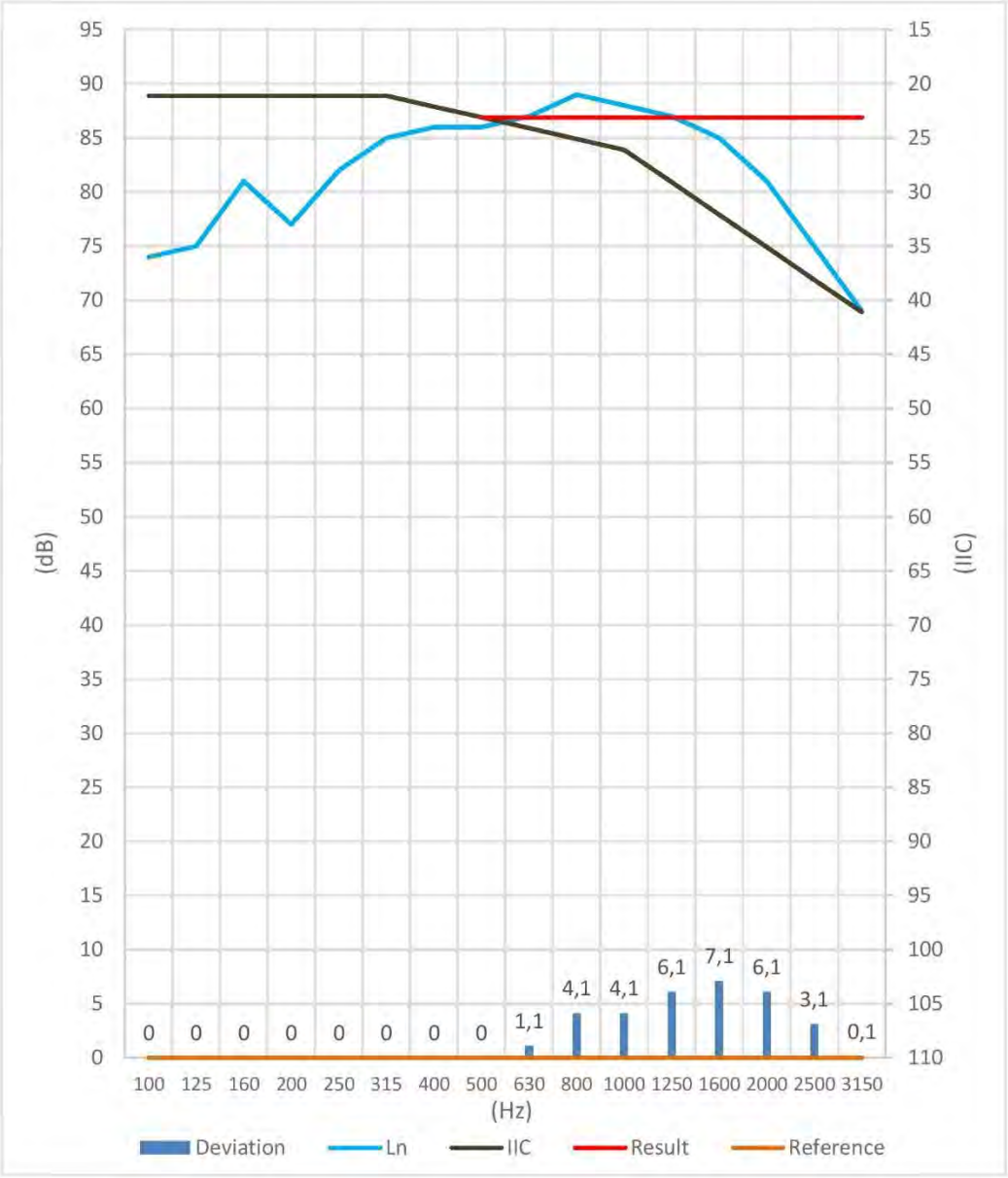
Project : Mass timber comparative study

Test : Test 1 - Bare CLT

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**23,1**
Defavorable deviations	31,8

Assembly description
CLT 131mm



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	74	75	81	77	82	85	86	86	87	89	88	87	85	81	75	69
IIC	88,9	88,9	88,9	88,9	88,9	88,9	87,9	86,9	85,9	84,9	83,9	80,9	77,9	74,9	71,9	68,9
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	75,13	75,49	80,36	76,03	81,71	84,15	84,64	85,09	86,49	86,96	86,87	84,72	81,14	76,56	70,82	64,28
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	0	0	0	0	0	0	0	0	1,1	4,1	4,1	6,1	7,1	6,1	3,1	0,1

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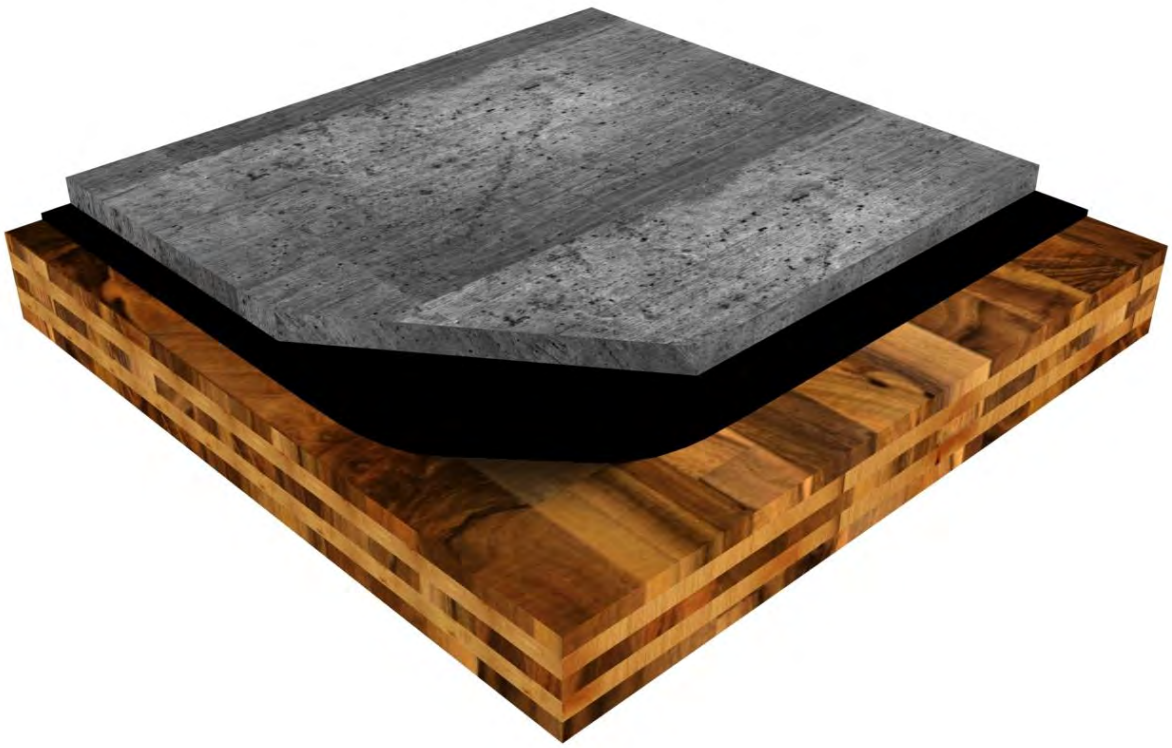
Soprema Insonomat



Measured Impact Insulation Class (AIIC/IIC)	44
Projected Sound Transmission Class (ASTC/STC)	55

Element	Thickness (mm)	Area density (lbs/ft2)
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
CLT panel	131	13.7
TOTAL	**184**	**35.6**

Project : Mass timber comparative study

Test : Test 14 - Bare Concrete(1.5in)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

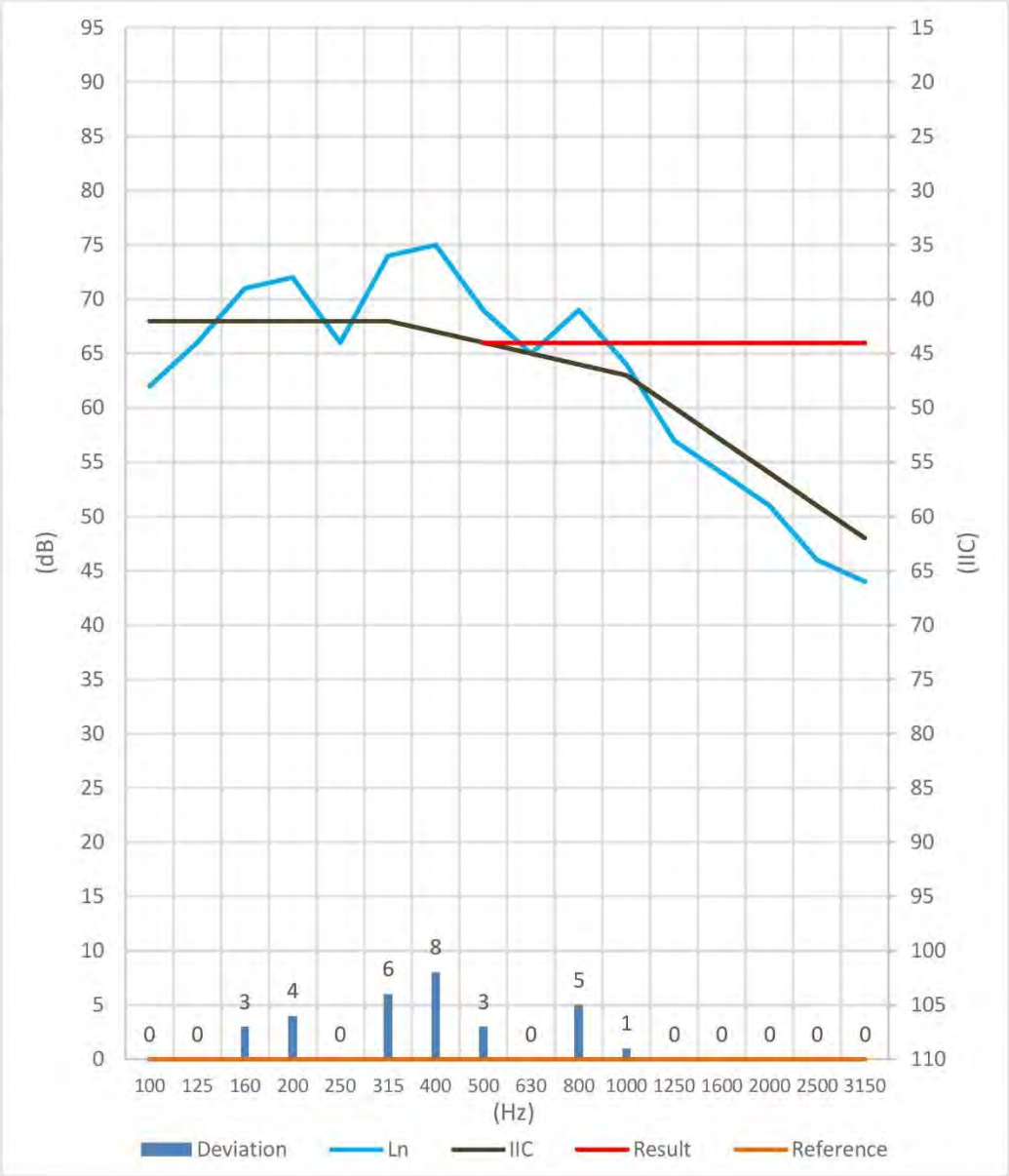
Results :	
IIC	**44**
Defavorable deviations	30

Assembly description

Insonomat

CLT 131mm

Thickness w/out CLT: 53mm (2.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	62	66	71	72	66	74	75	69	65	69	64	57	54	51	46	44
IIC	68	68	68	68	68	68	67	66	65	64	63	60	57	54	51	48
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	64,02	66,49	70,78	71,44	65,56	72,29	73,5	68,47	64,19	67,33	62,31	54,24	49,85	46,67	41,87	38,59
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	0	0	3	4	0	6	8	3	0	5	1	0	0	0	0	0

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Soprema Insonofloor
Soprema Insonomat

Measured Impact Insulation Class (AIIC/IIC)	**49**
Projected Sound Transmission Class (ASTC/STC)	**55**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
CLT panel	131	13.7
TOTAL	**195.5**	**37.6**

Project : Mass timber comparative study

Test : Test 15 - Concrete(1.5in)+Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

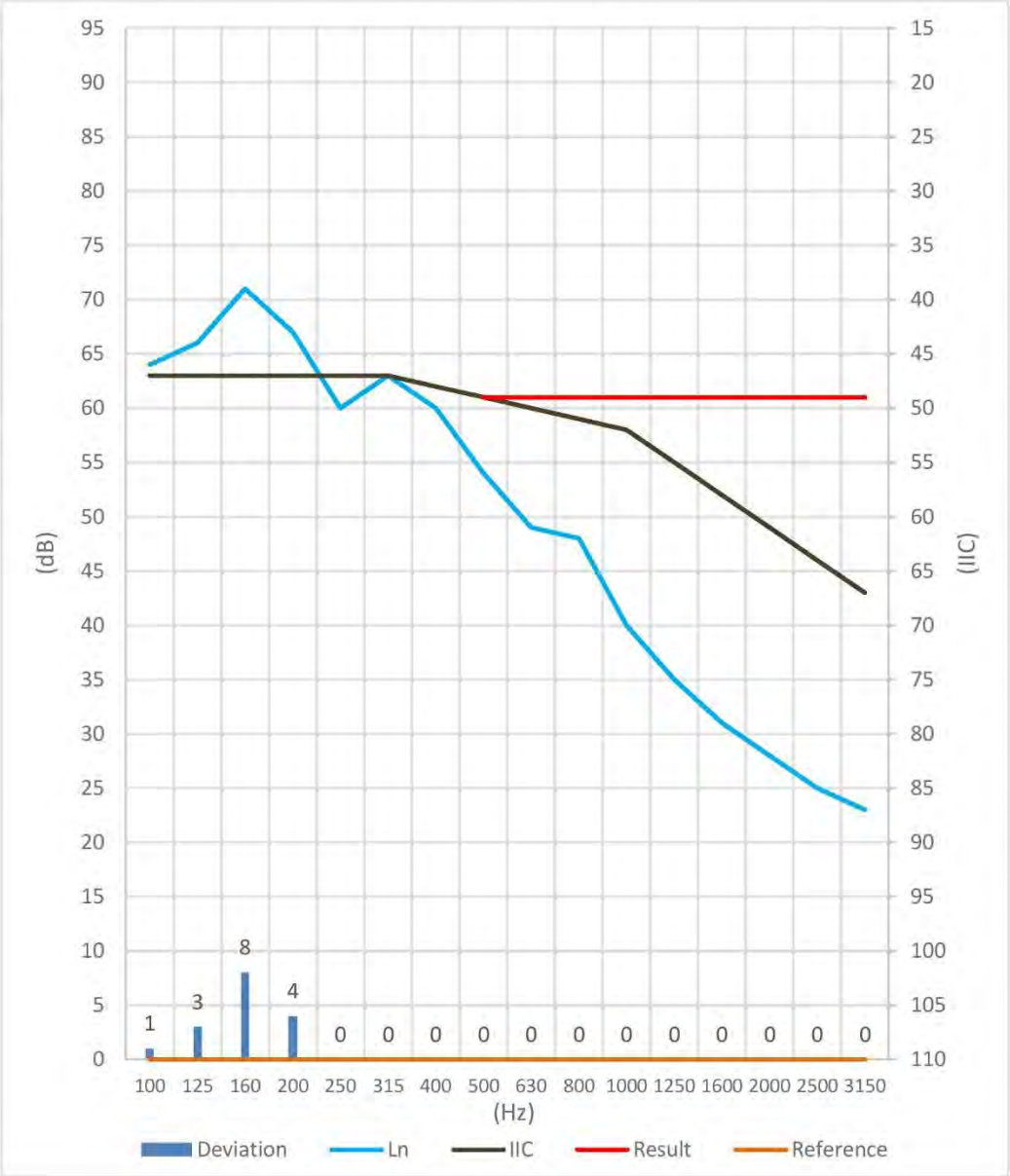
Results :	
IIC	**49**
Defavorable deviations	16

Assembly description

Insonomat

CLT 131mm

Thickness w/out CLT: 53mm (2.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	64	66	71	67	60	63	60	54	49	48	40	35	31	28	25	23
IIC	63	63	63	63	63	63	62	61	60	59	58	55	52	49	46	43
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	65,3	66,94	70,71	66,82	60,12	61,45	58,31	53,36	48,03	46	38,4	32,61	27,55	23,88	20,19	17,77
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	1	3	8	4	0	0	0	0	0	0	0	0	0	0	0	0

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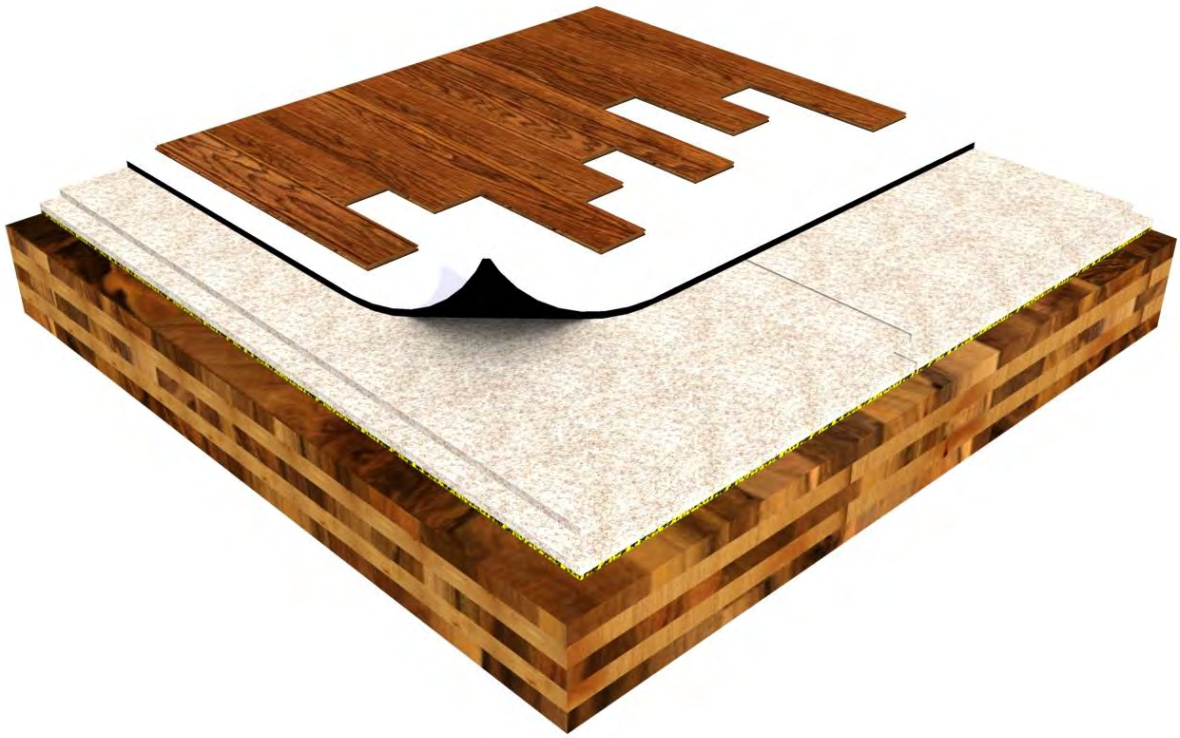
Soprema Insonofloor
Fermacell 2E32



Measured Impact Insulation Class (AIIC/IIC)	**43**
Projected Sound Transmission Class (ASTC/STC)	**48**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Fermacell 2E32	30	5.3
CLT panel	131	13.7
TOTAL	**172.5**	**21.0**

Project : Mass timber comparative study

Test : Test 10 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

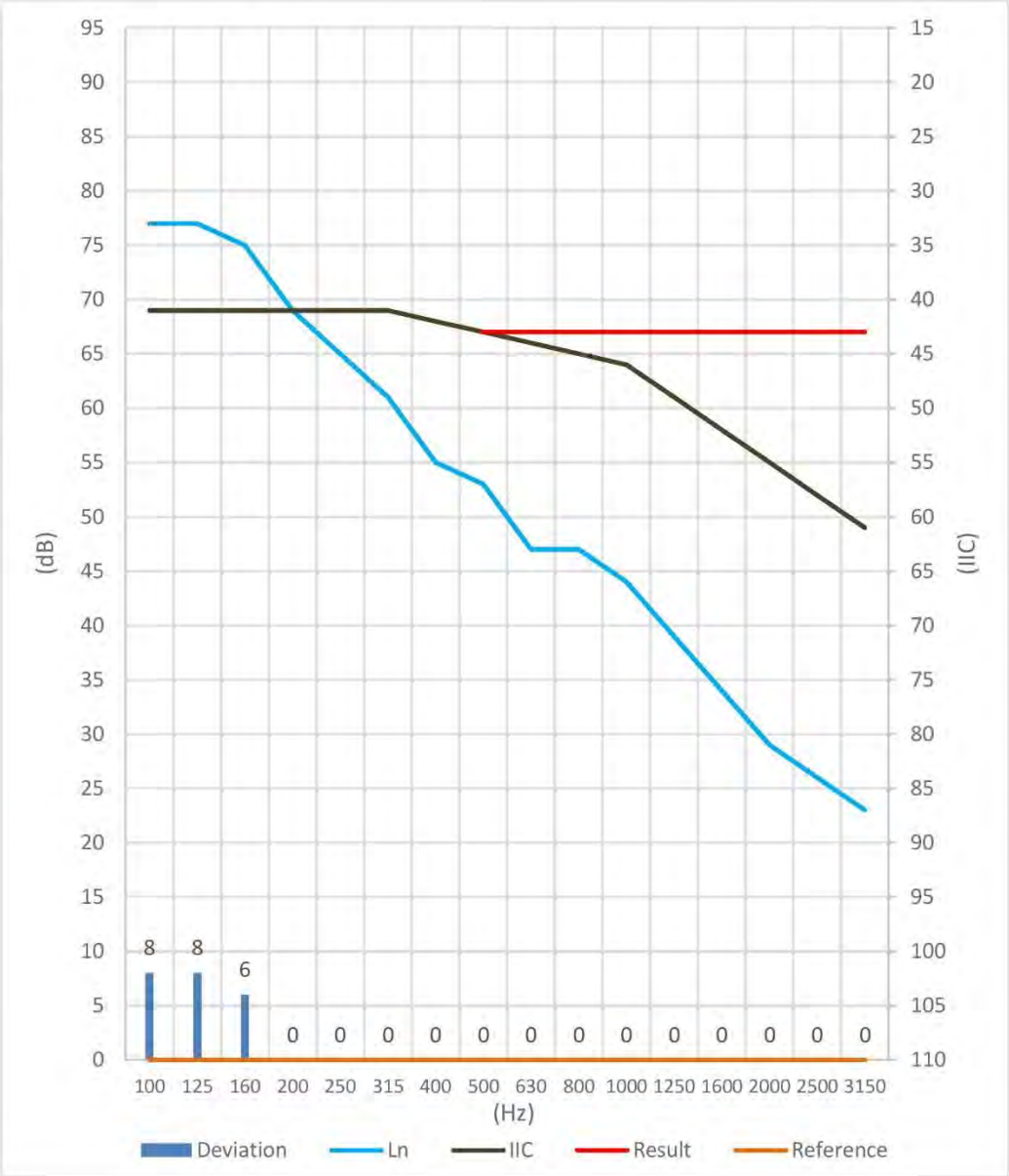
Results :	
IIC	**43**
Defavorable deviations	22

Assembly description

Fermacell 2E32

CLT 131mm

Thickness w/out CLT: 30mm (1.2in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	77	77	75	69	65	61	55	53	47	47	44	39	34	29	26	23
IIC	69	69	69	69	69	69	68	67	66	65	64	61	58	55	52	49
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	78,76	77,45	74,18	68,16	64,79	59,86	54,19	51,64	46,7	44,95	42,09	36,84	29,87	25,06	20,93	18,06
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0

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Soprema Insonofloor
Fermacell 12.5
Fermacell 2E32

Measured Impact Insulation Class (AIIC/IIC)	**44**
Projected Sound Transmission Class (ASTC/STC)	**50**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Fermacell 12.5	12.5	2.95
Fermacell 2E32	30	5.3
CLT panel	131	13.7
TOTAL	**185**	**24.0**

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Project : Mass timber comparative study

Test : Test 11 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**44**
Defavorable deviations	18

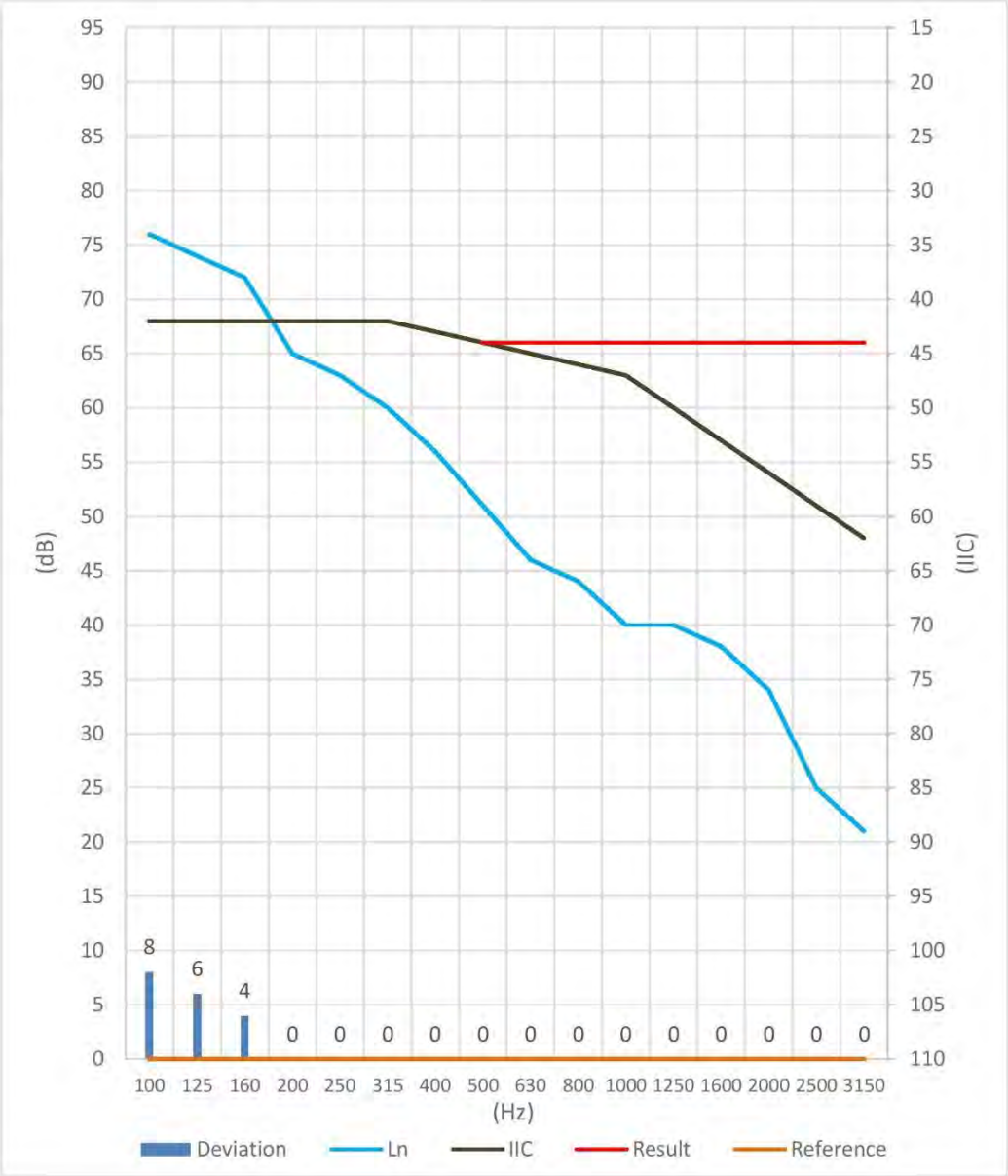
Assembly description

Fermacell(12.5mm)

Fermacell 2E32

CLT 131mm

Thickness w/out CLT: 43mm (1.7in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	76	74	72	65	63	60	56	51	46	44	40	40	38	34	25	21
IIC	68	68	68	68	68	68	67	66	65	64	63	60	57	54	51	48
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	77,46	74,2	71,19	64,86	62,44	58,46	54,57	49,78	45,23	42,45	38,73	37,14	34,49	30,29	20,53	16,72
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0

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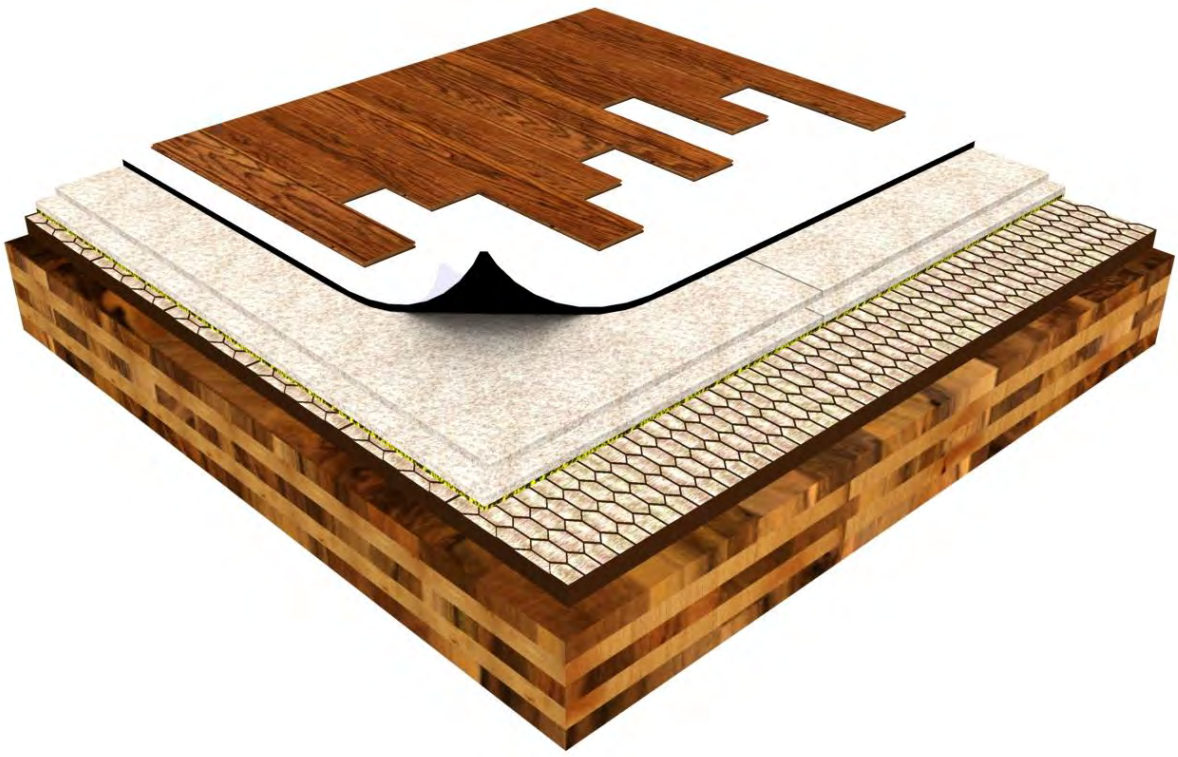
Soprema Insonofloor
Fermacell 2E32
Fermacell Honeycomb w/ filling



Measured Impact Insulation Class (AIIC/IIC)	**49**
Projected Sound Transmission Class (ASTC/STC)	**52**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Fermacell 2E32	30	5.3
Fermacell Honeycomb w/ filling	60	18.4
CLT panel	131	13.7
TOTAL	**232.5**	**39.43**

Project : Mass timber comparative study

Test : Test 12 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**49**
Defavorable deviations	15

Assembly description

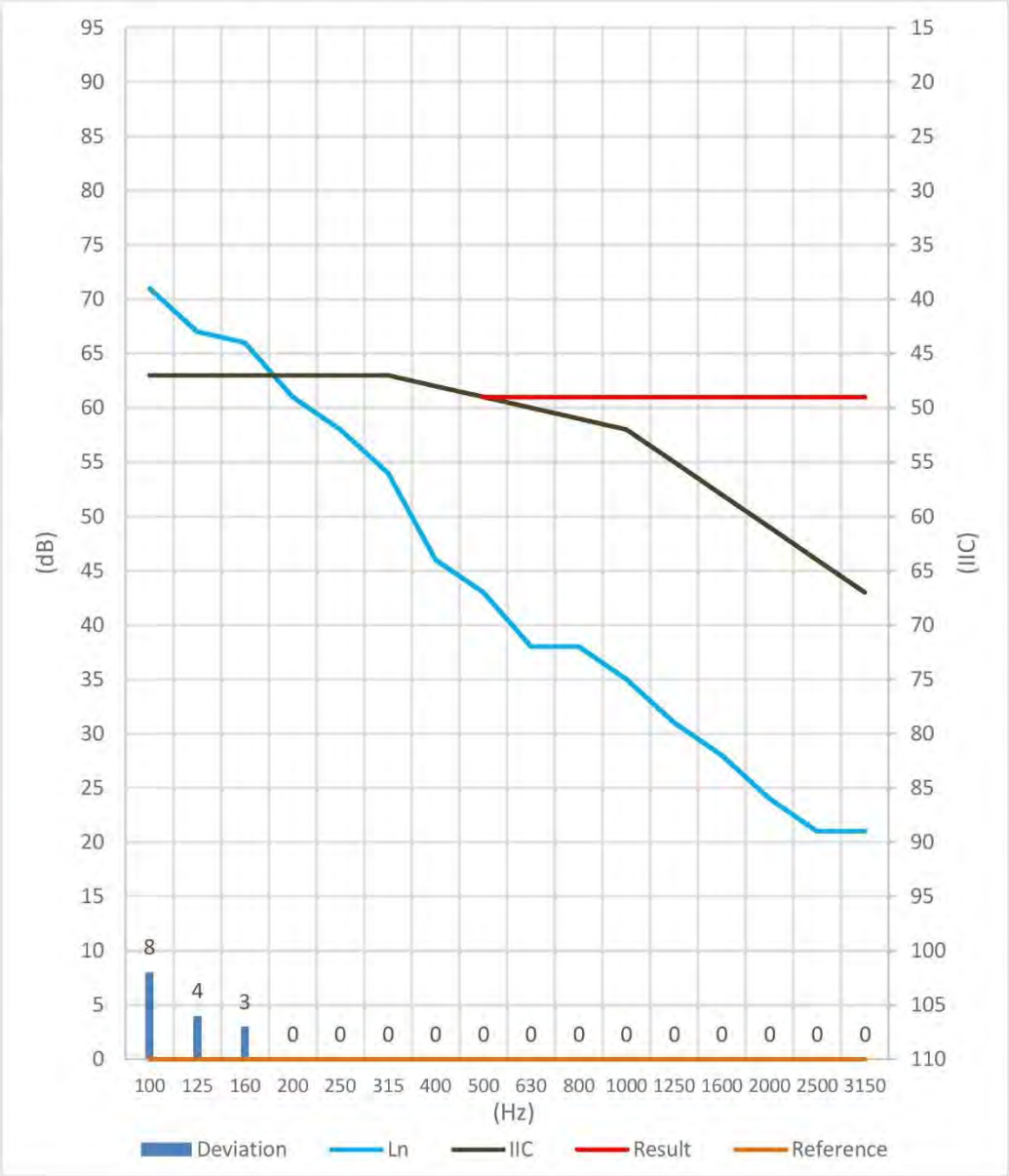
Fermacell 2E32

Granules

Cardboard honeycomb

CLT 131mm

Thickness w/out CLT: 60mm (2.4in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	71	67	66	61	58	54	46	43	38	38	35	31	28	24	21	21
IIC	63	63	63	63	63	63	62	61	60	59	58	55	52	49	46	43
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	72,93	67,37	65,8	59,92	57,93	53,2	45,24	42,44	37,31	36,45	33,87	28,85	24,26	19,68	17,2	16,38
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0

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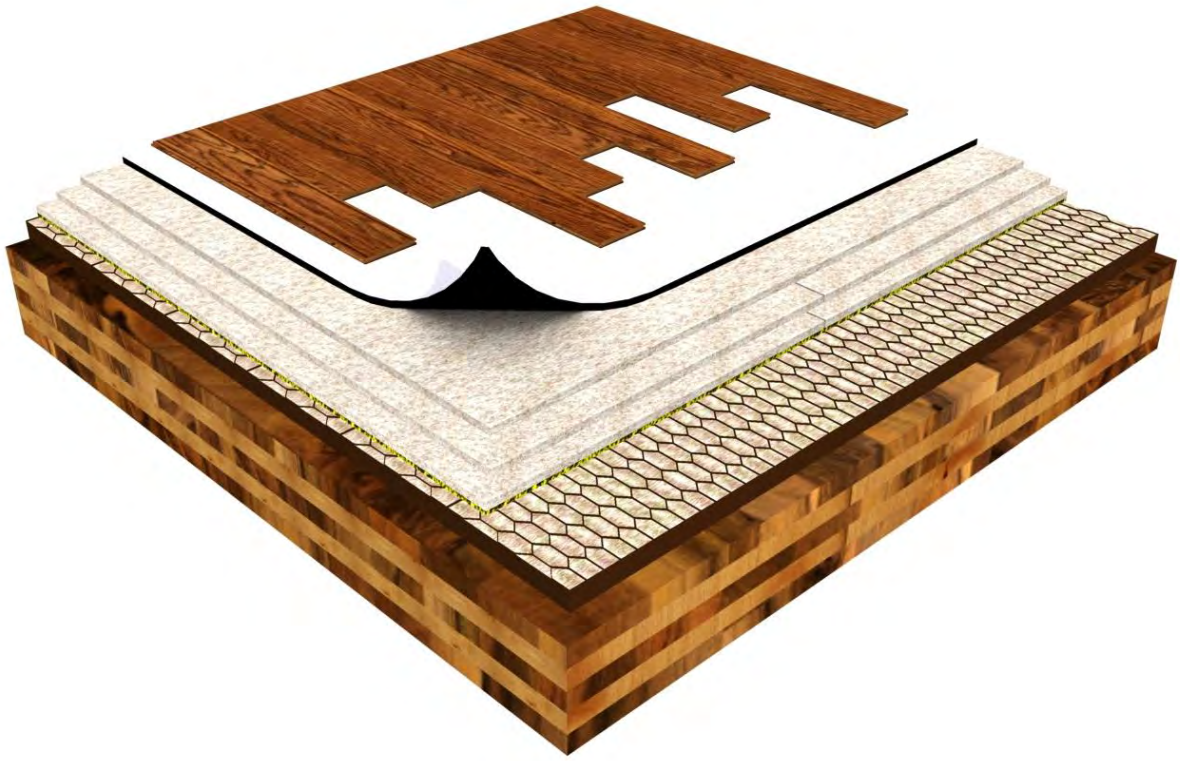
Soprema Insonofloor
Fermacell 12.5
Fermacell 2E32
Fermacell Honeycomb w/ filling



Measured Impact Insulation Class (AIIC/IIC)	**50**
Projected Sound Transmission Class (ASTC/STC)	**53**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Fermacell 12.5	12.5	2.95
Fermacell 2E32	30	5.3
Fermacell Honeycomb w/ filling	60	18.4
CLT panel	131	13.7
TOTAL	**245**	**42.4**

Project : Mass timber comparative study

Test : Test 13 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**50**
Defavorable deviations	18

Assembly description

Fermacell(12.5mm)

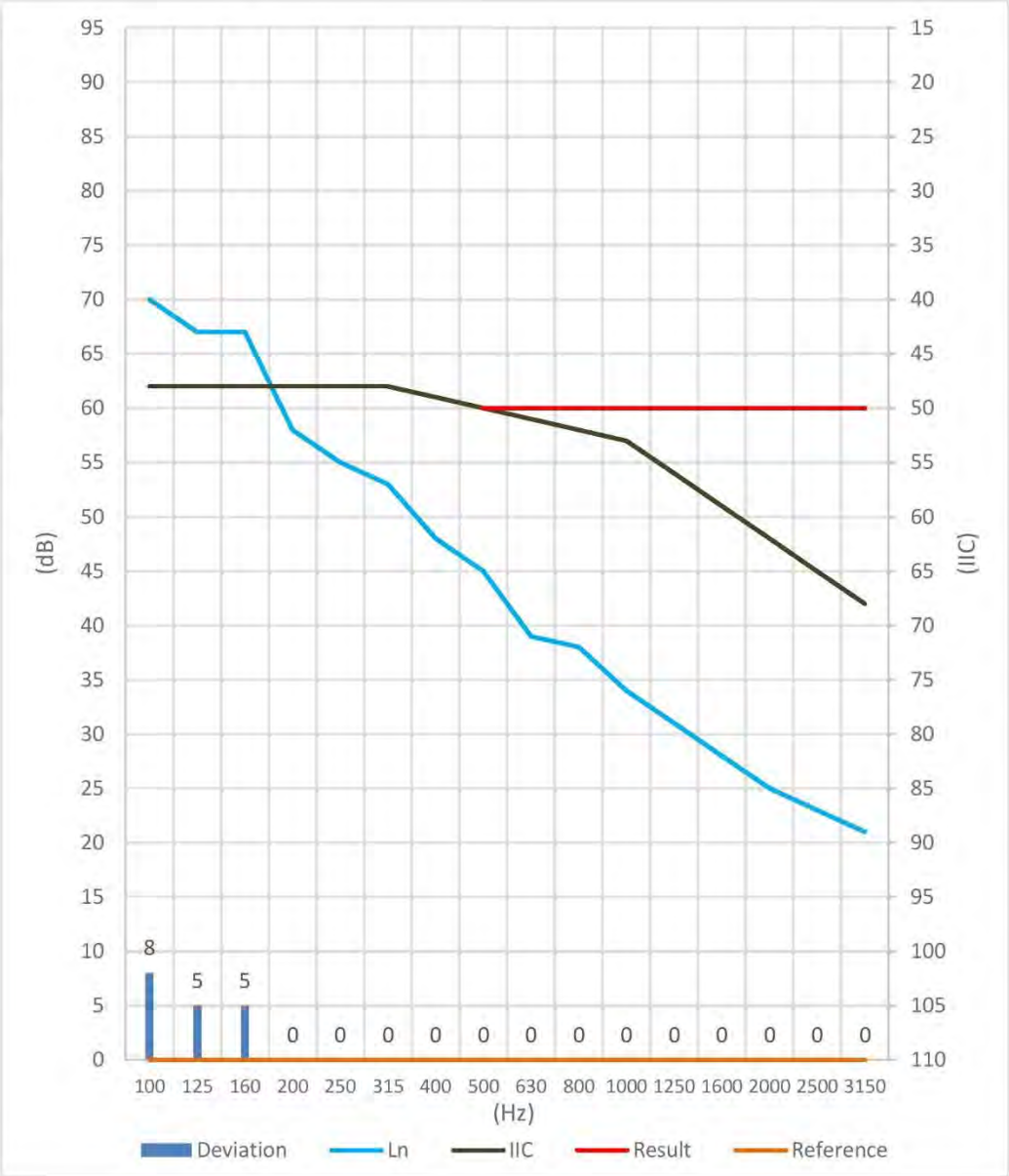
Fermacell 2E32

Granules

Cardboard honeycomb

CLT 131mm

Thickness w/out CLT: 73mm (2.9in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	70	67	67	58	55	53	48	45	39	38	34	31	28	25	23	21
IIC	62	62	62	62	62	62	61	60	59	58	57	54	51	48	45	42
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	71,24	67,3	66,11	57,31	55,24	51,92	47,24	43,62	38,42	36,34	32,34	28,75	24,57	20,92	18,73	16,48
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0

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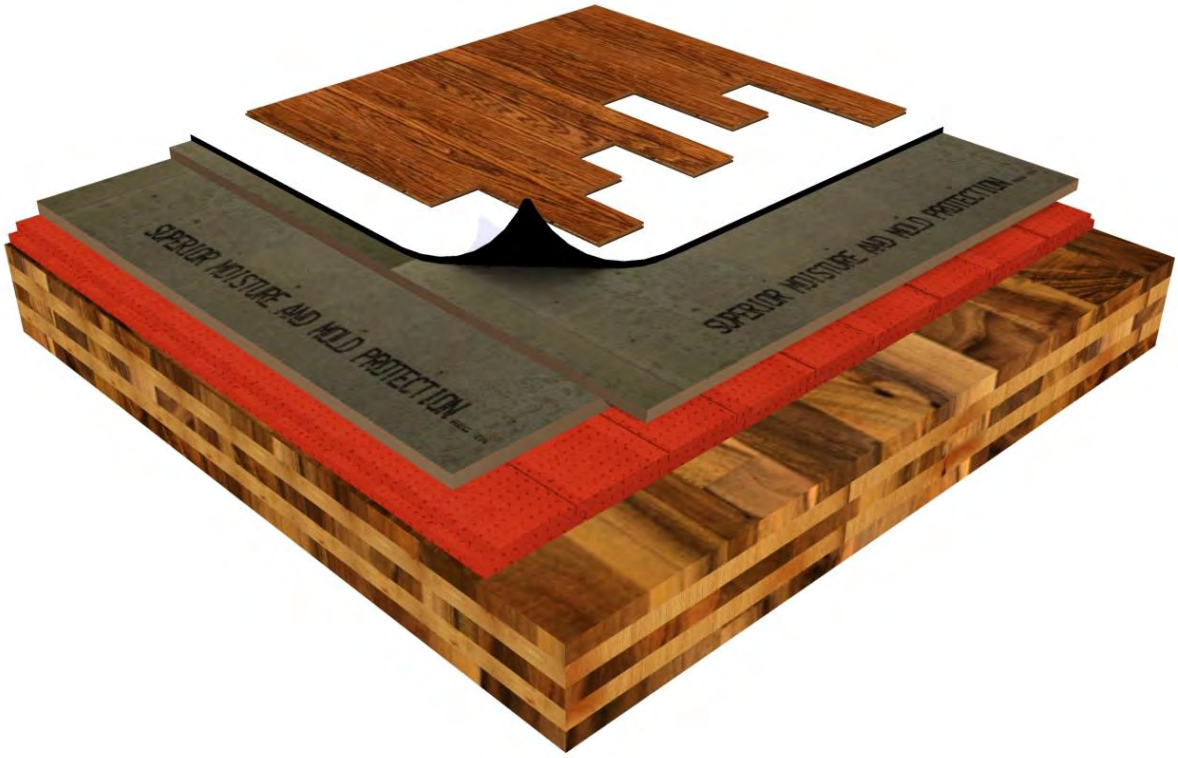
Soprema Insonofloor

5/8” Permabase cement board

3/4” Permabase cement board

SONO/MAX 25



Measured Impact Insulation Class (AIIC/IIC)	**45**
Projected Sound Transmission Class (ASTC/STC)	**50**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Permabase 5/8’’	15.9	3.65
Permabase 3/4’’	19	4.4
Sono/Max 25	25	1.32
CLT panel	131	13.7
TOTAL	**202.4**	**25.1**

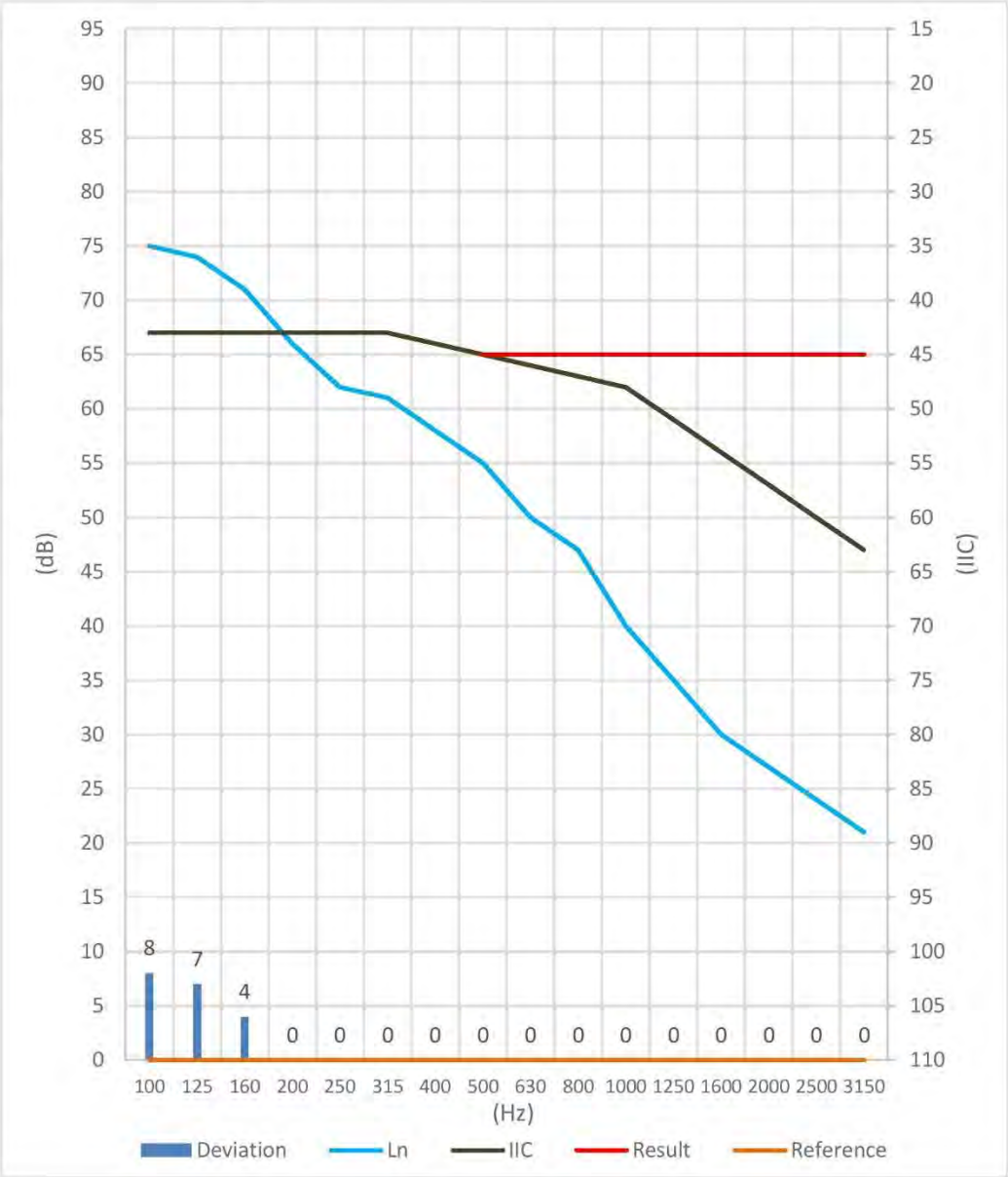
Project : Mass timber comparative study

Test : Test 18 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**45**
Defavorable deviations	19

Assembly description
Permabase(0.625in)
Permabase(0.75in)
Sonomax25(fiberboard only)
CLT 131mm
Thickness w/out CLT: 60mm (2.4in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	75	74	71	66	62	61	58	55	50	47	40	35	30	27	24	21
IIC	67	67	67	67	67	67	66	65	64	63	62	59	56	53	50	47
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	76,2	74,27	70,46	65,06	62,05	59,36	57,16	53,61	49,1	45,02	38,66	32,05	25,84	22,67	19,06	16,16
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0

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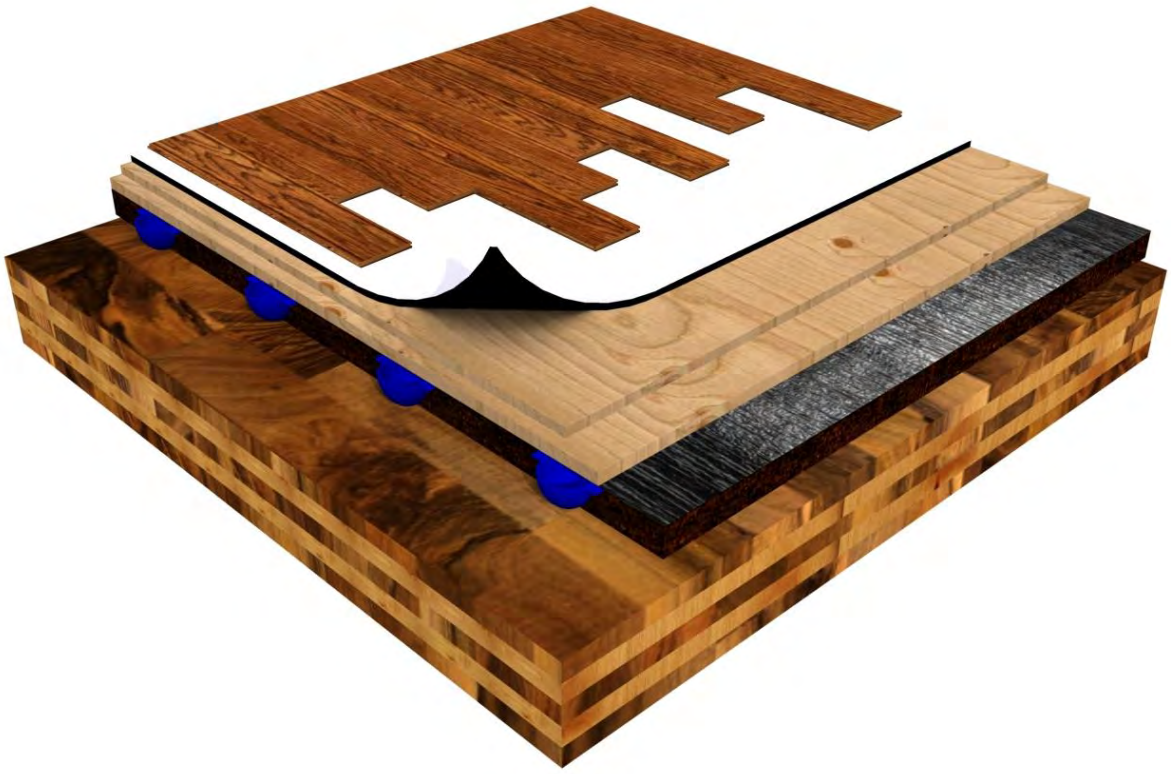
Soprema Insonofloor
1/2” Plywood
5/8” Plywood
AcoustiTECH SOFIX



Measured Impact Insulation Class (AIIC/IIC)	**51**
Projected Sound Transmission Class (ASTC/STC)	**53**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Plywood 1/2’’	12.7	1.27
Plywood 5/8’’	15.9	1.5
AcoustiTECH SOFIX	38	0.5
CLT panel	131	13.7
TOTAL	**209.1**	**19.0**

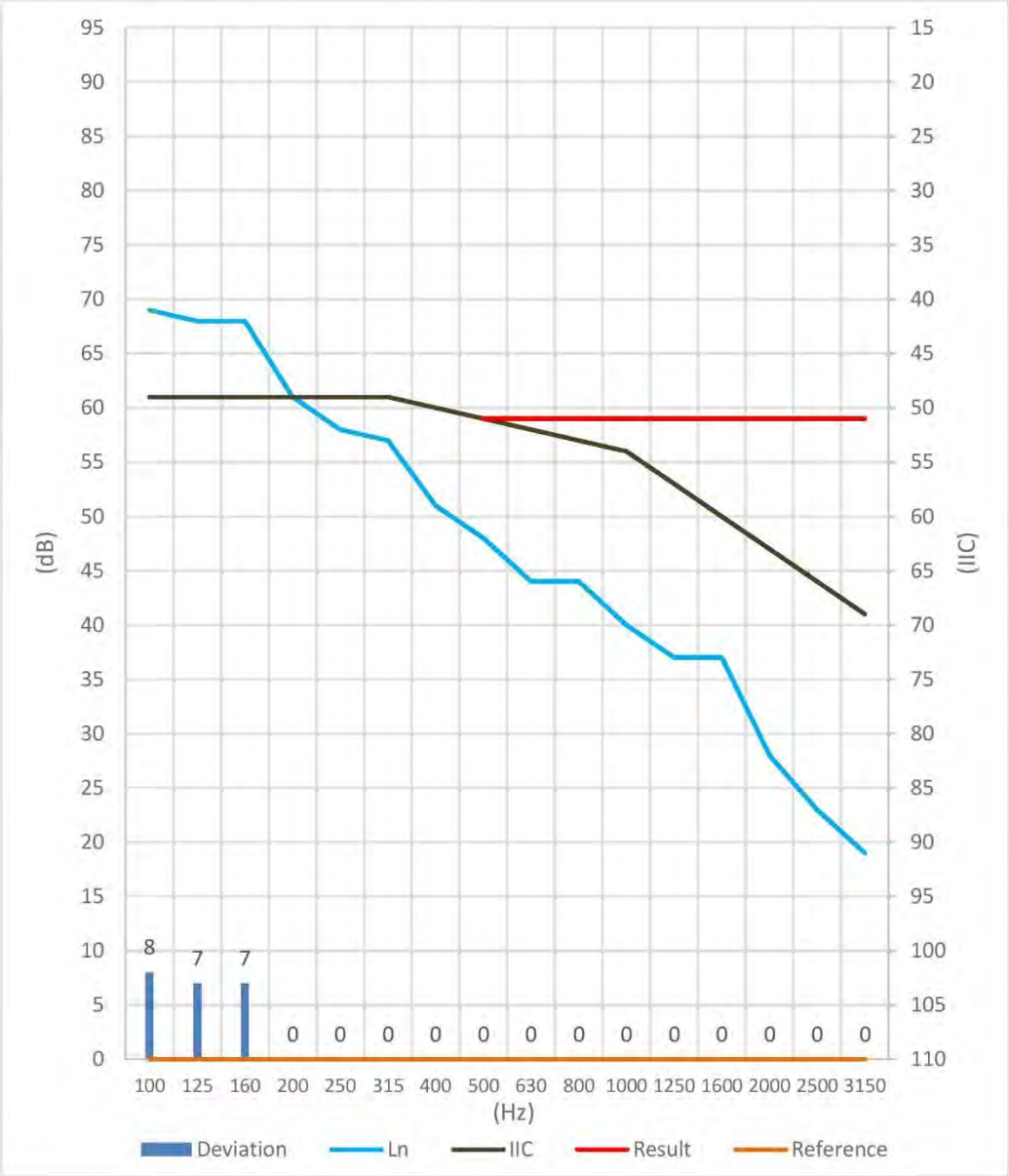
Project : Mass comparative study

Test : Test 22 - Soprema Insonofloor+floating floor(8mm)

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**51**
Defavorable deviations	22

Assembly description
plywood(0.5in)
plywood(0.625in)
AcoustiTECH SOFIX
CLT 131mm
Thickness w/out CLT: 67mm (2.6in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	69	68	68	61	58	57	51	48	44	44	40	37	37	28	23	19
IIC	61	61	61	61	61	61	60	59	58	57	56	53	50	47	44	41
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	70,62	68,55	67,84	60,84	57,76	55,69	50,01	47,55	44	42,14	38,77	34,53	32,97	24,34	18,22	14,84
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0

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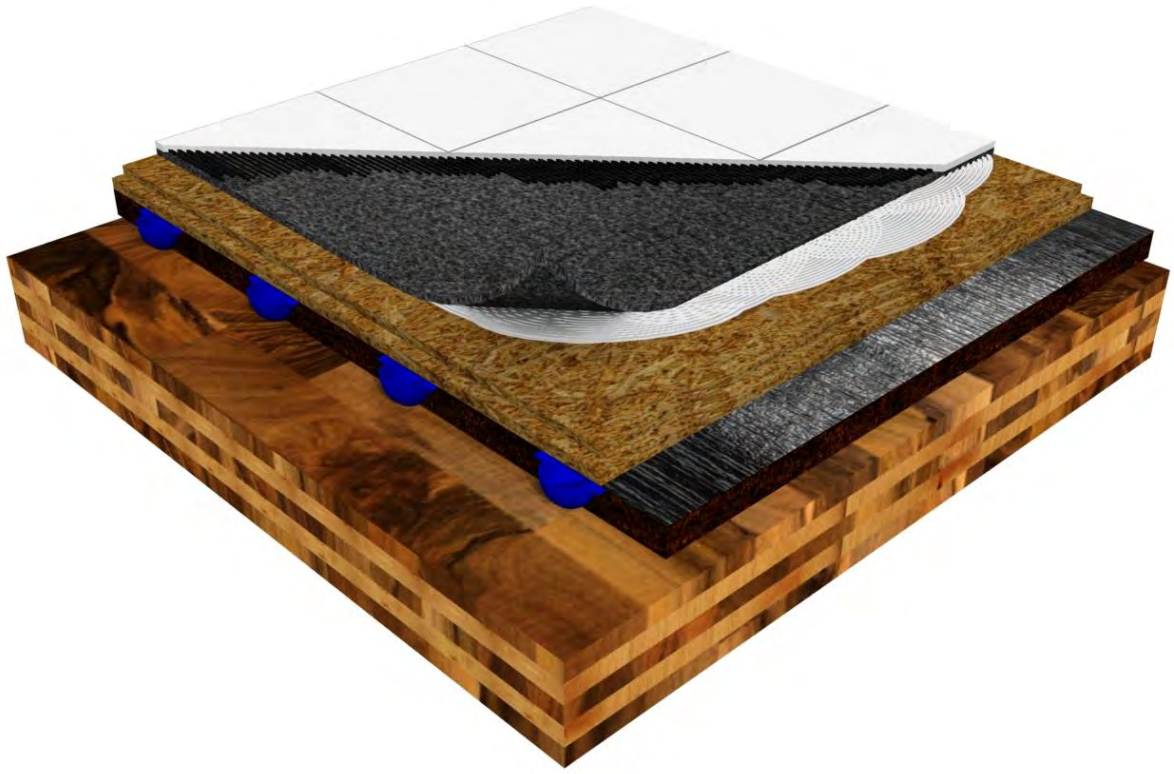
AcoustiTECH Ceramic
5/8” OSB
5/8” OSB
AcoustiTECH SOFIX



Measured Impact Insulation Class (AIIC/IIC)	**54**
Projected Sound Transmission Class (ASTC/STC)	**54**

Element	Thickness (mm)	Area density (lbs/ft2)
Ceramic flooring	8	1.60
AcoustiTECH Ceramic	3	0.11
OSB 5/8’’	15.9	2.1
OSB 5/8’’	15.9	2.1
AcoustiTECH SOFIX	38	0.5
CLT panel	131	13.7
TOTAL	**211.8**	**20.1**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass timber comparative study

Test : Test 19 - AcoustiTECH Ceramic+Ceramic

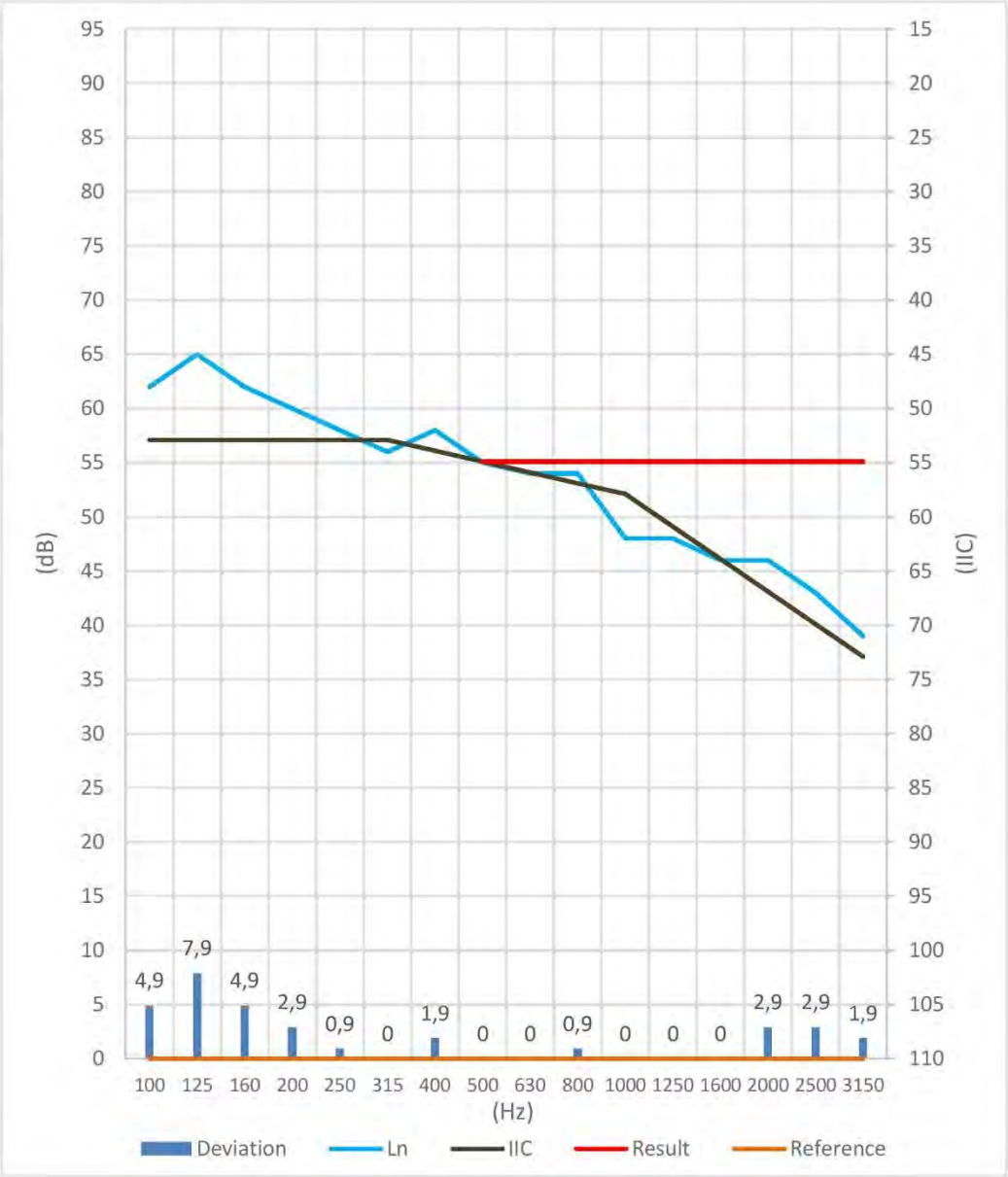
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**54,9**
Defavorable deviations	32

Assembly description

OSB(0.625in)
OSB(0.625in)
AcoustiTECH SOFIX
CLT 131mm

Thickness w/out CLT: 70mm (2.8in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	62	65	62	60	58	56	58	55	54	54	48	48	46	46	43	39
IIC	57,1	57,1	57,1	57,1	57,1	57,1	56,1	55,1	54,1	53,1	52,1	49,1	46,1	43,1	40,1	37,1
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	63,6	65,2	61,49	59,81	58,22	54,99	56,83	53,77	53,27	52,11	46,84	45,66	42,16	41,51	38,08	33,9
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	4,9	7,9	4,9	2,9	0,9	0	1,9	0	0	0,9	0	0	0	2,9	2,9	1,9

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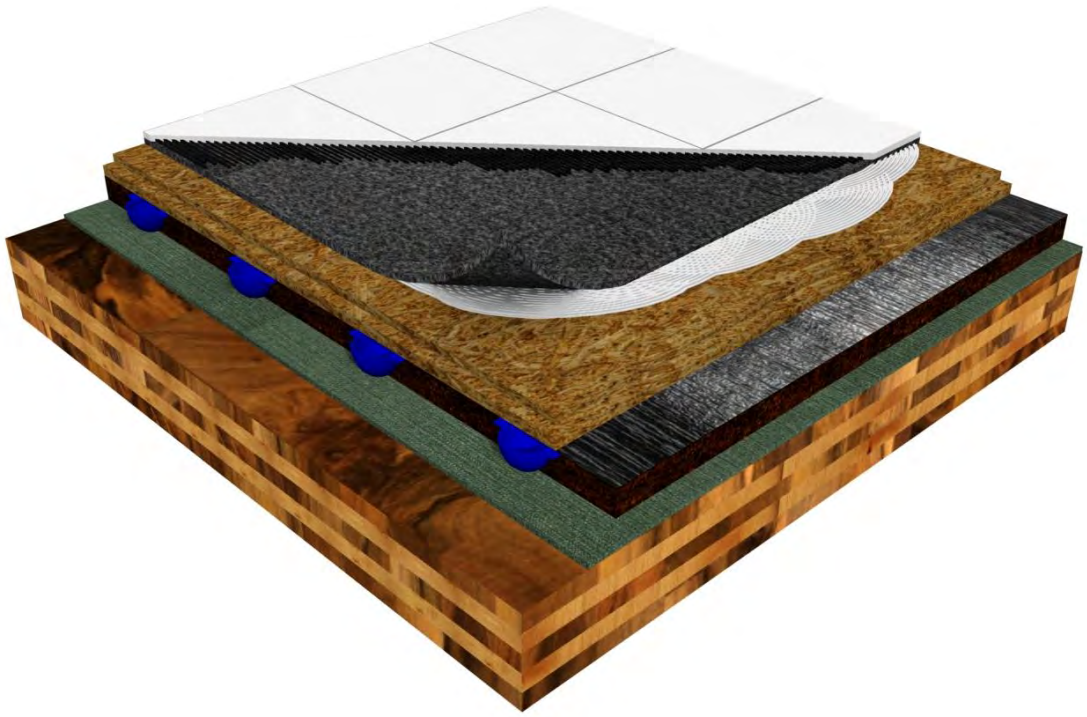
AcoustiTECH Ceramic
5/8” OSB
5/8” OSB
AcoustiTECH SOFIX
AcoustiTECH LEAD 6



Measured Impact Insulation Class (AIIC/IIC)	**58**
Projected Sound Transmission Class (ASTC/STC)	**55**

Element	Thickness (mm)	Area density (lbs/ft2)
Ceramic flooring	8	1.60
AcoustiTECH Ceramic	3	0.11
OSB 5/8’’	15.9	2.1
OSB 5/8’’	15.9	2.1
AcoustiTECH SOFIX	38	0.5
AcoustiTECH Lead 6	6	0.2
CLT panel	131	13.7
TOTAL	**217.8**	**20.3**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass timber comparative study

Test : Test 20 - AcoustiTECH Ceramic+Ceramic

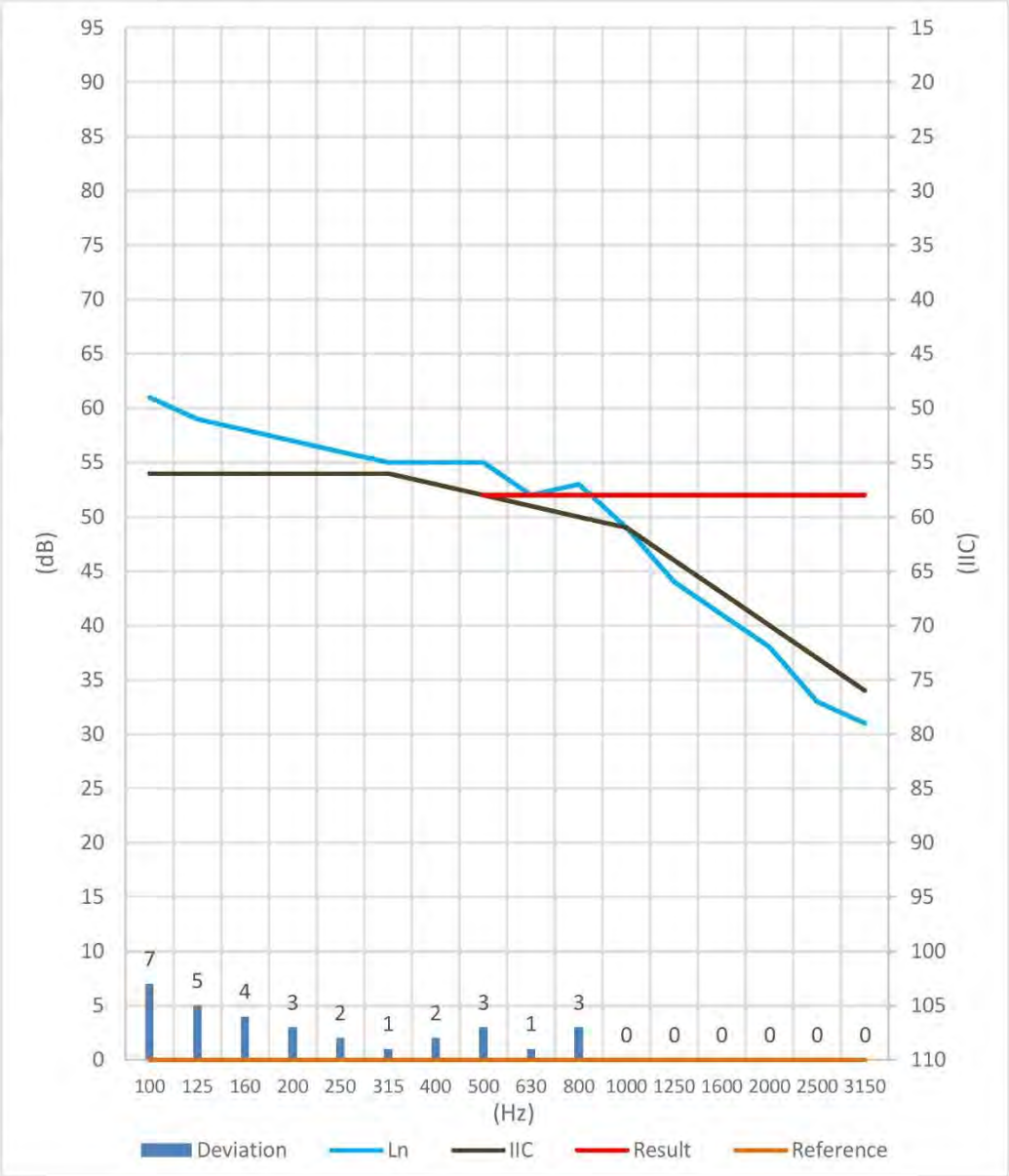
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**58**
Defavorable deviations	31

Assembly description

OSB(0.625in)
OSB(0.625in)
AcoustiTECH SOFIX
AcoustiTECH Lead 6
CLT 131mm

Thickness w/out CLT: 76mm (3in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	61	59	58	57	56	55	55	55	52	53	49	44	41	38	33	31
IIC	54	54	54	54	54	54	53	52	51	50	49	46	43	40	37	34
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	62,24	59,57	57,56	56,16	55,46	53,4	54,17	54,13	51,09	51,32	47,12	41,14	36,9	33,67	28,03	25,91
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	7	5	4	3	2	1	2	3	1	3	0	0	0	0	0	0

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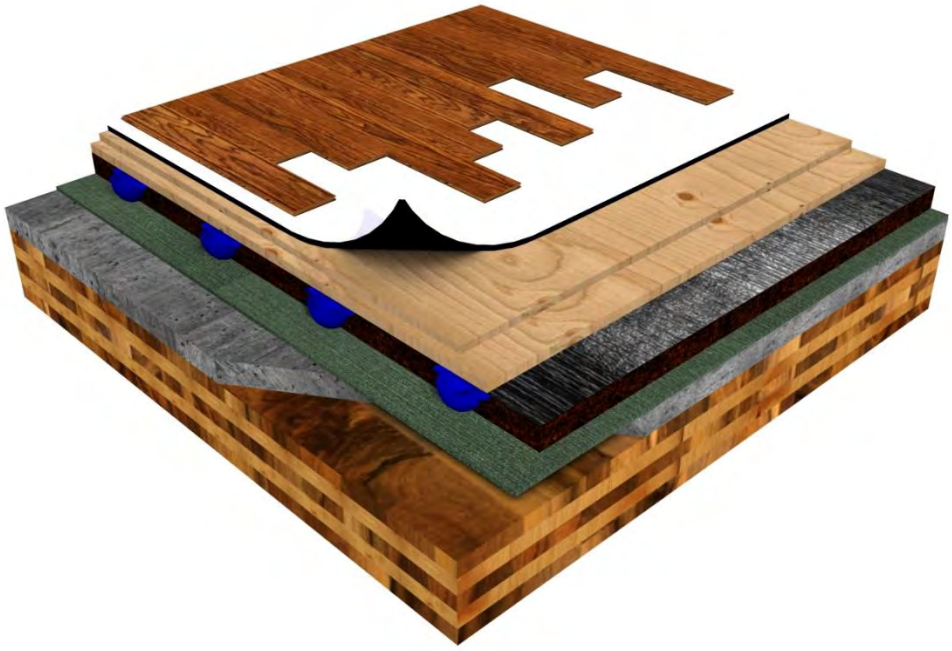
Soprema Insonofloor
1/2” Plywood
5/8” Plywood
AcoustiTECH SOFIX
AcoustiTECH LEAD 6
1 ½” standard concrete



Measured Impact Insulation Class (AIIC/IIC)	**58**
Projected Sound Transmission Class (ASTC/STC)	**58**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Plywood 1/2’’	12.7	1.27
Plywood 5/8’’	15.9	1.5
AcoustiTECH SOFIX	38	0.5
AcoustiTECH Lead 6	6	0.2
Concrete topping	38	21.1
CLT panel	131	13.7
TOTAL	**253.1**	**40.3**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass comparative study

Test : Test 29 - Soprema Insonofloor+floating floor(8mm)

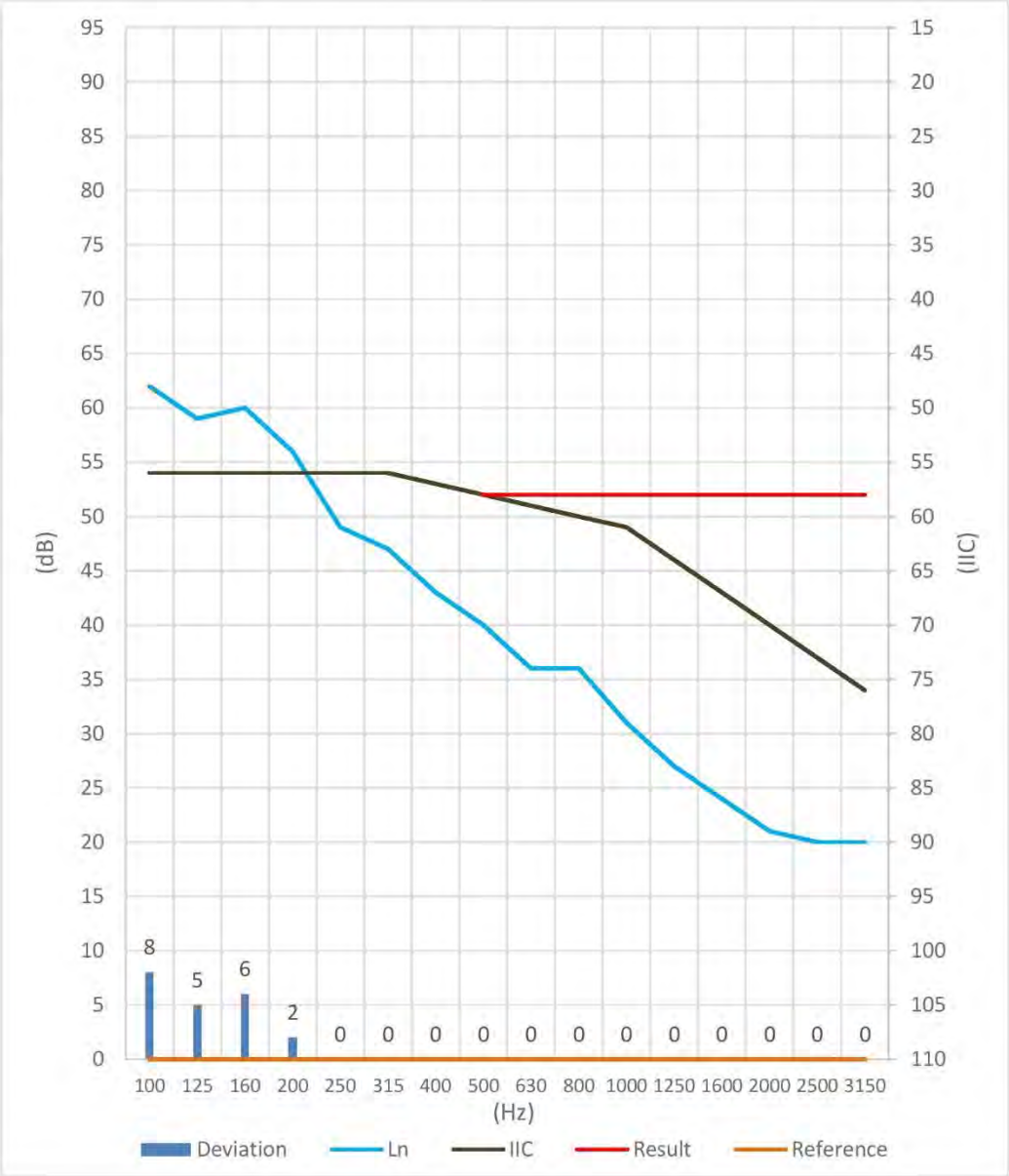
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**58**
Defavorable deviations	21

Assembly description

plywood(0.5in)
plywood(0.625in)
AcoustiTECH SOFIX
AcoustiTECH Lead 6
Concrete(1.5in)
CLT 131mm

Thickness w/out CLT: 111mm (4.4in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	62	59	60	56	49	47	43	40	36	36	31	27	24	21	20	20
IIC	54	54	54	54	54	54	53	52	51	50	49	46	43	40	37	34
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	63,49	59,35	59,5	55,58	49,31	45,69	41,58	39,67	35,98	34,28	29,63	24,92	20,76	17,8	16,27	15,78
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	5	6	2	0	0	0	0	0	0	0	0	0	0	0	0

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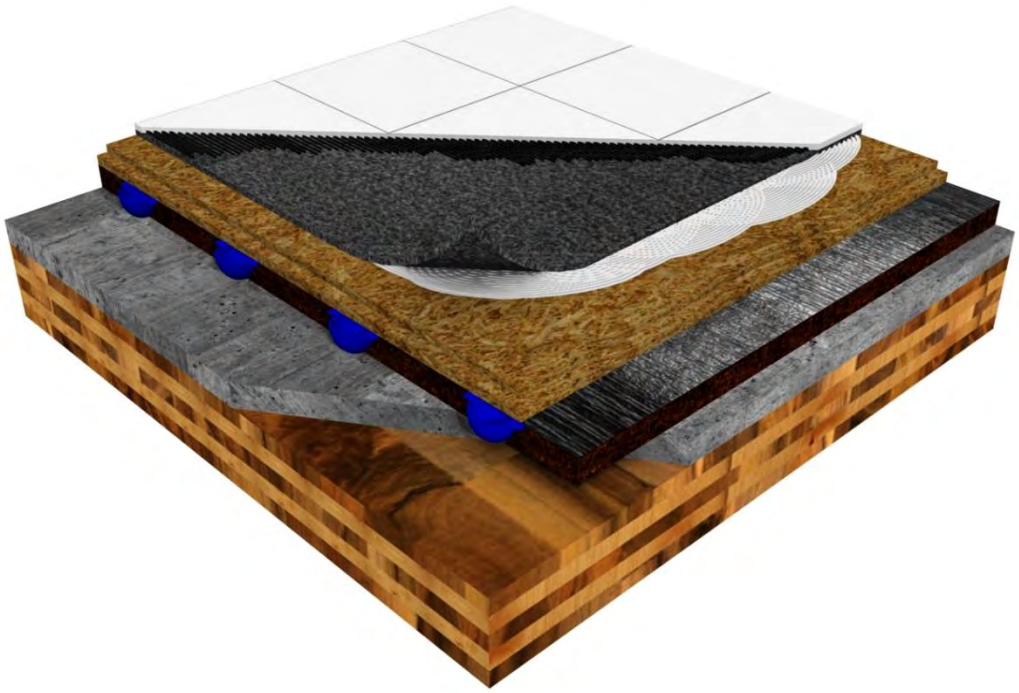
5/8” OSB
AcoustiTECH SOFIX
1 ½” standard concrete



Measured Impact Insulation Class (AIIC/IIC)	**60**
Projected Sound Transmission Class (ASTC/STC)	**60**

Element	Thickness (mm)	Area density (lbs/ft2)
Ceramic flooring	8	1.60
AcoustiTECH Ceramic	3	0.11
OSB 5/8’’	15.9	2.1
OSB 5/8’’	15.9	2.1
AcoustiTECH SOFIX	38	0.5
Concrete topping	38	21.1
CLT panel	131	13.7
TOTAL	**249.8**	**41.2**

Project : Mass comparative study

Test : Test 27 - AcoustiTECH Ceramic+Ceramic

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**60,1**
Defavorable deviations	31,8

Assembly description

OSB(0.625in)

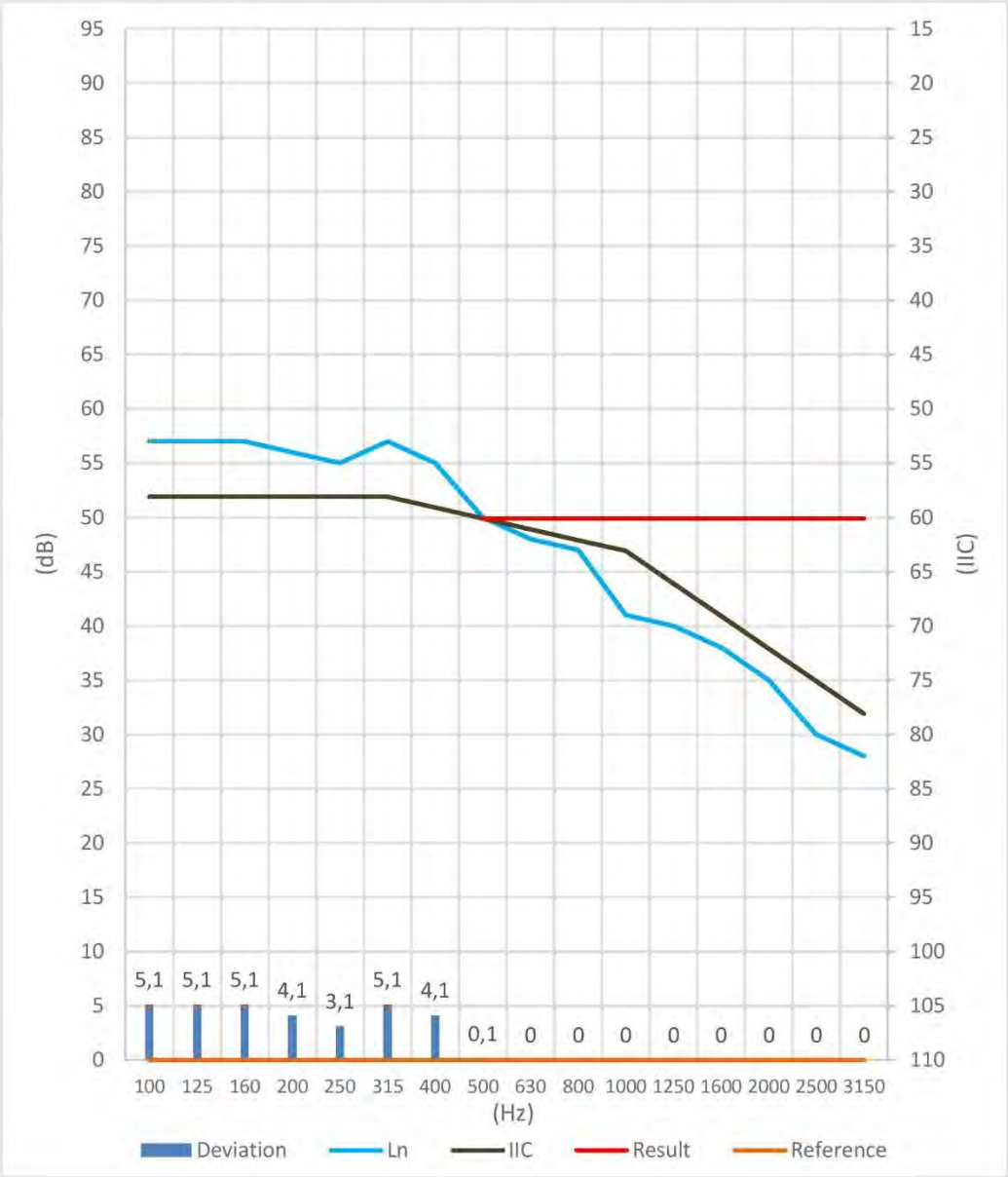
OSB(0.625in)

AcoustiTECH SOFIX

Concrete(1.5in)

CLT 131mm

Thickness w/out CLT: 108mm (4.3in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	57	57	57	56	55	57	55	50	48	47	41	40	38	35	30	28
IIC	51,9	51,9	51,9	51,9	51,9	51,9	50,9	49,9	48,9	47,9	46,9	43,9	40,9	37,9	34,9	31,9
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	58,89	57,44	56,7	55,81	55,04	55,49	53,84	49,36	47,27	45,98	40,11	37,76	34,85	30,76	25,93	22,95
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	5,1	5,1	5,1	4,1	3,1	5,1	4,1	0,1	0	0	0	0	0	0	0	0

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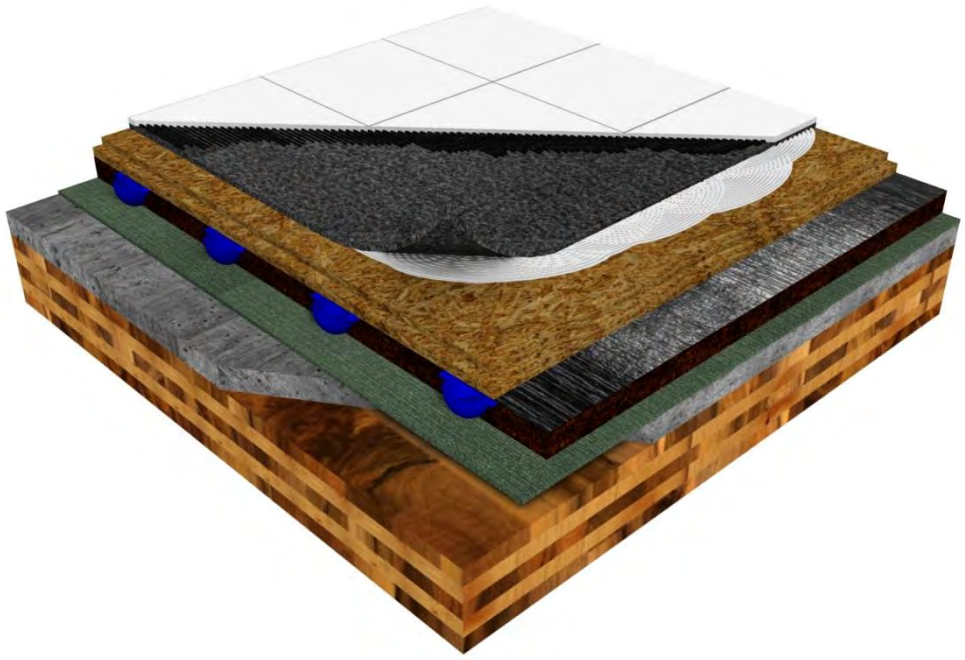
5/8” OSB
5/8” OSB
AcoustiTECH SOFIX
AcoustiTECH LEAD 6
1 ½” standard concrete



Measured Impact Insulation Class (AIIC/IIC)	**63**
Projected Sound Transmission Class (ASTC/STC)	**61**

Element	Thickness (mm)	Area density (lbs/ft2)
Ceramic flooring	8	1.60
AcoustiTECH Ceramic	3	0.11
OSB 5/8’’	15.9	2.1
OSB 5/8’’	15.9	2.1
AcoustiTECH SOFIX	38	0.5
AcoustiTECH Lead 6	6	0.2
Concrete topping	38	21.1
CLT panel	131	13.7
TOTAL	**255.8**	**41.4**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass comparative study

Test : Test 28 - AcoustiTECH Ceramic+Ceramic

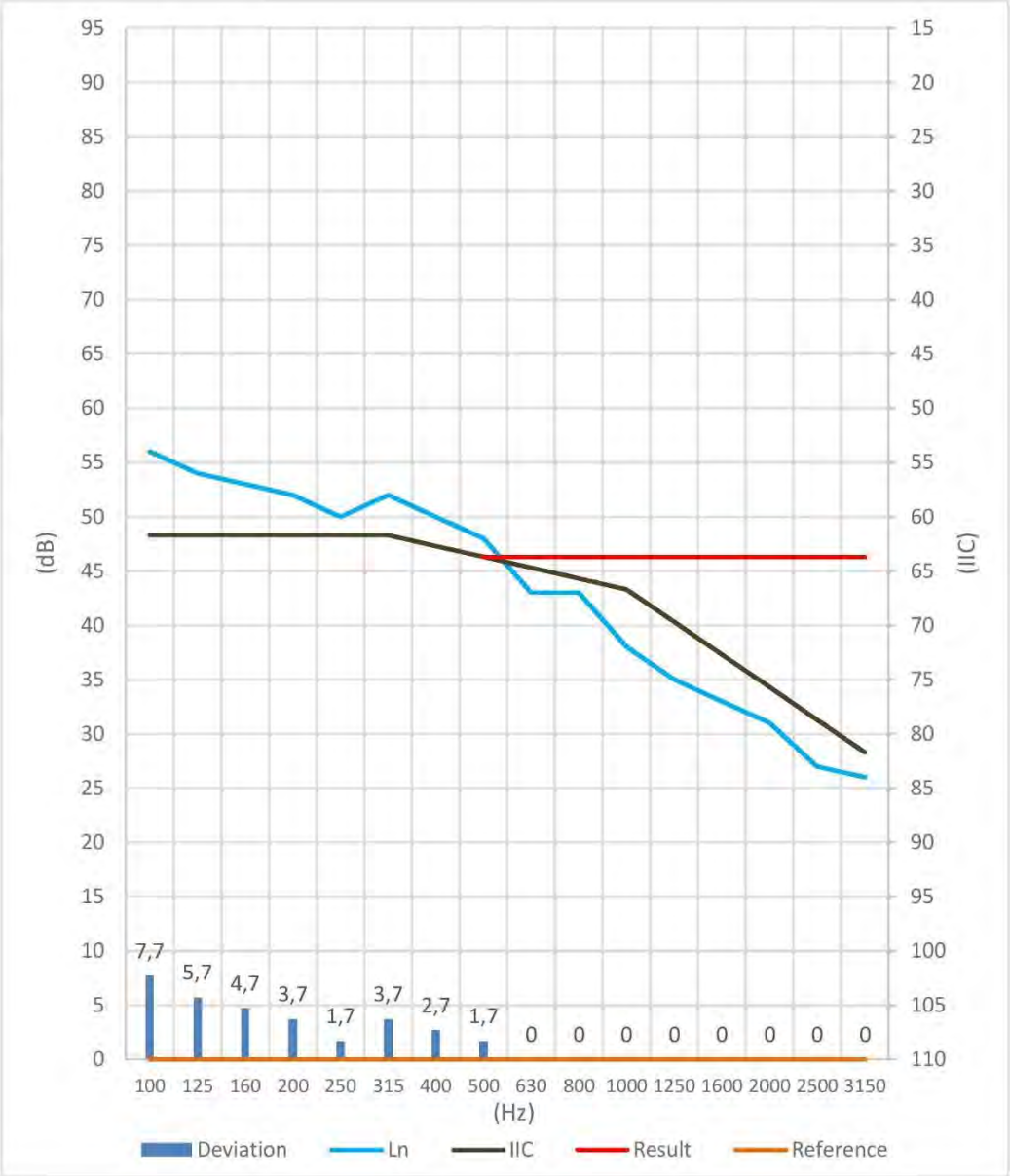
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**63,7**
Defavorable deviations	31,6

Assembly description

OSB(0.625in)
OSB(0.625in)
AcoustiTECH SOFIX
AcoustiTECH Lead 6
Concrete(1.5in)
CLT 131mm

Thickness w/out CLT: 114mm (4.5in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	56	54	53	52	50	52	50	48	43	43	38	35	33	31	27	26
IIC	48,3	48,3	48,3	48,3	48,3	48,3	47,3	46,3	45,3	44,3	43,3	40,3	37,3	34,3	31,3	28,3
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	57,58	54,75	52,22	51,71	50,32	50,49	48,81	47,66	42,54	41,42	37,05	32,95	29,39	26,89	22,98	20,81
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	7,7	5,7	4,7	3,7	1,7	3,7	2,7	1,7	0	0	0	0	0	0	0	0

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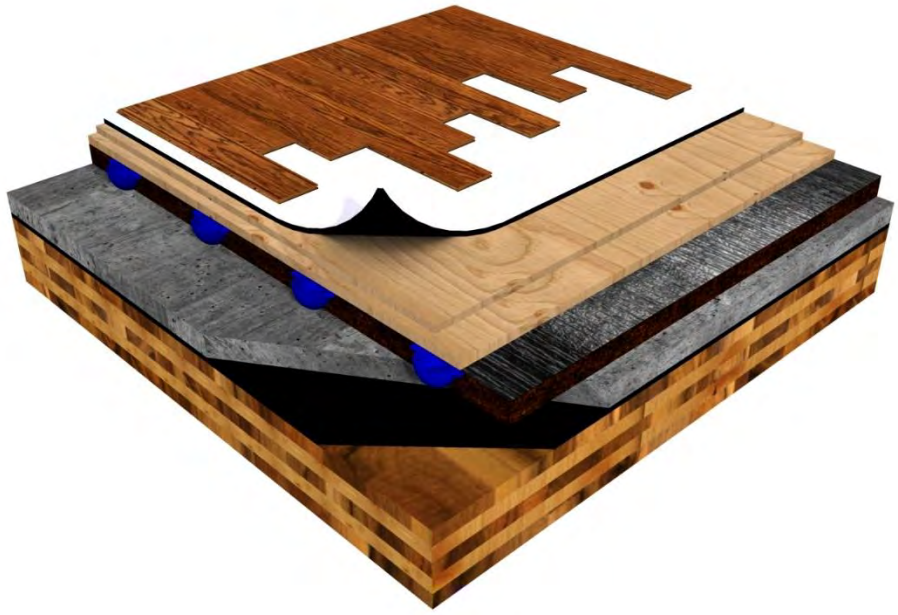
1/2” Plywood
5/8” Plywood
AcoustiTECH SOFIX
1 ½” standard concrete
Soprema Insonomat



Measured Impact Insulation Class (AIIC/IIC)	**57**
Projected Sound Transmission Class (ASTC/STC)	**58**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Plywood 1/2’’	12.7	1.27
Plywood 5/8’’	15.9	1.5
AcoustiTECH SOFIX	38	0.5
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
CLT panel	131	13.7
TOTAL	**262.1**	**40.9**

Project : Mass comparative study

Test : Test 32 - Soprema Insonofloor+floating floor(8mm)

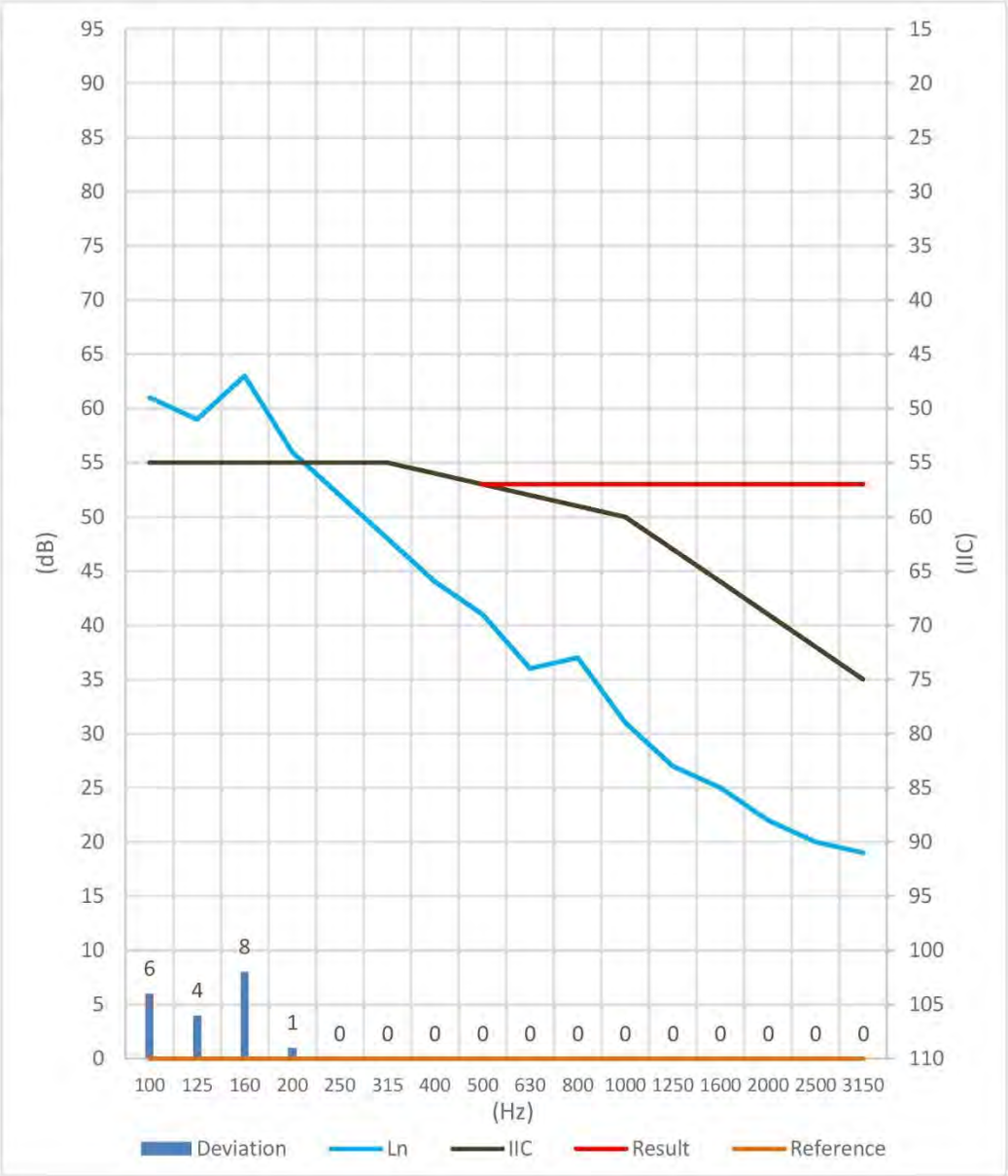
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**57**
Defavorable deviations	19

Assembly description

plywood(0.5in)
plywood(0.625in)
AcoustiTECH SOFIX
Concrete(1.5in)
Insonomat
CLT 131mm

Thickness w/out CLT: 120mm (4.7in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	61	59	63	56	52	48	44	41	36	37	31	27	25	22	20	19
IIC	55	55	55	55	55	55	54	53	52	51	50	47	44	41	38	35
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	62,68	59,1	62,86	55,86	51,72	46,62	42,55	40,01	35,85	35,42	29,96	25,06	21,07	18,53	16,35	14,84
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	6	4	8	1	0	0	0	0	0	0	0	0	0	0	0	0

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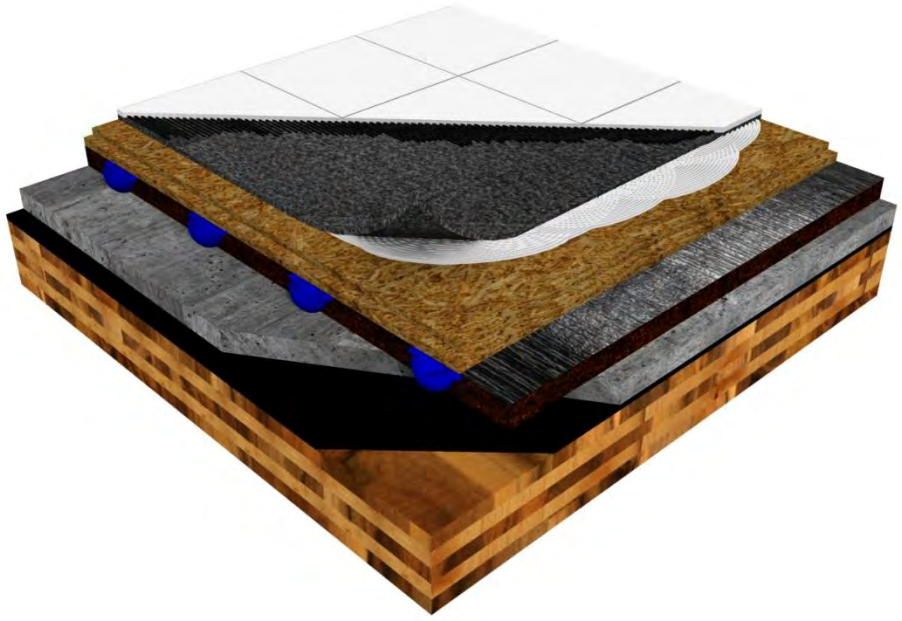
AcoustiTECH Ceramic
5/8” OSB
5/8” OSB
AcoustiTECH SOFIX
1 ½” standard concrete
Soprema Insonomat



Measured Impact Insulation Class (AIIC/IIC)	**59**
Projected Sound Transmission Class (ASTC/STC)	**59**

Element	Thickness (mm)	Area density (lbs/ft2)
Ceramic flooring	8	1.60
AcoustiTECH Ceramic	3	0.11
OSB 5/8’’	15.9	2.1
OSB 5/8’’	15.9	2.1
AcoustiTECH SOFIX	38	0.5
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
CLT panel	131	13.7
TOTAL	**264.8**	**42.0**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass comparative study

Test : Test 33 - AcoustiTECH Ceramic+Ceramic

Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	16,5
Receiving volume (m^3)	40

Results :	
IIC	**59,5**
Defavorable deviations	31,5

Assembly description

OSB(0.625in)
OSB(0.625in)
AcoustiTECH SOFIX
Concrete(1.5in)
Insonomat
CLT 131mm

Thickness w/out CLT: 123mm (4.8in)

Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	60	58	60	58	53	54	55	48	40	38	34	32	33	32	27	26
IIC	52,5	52,5	52,5	52,5	52,5	52,5	51,5	50,5	49,5	48,5	47,5	44,5	41,5	38,5	35,5	32,5
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	61,21	59,04	59,3	57,7	52,7	53,03	53,54	47,41	39,72	36,85	33,02	29,34	29,2	28,19	23,03	20,64
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	7,5	5,5	7,5	5,5	0,5	1,5	3,5	0	0	0	0	0	0	0	0	0

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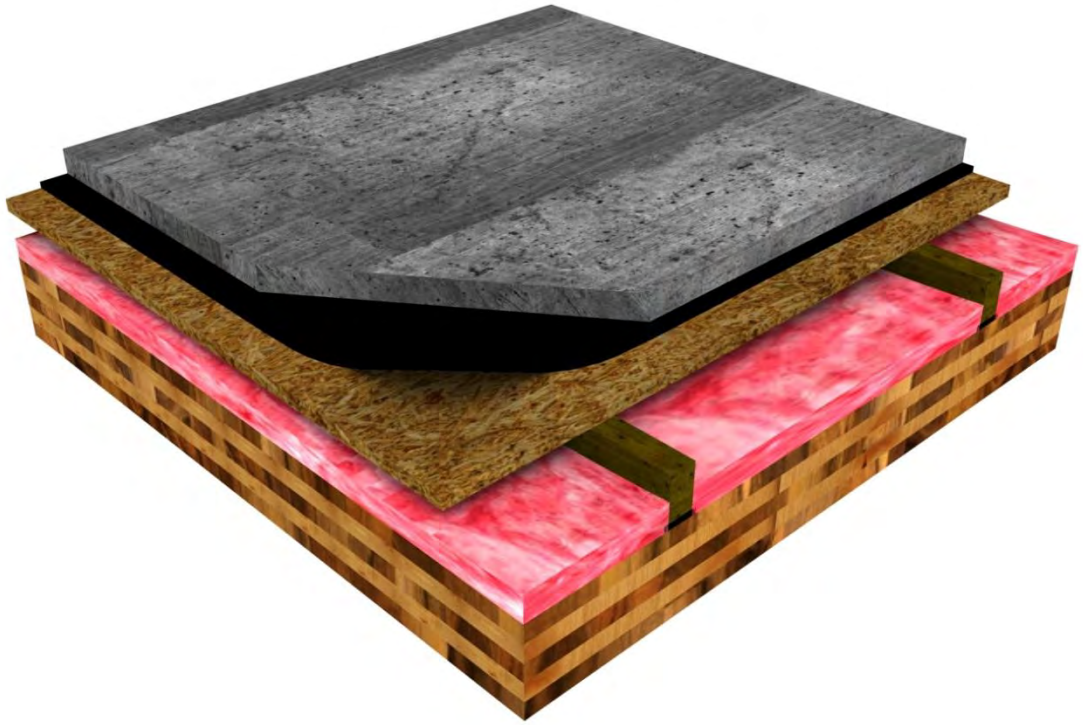
GROUPE Finitec GROUP

1 ½” standard concrete
Soprema Insonomat
5/8” OSB
Wood rafts w/ fiberglass
Soprema Acoustiboard Strips



Measured Impact Insulation Class (AIIC/IIC)	**56**
Projected Sound Transmission Class (ASTC/STC)	**60**

Element	Thickness (mm)	Area density (lbs/ft2)
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
OSB 5/8’’	15.9	2.1
Fiberglass insulation	90	0.22
38x90mm Wood Battens	90	0.84
Soprema Acoustiboard strip	8	0.37
CLT panel	131	13.7
TOTAL	**297.9**	**39.1**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass timber comparative study

Test : Test 2 - Bare Concrete(1.5in)

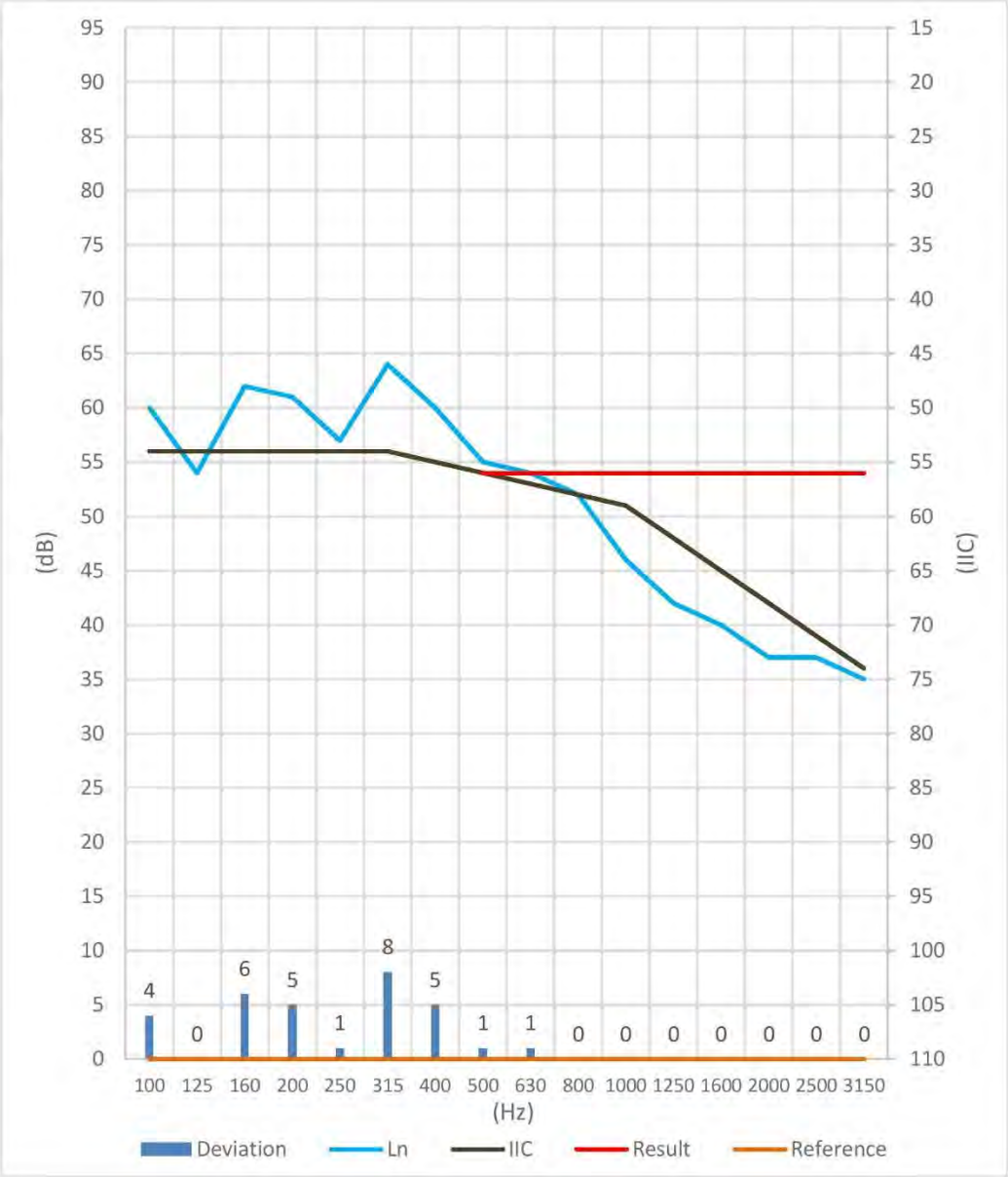
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**56**
Defavorable deviations	31

Assembly description

Insonomat
OSB(0.625in)
Fiberglass(1.5in)
Wood rafts (Acoustiboard strips+ 2inx3in@24inO.C.)
CLT 131mm

Thickness w/out CLT: 155mm (6.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	60	54	62	61	57	64	60	55	54	52	46	42	40	37	37	35
IIC	56	56	56	56	56	56	55	54	53	52	51	48	45	42	39	36
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	61,06	54,51	61,5	60,51	56,57	63,15	59,18	54,54	53,16	50,26	44,18	39,82	36,06	33,2	32,52	30,14
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	4	0	6	5	1	8	5	1	1	0	0	0	0	0	0	0

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GROUPE Finitec GROUP

Soprema Insonofloor

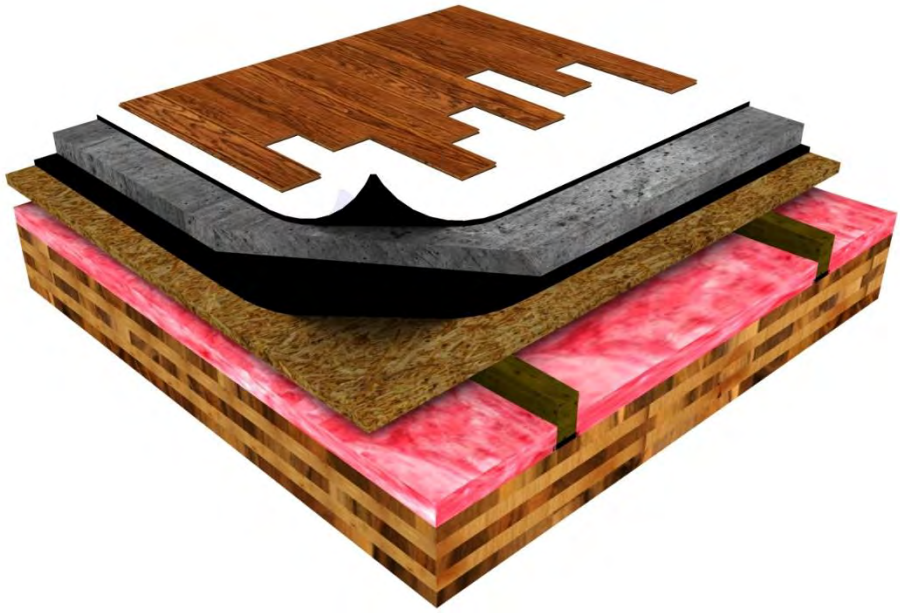
1 ½” standard concrete

Soprema Insonomat

5/8” OSB

Wood rafts w/ fiberglass

Soprema Acoustiboard Strips



Measured Impact Insulation Class (AIIC/IIC)	**61**
Projected Sound Transmission Class (ASTC/STC)	**60**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
OSB 5/8’’	15.9	2.1
Fiberglass insulation	90	0.22
38x90mm Wood Battens	90	0.84
Soprema Acoustiboard strip	8	0.37
CLT panel	131	13.7
TOTAL	**309.4**	**41.2**

Project : Mass timber comparative study

Test : Test 3 - Concrete(1.5in)+Soprema Insonofloor+floating floor(8mm)

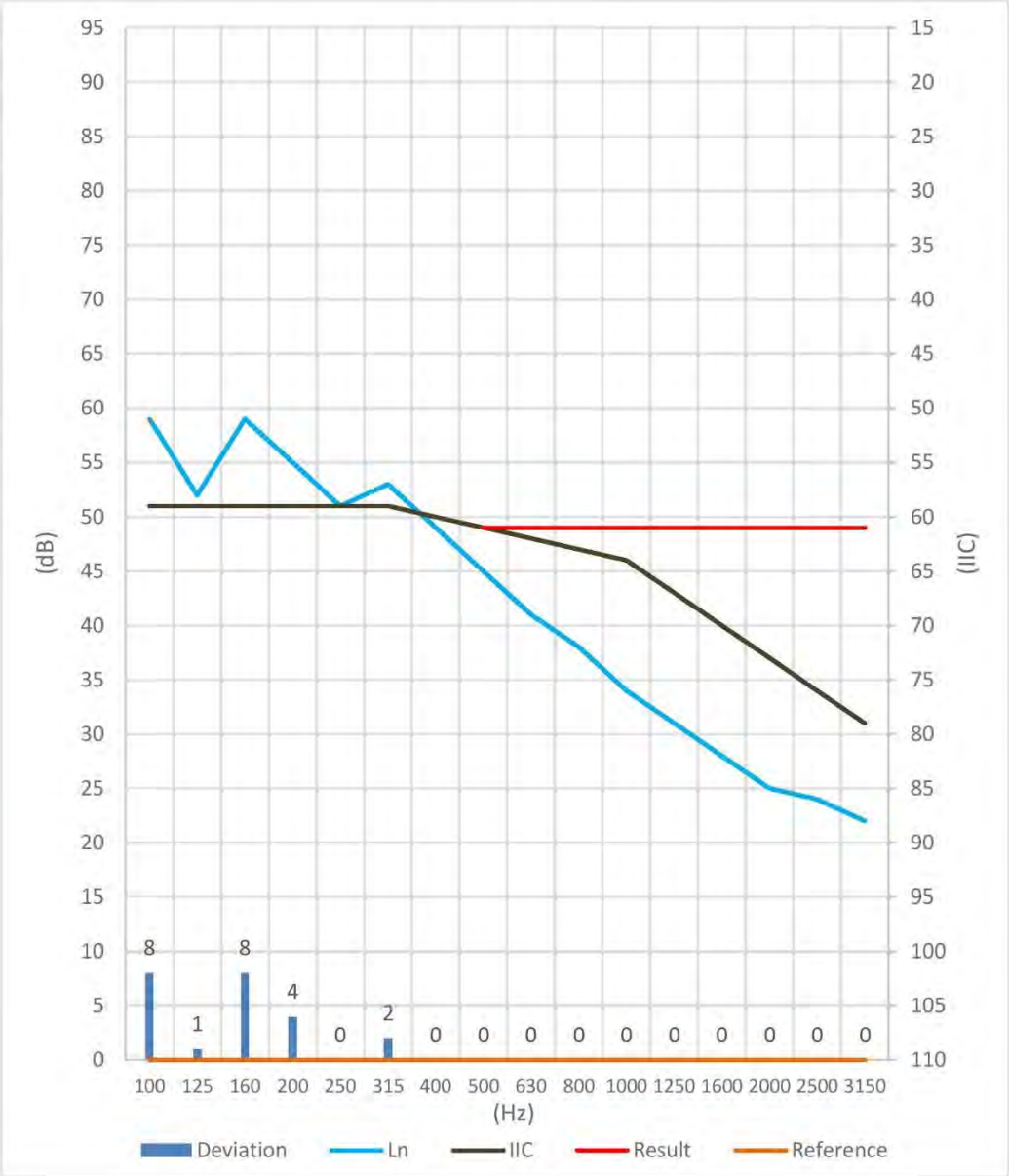
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**61**
Defavorable deviations	23

Assembly description

Insonomat
OSB(0.625in)
Fiberglass(1.5in)
Wood rafts (Acoustiboard strips+ 2inx3in@24inO.C.)
CLT 131mm

Thickness w/out CLT: 155mm (6.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	59	52	59	55	51	53	49	45	41	38	34	31	28	25	24	22
IIC	51	51	51	51	51	51	50	49	48	47	46	43	40	37	34	31
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	60,41	52,22	58,61	53,94	50,4	52,02	48,04	43,65	40,11	36,86	32,41	28,09	24,4	20,76	19,13	17,18
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	8	1	8	4	0	2	0	0	0	0	0	0	0	0	0	0

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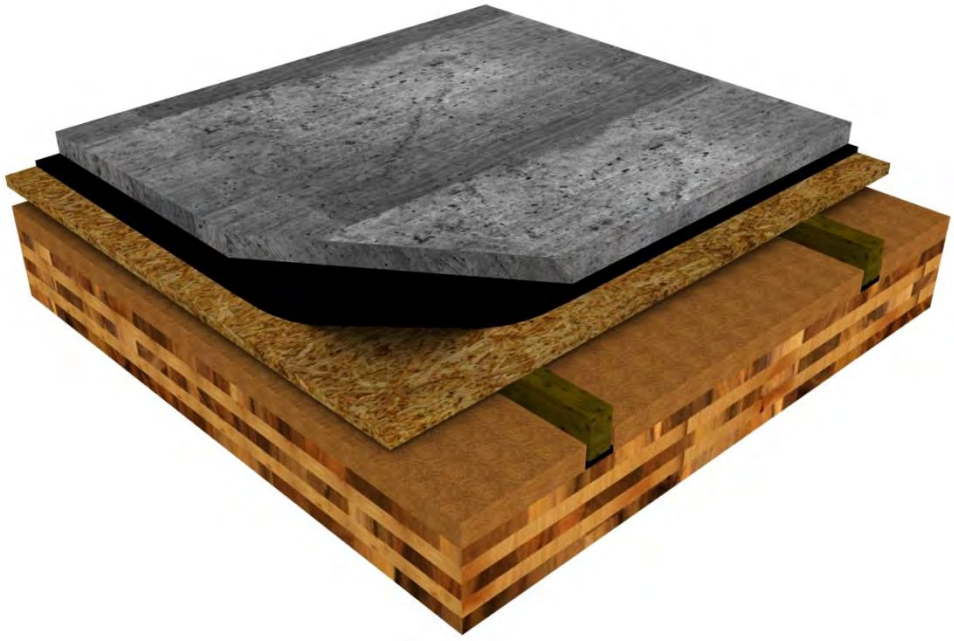
1 ½” standard concrete
Soprema Insonomat
5/8” OSB
Wood rafts w/ sand
Soprema Acoustiboard Strips



Measured Impact Insulation Class (AIIC/IIC)	**57**
Projected Sound Transmission Class (ASTC/STC)	**65**

Element	Thickness (mm)	Area density (lbs/ft2)
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
OSB 5/8’’	15.9	2.1
Sand	50	15.8
38x90mm Wood Battens	90	0.84
Soprema Acoustiboard strip	8	0.37
CLT panel	131	13.7
TOTAL	**297.9**	**54.7**

Project : Mass timber comparative study

Test : Test 6 - Bare Concrete(1.5in)

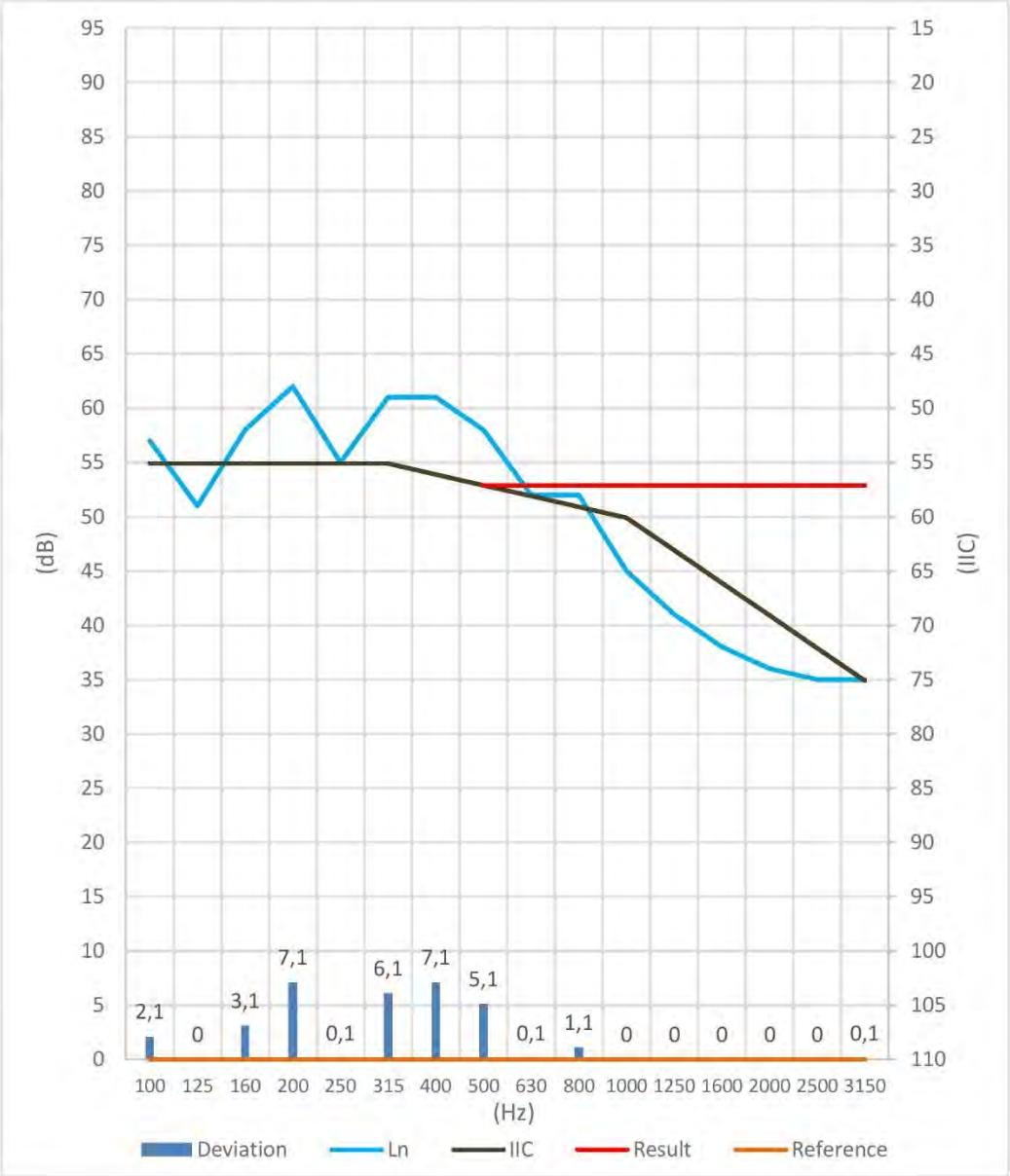
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**57,1**
Defavorable deviations	32

Assembly description

Insonomat
OSB(0.625in)
Sand(1.5in)
Wood rafts (Acoustiboard strips+ 2inx3in@24inO.C.)
CLT 131mm

Thickness w/out CLT: 155mm (6.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	57	51	58	62	55	61	61	58	52	52	45	41	38	36	35	35
IIC	54,9	54,9	54,9	54,9	54,9	54,9	53,9	52,9	51,9	50,9	49,9	46,9	43,9	40,9	37,9	34,9
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	58,42	51,25	57,67	61,45	54,95	60,17	60,05	56,66	51,66	50,1	43,13	38,9	34,36	31,64	30,86	29,35
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	2,1	0	3,1	7,1	0,1	6,1	7,1	5,1	0,1	1,1	0	0	0	0	0	0,1

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Soprema Insonofloor

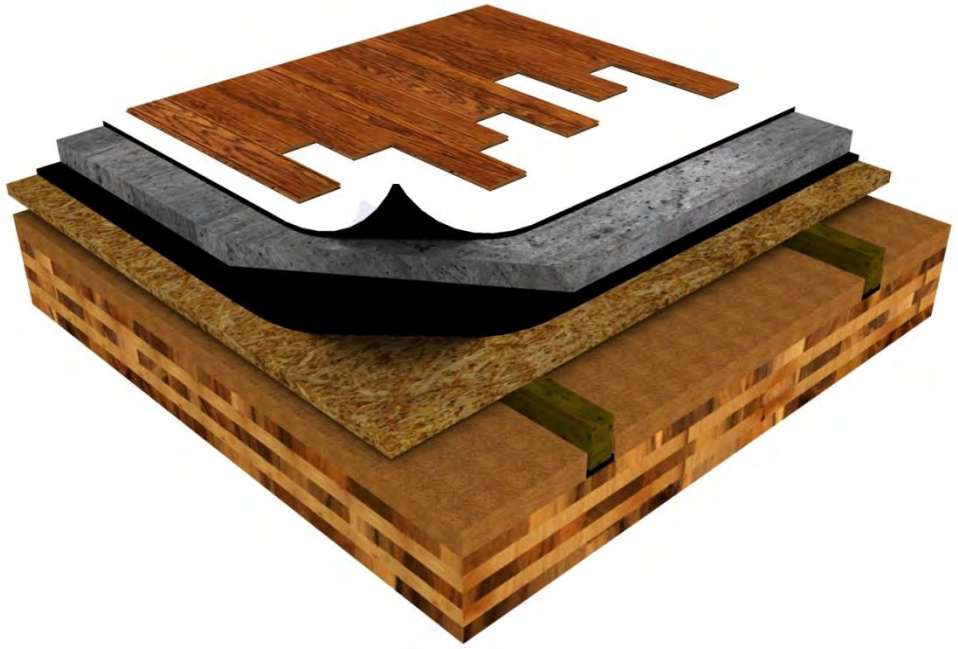
1 ½” standard concrete

Soprema Insonomat

5/8” OSB

Wood rafts w/ sand

Soprema Acoustiboard Strips



Measured Impact Insulation Class (AIIC/IIC)	**61**
Projected Sound Transmission Class (ASTC/STC)	**65**

Element	Thickness (mm)	Area density (lbs/ft2)
Laminate flooring	8	1.60
Soprema Insonofloor	3.5	0.43
Concrete topping	38	21.1
Soprema Insonomat	15	0.81
OSB 5/8’’	15.9	2.1
Sand	50	15.8
38x90mm Wood Battens	90	0.84
Soprema Acoustiboard strip	8	0.37
CLT panel	131	13.7
TOTAL	**309.4**	**56.8**

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE

Project : Mass timber comparative study

Test : Test 7 - Concrete(1.5in)+Soprema Insonofloor+floating floor(8mm)

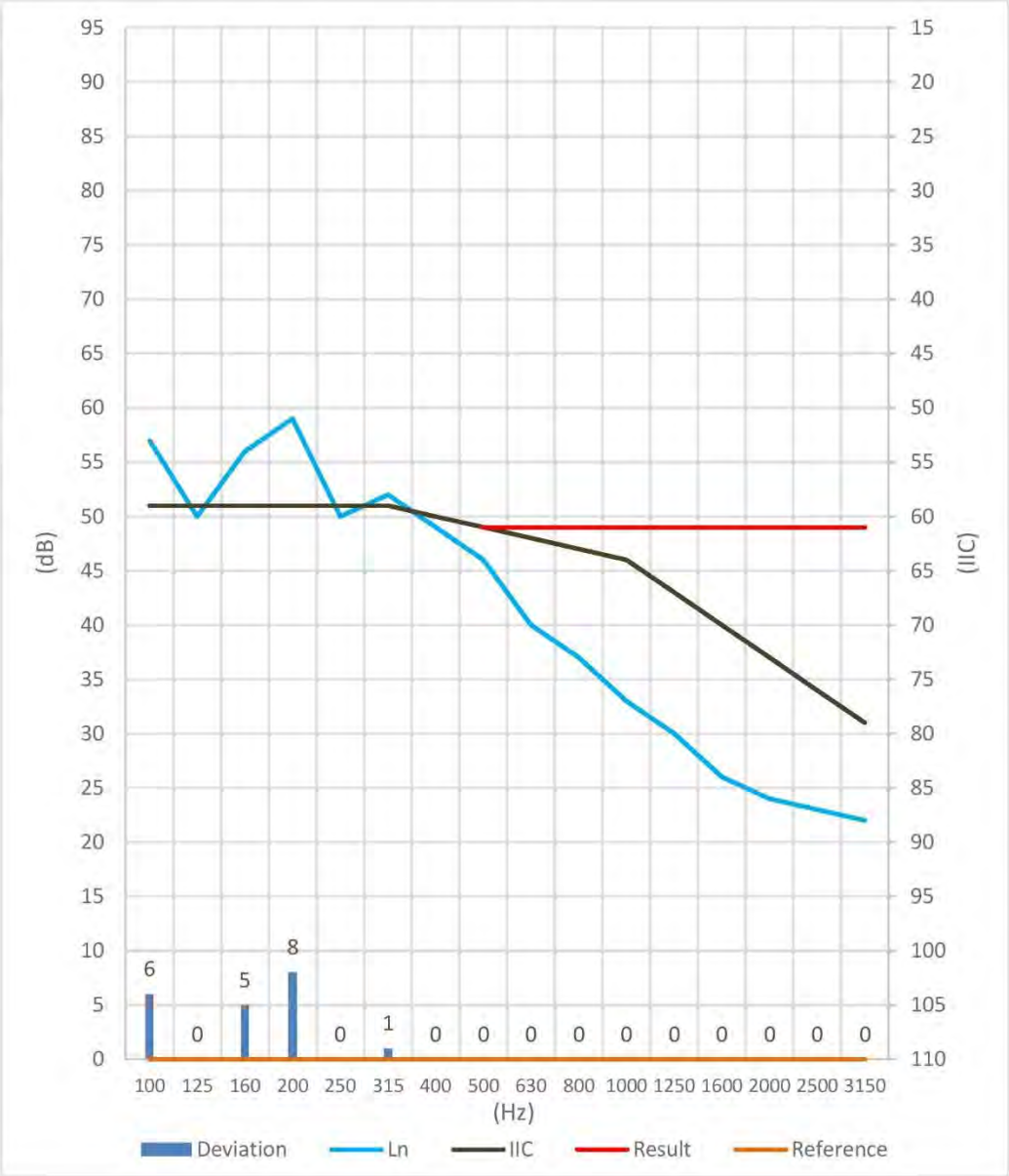
Description :	
Emitting surface (m^2)	16,8
Emitting volume (m^3)	41
Tested surface (m^2)	2,5
Receiving surface (m^2)	14,2
Receiving volume (m^3)	41,2

Results :	
IIC	**61**
Defavorable deviations	20

Assembly description

Insonomat
OSB(0.625in)
Sand(1.5in)
Wood rafts (Acoustiboard strips+ 2inx3in@24inO.C.)
CLT 131mm

Thickness w/out CLT: 155mm (6.1in)



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	57	50	56	59	50	52	49	46	40	37	33	30	26	24	23	22
IIC	51	51	51	51	51	51	50	49	48	47	46	43	40	37	34	31
T20	0,94	0,68	0,62	0,6	0,64	0,55	0,53	0,45	0,5	0,42	0,44	0,31	0,25	0,25	0,22	0,2
L2	58,48	50,32	55,41	58,13	50,27	51,09	47,96	44,76	39,72	35,92	31,64	27,61	22,35	19,65	18,45	16,94
T30	0,94	0,73	0,58	0,57	0,63	0,49	0,5	0,53	0,57	0,46	0,47	0,37	0,28	0,26	0,23	0,2
B2	15,05	15,2	9,5	8,99	13,59	11,29	10,65	11,74	14,19	10,28	9,54	9,27	7,25	8,52	7,76	7,29
Deviation	6	0	5	8	0	1	0	0	0	0	0	0	0	0	0	0

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