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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-23/0193 of 2023/04/11

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S	
Trade name of the construction product:	Rotho Blaas PIANO flexible interlayer
Product family to which the above construction product belongs:	Flexible interlayer to be used for the reduction of flanking sound transmission and/or vibration transmission in construction works
Manufacturer:	Rotho Blaas s.r.l Via dell'Adige 2/1 IT-39040 Cortaccia (BZ) Tel. + 39 0471 818400 Fax + 39 0471 818484 Internet www.rothoblaas.com
Manufacturing plant:	Rotho Blaas s.r.l Manufacturing Plants: RI3 - RI4
This European Technical Assessment contains:	14 pages including 6 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 042232-00-0503 Flexible interlayer to be used for the reduction of flanking sound transmission and/or vibration transmission in construction works
This version replaces:	-

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

Rotho Blaas "PIANO A", "PIANO B", "PIANO C", "PIANO D", "PIANO E" are flexible interlayers made of a homogeneous layer of EPDM (ethylene propylene diene monomer rubber)

The product has a thickness of 6 mm and it can be placed on market as stripe, mat, washer or other shape. The product is delivered with different density and shore hardness and different compressive modulus according to the values declared at point 3.2.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

Rotho Blaas PIANO flexible interlayer is used as flexible interlayer for the reduction of flanking transmission for airborne, impact and building service equipment sound between adjoining rooms frame and/or vibration transmission. The product is installed between at least two elements (i.e., floor and wall).

Rotho Blaas PIANO flexible interlayer shall be used in environmental not subjected to direct contact with weathering or wetting. Typically, the product is installed inside the construction works such as timber structures subject to the dry, internal conditions defined by the service classes 1 and 2 of EN 1995-1-1 (Eurocode 5).

The installation shall be carried out in accordance with nation provisions. Instructions from Rotho Blaas should be considered for installation.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the interlayers of 25 years. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

Characteristic	Assessment of characteristic
3.1 Safety in case of fire (BWR2)	
Reaction to fire	PIANO is made from EPDM (ethylene propylene diene monomer rubber) and classified as Euroclass E in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364
3.2 Protection against noise *) (BWR5)	
Compressive creep	See Annex A
Compression set	See Annex B
Compressive stress and deformation	See Annex C
Dynamic elastic modulus	See Annex D
Damping factor	See Annex E
Flanking transmission for airborne, impact and building service equipment sound between adjoining rooms frame	See Annex F
Compressive modulus	

PIANO A	E_c = 0,23 MPa	$E_{c,lubricant}$ = 0,19 MPa
PIANO B	E_c = 1,08 MPa	$E_{c,lubricant}$ = 1,08 MPa
PIANO C	E_c = 7,92 MPa	$E_{c,lubricant}$ = 3,67 MPa
PIANO D	E_c = 22,10 MPa	$E_{c,lubricant}$ = 7,92 MPa
PIANO E	E_c = 24,76 MPa	$E_{c,lubricant}$ = 12,03 MPa

*) Values may be subject to production tolerances.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 2000/273/EC as amended by 2001/596/EC of the European Commission1, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 3.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

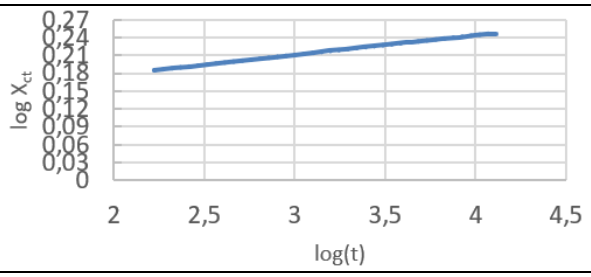
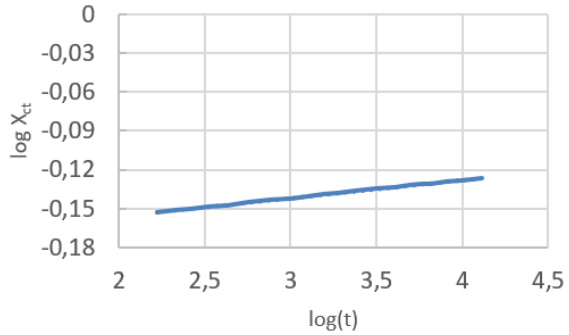
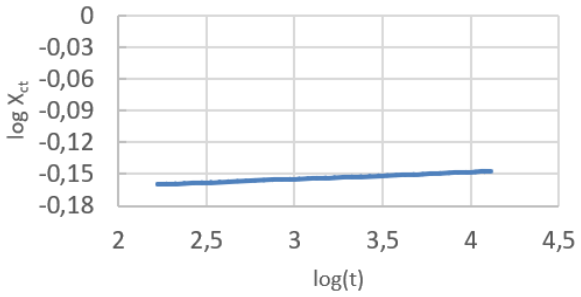
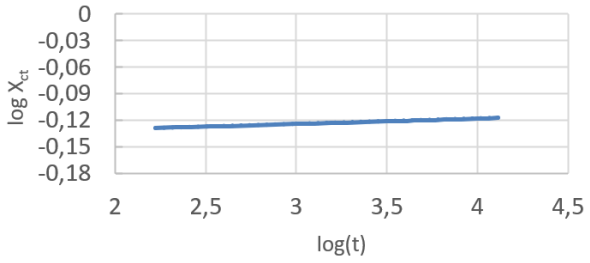
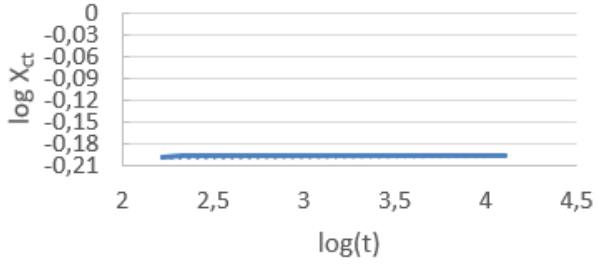
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2023-04-11 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex A
Compressive creep

Table A.1

Product	$\frac{\Delta\varepsilon}{\varepsilon_1}$	Description
PIANO A	0,24	
PIANO B	0,34	
PIANO C	0,18	
PIANO D	0,45	
PIANO E	0,24	

Where:

- $\frac{\Delta\varepsilon}{\varepsilon_1}$ is the mean value of the creep index in compression.
- the description of the long-term deformation is determined according with Annex A of EN ISO 16534 using the values (deformation and time) determined with ISO 8013 with the assessment specification above and the result shall be expressed as Figure B1 of Annex B of EN ISO 16534.

Annex B
Compression set

Table B.1

Product	c.s.	t [mm]	$t_{c.s.}$ [mm]
PIANO A	26,38 %	6	4,42
PIANO B	37,53 %	6	3,75
PIANO C	11,95 %	6	5,28
PIANO D	14,75 %	6	5,12
PIANO E	42,08 %	6	3,48

Where:

- c.s. is the difference between the initial thickness and the final thickness of a test piece of product after compression for a given time at a given temperature and after a given recovery time defined at point 8 of EN 1856.
- t [mm] is the nominal thickness of the product.
- $t_{c.s.}$[mm] is the calculated thickness of the product after compression and recovery.

Annex C
Compressive stress and deformation

Table C.1

Product	σ_{1mm} [MPa] $\sigma_{1mm,\ lubricant}$ [MPa]	σ_{2mm} [MPa] $\sigma_{2mm,\ lubricant}$ [MPa]	σ_{3mm} [MPa] $\sigma_{3mm,\ lubricant}$ [MPa]
PIANO A	0,04 0,03	0,08 0,07	0,15 0,14
PIANO B	0,14 0,14	0,31 0,30	0,85 0,80
PIANO C	1,50 0,65	3,55 1,49	9,23 3,71
PIANO D	4,40 1,41	10,49 3,38	25,88 9,19
PIANO E	3,81 2,40	8,36 4,43	17,07 10,09

Where:

- σ_{1mm} [MPa] is the mean value of compressive stress at 1 mm strain (surfaces not treated with lubricant).
- $\sigma_{1mm,lubricant}$ [MPa] is the mean value of compressive stress at 1 mm strain (surfaces treated with appropriate lubricant).
- σ_{2mm} [MPa] is the mean value of compressive stress at 2 mm strain (surfaces not treated with lubricant).
- $\sigma_{2mm,lubricant}$ [MPa] is the mean value of compressive stress at 2 mm strain (surfaces treated with appropriate lubricant).
- σ_{3mm} [MPa] is the mean value of compressive stress at 3 mm strain (surfaces not treated with lubricant).
- $\sigma_{3mm,lubricant}$ [MPa] is the mean value of compressive stress at 3 mm strain (surfaces treated with appropriate lubricant).

Annex D
Dynamic elastic modulus

Table D.1

Product	E'_{1Hz} [MPa] E''_{1Hz} [MPa]	E'_{5Hz} [MPa] E''_{5Hz} [MPa]	E'_{10Hz} [MPa] E''_{10Hz} [MPa]	E'_{50Hz} [MPa] E''_{50Hz} [MPa]
PIANO A	0,4 0,07	0,50 0,08	0,5 0,09	0,5 0,13
PIANO B	1,54 0,42	1,75 0,55	1,87 0,59	2,07 0,79
PIANO C	8,35 2,15	9,35 2,55	9,91 2,81	11,61 3,56
PIANO D	18,23 4,97	20,30 6,03	21,62 6,71	25,81 9,01
PIANO E	48,83 11,99	54,80 13,24	58,35 14,04	67,08 16,85

Where:

- E'_{1Hz} [MPa] is the mean value of elastic normal modulus (storage normal modulus) at 1 Hz.
- E''_{1Hz} [MPa] is the mean value of loss normal modulus at 1 Hz.
- E'_{5Hz} [MPa] is the mean value of elastic normal modulus (storage normal modulus) at 5 Hz.
- E''_{5Hz} [MPa] is the mean value of loss normal modulus at 5 Hz.
- E'_{10Hz} [MPa] is the mean value of elastic normal modulus (storage normal modulus) at 10 Hz.
- E''_{10Hz} [MPa] is the mean value of loss normal modulus at 10 Hz.
- E'_{50Hz} [MPa] is the mean value of elastic normal modulus (storage normal modulus) at 50 Hz.
- E''_{50Hz} [MPa] is the mean value of loss normal modulus at 50 Hz.

Annex E
Damping factor

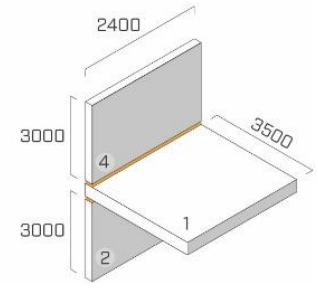
Table E.1

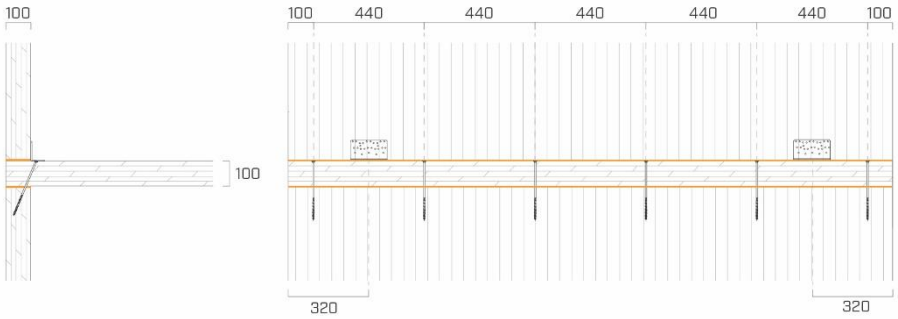
Product	tan δ_{1Hz}	tan δ_{5Hz}	tan δ_{10Hz}	tan δ_{50Hz}
PIANO A	0,177	0,186	0,192	0,238
PIANO B	0,270	0,308	0,314	0,372
PIANO C	0,258	0,272	0,283	0,306
PIANO D	0,273	0,297	0,310	0,349
PIANO E	0247	0,243	0,242	0,253

Where:

- tan δ_{1Hz} [MPa] is the mean value of tangent of the loss angle at 1 Hz.
- tan δ_{5Hz} [MPa] is the mean value of tangent of the loss angle at 5 Hz.
- tan δ_{10Hz} [MPa] is the mean value of tangent of the loss angle at 10 Hz.
- tan δ_{50Hz} [MPa] is the mean value of tangent of the loss angle at 50 Hz.

Annex F
Flanking transmission for airborne, impact and building service equipment sound between adjoining rooms
Frame

<table>
<tr><th>Joint type</th><th>Joint description</th><th>System drawing</th></tr>
<tr><td rowspan="3">1
T-joint</td><td>Standard:
EN ISO 10848-1/4</td><td rowspan="2"> 

Executive drawing of the junction constructed for the test build up.
 

Executive drawings of the positioning of fastening system and resilient interlayers</td></tr>
<tr><td>Tested build-up:
- (4) Top wall: 5-ply CLT, 100mm, (2,4 m x 3 m)
- (1) Floor: 5-ply CLT 100 mm (2,4 m x 3,5 m)
- (2) Bottom wall: 5-ply CLT, 100mm, (2,4 m x 3 m)

Fastening system:
- 6 Partially threaded screws HBS 8x240mm; step 440mm
- 2 Angle brackets NINO15080 (CLT pattern with 31 screws 5x50 mm) + XYLOFON 35 (55x150x6 mm); step 1760mm</td></tr>
<tr><td>Flexible interlayer:
- Product type: PIANO A
- Position: between top wall and floor and between floor and bottom wall.
- Dimensions:
width=100mm
thickness=6mm
length=2,40m
- Contact area: continuous stripe (same width and length of the wall)
- Load applied [kN/m^2]: 22</td><td>Measurements and results:

Path: 1-4
<table>
<tr><td>F (Hz)</td><td>100</td><td>125</td><td>160</td><td>200</td><td>250</td><td>315</td><td>400</td><td>500</td></tr>
<tr><td>K_{14} (dB)</td><td>18,5</td><td>20,6</td><td>17,6</td><td>25,4</td><td>19,8</td><td>23,1</td><td>23,7</td><td>17,2</td></tr>
</table>
<table>
<tr><td>F (Hz)</td><td>630</td><td>800</td><td>1000</td><td>1250</td><td>1600</td><td>2000</td><td>2500</td><td>3150</td></tr>
<tr><td>K_{14} (dB)</td><td>24,1</td><td>22,8</td><td>22,1</td><td>24,2</td><td>25,7</td><td>25,3</td><td>25,8</td><td>26,4</td></tr>
</table>
$\overline{K_{14}}$ = 22,4 dB $\overline{K_{14,0}}$ = 14,4 dB

$\Delta_{l,14}$ = 8,0 dB

Path: 1-2
<table>
<tr><td>F (Hz)</td><td>100</td><td>125</td><td>160</td><td>200</td><td>250</td><td>315</td><td>400</td><td>500</td></tr>
<tr><td>K_{12} (dB)</td><td>19,6</td><td>16,9</td><td>13,0</td><td>21,2</td><td>19,2</td><td>21,2</td><td>21,7</td><td>18,3</td></tr>
</table>
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<tr><td>K_{12} (dB)</td><td>23,3</td><td>25,0</td><td>26,0</td><td>30,9</td><td>32,9</td><td>30,6</td><td>25,7</td><td>27,1</td></tr>
</table>
$\overline{K_{12}}$= 23,1 dB $\overline{K_{12,0}}$= 14,6 dB

$\Delta_{l,12}$ = 8,5 dB

Path: 2-4
<table>
<tr><td>F (Hz)</td><td>100</td><td>125</td><td>160</td><td>200</td><td>250</td><td>315</td><td>400</td><td>500</td></tr>
<tr><td>K_{24} (dB)</td><td>20,5</td><td>28,2</td><td>20,9</td><td>31,0</td><td>26,0</td><td>29,0</td><td>27,7</td><td>26,1</td></tr>
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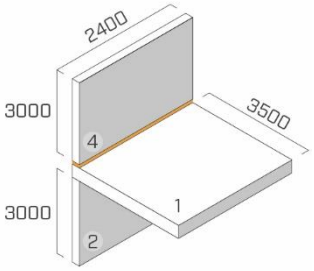
<tr><td>K_{24} (dB)</td><td>26,4</td><td>31,9</td><td>34,1</td><td>38,5</td><td>41,1</td><td>41,3</td><td>37,7</td><td>32,6</td></tr>
</table>
$\overline{K_{24}}$= 30,9 dB $\overline{K_{24,0}}$= 20,4 dB

$\Delta_{l,24}$ = 10,5 dB</td></tr>
</table>

<table>
<tr><th>Joint type</th><th>Joint description</th><th>System drawing</th></tr>
<tr><td rowspan="4">2
T-joint</td><td>Standard:
EN ISO 10848-1/4</td><td rowspan="2"> 

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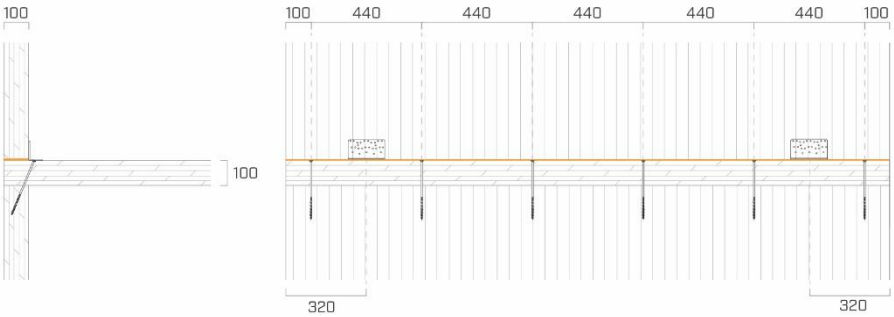
- 6 Partially threaded screws HBS 8x240mm; step 440mm
- 2 Angle brackets NINO15080 (CLT pattern with 31 screws 5x50 mm) + XYLOFON 35 (55x150x6 mm); step 1760mm</td><td> 

Executive drawings of the positioning of fastening system and resilient interlayers</td></tr>
<tr><td>Flexible interlayer:
- Product type: PIANO A
- Position: between top wall and floor
- Dimensions: width=100mm thickness=6mm length=2,40m
- Contact area: continuous stripe (same width and length of the wall)
- Load applied [kN/m^2]: 125</td><td rowspan="2">Measurements and results:

Path: 1-4
<table>
<tr><td>F (Hz)</td><td>100</td><td>125</td><td>160</td><td>200</td><td>250</td><td>315</td><td>400</td><td>500</td></tr>
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<tr><td>K_{14} (dB)</td><td>19,3</td><td>18,5</td><td>24,8</td><td>26,2</td><td>22,6</td><td>20,8</td><td>21,0</td><td>21,6</td></tr>
</table>
$\overline{K_{14}}$ = 18,7 dB $\overline{K_{14,0}}$ = 14,4 dB

$\Delta_{l,14}$ = 4,4 dB

Path: 1-2
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<tr><td>F (Hz)</td><td>100</td><td>125</td><td>160</td><td>200</td><td>250</td><td>315</td><td>400</td><td>500</td></tr>
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$\overline{K_{12}}$= 13,9 dB $\overline{K_{12,0}}$= 14,6 dB

$\Delta_{l,12}$ = -0,7 dB

Path: 2-4
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<tr><td>K_{24} (dB)</td><td>21,3</td><td>25,1</td><td>30,0</td><td>32,6</td><td>30,7</td><td>31,8</td><td>31,4</td><td>31,0</td></tr>
</table>
$\overline{K_{24}}$= 24,3 dB $\overline{K_{24,0}}$= 20,4 dB

$\Delta_{l,24}$ = 3,9 dB</td></tr>
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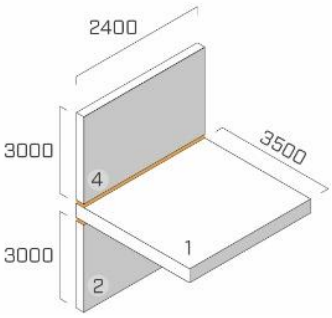
EN ISO 10848-1/4</td><td rowspan="2"> 

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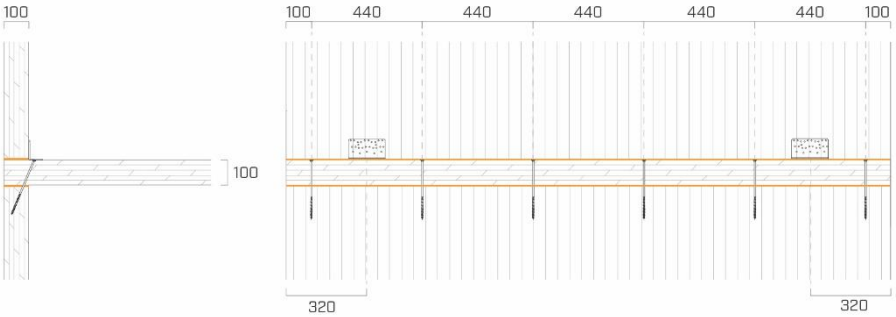
- 2 Angle brackets NINO15080 (CLT pattern with 31 screws 5x50 mm) + XYLOFON 35 (55x150x6 mm); step 1760mm</td><td> 

Executive drawings of the positioning of fastening system and resilient interlayers</td></tr>
<tr><td>Flexible interlayer:
- Product type: PIANO B
- Position: between top wall and floor and between floor and bottom wall.
- Dimensions: width=100mm thickness=6mm length=2.40m
- Contact area: continuous stripe (same width of the wall)
- Load applied [kN/m^2]: 210</td><td>Measurements and results:

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</table>
$\overline{K_{14}}$ = 18,5 dB $\overline{K_{14,0}}$ = 13,3 dB

$\Delta_{l,14}$ = 5,2 dB

Path: 1-2
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$\overline{K_{12}}$= 19,4 dB $\overline{K_{12,0}}$= 14,5 dB

$\Delta_{l,12}$ = 4,9 dB

Path: 2-4
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$\overline{K_{24}}$= 23,5 dB $\overline{K_{24,0}}$= 17,3 dB

$\Delta_{l,24}$ = 6,2 dB</td></tr>
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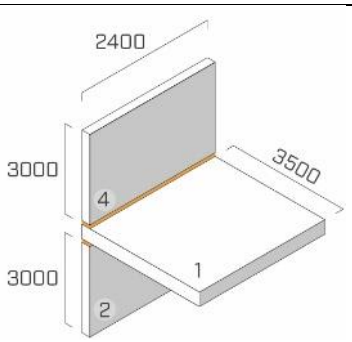
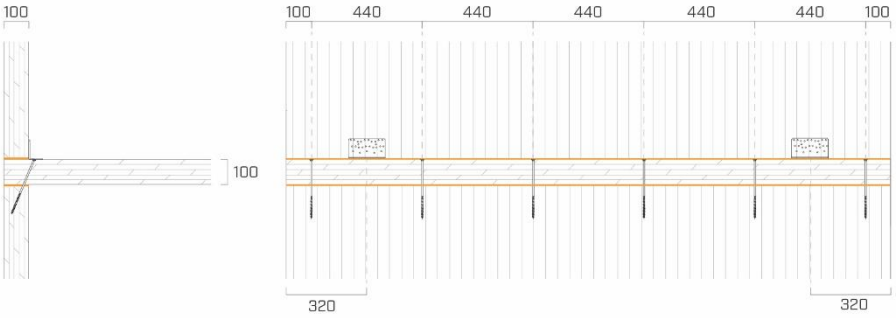
<tr><th>Joint type</th><th>Joint description</th><th>System drawing</th></tr>
<tr><td rowspan="3">1
T-joint</td><td>Standard:
EN ISO 10848-1/4</td><td rowspan="2"> 

Executive drawing of the junction constructed for the test build up.</td></tr>
<tr><td>Tested build-up:
- (4) Top wall: 5-ply CLT, 100mm, (2,4 m x 3 m)
- (1) Floor: 5-ply CLT 100 mm (2,4 m x 3,5 m)
- (2) Bottom wall: 5-ply CLT, 100mm, (2,4 m x 3 m)</td></tr>
<tr><td>Fastening system:
- 6 Partially threaded screws HBS 8x240mm; step 440mm
- 2 Angle brackets NINO15080 (CLT pattern with 31 screws 5x50 mm) + XYLOFON 35 (55x150x6 mm); step 1760mm</td><td> 

Executive drawings of the positioning of fastening system and resilient interlayers</td></tr>
<tr><td>Flexible interlayer:
- Product type: PIANO C
- Position: between top wall and floor and between floor and bottom wall.
- Dimensions: width=100mm thickness=6mm length=2.40m
- Contact area: continuous stripe (same width of the wall)
- Load applied [kN/m^2]: 1300</td><td rowspan="2">Measurements and results:

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$\overline{K_{14}}$ = 17,6 dB $\overline{K_{14,0}}$ = 13,3 dB

$\Delta_{l,14}$ = 4,3 dB

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$\overline{K_{12}}$= 17,6 dB $\overline{K_{12,0}}$= 14,5 dB

$\Delta_{l,12}$ = 3,1 dB

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