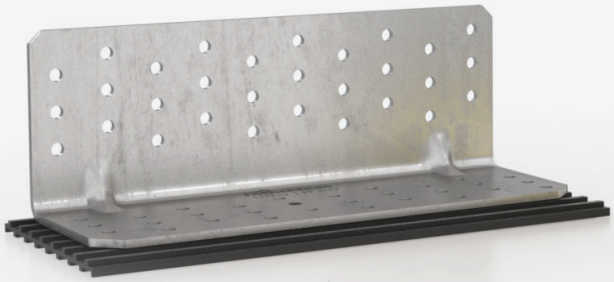
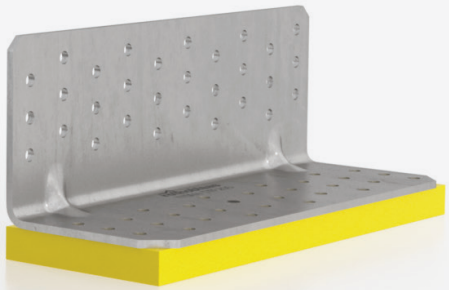
TITAN SILENT

Corner for shear stresses with soundproofing profile

3D drilled steel plate with polymer resilient profile



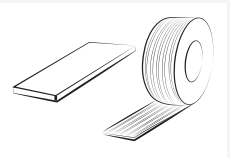
Aladin Stripe



Absorber Plate

TWO VERSIONS

Structural soundproofing profiles for TITAN TTF200: ABSORBER PLATE ready for use and ALADIN STRIPE to be cut on site



ACOUSTIC INSULATION

Significant reduction of vibrations from footsteps and attenuation of the transmitted noise, for excellent acoustic comfort

ACOUSTIC BRIDGES

The excellent shear resistances of the angular element and the soundproofing of the profile limit the acoustic bridges

TESTED VALUES

Abatement values of the vibrations and shear mechanical strength tested in both academic and industrial sector

APPLICATIONS

Wood-wood shear connections with reduction of acoustic bridges

- Xlam (Cross Laminated Timber)
- platform frame
- wood-based panels
- LVL
- solid wood
- laminated wood

LIVING COMFORT

The resistance of TITAN TTF200 in combination with the acoustic performance of the soundproofing profiles ensures noise reduction due to vibrations from footsteps on floors in wood buildings

DECIBEL

In a shear connection system with angular brackets, TITAN SILENT ensures a reduction of vibrations transmitted from footsteps of more than 3 dB. Value proven by lab tests

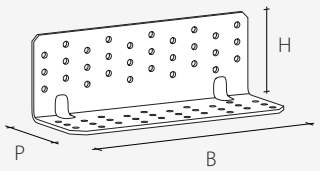
ACOUSTICS/STATISTICS

ABSORBER PLATE for an excellent noise reduction, with a slight reduction of mechanical strength. ALADIN STRIPE for good soundproofing and excellent resistance

CODES AND DIMENSIONS

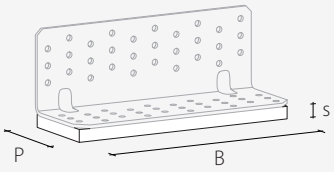
TITAN SILENT

TITAN TTF200



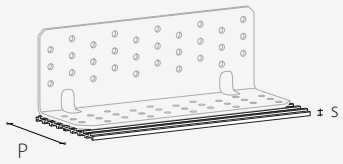
code	type	B [mm]	P [mm]	H [mm]	n_H Ø5 [pcs]	n_V Ø5 [pcs]	s [mm]		pcs/pack.
TTF200	**TTF200**	200	71	71	30	30	3	•	5

ABSORBER PLATE



code	type	B [mm]	P [mm]	s [mm]	pcs/pack.
D82361	**yellow**	200	70	12.5	10

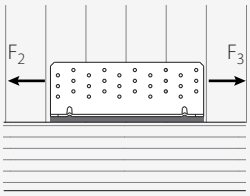
ALADIN STRIPE

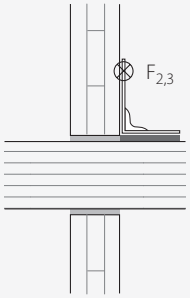


code	type	length [m]	P [mm]	s [mm]	pcs/pack.
D82113	**soft**	50*	95	5	1
D82123	**extra soft**	50*	115	7	1

* to be cut on site

STRESS





MATERIAL AND DURABILITY

TITAN TTF200: carbon steel DX51D with galvanising Z275.
Application in service class 1 and 2 (EN 1995:2008).
ABSORBER PLATE: closed cell polyurethane, without softeners and VOC.
ALADIN STRIPE: Extruded compact EPDM (soft version) and Foam compact EPDM (extra soft version). High chemical stability, not containing VOC.

APPLICATION

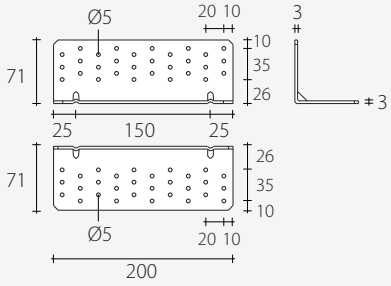
Wood-wood connections
OSB-wood connections

ADDITIONAL PRODUCTS - HARDWARE

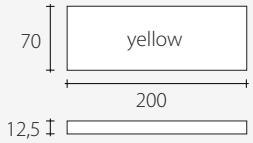
type	description		d_1 [mm]	support
LBA	anker nail		4	
LBS	plate screw		5	

DESIGN

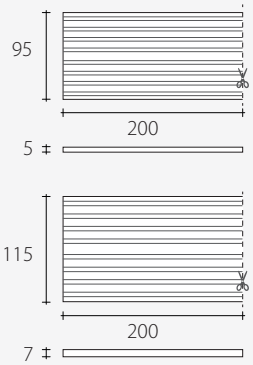
TITAN TTF200



ABSORBER PLATE

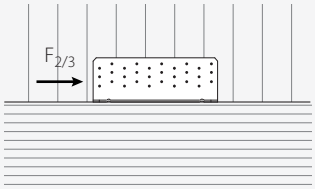


ALADIN STRIPE



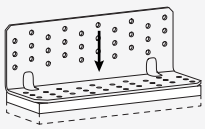
STATIC VALUES AND INSTALLATION

SHEAR CONNECTION - WOOD/WOOD



TITAN TTF200

The values of mechanical strength and the methods of installation of TITAN TTF200 are given on page 165 of the catalogue "Plates and connectors for wood".

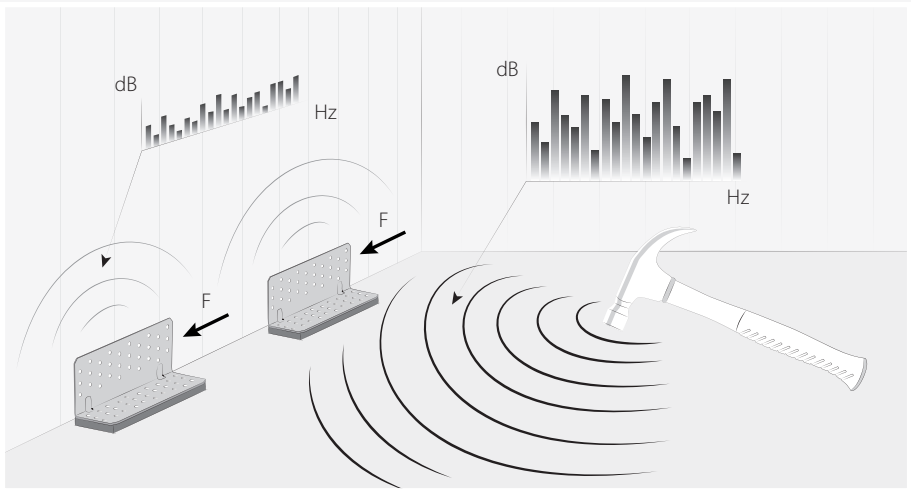


ABSORBER STRIPE / ALADIN STRIPE

The mechanical strength values are shown in the product technical sheets (www.rothoblaas.com)

TITAN SILENT ACOUSTIC-MECHANICAL BEHAVIOUR

The TITAN SILENT system (corner TITAN TTF200 + soundproofing profile) was subjected to a series of tests to understand its acoustic and mechanical behaviour. The experimental test was carried out as part of the Seismic Rev research project with the collaboration of prestigious research institutes in both the academic and industrial sector. The damping capacity of vibrations transmitted by footstep noise of various resilient materials on structural wood elements and the consequent variation of mechanical strength were compared.



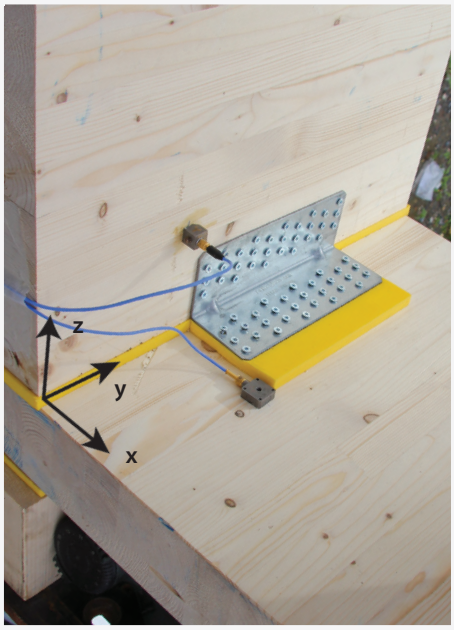
ACOUSTIC AND MECHANICAL INTERACTION

EXPERIMENTAL PHASE: SOUNDPROOFING

TEST SETUP

The test setup was realised in order to ensure reproducibility of the data and the comparison of results between the various materials. It was decided to pressurise the samples along the z axis using predefined load bands (from 5 to 35 kN/m) as previously tested in institutes dedicated to optimising the resilient capability depending on the type of soundproofing profile. Load variations were possible thanks to a oil-hydraulic press with pressure gauge.

Three wood elements were assembled orthogonally, reproducing the floor-wall node with the interposition of different soundproofing profiles. The principle of the method involves verifying the difference in terms of vibrational speed between two points on two orthogonal elements and separated by a joint made of TITAN TTF200 with and without the interposition of resilient material and fastening via LBA Ø4 x 60 nails. The stress is generated by the blow of a hammer (weight 350 g) with rubber head, repeating three impulses for each axis of reference. The phenomenon is detected at the same time on two wooden elements where two triaxial accelerometers are installed, connected to a multichannel analyser. The data was sampled in the frequency range between 5 and 5000 Hz, with a time constant of 5 ms.



REDUCTION OF VIBRATIONS TRANSMITTED BY FOOTSTEP NOISE

TEST CONFIGURATIONS	MIN LOAD	MAX LOAD
TITAN TTF200 + ABSORBER PLATE YELLOW	33% 3.5 dB	32% 3.4 dB
TITAN TTF200 + ALADIN STRIPE SOFT	14% 1.3 dB	16% 1.5 dB
TITAN TTF200 + ALADIN STRIPE EXTRA SOFT	24% 2.3 dB	16% 1.6 dB

The data expressed in decibels must only be considered as a comparison between the various materials tested with the same boundary conditions, since it refers to the reduction of noise transmitted on the specific structure, without considering the additional layers composing the whole wall (plasterboard slabs, mineral fibre panels, etc.). Therefore, this data does not express the foreseeable noise attenuation in the finished building.

The presentation of the results is expressed as a percentage of vibration reduction, and as decibels of attenuation of the transmitted noise. For easy reference it was decided to indicate the overall average data at the ends of the provided load bands.
The value relating to the average frequencies is the most solid one, from a statistical and methodological point of view.
Most of the energy imparted to the sample with the test hammer is concentrated within this range.

Further information and clarifications are available from the Rothoblaas technical department.

EXPERIMENTAL PHASE: MECHANICAL STRENGTH

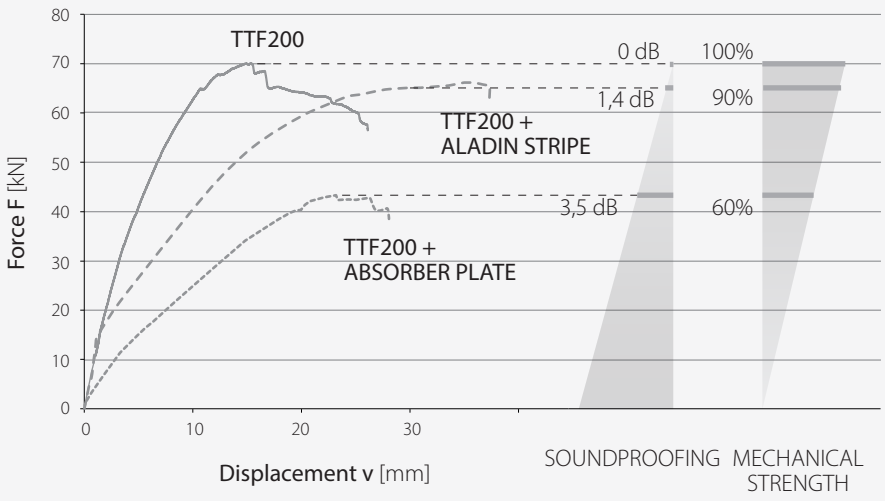
TEST SETUP

The test setup used during the experimental test consists of a metal frame designed in order to apply a static or cyclical action to the connector under investigation, depending on the objectives defined as part of the Seismic Rev research project.
In this context we analyse the monotone test results performed through linear load procedures in displacement control, aimed at assessing the variation of the last resistance offered by the TITAN TTF200 connection combined with different soundproofing profiles. The test setup was designed to highlight the behaviour of the wall-wall and wall-floor connection subject to the forces it must absorb during use. The sample tests are carried out with Xlam (Cross Laminated Timber) panels in resistance class C24 and corner TITAN TTF200 fastened with 60 anker LBA Ø4 x 60 mm nails.

VARIATION OF THE SHEAR MECHANICAL STRENGTH BASED ON THE SOUNDPROOFING PROFILE

test configurations	F_{max} [kN]	v_{max} [mm]	F_u [kN]	v_u [mm]	v_y [mm]	K_{ser} [N/mm]
TITAN TTF200	**70.0**	15.4	**57.2**	8.4	6.5	8945
TITAN TTF200 + ABSORBER PLATE	**43.5**	23.0	**40.3**	19.3	15.0	2555
TITAN TTF200 + ALADIN STRIPE	**65.1**	30.0	**65.1**	30.0	10.3	4771

SOUNDPROOFING AND MECHANICAL STRENGTH



Tests show that TITAN SILENT with ABSORBER PLATE offer a noise reduction of 3.5 dB in comparison to the use of corner TTF200 only, with mechanical stress equal to 60% of those of corner TTF200 (characteristic values found on page 168).
The shear resistance of the system (TTF200 + D82361) is greater than 15-20 times in comparison to that of traditional 100x100 mm corners combined with its acoustic profile.