TITAN SILENT

ETA 11/0496

FLANKSOUND

EN ISO 10848

ANGLE BRACKET FOR SHEAR STRESSES WITH RESILIENT PROFILE

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

ACOUSTIC BRIDGES
The excellent shear resistance of the angular bracket and the sound-proofing of the profile limit acoustic bridges.

TESTED VALUES
Abatement values for vibrations and shear mechanical strength tested in both academic and industrial environments.

CODES AND DIMENSIONS

TITAN

code	B [mm]	P [mm]	H [mm]	n Ø5 [pcs]	fastenings	s [mm]	pcs.
TTF200	200	71	71	60	LBAØ4 - LBSØ5	3,0	10
TTN240	240	93	120	72	LBAØ4 - LBSØ5	3,0	10
TTS240	240	130	130	28 (2)	HBS+ Ø8	3,0	10

XYLOFON

code	TITAN	B [mm]	P [mm]	s [mm]	pcs.
XYLPLATE	TTF200	200	70	6,0	10
XYL35120240	TTN240 - TTS240	240	120	6,0	10
XYL35100200	TCF200 - TCN200	200	100	6,0	10

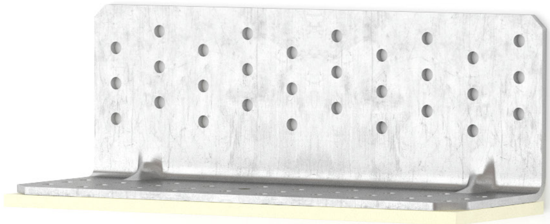
ALADIN STRIPE

code	Version	P [mm]	L [m]	s [mm]	pcs.
ALADIN95	SOFT	95	50 (1)	5,0	1
ALADIN115	EXTRA SOFT	115	50 (1)	7,0	1

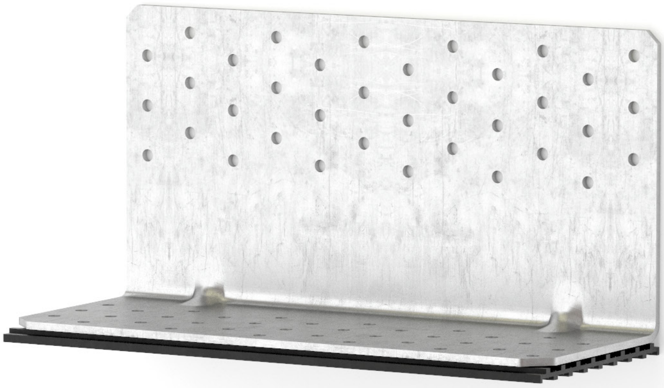
NOTES:
(1) to be cut on site
(2) Ø11 openings

TWO VERSIONS
Resilient structural profiles for TITAN: XYLOFON ready to use and ALADIN STRIPE to be cut on site.

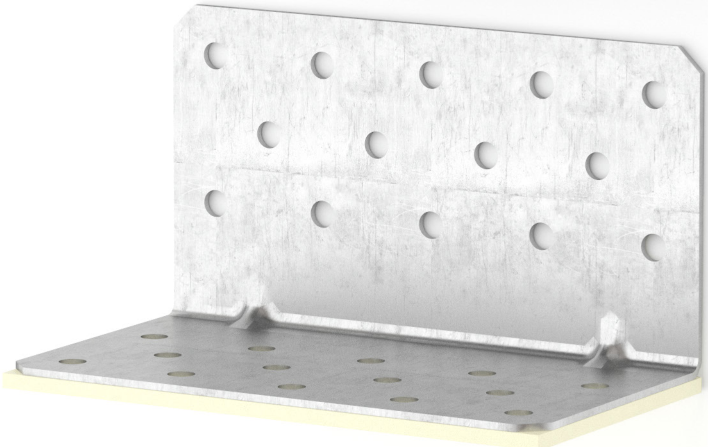
ACOUSTIC/STATIC
XYLOFON PLATE and ALADIN STRIPE for an excellent compromise between acoustic performance and mechanical resistance.



TTF200 + XYLPLATE



TTN240 + ALADIN95



TTS240 + XYL35130240

MATERIAL AND DURABILITY

XYLOFON: 35 shore polyurethane mixture, free from VOC and harmful substances.
ALADIN STRIPE: Extruded compact EPDM (soft version) and compact EPDM foam (extra soft version). High chemical stability, VOC-free.
TITAN: DX51D carbon steel with Z275 zinc coating.
Application in service class 1 and 2 (EN 1995:2008).

FIELD OF USE

Wood-wood shear connections with reduction of acoustic bridges

INTERACTION STRUCTURAL BEVAHIOUR

As part of the Seismic Rev project, in cooperation with the University of Trento and CNR IVALSA, preliminary assessment was done of the mechanical behaviour of the TITAN product when paired with various soundproofing profiles.

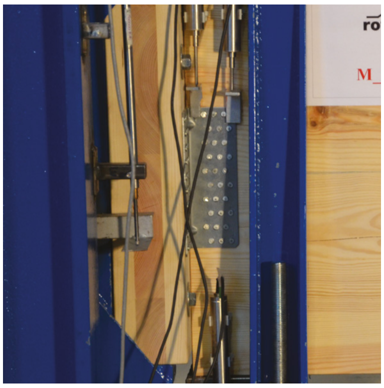
EXPERIMENTAL STAGE

During the experimental stage, monotone tests were carried out using linear load procedures with displacement control, aimed at assessing the change in ultimate resistance and stiffness offered by the connection. The test set-up was designed so as to highlight the behaviour of the wall-wall and wall-floor connections subject to the forces which must be absorbed during use.

TEST SAMPLES

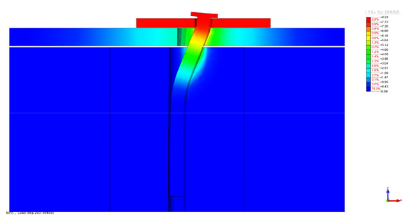
CLT panels
(Cross Laminated Timber)
resistance class C24

TITAN TTF200 angle bracket
fastened with 60 anker nails
LBA Ø4x60 mm



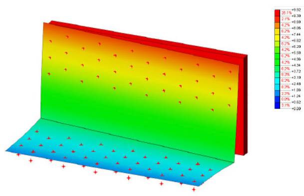
NUMERIC MODELLING

The results of the preliminary investigation highlighted the importance of performing more detailed analysis on the influence of the sound-insulating profiles on the mechanical behaviour of TITAN angle brackets. This led to the decision to carry out further assessments using finite elements numeric modelling. In the case under study, the effect on mechanical behaviour caused by the three different resilient profiles was analysed: **XYLOFON 35** (6 mm), **ALADIN STRIPE SOFT** (5 mm) and **ALADIN STRIPE EXTRA SOFT** (7 mm).



Displacement Tx [mm] for displacement induced by the steel plate equal to 8 mm

In the initial stage, advanced numeric analysis was carried out to assess the influence of the acoustic profiles, placed between the steel plate and the wood, on the behaviour of a single 4x60 mm LBA nail.



Displacement Tx [mm] for displacement induced equal to 10 mm

In the second stage, two types of TITAN connections were analysed, to investigate the influence of the acoustic profiles on the resistance value and global stiffness of the devices themselves.

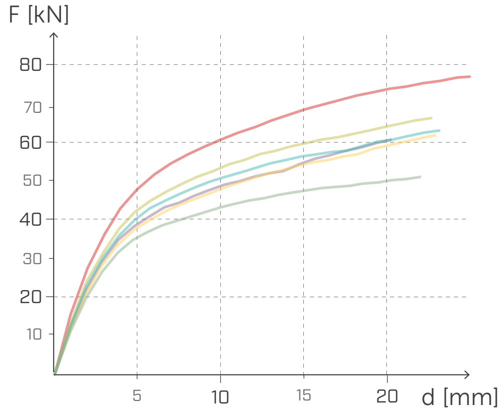
VARIATION IN MECHANICAL SHEAR RESISTANCE BASED ON THE SOUNDPROOFING PROFILE

Comparison of the results relative to the different configurations analysed is reported in terms of the variation in the force at 15 mm of displacement ($F_{15\ mm}$) and elastic stiffness at 5 mm ($K_{5\ mm}$).

TITAN TTF200

Configurations	sp [mm]	$F_{15\ mm}$ [kN]	$\Delta F_{15\ mm}$	$K_{5\ mm}$ [kN/mm]	$\Delta K_{5\ mm}$
TTF200	-	68,4	-	9,55	-
TTF200 + ALADIN STRIPE SOFT red.*	3	59,0	-14 %	8,58	-10 %
TTF200 + ALADIN STRIPE EXTRA SOFT red.*	4	56,4	-18 %	8,25	-14 %
TTF200 + ALADIN STRIPE SOFT	5	55,0	-20 %	7,98	-16 %
TTF200 + XYLOFON PLATE	6	54,3	-21 %	7,79	-18 %
TTF200 + ALADIN STRIPE EXTRA SOFT	7	47,0	-31 %	7,30	-24 %

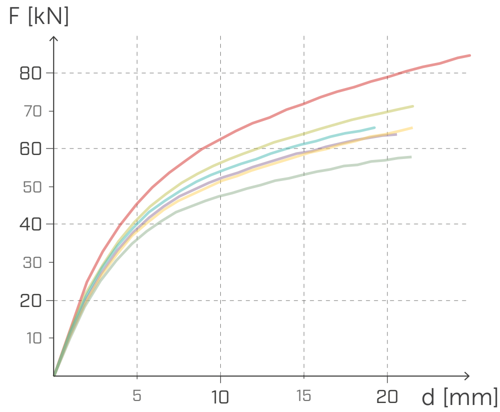
*reduced thickness: profile height reduced due to the corrugated section and consequent crushing induced by the nail head during use.



TITAN TTN240

Configurations	sp [mm]	$F_{15\ mm}$ [kN]	$\Delta F_{15\ mm}$	$K_{5\ mm}$ [kN/mm]	$\Delta K_{5\ mm}$
TTN240	-	71,9	-	9,16	-
TTN2400 + ALADIN STRIPE SOFT red.*	3	64,0	-11 %	8,40	-8 %
TTN240 + ALADIN STRIPE EXTRA SOFT red.*	4	61,0	-15 %	8,17	-11 %
TTN240 + ALADIN STRIPE SOFT	5	59,0	-18 %	8,00	-13 %
TTN240 + XYLOFON PLATE	6	58,0	-19 %	7,81	-15 %
TTN240 + ALADIN STRIPE EXTRA SOFT	7	53,5	-26 %	7,47	-18 %

*reduced thickness: profile height reduced due to the corrugated section and consequent crushing induced by the nail head during use.



The results obtained indicate a reduction in the resistance and stiffness of the devices following the insertion of the sound-insulating profiles. This change is heavily dependent on the thickness of the profile. To limit the reduction in force and stiffness to around 20%, profiles must be selected with real thicknesses less than or equal to 6 mm, approximately.

EXPERIMENTAL RESULTS

NOTES:

TITAN: Mechanical resistance values and installation methods are shown in the product technical sheets (www.rothoblaas.com).
XYLOFON: Mechanical resistance values and installation methods can be found on page 92 of the present catalogue, or in the product technical sheets (www.rothoblaas.com).
ALADIN STRIPE: Mechanical resistance values and installation methods can be found on page 114 of the present catalogue, or in the product technical sheets (www.rothoblaas.com).