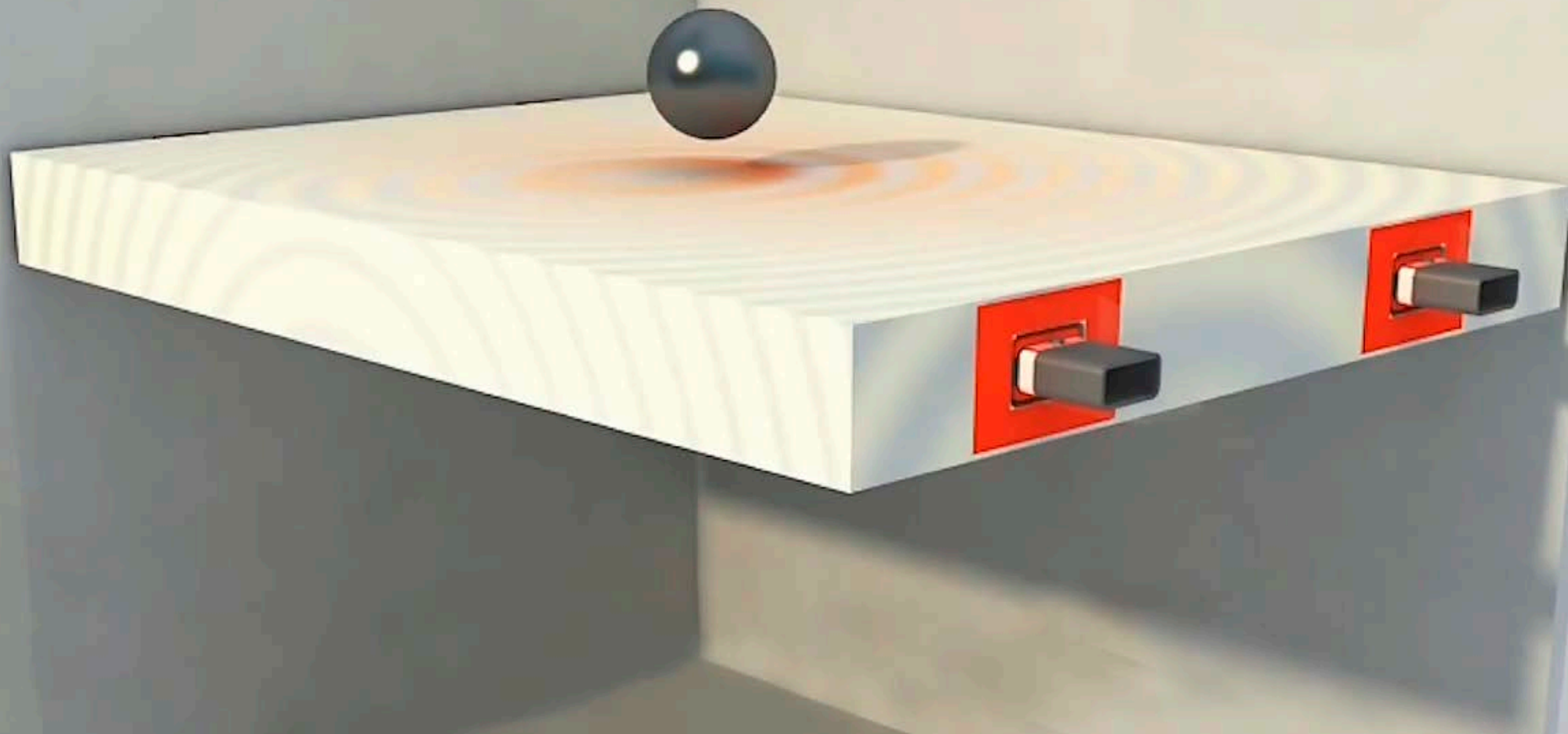




Invisible
connections®

STEPSOUND REDUCTION WITH TSS AND RVK



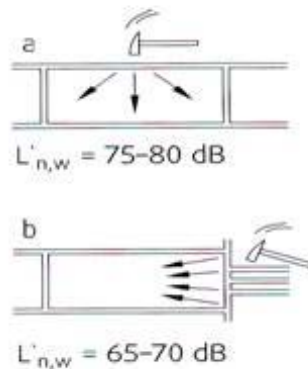
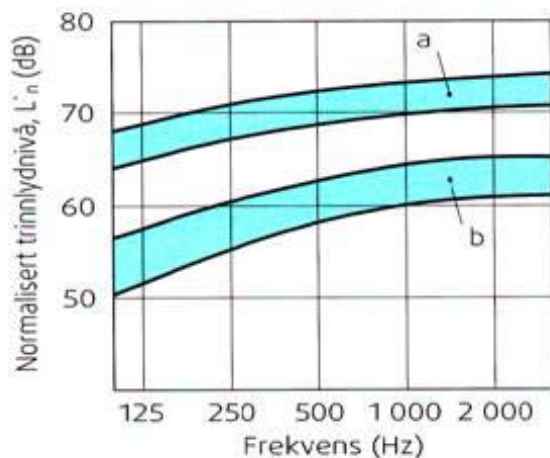
Concerning only precast concrete stairs



Impact sound transmission from stairs = a great challenge

- ✓ Step sound is much more in focus, increasing interest
- ✓ Most constructions can't meet the new building standards
- ✓ Step sound transmission from stairs to adjacent rooms
- ✓ Reduces the quality and the value of the building
- ✓ Contractual liability for the contractor towards building standards

Stepsound from concrete stairs without sound reducing efforts



Normal values

65-70 dB* = Normal values for situ repo staircase constructions

(* = equivalent to a normal conversation with a meter distance)

Limit values from SINTEF Byggforsk in Norway

Room type	Class B dB	Class C dB
Between residential units, a unit from common areas / common hallway / stairwell	48	53
To a unit from toilet, storage, balcony, terrace etc.	53	58
To a residential unit from business, service business, public garage, roof terrace etc.	43	48

The principle for effective sound reduction

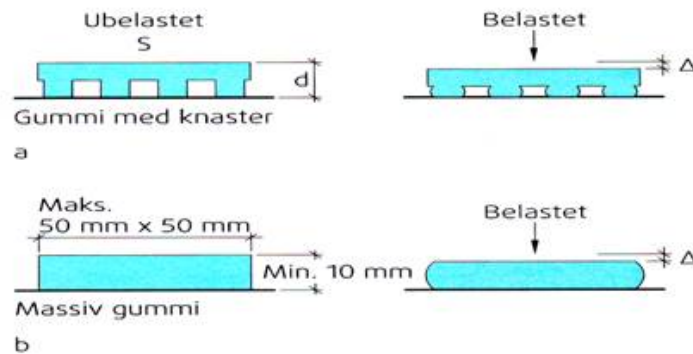


Fig. 363 a og b
Trinnlydforbedring ved ulike typer elastiske sjikt
a. Gummi med knaster
b. Massiv gummi

We have since 2007 been testing and developing products that reduce stepsound.

Our experience is that if you want to have good sound reduction, you have to use soft rubber eg 58 shore.

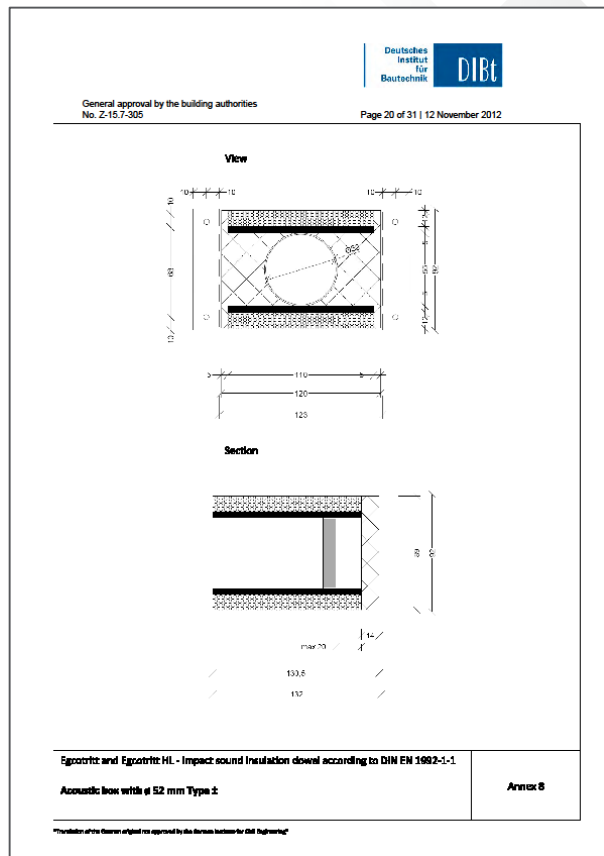
Then you must have an area of 250 mm² pr. kN breaking load.

Reduction : 30 dB = 60 kN ultimate load

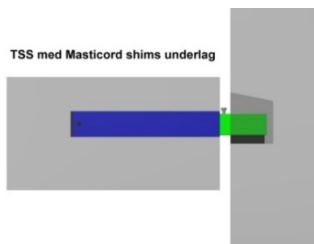
Area : $115 \times 110 = 12650 \text{ mm}^2 / 37 \text{ kN} = 210 \text{ mm}^2 / \text{kN}$

TSS 102 = 25 dB. 100 kN

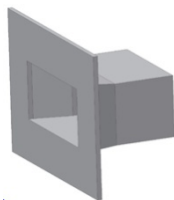
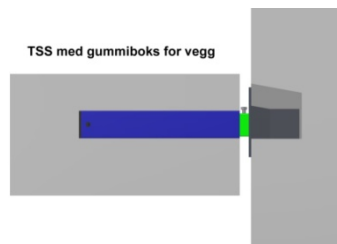
Area : $25000 \text{ mm}^2 = 250 \text{ mm}^2 / \text{kN}$



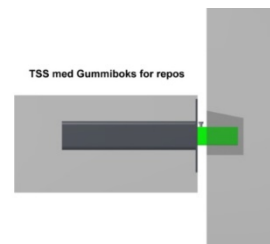
We have developed and tested the products for sound reduction over the past decade



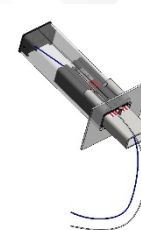
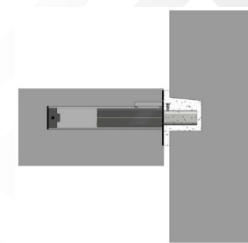
Masticord
Expired



Rubberbox for wall
Expired








Rubberbox for TSS
Expired



TSS 102

Tests showing us that there are a certain connection between attenuation area, rubber hardness (Shore), and impact sound reduction.

Product	Picture	Rubber hardness	Attenuation area	% of area rubberbox	Impact sound reduction in dB
TSS with rubberbox Expired		58 Shore	45000 mm ²	100 %	28-30 dB
Rubberbox for wall Expired		58 Shore	8000 mm ²	18 %	8-12 dB
Masticord Expired		72 Shore	7000 mm ²	15 %	8-12 dB
TSS 102		58 Shore	25000 mm ²	55 %	20-25 dB
Vertical rubber flinch for landing		65 Shore			10-12 dB

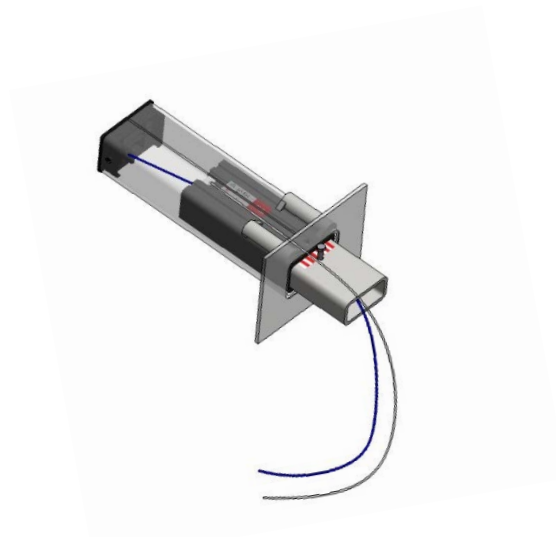
The conclusion is:

To reduce stepsound we need area.

200-250 mm²/ kN breaking
load.

NB! No contact with concrete between repos and wall.

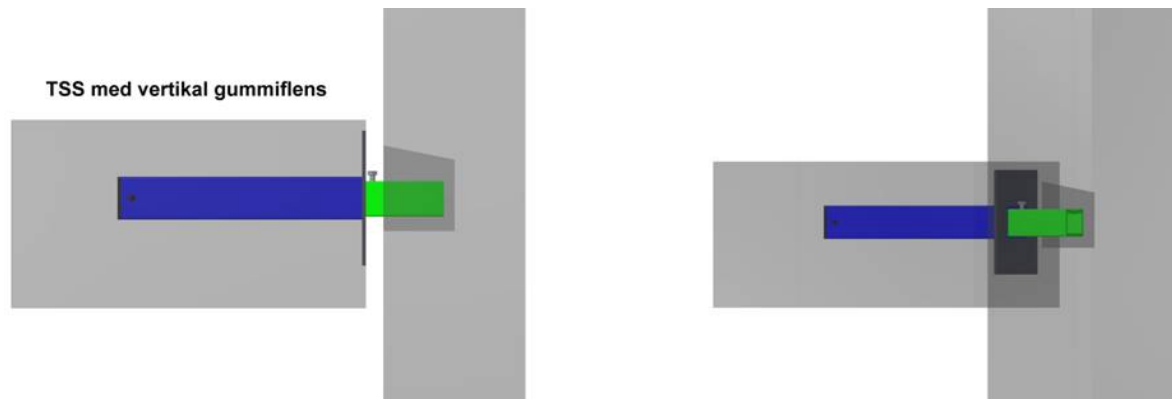
Recommended solution for apartments TSS 102



Reduction: 20- 25 dB

Recommended solution for:

Schools, Hospitals, Hotels, Offices. TSS with vertical rubber flinch



Reduction: 10-12 dB

Important hints regarding step sound reduction

1. Casting not bigger/wider than vertical rubber flinch B=250 x H=200
2. Elastic joint between landing and wall minimum 10mm
3. Tiles must not be in contact with the wall, minimum 10 mm joint.
4. Base tiles forbidden



Foto 13. Oversikt



Foto 15. Detalj skiferfliser på trapp og sokkellist



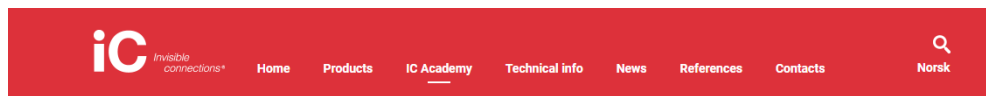
Foto 14. Detalj skiferfliser på trapp og sokkellist



Foto 16. Detalj skiferfliser på trapp og sokkellist
Et område manglet skifer og avslørte lim som rent ned i fugen.




























For more information, see the IC Academy (Stairs Engineer)

<http://www.invisibleconnections.no/category/ic-akademiet/>



IC Academy

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***freedom** to create*