Invisible connections™

Impact sound reduction

with TSS and RVK

Impact sound from stairs

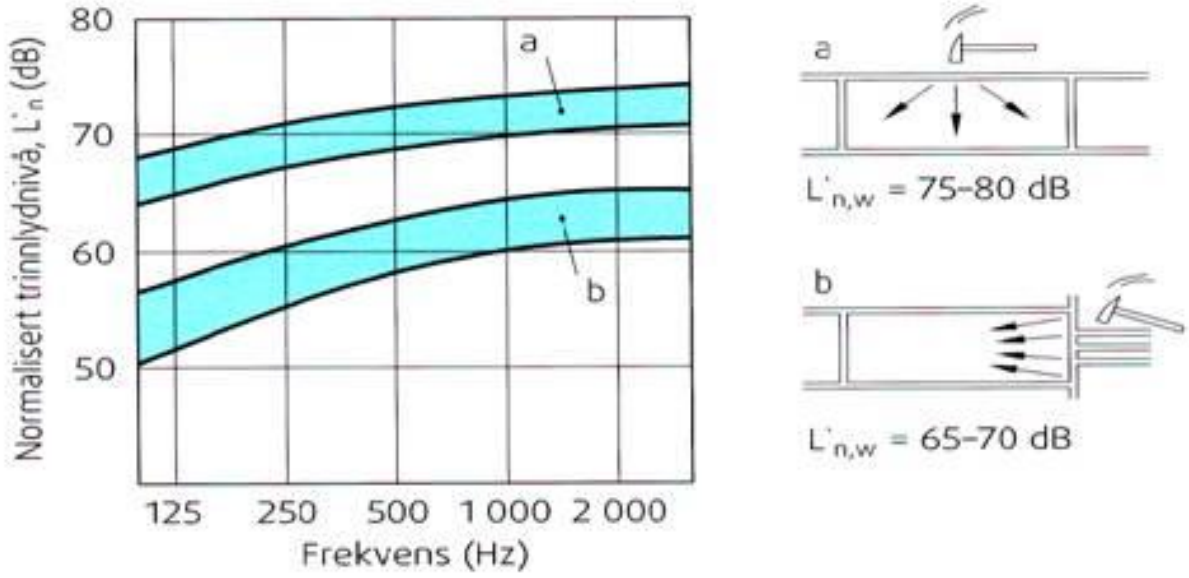
Concerning only precast concrete stairs

Stepsound Reduction with TSS and RVK

Impact sound transmission from stairs = a great challange

- **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 qualety and the value of the building**
- **Contractual liability for the contractor towards building standards**

Step sound from concrete stairs without sound reducing efforts



Limit values from SINTEF Byggforsk in Norway

Room type	Class B dB	Class C dB
Between room devices, In an apartment from common rooms/staircase	48	53
To living unit from shack, terrace, bathroom, the like	53	58
Ti living unit from commercial areas, common areas, common carage, the like.	43	48

Stepsound Reduction with TSS and RVK

Highest levels for weighted impact sound

• **Livingroom**	**53 dB**	**(48 dB for kl.B)**
• **School**	**58 dB**	
• **Hospital**	**58 dB**	
• **Hotel**	**58 dB**	
• **Meeting room**	**58 dB**	
• **Office**	**63 dB**	

The principle for effective sound reduction

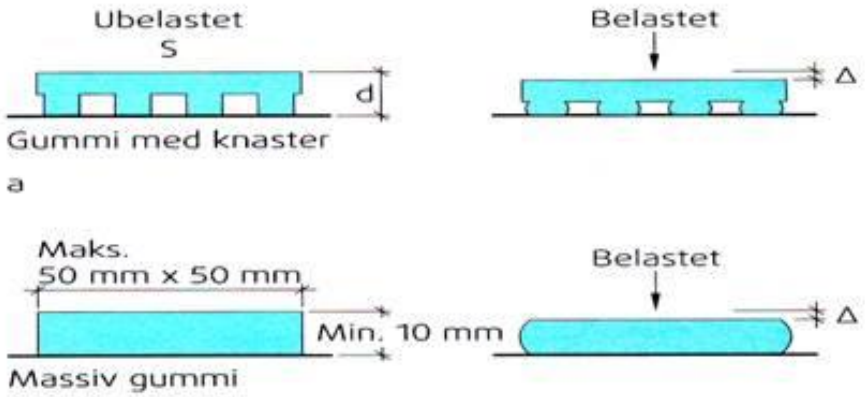
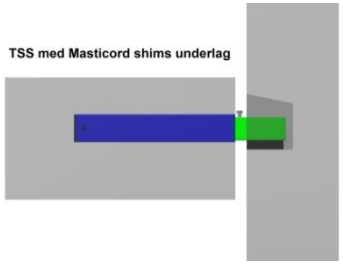
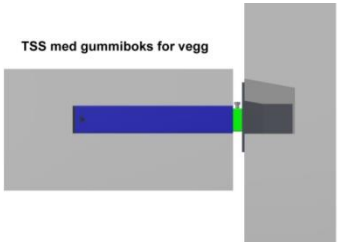


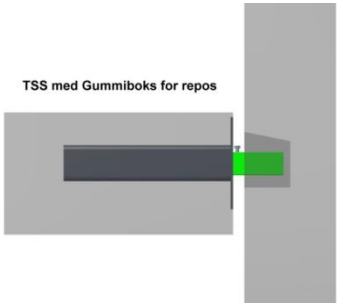
Fig. 363 a og b
Trinnlydforbedring ved ulike typer elastiske sjikt
a. Gummi med knaster
b. Massiv gummi

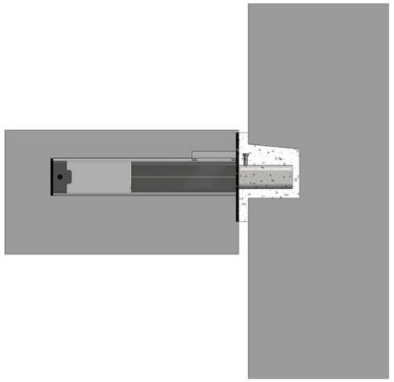
Stepsound Reduction with TSS and RVK

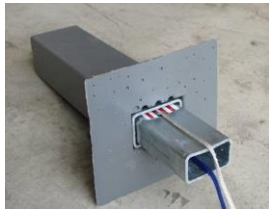
We developed and tested products for impact sound reduction over the last decade











Masticord

Rubberbox for wall

Rubberbox for TSS

TSS 102

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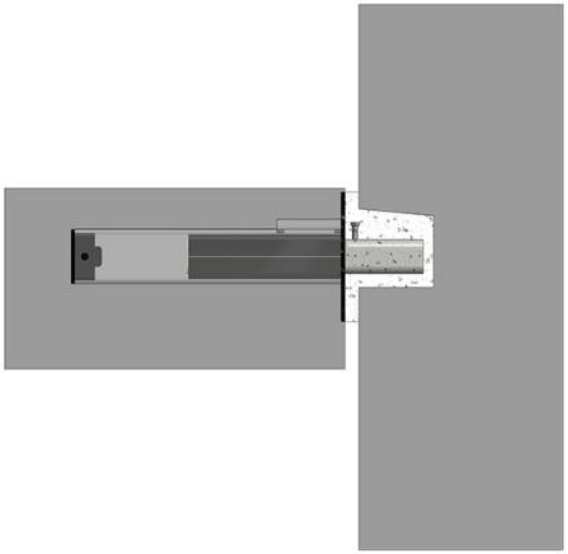
Stepsound Reduction with TSS and RVK

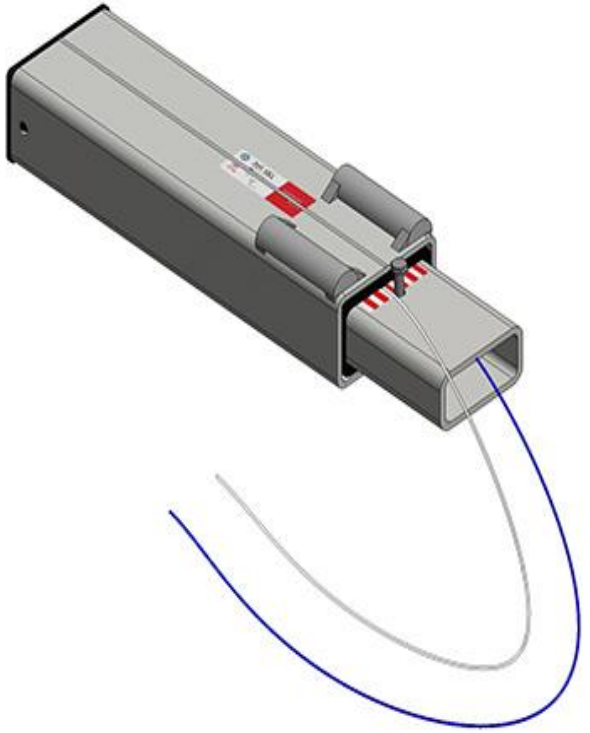
Tests showing us that there are some correlation between attenuation area and rubber hardness (Shore), and impact sound reduction.

Product	Rubber hardness	Attenuation area	% of area rubberbox	Impact sound reduction in dB
TSS with rubberbox	58 Shore	45000 mm²	100 %	28-30 dB
Rubberbox for wall	58 Shore	8000 mm²	18 %	8-12 dB
Masticord	72 Shore	7000 mm²	15 %	8-12 dB
TSS102	58 Shore	25000 mm²	55 %	20-25 dB
Vertical rubber flinch for landing	65 Shore			10-12 dB

Stepsound Reduction with TSS and RVK

Recommended solution for living apartments TSS 102



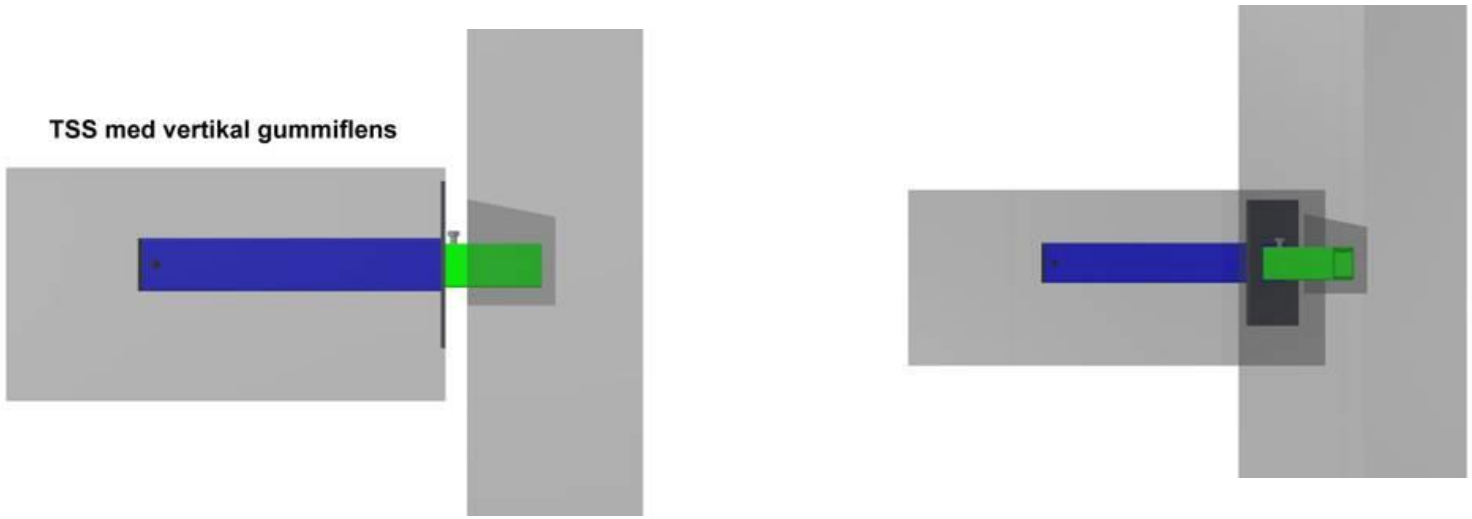


Reduction: 20- 25 dB

Stepsound Reduction with TSS and RVK

Recommended solution for:
Schools, Hospitals, Hotels, Offices.

TSS with vertical rubber flinch



Reduction: 10-12 dB

Important Hints regarding step sound

Foto 13. Oversikt

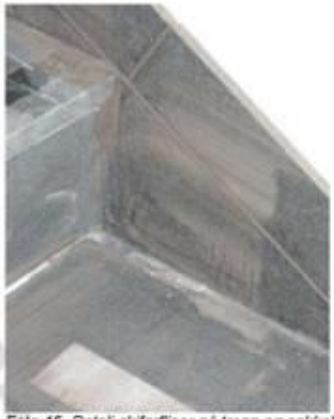


Foto 15. Detalj skiferfliser på trapp og sokkellist

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.

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 ,base tiles forbidden**

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Impact sound/step sound

During 2006-2007 SB Produksjon AS and Sintef Byggforsk carried out an extensive test regarding impact sound in staircases. As these problems are more in focus, and the rules are made more stringent, we found it natural to improve our systems.The measurements done in different types of buildings, shows that the values in real terms, from on-situ casted or precasted stairs (with the gap between the landing and wall fully casted out)., are between **65-70 dB** (Publication from Byggforsk 2-2006 nr 532.141

Therefore we have tested solutions when insulating for impact sound:

Solutions	Reduction	Assumed value
TSS 102 with rubber pads for sound reduction and vertical rubber flange. (Figure 2)	28-31dB	42 dB
TSS 101 with vertical rubber	12-15 dB	58 dB

Stepsound report summation.pdf

Impact sound reduction sept 2011.ppt

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Thank you for the attention!