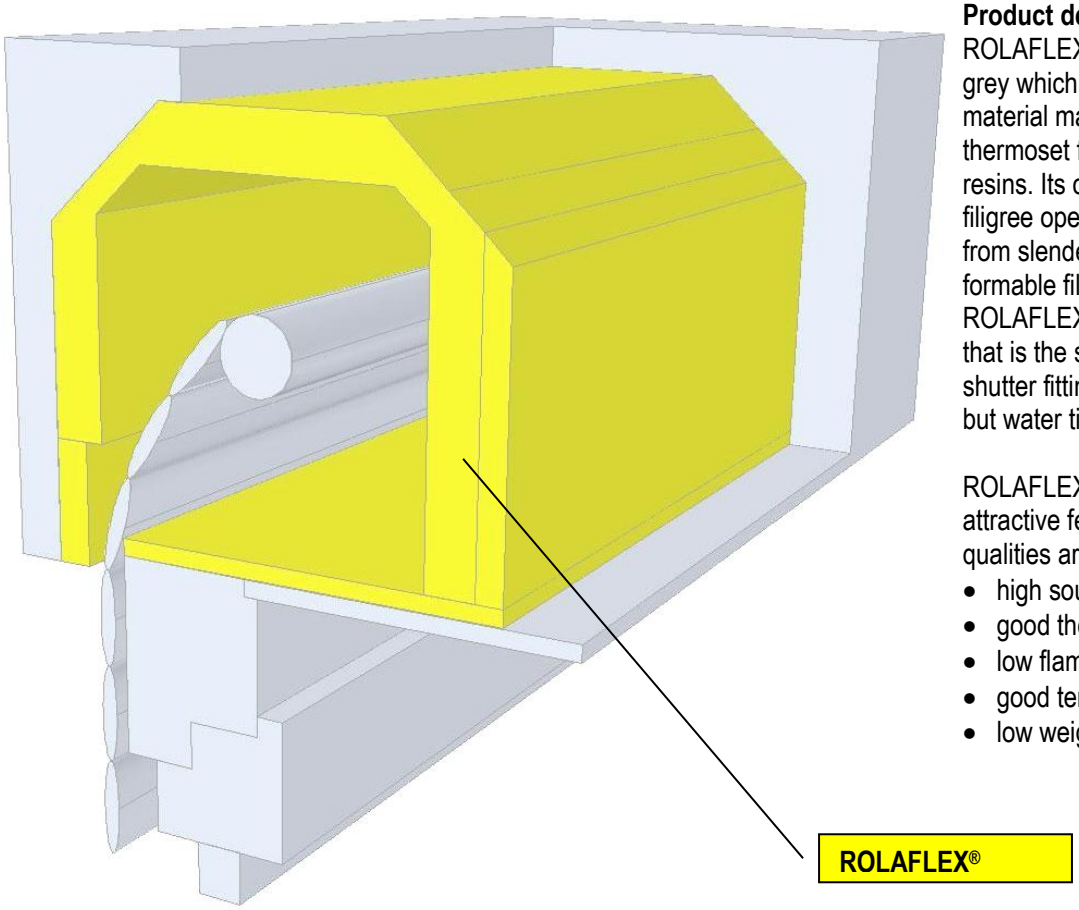
Technical Information
ROLAFLEX®



Product description:
ROLAFLEX® consists of Noiseflex® MH in grey which is a flexible open-cell foam material made from melamine resin, a thermoset from the group of aminoplastic resins. Its characteristic feature is its filigree open network structure formed from slender and hence readily thermo formable filaments.
ROLAFLEX® is equipped on the outside, that is the side which faces the roller shutter fitting, with a vapour permeable, but water tight and very robust membrane.

ROLAFLEX® offers a wide range of attractive features. Its outstanding qualities are:

- high sound-absorption capability
- good thermal insulation characteristics
- low flammability
- good temperature resistance
- low weight

Area of application:
The prime use of ROLAFLEX® is in renovation of integrated / walled-in roller shutter casings.
Here the roller shutter casings already in situ are lined with one and/ or several (particularly false edges on the room facing side of the shutter casing) layers of ROLAFLEX® with considerable subsequent improvement in terms of thermal and sound insulation.
The advantage of ROLAFLEX® is that roller shutter casings can be insulated against thermal losses and sound impact without further constructural procedure. In particular, neither shutter casings nor windows have to be dismantled or rebuilt.

Storage:
Storage temperature + 15 °C to + 25 °C, maximum shelf life 12 months.
The storage area must be properly ventilated and protected from damp.

Standard dimensions:

- 1000 x 600 x 10 mm, 1000 x 600 x 15 mm, 1000 x 600 x 20 mm, 1000 x 600 x 30 mm
  equipped with a vapour permeable fleece for installation in shutter casings on the side faced to the shutter spindle

- 1000 x 600 x 10 mm, 1000 x 600 x 15 mm, 1000 x 600 x 20 mm, 1000 x 600 x 30 mm
  for precisely tailored construction of false edges, particularly on the rear = room facing side of the shutter casing

Dipl.-Ing. (FH) Harold Neubrand
Beratender Ingenieur
Ingenieurkammer Baden-Württemberg
Liste der beratenden Ingenieure Nr. 115

Processing notes:
For processing please observe our discrete processing notes for ROLAFLEX®. Bonding is done with our BOSIG Acoustic Adhesive or our Winflex® TFS adhesive.
For proper adhesion, the subsurface must be dry and free of dust, oil and grease. Do not use in outdoor or surface temperatures of below + 5 °C. For further information please observe the technical information of our BOSIG Acoustic Adhesive or the technical information of our Winflex® TFS.
ROLAFLEX® is installed in the roller shutter casing, that the protecting membrane faces the roller shutter fitting.

Physical characteristics:
The most important advantages of ROLAFLEX® are its excellent fire protection properties, its very good thermal conductivity and its good sound-absorption capability. Worthy of note is the fact that its low thermal conductivity can be achieved with open-cell foam. The reason for this is the reduced air convection due to the fine cellular structure of Noiseflex® MH. The attractive characteristics profile of ROLAFLEX®, consisting of Noiseflex® MH and PP fabric composite is shown in Table 1 and 2.

Table 1:

Fire characteristics:		**Noiseflex® MH**	**PP fabric composite**	
– Germany	Building material class	B1 flame retardant		DIN 4102
– Europe	Material thickness to 15 mm	class B, s1, d0	E normally flammable	DIN EN 13 501
	Material thickness 20 / 30 mm	class C, s1, d0		DIN EN 13 501

Table 2:

Technical data:		**Noiseflex® MH**	**PP fabric composite**	
Thicknesses		10 mm / 15 mm / 20 mm special thicknesses on request		
Thermal conductivity	at 10°C / d = 50 mm	λ ≤ 0.035 W/mK		DIN 52 612
Sound absorption degree	d = 50 mm / f = 1250 Hz	> 90%		ISO 10534 – 2
	d = 40 mm / f = 1000 Hz	> 0.9		DIN EN ISO 345
s_d value	at 10 mm thickness	s_d = 0.01 – 0.02 m	s_d approx. 0.04 m	DIN EN ISO 12572
	at 15 mm thickness	s_d = 0.015 – 0.03 m	s_d approx. 0.04 m	
	at 20 mm thickness	s_d = 0.02 – 0.04 m	s_d approx. 0.04 m	

Colour		grey
Dimensions		600 x 1000 mm
Weight	at10 mm thickness	approx. 230 g / m³
	at 15 mm thickness	approx. 280 g / m³
	at 20 mm thickness	approx. 325 g / m³

The values specified are based on individual preliminary tests.

U values of ROLAFLEX®

with: $1/U = s / \lambda + R_{si} + R_{se}$

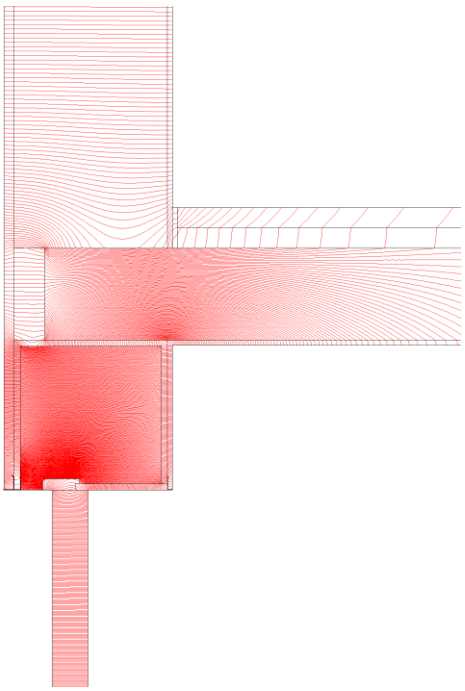
s = Thickness of material
λ = Thermal conductivity
R_{si} / R_{se} = Heat transmission resistance
R = Heat transfer resistance
U = Heat transfer oefficient

Thermal conductivity of ROLAFLEX®	λ = 0,035 W/(m·K)
Interior heat transmission resistance	R_{si} = 0,13 (m²·K)/W
Exterior heat transmission resistance	R_{se} = 0,04 (m²·K)/W

material thickness **s** [mm]	**R = s / λ** [W/(m·K)]	**U** [W/(m²·K)]
10	0,286	2,19
15	0,429	1,67
20	0,571	1,35
30	0,857	0,97

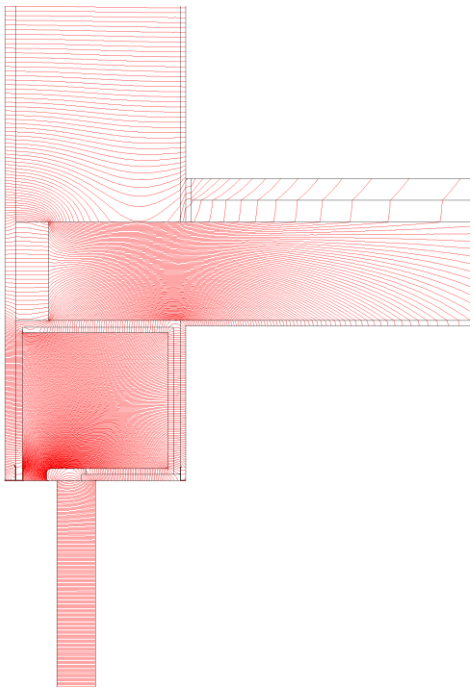
For calculation of the thermal insulation capacity of ROLAFLEX®, the lineal ψ-values are more important than the area related U-values, because ψ-values give information conforming to standards, e. g. the supplementary sheet no. 2 of DIN 4108.

roller shutter casings original old building



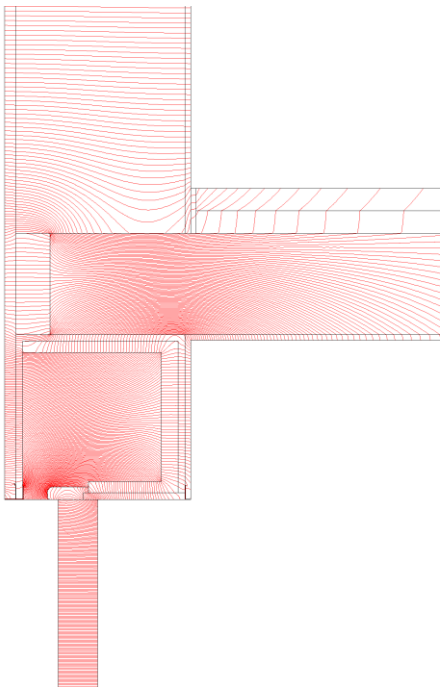
ψ = 0,88 W/(mK) (100 %)

with 10 mm ROLAFLEX®



ψ = 0,58 W/(mK) (minus 34 %)

with 20 mm ROLAFLEX®



ψ = 0,39 W/(mK) (minus 56 %)

Figure 1.
Graphical presentation of the temperature profile in a roller shutter casing **without thermal insulation.**
Inside temperature at the corner Θ_E is 10.8 °C, therefore below the critical temperature of mould formation of 12.6 °C.
In this case, formation of mould is in all probability!

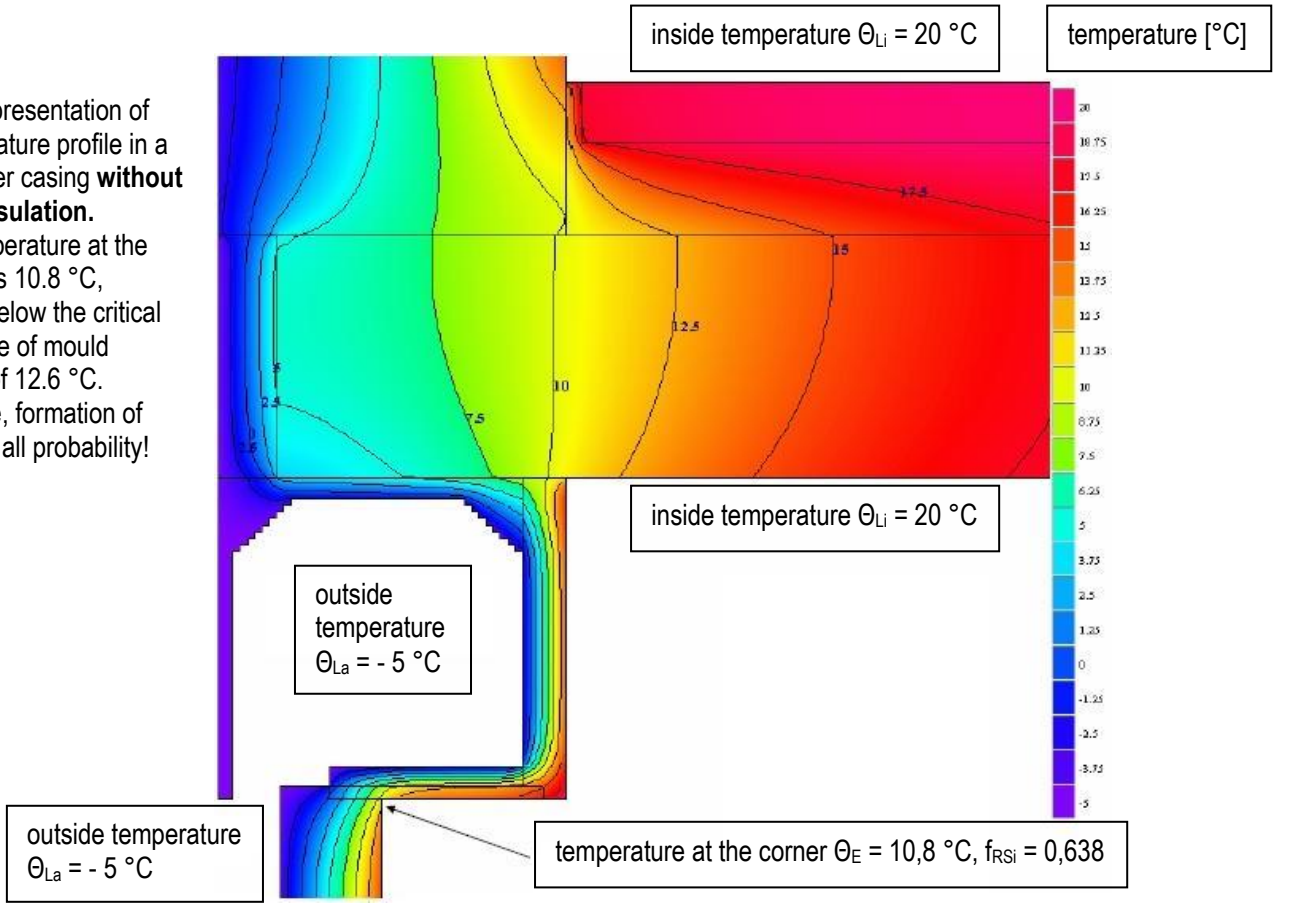
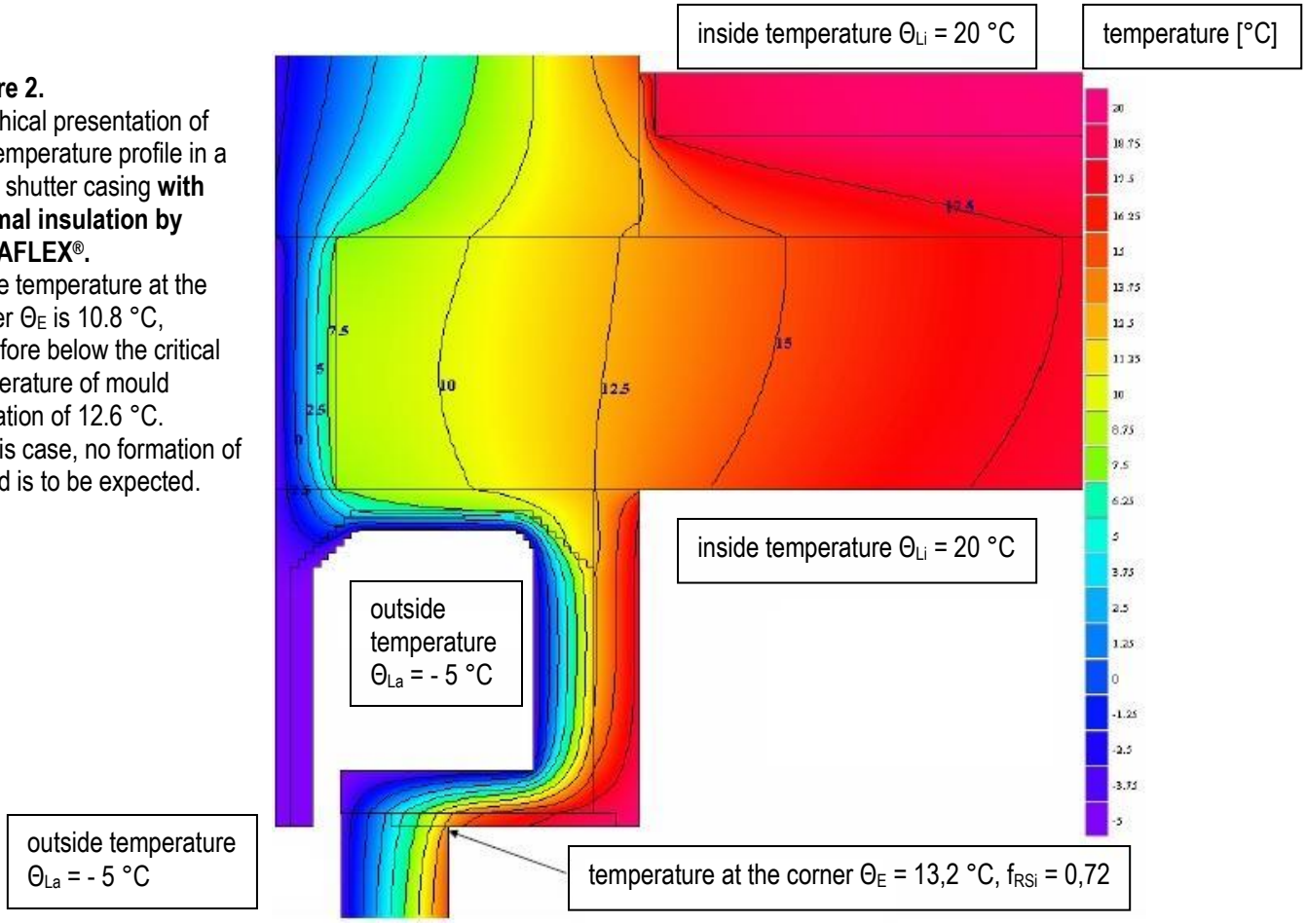
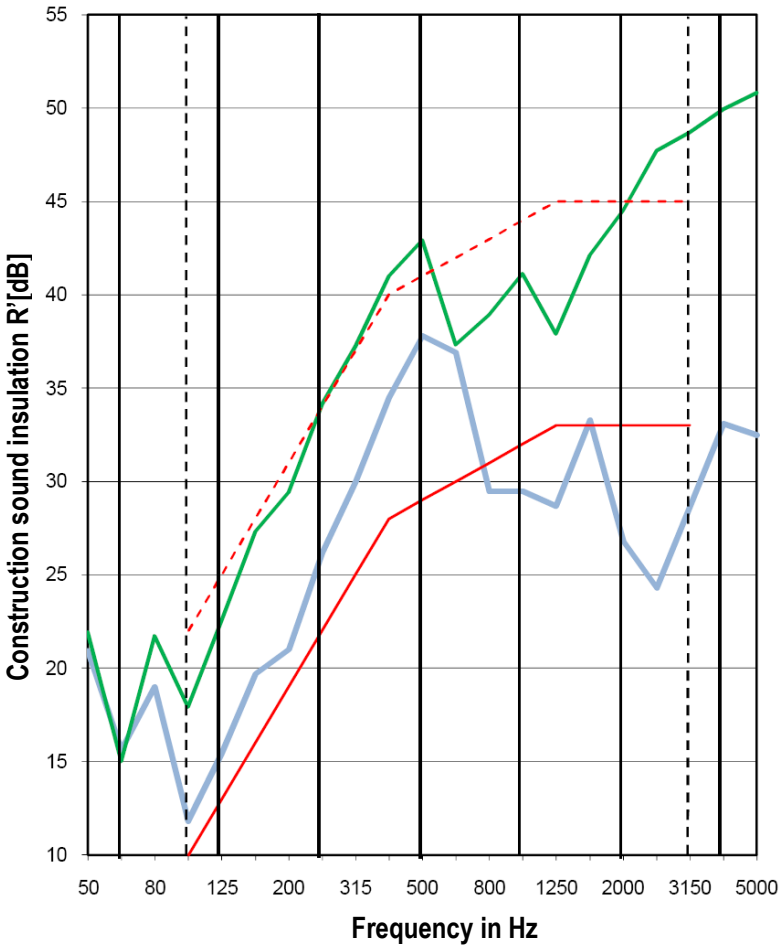


Figure 2.
Graphical presentation of the temperature profile in a roller shutter casing **with thermal insulation by ROLAFLEX®.**
Inside temperature at the corner Θ_E is 10.8 °C, therefore below the critical temperature of mould formation of 12.6 °C.
In this case, no formation of mould is to be expected.



Sound absorption properties of ROLAFLEX®

	1	2
Frequenz f Hz	R' Terz dB	R' Terz dB
50	20,9	21,9
63	15,6	15,0
80	19,0	21,7
100	11,8	17,9
125	15,4	22,5
160	19,7	27,3
200	21,0	29,4
250	26,2	34,1
315	30,0	37,2
400	34,5	41,0
500	37,8	42,9
630	36,9	37,3
800	29,5	38,9
1000	29,5	41,1
1250	28,7	37,9
1600	33,3	42,1
2000	26,8	44,5
2500	24,3	47,7
3150	28,7	48,7
4000	33,1	49,9
5000	32,5	50,8



Exemplary measurement of the sound insulation properties of a roller shutter casing with ROLAFLEX® and without ROLAFLEX®

1. Small roller shutter casing (composite board and polystyrene)

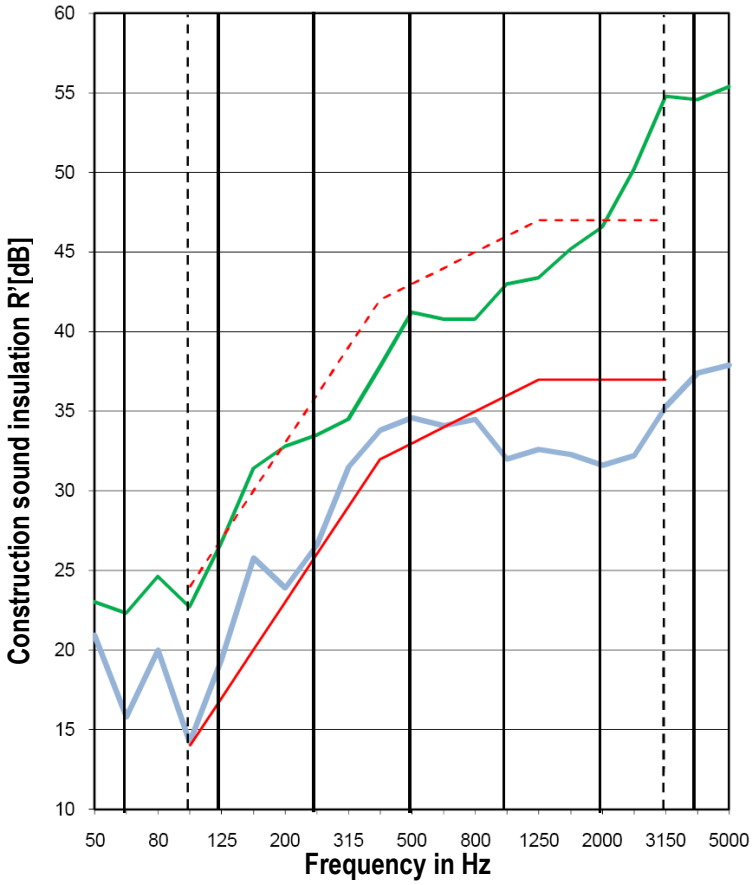
Area S of the separating constructional component: 0.31 m²
Volume of the studio:
Volume of the best room: 57.00 m³
Sample: small roller shutter
Installation depth: casing
ROLAFLEX® material thickness: 24 cm installation depth
20 mm

1. Measurement: as cast state, roller shutter shield rolled out
   R_w = 29 dB 080529_1c
   complies for this example with sound prove class 1
2. Measurement: as measurement 1 with ROLAFLEX®
   R_w = 41 dB 080530_2c
   complies for this example with sound prove class 4

Resulting improvement of the sound insulation value:
ΔR_w = 12 dB
this means an improvement of sound prove class from 1 to 4.

Date: May 3, .2008 / Aug. 13, 2008
Measurement: Fraunhofer-Institut für Bauphysik / Bauakustik, Nobelstr. 12, 70569 Stuttgart
Analysis: Bauphysik! Ingenieurbüro, Bolzweg 26, 73035 Göppingen

	1	2
Frequenz f Hz	R' Terz dB	R' Terz dB
50	20,9	23,0
63	15,8	22,3
80	20,0	24,6
100	14,2	22,7
125	19,4	26,7
160	25,8	31,4
200	23,9	32,8
250	26,6	33,5
315	31,5	34,5
400	33,8	37,8
500	34,6	41,2
630	34,1	40,8
800	34,5	40,8
1000	32,0	43,0
1250	32,6	43,4
1600	32,3	45,2
2000	31,6	46,6
2500	32,2	50,2
3150	35,3	54,8
4000	37,4	54,6
5000	37,9	55,4



Exemplary measurement of the sound insulation properties of a roller shutter casing with ROLAFLEX® and without ROLAFLEX®

2. big roller shutter casing (composite board and polystyrene)

Area S of the separating constructional component: 0.31 m²
Volume of the studio:
Volume of the best room: 57.00 m³
Sample: big roller shutter casing
Installation depth: 30 cm installation depth
ROLAFLEX® material thickness: 20 mm

1. Measurement: as cast state, roller shutter shield rolled out
   R_w = 33 dB 080529_2c
   complies for this example with sound prove class 2
2. Measurement: as measurement 1 with ROLAFLEX®
   R_w = 43 dB 080530_1c
   complies for this example with sound prove class 4

Resulting improvement of the sound insulation value:
ΔR_w = 10 dB
this means an improvement of sound prove class from 2 to 4.

Date: May 3, 2008 / Aug. 13, 2008
Measurement: Fraunhofer-Institut für Bauphysik / Bauakustik, Nobelstr. 12, 70569 Stuttgart
Analysis: Bauphysik! Ingenieurbüro, Bolzweg 26, 73035 Göppingen

Dr. Hermann, Anwendungstechnik / Application Technology, Gingen / Fils