

IZOROL- SR EPS T and IZOROL- SR/KL EPS T, SD20

Two floors of a building are separated by an in-situ concrete solid floor, thickness 200 mm. To achieve a certain acoustic performance a floating floor, thickness 60 mm, made of concrete shall be fabricated on a layer of EPS T. In this example of calculation IZOROL- SR EPS T and IZOROL- SR/KL EPS T is taken into account.

Assuming that:

thickness	10, 12 and 15 mm
compressibility	2 mm
dynamic stiffness	20 MN/m ³
thickness of the solid floor	200 mm
density of the concrete floor	2.300 kg/m ³
density of the slab	2.000 kg/m ³
4 external walls with 25 cm	0, 25[(800x0, 25)x4]=200

If the density of the concrete floor is 2.300 kg/m³ and the density of the slab is 2.000 kg/m³ the mass per unit area is

for the floor 460 kg/m² (m' = 0,20x2300)

for the screed 120 kg/m² (m' = 0,06x2000), where thickness of a floating floor = 60 mm

According to Annex B of EN 12354-2, equation B.5, page 22, the equivalent weighted normalized sound pressure level $L_{n,w,q}$ of homogeneous floor constructions is

$$L_{n,w,q} = 164 - 35 \lg \frac{m'}{m_0} \text{ in dB, where } m' \text{ is the mass per unit area of the floor and } m_0 \text{ is } 1 \text{ kg/m}^2.$$

$$L_{n,w,q} = 164 - 35 \lg \frac{460 \text{ kg/m}^2}{1 \text{ kg/m}^2} = 164 - 35 \lg 460 = 164 - 35 \cdot 2,663 = 70,8 \text{ dB} \approx 71 \text{ dB}$$

- The weighted reduction of impact sound pressure level, ΔL_w , for floating floor screeds may be taken from figure C.1, page 25 of EN 12354-2. For a mass per unit area of the screed of 120 kg/m² and a dynamic stiffness of 20 MN/m³ of the impact sound insulation layer $\Delta L_w = 29,5 \text{ dB} - 29 \text{ dB}$

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Sound reduction evaluation

Insulation plates Izorol-PP EPS T 045 for thickness 20mm and 30mm

Presumptions:

Thickness of EPS plate: 20mm and 30mm

Compressibility of EPS plate: 3mm

Dynamic stiffness: 20MN/m³

Thickness of floor: 200mm

Apparent density of floor: 2300kg/ m³

Apparent density of concrete: 2000kg/ m³

Surface mass of concrete roof: 200mm

4 external walls of 25cm each: $0,25[(800 \times 0,25) \times 4] = 200$

$m' = 0,20 \times 2300 = 460 \text{ kg/m}^2$

$m' = 0,06 \times 2000 = 120 \text{ kg/m}^2$ – floating floor

$L_{n,w,eq} = 71 \text{ dB}$

□ The weighted ratio of reducing impact sound insulation of floating floor for $s' = 20 \text{ MN/m}^3$ and $m' = 120 \text{ kg/m}^2$ in compliance with drawing C1 from page 25 of norm PN-EN 12354-2

$\Delta L_w = 29,5 \text{ dB} \sim 29 \text{ dB}$

□ Amendment $k = 2 \text{ dB}$

□ $L'_{n,w} = L_{n,w,eq} - \Delta L_w + K = 71 \text{ dB} - 29 \text{ dB} + 2 \text{ dB} = 44 \text{ dB}$

□ $L'_{nT,w} = L'_{n,w} - 10 \lg(V/30) = 44 \text{ dB} - 2,2 \text{ dB} = 41,8 \text{ dB} \sim 42 \text{ dB}$

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Sound reduction evaluation

Insulation plates Izorol-PP EPS T 045

Presumptions:

Thickness of EPS plate: 25mm

Compressibility of EPS plate: 3mm

Dynamic stiffness: 20MN/m³

Thickness of floor: 200mm

Apparent density of floor: 2300kg/ m³

Apparent density of concrete: 2000kg/ m³

Surface mass of concrete roof: 200mm

4 external walls of 25cm each: $0,25[(800 \times 0,25) \times 4] = 200$

$m' = 0,20 \times 2300 = 460 \text{ kg/m}^2$

$m' = 0,06 \times 2000 = 120 \text{ kg/m}^2$ – floating floor

- $L_{n,w,eq} = 71 \text{ dB}$
- The weighted ratio of reducing impact sound insulation of floating floor for $s' = 20 \text{ MN/m}^3$ and $m' = 120 \text{ kg/m}^2$ in compliance with drawing C1 from page 25 of norm PN-EN 12354-2 **$\Delta L_w = 29,5 \text{ dB} \sim 29 \text{ dB}$**
- Amendment $k = 2 \text{ dB}$
- $L'_{n,w} = L_{n,w,eq} - \Delta L_w + K = 71 \text{ dB} - 29 \text{ dB} + 2 \text{ dB} = 44 \text{ dB}$
- $L'_{nT,w} = L'_{n,w} - 10 \lg(V/30) = 44 \text{ dB} - 2,2 \text{ dB} = \textbf{41,8 dB} \sim \textbf{42 dB}$

Oferujemy:

I. styropian budowlany

II. Akcesoria do wodnego ogrzewania podłogowego

- płyty izolacyjne do ogrzewania podłogowego "IZOROL-L", "IZOROL-PP"

- taśmy brzegowe, klipsy do mocowania rur, folie izolacyjne

Sound reduction evaluation

IZOROL-PP EPS T 045 35-3

Presumptions:

Thickness of EPS plate: 35mm

Compressibility of EPS plate: 3mm

Dynamic stiffness: 15MN/m³

Thickness of floor: 200mm

Apparent density of floor: 2300kg/ m³

Apparent density of concrete: 2000kg/ m³

Surface mass of concrete roof: 200mm

4 external walls of 25cm each: $0,25[(800 \times 0,25) \times 4] = 200$

$m' = 0,20 \times 2300 = 460 \text{ kg/m}^2$

$m' = 0,06 \times 2000 = 120 \text{ kg/m}^2$ – floating floor

- $L_{n,w,eq} = 71 \text{ dB}$
- The weighted ratio of reducing impact sound insulation of floating floor for $s' = 15 \text{ MN/m}^3$ and $m' = 120 \text{ kg/m}^2$ in compliance with drawing C1 from page 25 of norm PN-EN 12354-2 **$\Delta L_w = 31,25 \text{ dB} \sim 31 \text{ dB}$**
- Amendment $k = 2 \text{ dB}$
- $L'_{n,w} = L_{n,w,eq} - \Delta L_w + K = 71 \text{ dB} - 31 \text{ dB} + 2 \text{ dB} = 42 \text{ dB}$
- $L'_{nT,w} = L'_{n,w} - 10 \lg(V/30) = 42 \text{ dB} - 2,2 \text{ dB} = \textbf{39,8 dB} \sim \textbf{40 dB}$

Oferujemy:

I. styropian budowlany

II. Akcesoria do wodnego ogrzewania podłogowego

- płyty izolacyjne do ogrzewania podłogowego "IZOROL-L", "IZOROL-PP"

- taśmy brzegowe, klipsy do mocowania rur, folie izolacyjne

Sound reduction evaluation

Insulation plates Izorol-PP EPS T 045 for thickness 40

Presumptions:

Thickness of EPS plate: 40mm

Compressibility of EPS plate: 3mm

Dynamic stiffness: 15MN/m³

Thickness of floor: 200mm

Apparent density of floor: 2300kg/ m³

Apparent density of concrete: 2000kg/ m³

Surface mass of concrete roof: 200mm

4 external walls of 25cm each: $0,25[(800 \times 0,25) \times 4] = 200$

$m' = 0,20 \times 2300 = 460 \text{ kg/m}^2$

$m' = 0,06 \times 2000 = 120 \text{ kg/m}^2$ – floating floor

$L_{n,w,eq} = 71 \text{ dB}$

The weighted ratio of reducing impact sound insulation of floating floor for $s' = 15 \text{ MN/m}^3$ and $m' = 120 \text{ kg/m}^2$ in compliance with drawing C1 from page 25 of norm PN-EN 12354-2

$\Delta L_w = 31,25 \text{ dB} \sim 31 \text{ dB}$

$L_{n,w} = L_{n,w,eq} - \Delta L_w + K = 71 \text{ dB} - 31 \text{ dB} + 2 \text{ dB} = 42 \text{ dB}$

$L'_{n,w} = L_{n,w,eq} - \Delta L_w + K = 71 \text{ dB} - 31 \text{ dB} + 2 \text{ dB} = 42 \text{ dB}$

$L'_{nT,w} = L'_{n,w} - 10 \lg(V/30) = 42 \text{ dB} - 2,2 \text{ dB} = 39,8 \text{ dB} \sim 40 \text{ dB}$

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