

## 2.1.5 Protection against noise

### 2.1.5.1 Direct airborne sound insulation

The weighted sound reduction index ( $R_w$ ) of the worst type of Metablock<sup>®</sup> sheathing (the lightest and thinnest panel of the range, with a discontinuous lower layer), with no additional layer (no waterproofing nor tiling), has been determined by test according to EN-ISO 140-3, with the following result.

$$R_w(C_{100-5000}; C_{tr,100-5000}) = 28 (0, -2) \text{ dB.}$$

### 2.1.5.2 Sound absorption

The sound absorption behaviour of Metablock<sup>®</sup> sheathing HER15-40-19 has been tested according to EN ISO 354:2003.

The weighted sound absorption coefficient of Metablock<sup>®</sup> sheathing HER15-40-19, expressed in accordance with EN ISO 11654, is  $\alpha_w = 0,35$  (-HH), and the panel is consequently classified as class D.

The sound absorption behaviour of all other types of Metablock<sup>®</sup> panels has not been determined (NPD), since they are not specifically meant for uses subject to sound absorption requirements.

## 2.1.6 Energy economy and heat retention

### 2.1.6.1 Thermal insulation properties

The thermal transmittance U [in  $W/m^2 \cdot K$ ] of the different types of Metablock<sup>®</sup> panels, calculated according to EN ISO 6946, is shown in annex 2 of this ETA. The panels themselves and the interlocking system between adjacent panels do not create thermal bridges.

The thermal transmittance U [in  $W/m^2 \cdot K$ ] of the different types of Metablock<sup>®</sup> sheathing could be influenced by the following thermal bridges, depending on the installation system:

#### a) Metallic fixations through the panel

If the structure of the roof which supports Metablock<sup>®</sup> sheathing is made of wood, the effect of thermal bridges due to metallic fixations through the sheathing and on the supports is negligible, as fixations are surrounded by wood.

If the supporting structure is metallic, these thermal bridges will need to be considered, according to the calculation method given in EN ISO 6946, taking into account the number of fixations per panel defined in the project (generally 9/12 fastenings per panel or 6/8 per  $m^2$ ).

#### b) Joints between panels

The joints of Metablock<sup>®</sup> sheathing must be tight and they are always blocked and sealed; short side joints of the panels lay always on the frame support and long side joints of the panel are blocked by the spline between panels. This spline is made of wood-based material, it is totally surrounded by insulating material and it has a volume which is negligible in comparison with the volume of insulating material of the panel. On the other hand, air permeability of these joints has proved to be satisfactory (see chapter 2.6.2).

Therefore no thermal bridge correction is needed due to joints in Metablock<sup>®</sup> sheathing.

### 2.1.6.2 Air permeability