

Real Wood Flooring with underfloor heating:

Next we are going to analyze the compatibility of Step & Wall wood floors with radiant heating.

The thermal resistance of these wood floors should be less than **0.15 m²-k/W** to comply with the limits required in the UNE-EN 56810 standard, in section 11.6. This value can be calculated individually with the formula provided in the standard UNE-EN 14342:

$$R_T = \sum \frac{t_i}{\lambda_i}$$

Where, t_i is the thickness in meters of the corresponding layer (in the case of solid wood, it will be the total thickness) and λ_i is the thermal conductivity of the corresponding layer. The value of the thermal conductivity is obtained from the UNE-EN 14342 standard in Table 2.

Applying the above formula, the thermal resistance of the Step & Wall floor, with a total thickness of 12 mm, consisting of a 0.6 mm oak top layer (density around 700 kg/m³), a 9 mm thick HDF board (density around 860 kg/m³), a 0.6 mm thick wood backing (density around 500 kg/m³), and a 2 mm thick cork base (density around 200 kg/m³).

$$R_T = \frac{0.0006}{0.17} + \frac{0.009}{0.15} + \frac{0.0006}{0.12} + \frac{0.002}{0.040} = 0.1185 \leq 0.15 \text{ m}^2\text{K/W}$$

In the case of floor cooling, a thermal resistance lower or equal to 0.09 m²K/W is recommended. In this case we can verify that it does not reach this figure, which leads us to conclude that Step & Wall floors with cork base are not compatible with the use of floor cooling.