



Life cycle assessment Monobloc panels

SEVENPIR®
in comparison with rock and glass wool

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- 45% less environmental impact with SEVENPIR®
- SEVENPIR® - suitable for use in MINERGIE-ECO® buildings

Life cycle assessment of Monobloc panels

Seven-PIR® in comparison with rock wool and glass wool:

Eco-balance (method)

This product life cycle assessment was carried out according to the ecological scarcity method and is based on data sets from the KBOB (Coordination Conference of the Construction and Property Bodies of Public Building Owners, 2011). For a quantitative assessment of the environmental impact, the ratio of the measured or calculated intensity of resource consumption or pollutant emissions to the tolerated intensity (guideline and limit values) is formed. The method weights the environmental impacts associated with the manufacture and disposal of a product and summarises them in the uniform «currency» of environmental impact points (EP). For all insulation variants, the reference value for the environmental impact is a 1 m² panel with a U-value of 0.59 W/(m²·K) (functional unit).

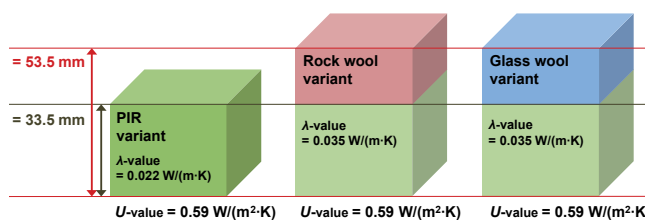
U-value:

Basis for classification (legislation) and comparability. The thermal insulation used in the Monobloc panel determines the U-value (heat transfer coefficient) through 2 factors:

- λ-value (lambda value, thermal conductivity)
- Layer thickness (d)

Same U-value (0.59 W/m²·K), different thicknesses.

In order to fulfil the same U-value, greater insulation layer thicknesses must be used for higher λ-values.



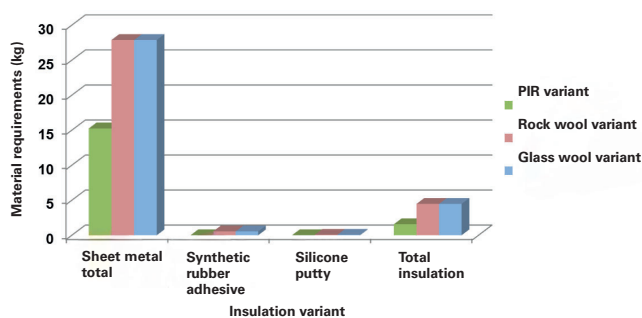
MATERIAL DATA

	PIR-variant	Rock wool variant	Glass wool variant
Panel weights (Cover: 1m ²):	16.82 kg	32.35 kg	32.35 kg
Panel deflection:	Compound effect	Panel stiffener	Panel stiffener
Sheet thickness:	0.75 mm	1.00 mm	1.00 mm
Quantity galvanised sheet steel:	15.25 kg	27.88 kg	27.88 kg
Foaming/raw densities insulation	47 kg/m ³	80 kg/m ³	80 kg/m ³

Conclusions of the report

The environmental impact of the insulation is negligible in relation to the sheathing. However, the nature of the insulation has a decisive influence on the required (sheet steel) construction and thus on the overall environmental impact. The 35 mm PIR composite panels from Seven-Air have a 45% lower environmental impact compared to mineral wool panels. With increased thermal insulation requirements, this effect of lower environmental impact increases to up to

Material required for the production of 1 m² of panel (kg)



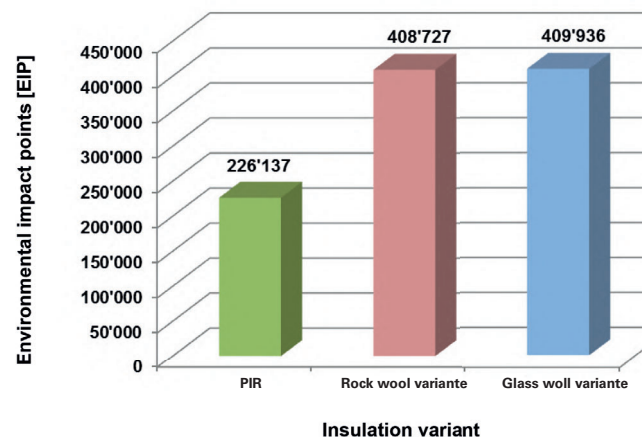
1. conclusion: Higher λ-values and lower deflection resistance increase the material requirement for the panel.

2. conclusion: Higher material requirements have an unfavourable effect on the ratio volume of sheet steel insulation.

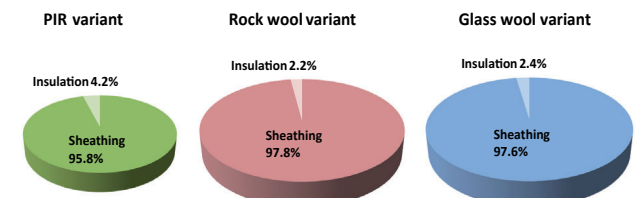
Environmental impact (EIP)

■ per kg of building material:
Galvanised sheet steel PIR Rock wool Glass wool
14'200 6'100 1'970 2'240

■ per 1m² panel:
Multiplying by the respective material quantities and adding them up results in the total environmental impact points per variant.



■ Distribution to insulation or sheathing:
Environmental impact of sheet steel (panel cladding) compared to insulation. The circular areas are proportional to the environmental impact.



54% (panels for ventilation units of classes T2 (EN 1886) or T1).

Seven-PIR® rigid foam insulation is foamed with the blowing agent cyclopentane. It does not contain any halogen compounds that are harmful to the ozone layer.

Lucerne, 13.03.2012 Dr Erhard Hug / Niklaus Renner

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