

The impact of the need for ancillary materials for wall insulation

The environmental impacts of ten insulation products (and materials) in different wall designs are to be assessed. This particular case calculates the environmental impacts of a brick wall element (1 m²) with a wood cladding outer leaf (U=0.24 W/m²·K).

Main results:

- Different insulation products require different ancillary materials for their installation in walls. These must be included in the assessment of the environmental performance of the insulant.
- Higher embodied impacts in insulation products do not necessarily lead to higher impacts at the level of the building element. As a result, the PU solutions show a similar environmental performance as plant-based insulation products.

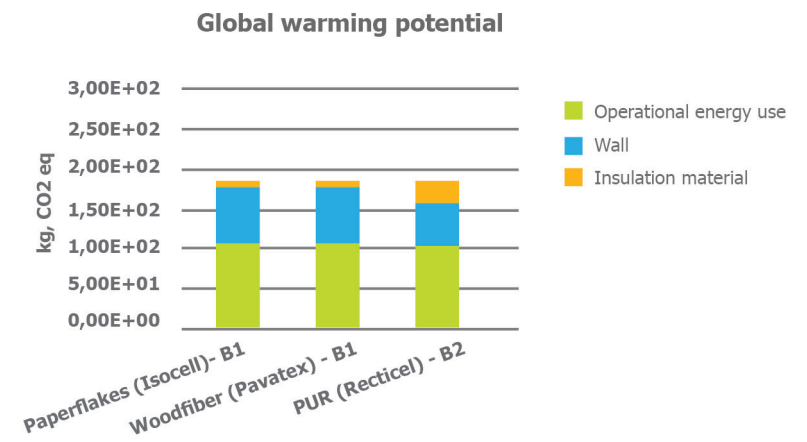
Life Cycle Analysis

The following graphs show the link between the impacts coming from insulation products, other building products and operational energy use for a number of impact categories. The study covers

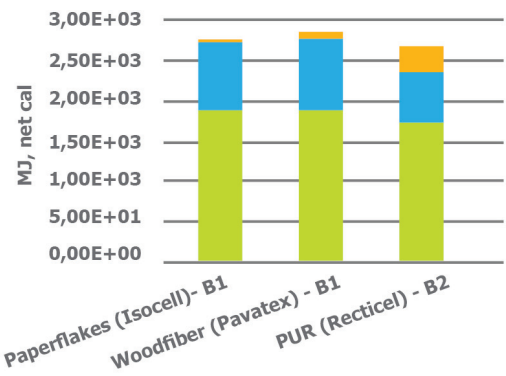
a wider range of environmental indicators, which may be equally relevant. They show similar results.

The PU solution offers an excellent environmental performance in most impact categories.

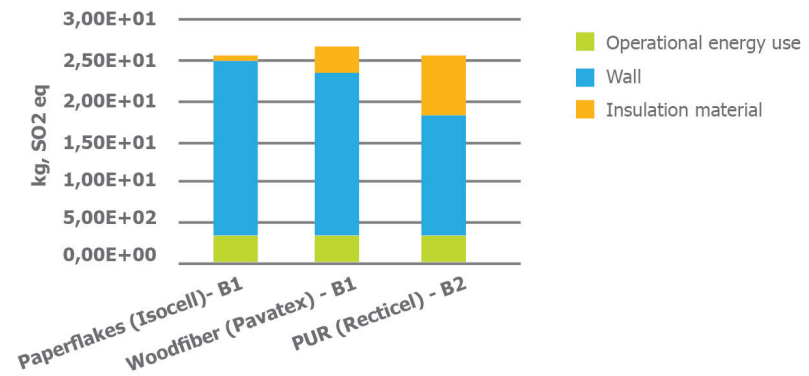
This study does however not consider the knock-on effects of thicker walls on the whole building. Their inclusion would demonstrate additional PU benefits.



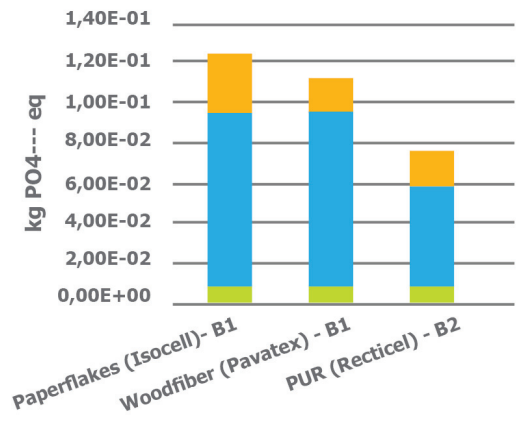
Abiotic depletion fuel



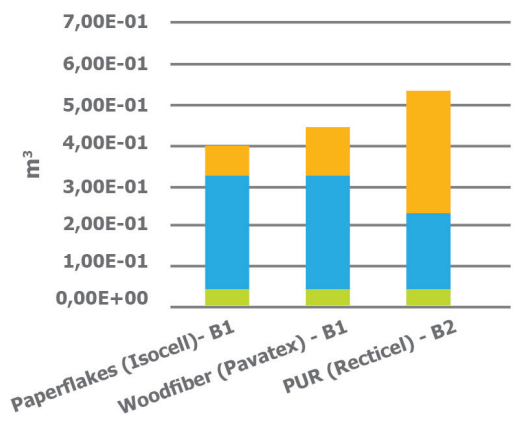
Acidification potential

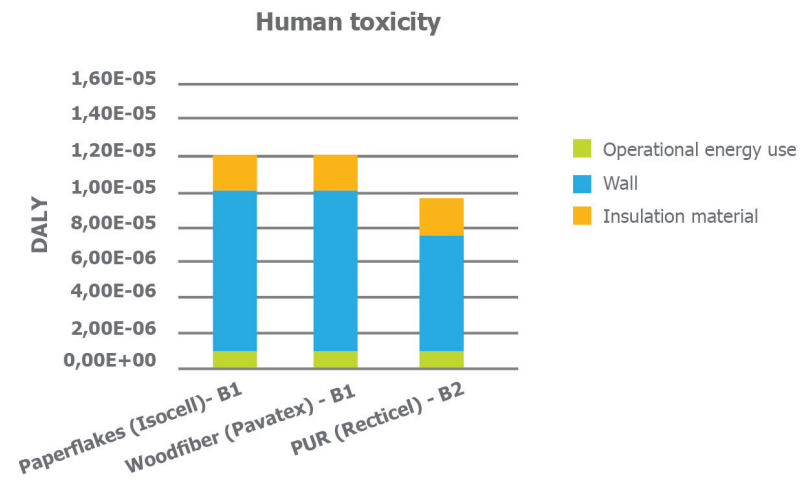


Eutrophication



Water depletion





Disclaimer

The results are reflecting the performance of specific products and cannot be extrapolated to all insulation products produced by the manufacturers concerned or, more generally, made from the same material.

Source: VITO for Belgian government: Final LCA background report – LCA:TIM project – “Het opstellen van regels, het uitvoeren van levenscyclusanalyses inclusief dataverzameling en het geven van beleidsaanbevelingen m.b.t. vijf niet-hernieuwbare (glaswol, rotswol, PUR, EPS, XPS) en vijf hernieuwbare (schapenwol, papiervlokken, vlassisolatie, houtvezelisolatie, hennepisolatie) thermische isolatiematerialen voor spouwmuren” (Bestek met nummer: DG5/PP/DDL/11032) Task 2 – Life cycle assessment of thermal insulation materials for walls in the Belgian building context