BROWNIE FORMALDEHYDE FREE

NO PHENOL, FORMALDEHYDE, ACRYLICS OR ARTIFICIAL COLOURS

Thermal Comfort | Fire-Safety | Sound Comfort | Energy Efficiency | Lightweight | Sustainability

GLASS MINERAL WOOL INSULATION

> "1st FORMALDEHYDE FREE mineral wool insulation in Malaysia"

PGF Insulation is proud to present to you our latest product – BROWNIE, the second generation ECOWOOL.

On top of the superior insulation features brought by ECOWOOL, BROWNIE is formaldehyde free. It employs natural polyester-based binder that is free of formalin, phenol or any other artificial chemicals.

BROWNIE helps to improve indoor air quality and offer a sustainable alternative for earning points in a variety of green programs such as GBI and LEED®

WHAT IS "FORMALDEHYDE-FREE" INSULATION?

Formaldehyde-free" insulation is glass mineral wool produced using a binder containing no formaldehyde. The trace amounts of formaldehyde found in traditional glass mineral wool do not present health concerns. In fact, there is no evidence to suggest that the level of formaldehyde released by traditionally bonded glass mineral wool insulation is at all harmful.

- Free from formaldehyde
- Reduced VOCs (volatile Organic compounds)
- Improved indoor air quality
- Comply with GREENGUARD Indoor Air Quality requirements
- Guaranteed performance for the life of your home
- Over 80% recycled content
- Easy to install

Savings and comfort when you install BROWNIE

Insulate and SAVE

WHAT IS FORMALDEHYDE?

Formaldehyde is a colorless gas with a characteristic pungent odor. It is an important precursor to many other chemical compounds, especially for polymers. In 2005, annual world production of formaldehyde was estimated to be 23 million tonnes (50 billion pounds). Commercial solutions of formaldehyde in water, commonly called formalin, were formerly used as disinfectants and for preservation of biological specimens.

In view of its widespread use, toxicity and volatility, exposure to formaldehyde is a significant consideration for human health. On 10 June 2011, the US National Toxicology Program has described formaldehyde as "known to be a human carcinogen".

THE ROLE OF FORMALDEHYDE IN INSULATION?

From the time glass mineral wool was invented, manufacturers have used formaldehyde as a binder ingredient in the manufacturing process to help glue or "bind" the glass fibres together. The binder gives the insulation its shape and the ability to recover from a highly compressed package. However, the level of formaldehyde in glass mineral wool is negligible as compared to other building materials.

SHOULD INSTALLERS OR BUILDING OWNERS BE CONCERNED ABOUT FORMALDEHYDE EMISSIONS FROM GLASS MINERAL WOOL INSULATION?

No! During the manufacturing process, the binder is cured at very high temperatures, virtually eliminating the formaldehyde content. Although there is a small amount of formaldehyde present in the traditional glass mineral wool, it does not present any health concern.

Trace levels of formaldehyde are all around us - in paper towels, fabric softeners and cosmetics. Even apples, potatoes and fish contain trace amounts of formaldehyde.

DOES FORMALDEHYDE IN TRADITIONAL GLASS MINERAL WOOL INSULATION PRESENT HEALTH ISSUES?

No. The trace amounts of formaldehyde in traditional glass mineral wool insulation do not cause health or indoor air-quality issues. For instance, the U.S.A. Environmental Protection Agency (EPA) do not even list glass mineral wool as a major source of formaldehyde in the home.

Therefore, the trace amounts of formaldehyde in glass mineral wool insulation are not a concern to human health or the environment. In absolute agreement with this, the North American Insulation Manufacturers Association (NAIMA) mentioned that:

"Consistent with the Environmental Protection Agency and the U.S. Consumer Product Safety Commission, we do not consider the trace amounts of formaldehyde found in glass mineral wool insulation to be a concern to human health or the environment." NAIMA, 3-22-02)

Existing research on PGF Insulation existing glass mineral wool with phenol-formaldehyde binders contains levels of formaldehyde that could potentially be released from a finished ordinary product are so low as to present virtually no risk. There is simply no health problem presented by the trace amounts of formaldehyde in traditional fiber glass.

Table 1: Formaldehyde Emission Rate By Different Building Materials

PRODUCT	FORMALDEHYDE EMISSION RATE
Top coat, floor finish - after 22 hours	(mg2/m-hr)*
1/4 inch UF particleboard	4.66
5/8 inch particleboard underlayment	1.58
1/2 inch hardwood veneer plywood	0.508
R-19 Glass mineral wool Insulation	**0.17**

Source: "Emission Rates of Formaldehyde from Materials and Consumer Products Found in California Homes", T.J. Kelly, D.L. Smith and J. Satola, Environmental Science and Technology, 1999, 33, pp. 81-88

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"In making the switch to the formaldehyde free insulation, PGF Insulation is not correcting any health problem with the product."

BROWN is GREEN

Fire-Safety Sustainability Thermal Comfort Energy Efficiency Sound Comfort Lightweight