

THE NEED FOR BUILDING INSULATION

Buildings are responsible for more than 40 % of global energy use. Industry and society require Low-emission buildings, Energy-efficient architecture, sustainable solutions and modular systems.

There is a growing demand for sustainable materials. Such materials ought to have the potential to be re-invented; must make significant contribution to its saving effects on energy and its resources and should have the properties of being the best insulator, besides being lightweight and durable.

With some elaboration, they ought to have the scientific basis as covered below:



Figure 1 Desirable Properties of a Sustainable Material - Polyurethane has it all

But, what is Sustainable Development?

Sustainability is an abstract concept subject to interpretation. A good definition of sustainable development would include

1. Sustainability is an attribute of a system.
2. Sustainability is achieving commercial success through solid business models in a way that meets the needs of our employees, society, and protects the environment and natural resources.
3. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

At the 2005 World Summit it was noted that sustainability requires the reconciliation of environmental, social and economic demands - the “three pillars” of sustainability¹. This view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars are not mutually exclusive and can be mutually reinforcing.

What we know:

Fossil fuels are a finite source of energy. Burning fossil fuels emit greenhouse gases. Energy efficiency in buildings conserves resources such as fossil fuels. By conserving energy, we can slow down the depletion of fossil fuel, giving time to develop long-term solutions to meet energy needs for the future.

- Insulating our homes and buildings conserves the fossil fuels needed to heat and cool them.
- Buildings insulated with spray polyurethane foam will typically use 30 per cent less energy for heating and cooling compared to buildings insulated with traditional fibrous insulation material².

Life Cycle Assessments (LCA) for some individual chemical product applications, including insulation, were calculated in the ICCA³ report. The life cycle assessment is a recognized multi-step,

¹ Source: Johann Dreo - Sustainable development 2006

² Source DOE Airsealing

well-structured methodology that performs environmental impact analysis (based on ISO 14044:2006). LCA assess energy and environmental impacts of a material in a specified application from cradle to end-of-life. LCA results support decision-making on new projects and compare the energy and environmental impact of different products with quantitative data factoring in all the life cycle phases.

LCA performed on insulation products have demonstrated that energy savings during the use phase far outweigh energy associated with manufacturing the raw material, formulating components, transporting, installing and managing at end-of-life. LCA calculations show that the highest values obtained with an increase of insulation can contribute substantially to energy efficiency improvement. Insulation contributes to fossil fuel conservation and GHG reduction.

Why should I insulate?

- Lower energy losses; avoid the danger of oversized heating or cooling systems that work hard to compensate for the heat or cold losses through the building envelope.
- Effective insulation lowers heating or cooling bills, thus no longer being affected by rising energy costs.
- minimize air-borne sound transmission,
- impede entry of insects and pests,
- reduce air infiltration that can generate condensation and result in mold growth,
- increase the comfort of occupants.
- Future legal requirements. Energy certification anticipated.

Why Polyurethane insulation?

- SPF insulation reduces the amount of energy required for heating and cooling, thus also cutting CO2 emissions.
- An investment in improving energy efficiency of your building with SPF insulation is far more profitable and sustainable than a conventional capital investment.
- SPF insulation is effective even in renovation of buildings.
- SPF insulation provides insulation + air sealing in one product and step

How should I insulate?

- Appropriate expertise is required when planning a building project due to the huge number of building materials, the multitude of technical options, the legal regulations relating to thermal protection and tight deadlines.-
- Cost-effective, state-of-the-art integrated solutions are needed.
- The most important criterion for the effectiveness of an insulating material is its thermal conductivity.
The lower the number, the better the material's insulating properties.

Why SPF insulation?

- Low energy and heating/cooling costs.
- Optimum thermal protection. Thin is in.
- Greater comfort and a more pleasant room climate throughout the year
- A significant increase in the value of your property
- Reliable compliance with all legal requirements.

PU insulation have thermal conductivity and low mass compared with solid walls or ceilings and are not good at retaining heat.

Where should I insulate?

- Roofs
- Walls
- Floors

Why SPF insulation?

- High compressive strength.
- Lightweight & thin
- Maximizing space utilization
- Quick and easy to install
- Architecture appeal