HUNTSMAN

BUILDING SOLUTIONS

Environmental Product Declaration

Introduction to Global Warming Potential (GWP)

Definitions:

Greenhouse Gases (GHG):
- Absorb energy and trap heat in the atmosphere, effectively warming it.
- Heat-trapping potential and atmospheric lifetime specific to each GHG.

Global Warming Potential (GWP):
- Metric that compares the global warming impact of those different GHGs.
- Measures how much energy the emissions of 1 ton of a GHG will absorb over a given period relative to 1 ton of CO2; expressed in Carbon Dioxide Equivalent (CO2-eq.).

The higher the GWP, the more a gas warms the planet compared to CO^2 over a period of 100 years.

Worldwide Issue: Global Warming

Two main types of carbon emissions (GHG) in buildings that contribute to the GWP:

1) Embodied carbon of construction materials
2) Operational carbon of buildings (e.g. HVAC)

PROBLEM:
Construction & Building Operations
- 38% of global annual GHG emissions

PROBLEM:
World's building stock expected to double by 2060
- ++ energy consumption; ++ carbon emissions

RESPONSE TO PROBLEM:
Paris Agreement's goals:
- Limit global warming to 2°, pref. 1.5° C from pre-industrial levels (IPCC AR5)
- 2030 » >50% carbon emission reductions
- 2050 » Zero Carbon

Addressing upfront carbon by changing the way buildings are designed, built, used and decommissioned will be a priority over the coming decades.

Global CO2 Emissions by Sector

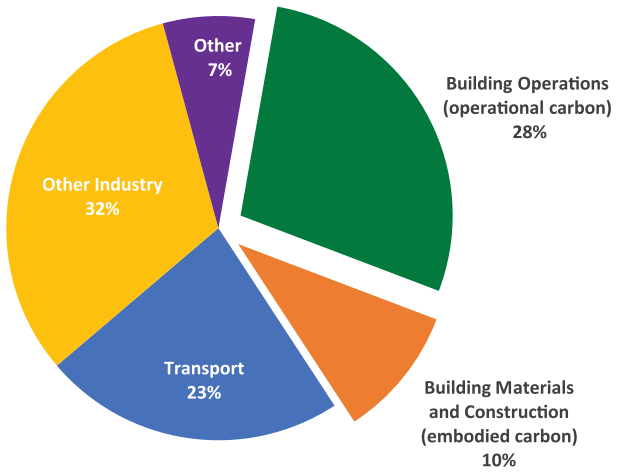

Chart source: © 2021 Huntsman Building Solutions. All rights reserved.
Data sources: UN Environment Global Status Report 2020; IEA Energy Technology Perspectives 2020; IEA World Energy Balances 2020

HBS SPF's Contribution to Reducing Construction And Buildings' Global CO2 Emissions

1) Reduced embodied carbon of HBS products as demonstrated in HBS-specific EPD & LCA.
2) Reducing operational carbon of buildings through increased energy performance.

Environmental Product Declaration

- Heatlok ECO: 1st closed cell spray foam product to achieve Codemark certification in Australia
- Based on Cradle-to-Grave Life-Cycle Assessment which communicates transparent, objective and comparable information about the entire life-cycle environmental impact of products.
- HBS' proprietary polyol with recycled content & the new-generation Solstice HFO blowing agent with a GWP=1 responsible for diminished environmental impact.

ENVIRONMENTAL PRODUCT DECLARATION

HEATLOK ECO

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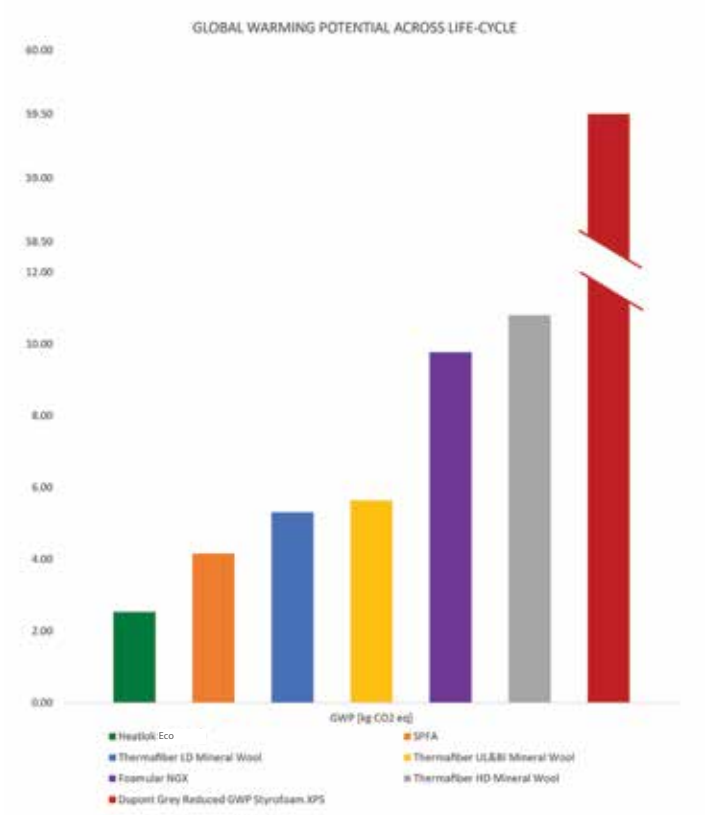
Huntsman Building Solutions is a global leader in the manufacture and supply of open-cell and closed-cell spray polyurethane foam (SPF) insulation and coatings. Formed in May 2020 through the combination of the Demilec and Icynene-Lapolla SPF businesses, Huntsman Building Solutions is a business unit of Huntsman Corporation and has a combined heritage of more than 110 years. Through the application of innovative technology and advanced science,

Huntsman Building Solutions focuses on meeting market demands for more energy-efficient products and serves a range of industries, including residential, commercial, industrial, institutional, and agricultural. For more information, visit www.huntsmanbuildingsolutions.com.

CODEMARK Australia



Heatlok Eco's GWP Comparison to Other Insulation Types

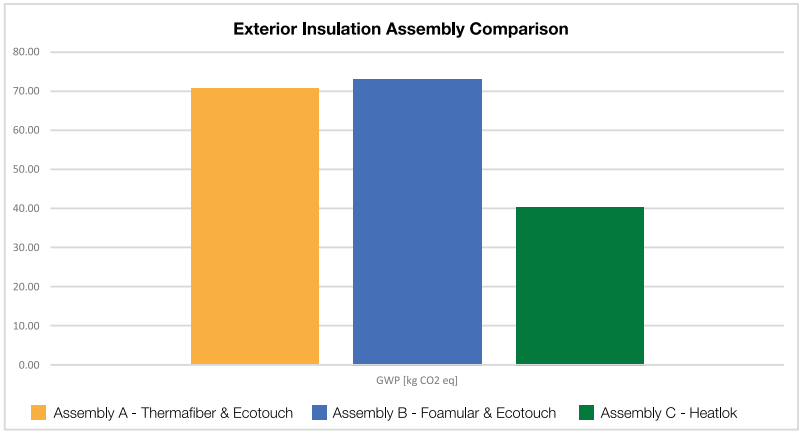
- 39% lower than the spray foam industry average (SPFA)
- 74% and 96% lower than HFO extruded polystyrene
- 77% lower than heavy density mineral wool
- 52% lower than light density mineral wool
- 55% lower than unbonded loosefill & blown-in mineral wool

Chart source: © 2021 Huntsman Building Solutions. All rights reserved.
Data sources: Products' respective EPDs.

Assembly Comparisons

Wall assembly with only Heatlok ECO vs assemblies insulated with mineral wool, HFO extruded polystyrene board stock and fiber glass insulation. By simply replacing all insulation and membranes in assemblies A and B by the single product Heatlok HFO at an equivalent R-value, assembly's GWP nearly cut in half.

A/B » C = 45% GWP



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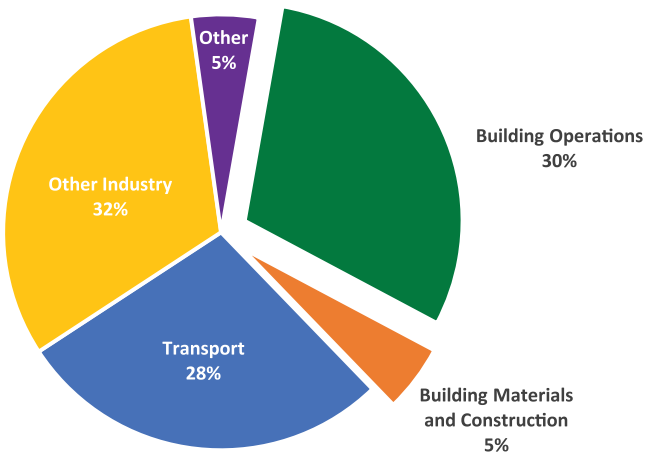
Data sources: Products' respective EPDs.

Global Energy Use by Sector



Energy Efficiency

- Building Operations: 30% of global annual energy use
- HBS SPF: Inherently seamless and higher thermal insulation, vapor and air barrier properties increase energy savings, reduce HVAC loads & lower building operational carbon emissions.
- Using spray foam in place of other products could reduce annual home heating and cooling-related carbon emissions by 30% (American Chemistry Council)

HEATLOK ECO

GWP Payback Period & Carbon Removal

- SPFA's Energy modeling report compares embodied energy and carbon impact of SPF and fiberglass insulation.
- GWP Payback period: SPF's higher initial embodied carbon is offset by its energy and operational carbon emission savings within 8 years. Then, through its remaining service life, SPF prevents the release of carbon in the atmosphere that would be released with fiberglass insulation.
- Having lower embodied carbon than the industry average, Heatlok ECO's GWP Payback Period is only 4 years. After 4 years, Heatlok ECO removes carbon that would be released in the atmosphere using fiberglass.

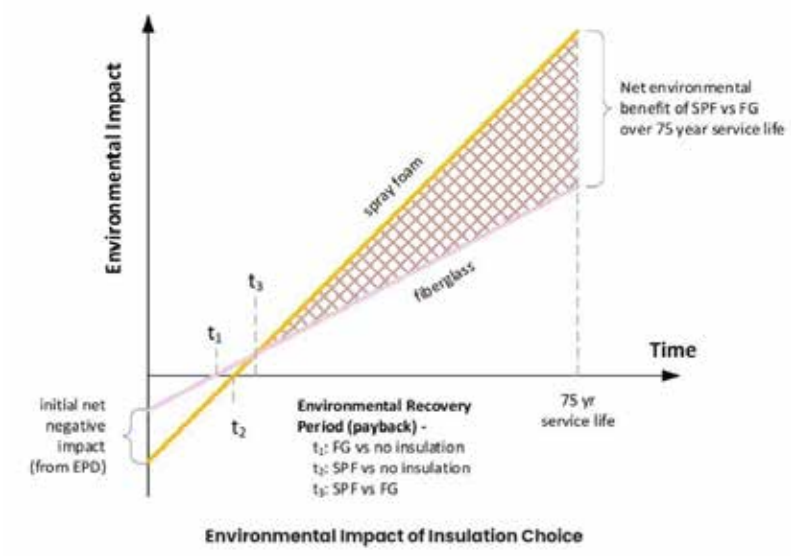


Chart source: SPFA Counting Carbon: Demand a Better Insulation in Your Next Home 2021

LEED & Other Sustainability Benefits

- HBS SPF keeps building components in better condition longer, giving buildings longer lifespans, which promotes the reuse of materials & buildings to reduce the reliance on new construction and the need for virgin materials.
- Waste reduction during construction
- Contains recycled & renewable content
- Exceeds indoor air quality standards
- Greenguard Gold-Certified

HBS' SPF products help achieve LEED and other programs' sustainability goals of reducing whole building life-cycle impacts.

To learn more:
https://huntsmanbuildingsolutions.com/en-AU

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