



# INSULATION LIFE CYCLE ANALYSIS

## INSULATION IMPACT

Building account for 76% of electricity use and 40% of all U. S. primary energy use and associated greenhouse gas (GHG) emissions. Making it essential to reduce energy consumption in buildings in order to meet national energy and environmental challenges. Premier SIPS. MPS and GPS solid insulation cores help drive this reduction by:

- Lowering energy consumption and reducing CO2 emissions (CO2 measures the total green house gas emissions)
- Being naturally inert and stable
- Not producing contaminating leachates
- Being free of CFC, HCFC and HFC, all of which are harmful to the earth's ozone layers

### LIFE CYCLE BENEFITS

When choosing Premier SIPS molded polystyrene (MPS) or graphite polystyrene (GPS) insulation core, you get a built-in feature that provides environmental benefits for the life of the product.

Building materials and their impact on the environment must be considered over the life of the building structure. This is considered the full "life cycle" of the building.

### ASSESSMENT STUDY

The Expanded Polystyrene Industry Alliance (EPS-IA) commissioned industry leading Franklin Associates to conduct a life cycle assessment of MPS wall insulation. The study quantified the energy use and emissions associated with MPS insulation production and compared this with the savings in energy and greenhouse gas emissions that result from the added R-value of the insulation.

The life cycle stages evaluated include: all steps of MPS insulation production of insulation from raw material extraction, through manufacturing transportation, to a project construction site and finally the electricity/natural gas consumption to heat and cool the building over a 50-year life span.

### PAYBACKS

Energy and CO2 greenhouse gas savings were determined by comparing the heating and cooling energy use

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for a typical house (2x4 wood frame with r-13 fiberglass insulation) to the same house with additional MPS insulation added. The table below shows the average U.S. reduction in energy use and CO2 emissions/global warming potential.

	ENERGY INVESTMENT MILLIONS Btu's	GWP INVESTMENT lbs. CO <sub>2</sub> Equiv
Molded polystyrene (MPS) Production	8.90	7.95
Molded polystyrene (MPS) Transportation	0.13	24
Total Energy Invested	9.03	8.19

	ENERGY SAVINGS MILLIONS Btu's	GWP REDUCTION lbs. CO <sub>2</sub> Equiv.
Annual Savings	6.58	982
Savings over 50 yrs.	329	49,095

Investment Payback Period	1.37 years	0.83 years
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### SUMMARY

Results of the study proved that MPS insulation saves on long-term energy consumption, operational costs, and provides a substantial reduction in CO2/greenhouse gas emissions. All of which aid in reducing the potential for ozone depletion and global warming.



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