



SUPERIOR FOAM INSULATION



Polyurethane foams are the most efficient insulating materials available today.

Polyurethane foams were first developed in Germany during the late 1930's.

Polyurethane foams are thermosetting cellular plastics, consisting of a solid mass of small closed cells with densities ranging from 32 to 1000 kg/m³.

For foams having a density of 32 to 48 kg/m³ the reaction mixture expands to about thirty times the original liquid volume, and the foam reaction proceeds relatively quickly to form the cross-linked polymeric structure.

While this reaction is taking place, heat is generated which vaporizes

the blowing agent, which is then trapped in the form of bubbles in the expanding foam mass.

The combination of small-unconnected closed cells, each containing a low conductivity gas which reduced the flow of heat, and its lightweight enables rigid polyurethane foam to outperform all other insulation materials. When enclosed between two impervious skins, the initial very low thermal conductivity (K-Value) is retained indefinitely.



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Benefits:

- Superior insulation, insulation values typically 0.023-0.025 W/mK
- R values 0.97—1.04 mK/W (metric) or 5.8—6.2 ft² °F h/Btu (imperial)
- Forms a complete insulation envelope—avoiding drafts that compromise your insulations performance
- Light weight material, densities as low as 32 kg/m³
- Can be moulded to any shape
- Fast production turnaround—make to order

NEW INSULATION STANDARDS

The New Zealand Building Code Clause H1 Energy Efficiency came into effect on 31 October 2007.

There are new minimum standards for insulation in homes built in the South Island and Central Plateau of the North Island.

There are also new minimum standards for lighting in commercial and other large buildings.

Organisations can reduce their energy costs through the efficient use of polyurethane insulation.

Whether heating or cooling, energy can be conserved by the correct installation of the appropriate insulation material. Polyurethane foam offers the versatility of handpour,

injection, spray or pre-formed sheet options.

New Zealand has
a revised Code
of Insulation



PRODUCT RANGE

Polymer Group is the largest manufacturer of rigid polyurethane foam systems in New Zealand. These custom-formulated materials are available for:

- **Spray Foam**

Roofs, cool stores, dairy tanks, wine tanks, fishing vessels, pleasure boats, spa pools, theming.

- **Injection Foam**

Hot water cylinders, pipe lines, tanks, freezer doors, insulated panels

- **Hand-pour Foam**

In-situ freezers, buoyancy aids, marine floats and buoys,

FORMULATION AND CUSTOM DESIGN

Polymer Group Ltd offers a complete product design service. Custom formulations for polyurethane foams and casting materials.

POLYURETHANE FOAM EXPANSION RATES: A 32 Kg/m³ polyurethane foam will expand approximately 31 times its original volume depending on mould or substrate temperature. Mould and substrate temperatures will affect the degree of rise. Warm mould or substrate typically increases expansion rate while a cooler mould or substrate reduces expansion rate.

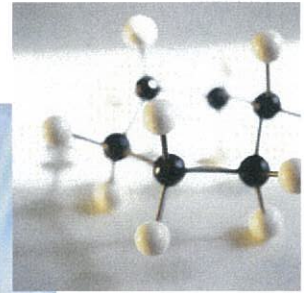


HUNTSMAN Polyurethanes

In early 2003 Polymer Group signed an alliance with Huntsman Polyurethanes, one of the world's largest polyurethane research and manufacturing companies.

The Alliance provides Polymer Group with access to the latest in polyurethane research and development, as well as providing technical expertise in the area of blowing agent replacement technology, necessitated under the Kyoto Protocol.

Huntsman is a leading global manufacturer, not only of polyurethane foam systems, but also spray elastomers, polyurethane/polyurea hybrids and pure polyurea elastomers.



FIRE PERFORMANCE / INTUMESCENT COATINGS

Although most polyurethane foams contains fire retardant, all polyurethane insulation will burn when exposed to fire. For interior building applications, a protective thermal barrier equal in resistance to 13mm gypsum board must be used over the insulation

However there are times when polyurethane foam cannot be protected by a thermal barrier but must still meet a flammability or combustion specification.

One solution is to use an intumescent coating. This is a coating that in the event of a fire heats up and expands protecting the insulation foam from the source of combustion. Polymer Group have a variety of flame barriers and intumescent coatings available for your application.

COATINGS UNDER THERMAL INSULATION

Coatings utilized under thermal insulation, in particular inorganic zincs and galvanized coatings, have been found to behave poorly in certain service conditions.

This development was initiated following a State-of-the-Art Report from a Technical Committee of the National Association of Corrosion Engineers, (NACE, Task Group T-6H-31), which found a history of corrosion problems stemming from the plant construction boom of the 1960s when there was an increasing use of thermal insulation for energy conservation.

Previously accepted practices (of thin film liquid applied anti-

corrosive primer) were found to provide inadequate protection under the harsh environment under, often wet, which exists in the majority of thermally insulated plant and equipment.

Corrosion seemed to be most prevalent, (for both carbon and austenitic stainless steels), in chloride- or sulphide-containing environments and was further aggravated in locations with high humidity, rainfall and salt-laden air.

Before you commence any insulation work over a mild steel, stainless steel, or other substrate therefore, we recommend you draw your client's attention to the need to fully evaluate the corrosion

protection requirements he should install to ensure long term reliable performance.

Please do not hesitate to contact our office for any evaluation or specification assistance you may require.

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Superior Insulation Solutions



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**Chemically Engineered Solutions
for Extreme Environments**

Polymer Group Ltd is an applied technology company comprising a team of industrial chemists, engineers and qualified coatings inspectors which has served New Zealand industry for over 25 years.

Property Asset Protection is the company's major focus, providing proven, durable solutions for the **protection of structural steel, concrete and timber** structures.

Wear resistant, Anti-corrosive Protection Systems are engineered to provide optimum performance and extended maintenance intervals.

Surface Coating Technology Advances offer multiple choices to the asset manager and civil engineer who is seeking long term solutions and minimum downtime, but not always able to provide an optimum application time frame.

Maintenance Assessment and Specification Options give the client the opportunity to inspect and discuss the asset with experienced personnel, taking into consideration the exposure environment, past performance of any existing protection systems, available downtime and other constraining influences.

Sole Responsibility Material Supply and application contracts provide the client with further reassurance that their protection/maintenance systems are supplied and installed by a **Quality Assured, ISO 9001:2008** company.

We are on the web
www.polymer.co.nz

Solutions for your Extreme Environments!

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POLIBRID

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- ENDURATHANE® Foam
- HUNTSMAN® Foam and Spray Elastomer Coatings
- Jotun® Marine & Protective Coatings
- Intumescent Coatings
- Polibrid® Durable Linings
- Tremco® Waterproofing Systems
- Rhino Linings® Durable Coatings
- Nullifire® Fireproofing