POLYMER GROUP LTD
SOLUTIONS FOR EXTREME ENVIRONMENTS

Product Data Sheet

ENDURATHANE SR42M
Spray Foam System

PRODUCT DESCRIPTION

Endurathane SR42M is a fully formulated polyol blend designed to react with **Suprasec 5005 or Endurathane Part A** isocyanate to produce a polyurethane foam system suitable for structural applications. The two components are processed using plural airless spray equipment.

Endurathane SR42M is formulated with HFC as the blowing agent which has zero ozone depleting potential, as well as below the "Greenstar" VOC threshold.

TYPICAL LABORATORY REACTION & PROPERTIES DATA

Mixing ratio:

Endurathane SR42M	100 pbv
Isocyanate	100 pbv

Laboratory reaction profile at 21°C:

Cream time (sec):	4-7
Gel time (sec):	10-14
Rise time (sec):	28-36
Free Rise core Density (kg/m³):	30-34

Typical liquid properties at 21°C:

Appearance:	Clear coloured liquid
Viscosity (Brookfield):	630 mPa's
Specific Gravity:	1.14

Endurathane SR42M is used to insulate tanks, in conjunction with a spray-applied elastomeric membrane, for industries as diverse as petrochemicals and brewing. It is also used to insulate galvanised iron ducting for domestic heating/cooling systems.

Endurathane SR42M is used to internally insulate pig, poultry and other agricultural shedding. (See General Safety Precautions). It is also used internally, in conjunction with a spray-applied elastomeric membrane, to seal (gastight) grain stores to allow gaseous fumigation.

Endurathane SR42M is used for construction of cool stores and to seal the joints in existing EPS/metal cool stores. It can also be used as a spray-applied, self-adhering "protector board" for buried waterproofing membranes.

Service Temperature

For hot applications such as heated tanks, the cured insulation may be used at continuous service temperatures up to 85ºC.

Typical properties as seen in laboratory samples:

Test	Result	Method
10% Compressive strength – parallel (32kg/m³)	> 100 kPa	AS2498.3
10% Compressive strength – perpendicular (32kg/m³)	> 100 kPa	AS2498.3
Fire test	Self-extinguishing after 0-3 secs	D1692/ ISO3582
Initial Thermal conductivity (k-factor) @ 22.5°C	0.022 W/mK	EKO machine
Aged Thermal conductivity (k-factor) @ 22.5°C	0.0241 W/mK	EKO machine
Aged R-value (@ 49.4mm)	2.05 m²K/W	ISO8302-1991
Closed cell content	> 95%	Pycnometer
VOC emissions "Greenstar" limit = 0.5mg/m²/hr	0.01 over 24 hours	CETEC – D5116

LIMITATIONS

Although **Endurathane SR42M** 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 should be used over the insulation. For special applications requiring materials rated under AS1530 Part 3, the use of *Endurathane SR52* is recommended.

For any application subjected to foot traffic (eg roofs of tanks), consult Polymer Group Ltd for a recommendation.

PACKAGING

Nett 225 kg per 200 litre drum.

STORAGE AND HANDLING PRECAUTIONS

ALL CHEMICALS MUST BE USED BY TRAINED PERSONNEL.

Endurathane SR42M contains HFC which has an initial boiling point of 15°C. Storage at elevated temperatures will result in build up within the drums, and for this reason the product should be stored away from direct sunlight.

When opening drums, care must be taken to release any internal pressure slowly.

To prevent loss of HFC by evaporation, and to prevent ingress of moisture, drums must be kept tightly sealed when not in use.

Suprasec 5005 or Endurathane Part A isocyanate will react with water to produce carbon dioxide gas. As a result drums contaminated with water should not be sealed.

Materials Protection System
Spray foam chemicals are either hydroscopic or reactive to moisture and a nitrogen gas purge of desiccant dryer system should be used to prevent moisture vapour entering the drums through the small bung holes.

Clean up:
Owing to the chemical resistance of polyurethane products it is important to clean up any overspray as quickly as possible. Methyl Proxitol is suitable for general cleaning and methylene chloride can be used as a line flush. Wear suitable protective clothing, goggles and gloves at all times when cleaning. Greasing components beforehand assists with contamination removal.

Storage Stability
Recommended storage temperature is 10-25°C in tightly closed containers to prevent moisture and other contamination. Under these conditions this product has a storage stability of at least 6 months.

Store out of direct sunlight and sources of heat. If exposed to moisture Component A will crystallise resulting in line blockages.

HEALTH AND SAFETY ADVICE

Refer to Polymer Group Safety Data Sheets for individual products. Also refer to technical Information PU193-IE "*MDI-Based Compositions: Hazards and Safe handling Procedures".*

Component A [isocyanate] contains methylene bisphenyl di-isocyanate [MDI]. It is moderately toxic. **Avoid contact with skin or eyes, avoid breathing vapour** and use only in well ventilated areas.

Component B [polyol] contains HFC volatile blowing agent. It is a mild irritant. In confined spaces it may displace sufficient air to be hazardous. Provide ventilation or use only in well ventilated situations.

Always wear **eye protection** and suitable **protective clothing.**

Flush splashes to the skin or eyes with copious quantities of water.

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PROPERTIES AND SUSTAINABILITY OF POLYURETHANE FOAM

Polyurethane rigid foams have a closed cell structure and high cross-linking density give them the characteristics of good heat stability, high compressive strength and excellent insulation properties.

PU insulation has a very low thermal conductivity, starting from as low as 0.017 W/m.K, making it one of the most effective insulants available today for a wide range of applications.

All types of insulation can also play a role in improving the energy efficiency of buildings and reducing CO_2 emissions.

The environmental impact Polyurethane offers is as follows:

- Excellent thermal efficiency – leading to optimum energy savings and reduced CO_2 emissions.
- Relatively low environmental impact at the building level – the product saves more than 100 times the energy than is used in its manufacture.
- Durability – leading to long term performance and reducing the need for replacement, therefore saving energy.

The economic impact from polyurethane is:

- Increased energy efficiency – leading to immediate savings for the end user.

Ref: PU Europe Sustainability and polyurethane insulation.

λ INFORMATION ON THERMAL CONDUCTIVITY (K-FACTORY OR λ) TESTING

To test the insulation properties of foam we test the thermal conductivity or K-factor, which is a measure of a materials ability to transfer heat through conduction and therefore is the principle property of an insulation material.

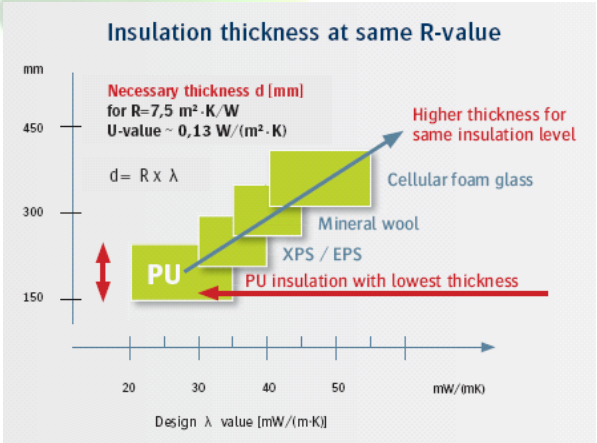
Typical values of insulating materials are:

Material	Density (kg/m³)	k-factor (W/mK)
Polyurethane foam closed cell	32	0.022 initial 0.024 aged
Polyurethane foam open cell	10-12	0.035
Polystyrene foam	16	0.035
Rockwool	100	0.037
Glasswool	65-160	0.041
Timber – white pine	350-500	0.112

Insulation materials are then normally reported in terms of their R-value, which is a measure of the thermal resistance.

Endurathane SR42M with an aged k-factor of 0.0241 W/m.K would give an R-value of 2.05 m²K/W @ 49.4mm thickness.

The following graph shows the thickness of insulation materials needed to get an R-value of 7.5 m² K/W with standard PU foam. As seen PU offers the best insulation at lowest thickness.



Reference: Insulation for sustainability: A guide, XCO2 Conisbee 2002

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