

ENDURATHANE SR52

Polyisocyanurate Spray Insulation System

PRODUCT DESCRIPTION

Endurathane SR52 is a fully formulated polyol blend designed to react with Suprasec 5005 or Endurathane Part A isocyanate as the B component of a two component, spray-applied polyisocyanurate insulation system.

This product 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.

This product is also used internally to insulate pig, poultry and other agricultural shedding or in conjunction with a spray-applied elastomeric membrane, to seal (gas-tight) grain stores to allow gaseous fumigation.

This product is also used for construction of cool stores and to seal the joints in existing EPS/metal cool stores.

Endurathane SR52 is a highly fire retarded polyisocyanurate foam system.

BENEFITS

Environmentally Friendly.

This product contains no CFC's.

Energy Saving

Polyurethane provides the most efficient thermal insulation value of any building material. Because this product is sprayed-in-place, there are no gaps, seams or fasteners to act as thermal bridges.

Structural Strength

This product adheres strongly to the prepared substrate, improving structural integrity of fragile substrates.

Waterproof Integrity

Sprayed-in-place this product creates a one piece, seamless, self-flashing barrier which is fully bonded to the substrate. Closed cell construction prevents the passage of liquid water.

This product is formulated to provide an ideal, uniform prepared surface to accept a liquid-applied waterproofing membrane.

Improved Productivity and Economy

This product may be rapidly installed to large areas of substrate by high productivity spray equipment. Labour costs are minimised as the liquid-applied system conforms and adheres to complex substrate shapes and details with no need for mechanical flashings, fasteners or fittings.

SPECIFICATION

Primer

All substrates must be primed by a suitable primer according to the primer manufacturer's recommendation.

Recommended Thickness

The minimum recommended thickness for most applications is 25mm of sprayed polyurethane insulation. This may be increased as required to provide desired insulation value.

Number of Coats

Up to 50mm of this product may be applied in a single pass. A minimum pass thickness of 10mm is recommended.

Service Temperature

For hot applications such as heated tanks, the cured insulation may be used at service temperatures up to 120°C.

LIMITATIONS

Although this product contains fire retardant and is rated under AS1530 Part 3, 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 any application subjected to foot traffic (eg roofs of tanks), the use of Endurathane SR43 is recommended,

APPLICATION INSTRUCTIONS

Introduction

This product is designed for application by heated plural airless spray equipment.

Temperature is critical in the quality and long term performance of polyisocyanurate foams.

The materials must be heated to a minimum temperature of 55 °C through a plural component machine when spraying. The minimum substrate temperature is 40 °C. Note that these minimum temperature settings may vary due to atmospheric conditions.

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Equipment Specifications

Material Supply System

The proportioning pump shall be fed the individual components by a transfer pump. Normally a 3m 500 psi rated, nylon lined transfer hose connects each pump to the proportioner. There should also be a screen filter of about 80 mesh in place between the transfer pump and the proportioner.

Proportioning Pump

A plural 1:1 proportioning pump that uses a single air or hydraulic power source to drive two proportioning cylinders simultaneously. This balanced pumping action shall provide equal amount of both "A" and "B" components, by volume, to within an accuracy of $\pm 2\%$. The proportioning pump should be capable of developing a minimum of 1000 psi fluid pressure.

Material or Primary Heaters

Material heaters are necessary in the system to reduce and maintain material viscosities at optimum levels. These primary heaters are usually mounted on the proportioner and are connected in line after the proportioning pump. These heaters should be capable of raising the temperature of the material 20°C at the flow rate during normal application. They should be rated to withstand the maximum pressures the system can develop.

These heaters function better in the system if they are controlled accurately by a thermostat incorporated into the heater. In conjunction with the heated hose assembly (below) the spray foam equipment shall be capable of providing temperature control of the "A" and "B" components to within an accuracy of $\pm 1^\circ\text{C}$.

Heated Hose Assembly

Nylon lined hoses for each component rated for the proportioning pumps maximum pressures are used to transfer the material under pressure from the pump to the spray gun. These hoses should be heated and controlled thermostatically by temperature controls at the proportioner. The hose heat should be capable of maintaining the material temperature set by the primary heaters to the spray gun. The hose assembly is usually insulated with flexible pipe insulation and the air line necessary for the operation of the spray gun is incorporated into the package.

Spray Gun

Plural component spray gun utilising impingement mixing and a mechanical or air purge. Spray guns requiring solvent flushing, except as required for maintenance purposes, are not acceptable.

Materials Protection System

As spray foam chemicals are either hydroscopic or reactive to moisture a nitrogen gas purge or desiccant dryer system is used to prevent moisture vapour entering the drums through the small bung holes.

Other Equipment

Band heaters can aid in the conditioning of the materials in the containers to the optimum temperature. These heaters usually are flexible heating bands designed to be placed around the container.

Procedure

Pre-Conditioning

The materials should be maintained prior to any application at an optimum temperature of 25°C. This may require the use of band heaters.

Equipment Operation

Consult equipment manufacturer's instructions. Typical processing data are:

- i) operating pressure at 1000-1500 psi,
- ii) primary heaters at 55-60°C for both components depending on ambient conditions,
- iii) hose heaters (both components) at 50- 60°C depending on ambient conditions.

Application Guidelines

Substrate Preparation

The substrate should be clean, dry and in most cases primed. Do not apply spray foam insulation to damp substrates. Further, do not apply spray foam in rain, snow, fog, mist or when the substrate is less than 3°C above the dew point. Further, the substrate should be free of grease, oil, solvent or other contaminants which will interfere with proper adhesion and/or polyurethane insulation quality.

Application Temperatures

This product in combination with Endurathane 5005 is suitable for spraying on substrates with temperatures in the range of 20-50°C with good foam rise and surface texture.

Cure Time and Recoat Time

This product shall generally be applied in one or more passes at no more than 25mm and no less than 10mm thickness per pass. Passes shall be sharply lapped so as to minimise feathering. Further, feathering of thicknesses less than 10mm should be avoided on horizontal surfaces at edge terminations or in levelling of ponded areas.

Externally applied Endurathane SR52 insulation requires application of an appropriate membrane for protection from the weather. The first coat of membrane should be applied, weather permitting, no earlier than 1 hour and within 72 hours of Endurathane SR52 insulation application. If more than 72 hours elapse between application of insulation and the membrane application, the insulation surface shall be inspected for ultra-violet light and/or oxidation degradation which will be indicated by a dusting of the foam surface.

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Should such degradation occur, the insulation surface shall be brushed with a stiff bristle broom or mechanically scarfed and either primed (consult Polymer Developments Group Ltd for a recommendation) or treated with an additional pass of Endurathane SR52 prior to membrane application.

Storage of Materials

A Component (Endurathane 5005)

Endurathane isocyanates should be stored indoors at room temperatures of 20-25°C. Under these conditions the materials have a shelf life of one year.

Avoid storage at temperatures below 0°C (as it may cause some crystallisation) or above 50°C (as it can accelerate formation of insoluble solids). Partly used drums should be tightly sealed before storage to prevent ingress of moisture.

B Component (Endurathane SR52)

Endurathane SR52 resins have a shelf life of about 3 months at ambient conditions. For prolonged storage it is recommended that the temperature should not exceed 21°C. Partially used drums should be tightly sealed before storage to prevent loss of blowing agent and ingress of moisture.

General Safety Precautions

Refer to Material Safety Data Sheet for Endurathane SR52.

Endurathane resins contain HCFC blowing agent which has a boiling point of 28°C. Storage at elevated temperatures will result in pressure build-up within the drums, and for this reason product should be stored away from direct sunlight. When opening drums, care must be taken to release any internal pressure slowly.

Endurathane isocyanates will react with water to produce carbon dioxide gas. As a result drums contaminated with water should not be sealed.

Typical Liquid Properties

Appearance: Brown Yellow Liquid
Specific Gravity @ 21°C: 1.26
Viscosity @ 21°C: 200 cps

Typical reaction Data @ 21°C

	Machine Mix
Cream Time	1.5 sec
Rise Time	5 sec
Tack Free Time on rise	14 sec
Cure Time	4 hours

Property	Test Method Basis	Typical Result
Density (Sprayed in place)	ASTM D 1622 ISO 845-1988	32 kg/m ³
Compressive Strength (Perpendicular to use)	A.S.2498-3 (1993)	174 kPa (26 psi)
Closed Cell Content	A.S. 2498-7 (1993)	> 90%
Minimum Oxygen Concentration Or Flame Propagation	ASTM 2122.2 (1978)	29.1%
Early Fire Hazard Properties	AS1530 Part 3 (1989) Ignitability Index (0-20) Spread of Flame Index (0-10) Heat Evolved Index (0-10) Smoke Developed Index (0-10)	30-35 mm sample 12 0 1 5
Fire Behaviour of Building Materials Classification	DIN 4102 Part 1 (1981)	B2
Thermal Conductivity, Aged	ASTM C518-91	0.021 W/m°C
Dimensional Stability	AS2498.6 (1993) 14 days exposure at: -25°C +70°C 100% RH +100°C Dry	% Change Length Width Thickness 0.2 0.0 0.4 4.7 5.1 0.8 3.5 3.4 1.8

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