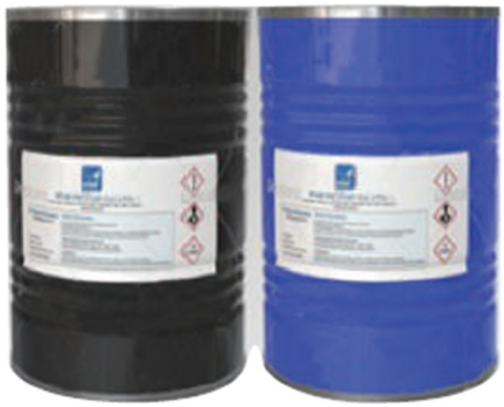
# Product Data Sheet



## STARPROOF PU-44

**Two component, high quality, spray applied Polyurethane Insulation**

### Uses:

- Insulation of Roofs, Walls and Basements
- Formation of a seamless barrier against water vapor and air
- Filling of Voids

### Product Description

STARPROOF PU-44 is a Two Component, spray applied, HFC blown, Polyurethane based rigid closed cell foam system for insulation of Roofs, Walls and Basement. The urethane foam creates a seamless monolithic barrier against water vapor and air. The system offers good mechanical properties, dimensional stability and is CFC free, using only blowing agents compliant with the environmental regulations at present.

### Advantages

- Light weight, seamless insulation system
- Machine controlled and applied for efficient and fast application rates
- Provides thermal insulation & energy savings
- Provides a combination of thermal insulation and supports waterproofing in combination with suitable STAR Technology waterproofing products.
- Fast curing = Fast return to service
- Adheres to most common substates, coated steel, concrete, bricks, wood and particle boards

### Standard Compliance

- IS 12432-3 (2002) Application of Spray Applied Insulation – Code of Practice, Part 3: Polyurethane/Polyisocyanate (CHD 27: Thermal Insulation)
- Type-1 foam as per Table-1 of ASTM D 7425

### Typical Technical Properties

| STARPROOF PU-44 | Typical Values @ Laboratory Conditions |
|---|---|
| Form | 2K – Liquid (MDI and Polyol) |
| Color | Part A (ISO) = Yellow/Brown |
| | Part B (Polyol) = Clear |
| Mix Ratio | Volume: Part A/Part B = 1:1 |
| | Weight: Part A/Part B = 1.13:1 |
| Core Density (ASTM D1622) | (approx..) 45 Kg/m³ |
| Comp. Strength (ASTM D1621) | > 250 kpa |
| Thermal Cond @ 25˚C (ASTM C518) | (approx..) 0.021 W/m.K |
| Water Vapor Transmission (Perm. – Inch) (ASTM C518) | < 2 |
| Fire Resistance (DIN 41012) | B3 |
| Specific Gravity @ 20˚C | Part A (ISO): 1.24 |
| | Part B Polyol): 1.16 |
| **Typical reaction Time and Density** | |
| Cream Time | 3 – 6 sec |
| Tack Free Time | 9 – 11 sec |
| Free Rise Density | (approx..) 38 Kg/m³ |
| **Recommended Processing Parameters** | |
| Block & Hose Temp | 40 – 45 ˚C |
| Pressure | 100 – 110 bar |

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## Application

Prior to application the following must be considered and observed to reach best results in quality as well as yield:

- All substrates must be free of dirt, soil and grease
- Moisture in any form: Wet concrete, Excessive Humidity (>85% R.H.), rain, fog, ice or condensation will react chemically and adversely affect system performance & Physical properties of finished good
- Climatic conditions must be recognized and anticipated to ensure highest quality and expected yield
- Ambient Air and substrate temperatures, moisture and wind velocity are critical determinants of foam quality
- Extreme ambient and substrate temperature influence the chemical reaction – affecting yield, adhesion and properties

STARPROOF PU-44 is Spray-applied using a plural-component proportioner with air purge or mechanical purge spray gun.

STARPROOF PU-44 should be applied at a constant rate using a standard cross-hatch spray pattern to achieve the desired coverage rate and required thickness.

STARPROOF PU-44 should be applied evenly resulting in a smooth finish, avoiding any ridges.

STARPROOF PU-44 is designed to immediately foam upon hitting the substrate – down ward flow of material is stopped. Recommended thickness per layer is 25mm.

Precautions should be taken to prevent damages to adjacent areas from uplifted overspray.

### Cleaning:

Equipment can be cleaned with STAR Technology equipment cleaner – any mixed material must be cleaned immediately.

Cured material can only be removed mechanically.

### Packing & Coverage:

| Product | Pack Size | Theoretical average Coverage |
|---|---|---|
| STARPROOF PU-44 Part A (ISO) | 250 Kg drum | Approx.. 1.7 Kg/m² at 3cm thickness |
| STARPROOF PU-44 Part B (Polyol) | 220 Kg drum | |

## Directions for Processing & Equipment

STARPROOF PU-44 is designed for processing on high and low pressure machines. Mixing ratios of 1:1 by Volume must be possible. Machine parameters must be selected properly in order to guarantee proper mixing.

2:1 transfer pumps are recommended for material transfer from container to the proportioner. The plural component proportioner must be capable of supplying each component within ± 2% of the desired 1:1 mixing ratio by volume. Hose heaters should be set to deliver 50°C to 55°C materials to the spray gun. These settings will ensure thorough mixing in the spray gun mix chamber in typical applications. Optimum hose pressure and temperature will vary with equipment type and condition, ambient and substrate conditions, and the specific application. Some equipment may require you to heat drums to achieve optimum material temperature. It is the responsibility of the applicator to properly interpret equipment technical literature, particularly information that relates acceptable combinations of gun chamber size, proportioner output, and material pressures. The relationship between proper chamber size and the capacity of the proportioner's pre-heater is critical. Contact your machine supplier representative for specific recommendations, pricing, and availability of spray and auxiliary equipment.

### Limitations / Caution:

Applicators should ensure the safety of the jobsite and construction personnel by posting appropriate signs warning that all "hot work" such as welding, soldering, and cutting with torches should take place no less than 35 feet from any exposed foam. If "hot work" must be performed all spray polyurethane foam should be covered with an appropriate fire or welder's blanket, and a fire watch should be provided.

For use on plastic surfaces, adhesion testing should be carried out prior to application.

Do not proceed with application if substrate is below 15 ℃ or is wet. If the surface temperature is < 3 ℃ above the dew point or if precipitation is imminent.

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## Labeling and REACH applications

This product data sheet is only valid in conjunction with the latest edition of the corresponding Safety Data Sheet. Any updating of safety-relevant information in accordance with statutory requirements will only be reflected in the Safety Data Sheet, copies of which will be revised and distributed. Information relating to the current classification and labeling, applications and processing methods and further data relevant to safety can be found in the currently valid Safety Data Sheet.

## Health and Safety

Respiratory protection is MANDATORY! Contact HP Systems for a copy of the Model Respiratory Protection Program developed by API or visit their website at www.polyurethane.org. Avoid contact with skin, eyes, and clothing. Open containers carefully, allowing any pressure to be relieved slowly and safely. Wear chemical safety goggles and rubber gloves when handling or working with these materials. In case of eye contact, immediately flush with large amounts of water for at least fifteen minutes, consult a physician immediately. In case of skin contact, wash area with soap and water. Wash clothes before reuse.

## Guide Formulation

| | By weight | By Volume |
|---|---|---|
| **STARPROOF PU-44 POLYOL** | 100 | 100 |
| **STARPROOF PU-44 Isocyanate** | 113 | 100 |

## Foaming Data:

Foaming data by the hand mixing method with 3000 rpm at raw material temperature of 23°C.

| | | |
|---|---|---|
| **Cream Time** | 4 ± 1 | Seconds |
| **Tack free Time** | 10 ± 1 | Seconds |
| **Free Rise Density** | 30 ± 1 | Kg/m³ |
| **Applied Density approx..** | 45 | Kg/m³ |

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|---|---|
| **Additional Information**<br>STAR manufactures a wide range of construction chemicals and specialty products for various applications divided into the following product sections:<br><br>1. **Waterproofing Products**<br>2. **Sealants, Grouts, and Joint Fillers**<br>3. **Adhesives**<br>4. **HVAC – Adhesives, Coatings & Sealants**<br>5. **Flooring Products**<br>6. **Industrial Adhesives (i.e. Paper Industry)**<br>7. **Accessories**<br><br>STAR Technology provides various technical information such as detailed method statements, specification clauses, application manuals and technical support both in contractors and consultant's offices as well as construction sites.<br><br>For further information on these products and systems kindly visit our website or contact your local STAR representative. | |