

SPR 230-S

Closed Cell, Rigid Spray Polyurethane Foam

1 - Description

AKFIX SPR 230-S is a two component (polyol - isocyanate), rigid spray polyurethane foam system with closed cell structure which is applied with high pressure and heated special spray machines for heat insulation purpose. Due to its smooth surface, the waterproofing material consumption to be applied on it decreases about 25-40%.

AKFIX SPR 230-S contains ecological blowing agents (HFC) that do not damage the ozone layer (ODP = 0).

2 - Properties & Features

- Two component
- Closed cell structure
- B2 (E) fire reaction
- Easy and fast application (~ 1000 m² per day)
- Seamless, no heat bridge
- Self-adhesive properties on many surfaces (concrete, wood, metal etc.)
- Does not grow insect and fungus
- Excellent thermal insulation for a long time (70- 80 years)
- High energy saving
- Water vapor permeability
- Excellent mechanical properties
- Low storage and transportation cost
- Partial sound insulation

3 - Fields of Application

- Foundation and curtain concrete
- Roof
- Floor
- Wall
- Ceiling
- Attic
- Chicken farms and barns
- Ships and storage tanks
- Cold storage room
- Other thermal insulation areas.

4 - Product Information

| | |
|--------------------|--|
| Packacking | 480 kg set (250kg PMDI) + (230kg Polyol Blend) |
| Shelf Life | 6 months |
| Storage Conditions | Store in cool and dry conditions between +15°C and +25°C |

5- Technical Data

| Foam | Method / Conditions | Polyol Blend | Polymeric MDI |
|---------------------|---------------------|------------------|------------------|
| Physical Appearance | – | Liquid | Liquid |
| Color | – | Yellow | Yellow |
| Density | ASTM D 891 / 20°C | 1,13 ±0,03 gr/ml | 1,23 ±0,03 gr/ml |
| Viscosity | ASTM D 4878 / 25°C | 260±50 cps | 220-250 cps |
| NCO Content | ASTM D 5155 | - | 30-31 % |
| OH Content | ASTM D 4274 | 280-300 mgKOH/g | - |

| Reaction Parameters | Unit | Data |
|---------------------|-------------------|-------|
| Cream Time | sec. | 3-5 |
| Gel Time | sec. | 8-10 |
| Tack Free Time | sec. | 10-12 |
| Free Rise Density | kg/m ³ | 30±1 |

* Tests were performed at 15°C under laboratory conditions.

Finished Product Features:

| Test Name | Unit | Method | Data |
|----------------------|---------|---------------|------------|
| Closed Cell Content | % | EN 4590 | ≥ 90 |
| Fire Reaction | – | EN 13501 | E |
| | | DIN 4102 | B2 |
| Service Temperature | °C | - | -30 to 100 |
| Thermal Conductivity | (W/m.K) | EN 12667 | 0,021 |
| Compressive Strength | kPa | UNI 6350-1968 | 210 |

6 - Application Conditions

- The application surface should be clean and dry, the elements that prevent adhesion should be cleaned from the surface. Do not wash to clean the surface.
- Recommended temperature of application surface is between 5°C and 40°C.
- The recommended air temperature is between 10°C and 40°C.
- It is not recommended to apply in windy weather.
- Recommended component temperatures and machine settings are as follows.

| Parameters | Data |
|---------------------------|------------|
| Polyol Blend Temperature | 40-55°C |
| Polymeric MDI Temperature | 40-55°C |
| Hose Temperature | 35-55°C |
| Machine Pressure | 80-110 bar |

* Settings may vary depending on weather conditions and machine specifications.

- In order to obtain mixture in the right ratio, the filters of the machine should be cleaned and pump maintenance should be done. Improper mixing ratio of components results in low quality foam formation. In addition, the improper mixing ratio causes the adhesion problem, the increase in consumption, the deterioration of the cell structure and the foam not reaching the desired hardness.

| Mixing Ratio | Unit | Data |
|------------------------------|-----------|-----------|
| Polyol Blend / Polymeric MDI | By volume | 100 / 100 |
| | By weight | 100 / 110 |

7 - Directions for Use

- AKFIX SPR 230-S is applied in layers to the surface to be thermal insulation until the desired thickness is obtained. Application is made in different thicknesses according to the regional climate conditions and application areas.
- The ideal application thickness for each layer is between 1.0 cm and- 2.0 cm. If thicker than 2.0 cm is applied, blistering may occur due to exothermic reaction.
- Since the surface is generally cold in the first layer application, the reaction is slow and the desired thickness cannot be obtained. Therefore, the first coat application is usually applied as a primer layer. In the second layer application to be applied, the desired thickness will be obtained more easily because the surface is warmer.
- In outdoor applications which is under direct sunlight, the foam color becomes darker after a period of time, the foam surface becomes dusty and the foam becomes more brittle. Polyurea (AKFIX POLYUREA Series), liquid PU membrane (AKFIX PU MEMBRANE Series) or acrylic membrane (AKFIX EM600) must be applied to protect the foam from UV rays.

8 - Consumption

- Material consumption may vary for many reasons. These reasons are the air temperature, application surface temperature, machine temperature settings, mixing ratio, number of application layers and so on.
- According to the application thickness and the number of application layers the theoretical consumption table is as follows.

| Application Thickness | Consumption (kg) |
|-----------------------|------------------|
| 3 cm | 1,50 |
| 5 cm | 2,50 |
| 10 cm | -- |

* The applied layer thickness is between 1,00 cm - 1,50 cm.

9 - Remarks & Restrictions

- AKFIX SPR 230-S components are moisture sensitive. For this reason, it should be stored in original, unopened and undamaged packages, in store which is dry and not under direct sunlight.
- Storage of the components at low temperature can lead to increased viscosities of the components resulting in difficulty in application and crystallization of polymeric MDI.
- Storage of the components at high temperature causes evaporation of the blowing agent in polyol mixture and swelling of the barrel. In addition, when the pump is placed in the drum, it causes the material to bubble uncontrollably.
- The lids of the completely non-consumed drums should be closed tightly to prevent air entrance to barrel.
- Clean all tools and application equipment with suitable cleaner solvent immediately after use. Hardened and cured material can only be cleaned by mechanical methods.

- Read the MSDS form carefully before using the AKFIX SPR 230-S product or when a problem is encountered and follow the written instructions.
- Personal protective equipment and full face mask with appropriate filter should be used during application.
- There must be sufficient air circulation in the application area.
- Give empty barrels to authorized hazardous waste collector companies.

10 - Safety

Contains Diphenylmethane-4,4'-Diisocyanate. Harmful by inhalation. Irritating to eyes, respiratory system and skin. Do not breathe spray/vapor. Wear suitable protective clothing and gloves. Use only in well-ventilated areas. Pressurized container. Keep away from direct sunlight and do not expose temperatures over 50°C. Do not pierce or burn, even after use. Keep away from sources of ignition, no smoking. Keep out of the reach of children.

11 – Disclaimer

The technical data contained herein is based on our present knowledge and experience and we cannot be held liable for any errors, inaccuracies, omissions or editorial failings that result from technological changes or research between the date of issue of this document and the date the product is acquired. Before using the product, the user should carry out any necessary tests in order to ensure that the product is suitable for the intended application. Moreover, all users should contact the seller or the manufacturer of the product for additional technical information concerning its use if they think that the information in their possession needs to be clarified in any way, whether for normal use or a specific application of our product. Our guarantee applies within the context of the statutory regulations and provisions in force, current professional standards and in accordance with the stipulations set out in our general sales conditions. The information detailed in the present technical data sheet is given by way of indication and is not exhaustive. The same applies to any information provided verbally by telephone to any prospective or existing customer.