

Poliuretán[®] Spray RF-351-C

Isocianato H

DESCRIPTION

Poliuretán[®] Spray RF 351-C is a two-component polyurethane system (polyol and isocyanate) containing HFC^s and formulated to obtain closed-cell rigid foams to be sprayed-in-place for thermal insulation.



AENOR N CERTIFICATION



Poliuretán[®] Spray RF 351-C system has been awarded with the **AENOR N Certificate** to product quality for thermal insulation materials and their use in building and reaction to fire EuroClass **Cs3d0**, according to the contract number: 020/000186.



COMPONENTS

- COMPONENT A:** **Poliuretán Spray RF-351-C**
Mixture of polyols containing catalysts, flame-retardants and foaming agents
- COMPONENT B:** **ISOCIANATO H**
MDI polymeric (Methane diphenyl diisocyanate)

USES

Poliuretán[®] Spray RF 351-C system is applied by spraying with a high pressure equipment fitted with heating, with a mixing ration of 1:1 in volume. The main applications are the thermal insulation of building closings, houses (partitioning), industrial buildings, roofs, farms, ships, tanks, cool stores, etc.:

CONDITIONS OF USES

For the preparation and application of **Poliuretán[®] Spray RF-351-C** system, the AISLA Rules on the Application of Insulating Material, should be taken into consideration. (www.aisla.org).

The surfaces must be clean, dry and free of dust and grease to ensure good adherence of the foam to the substrate; if the substrate is metallic it must also be free of oxide and rust. However, a suitable primer could be needed to guarantee good adherence on metal substrates.

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The foam performance is influenced by a great number of factors which are listed below:

- Weather conditions: temperature and humidity of the atmosphere and the substrate surface, as well as other environmental factors (wind, etc.)
- Adjustment of the machinery, a proper ratio.
- Application type: vertical, horizontal, roofs.
- Application process: coat thickness, varnish application.

GENERAL INSTRUCTIONS

Coat thickness is perfectly controllable and can be modified by varying the speed of application and/or the gun mixing chamber; thickness should be between 10 and 20mm.

It must be taken into account that the foam performance is greater the lower the number of coats applied for the same thickness. Nevertheless, it is not convenient to apply thicknesses above 20 mm, in order problems that may take place due a high exothermic reaction. To avoid the horizontal growth of foam in the implementation of this system, it is advisable to project a thin (5 mm) after the coat of primer, then project normally.

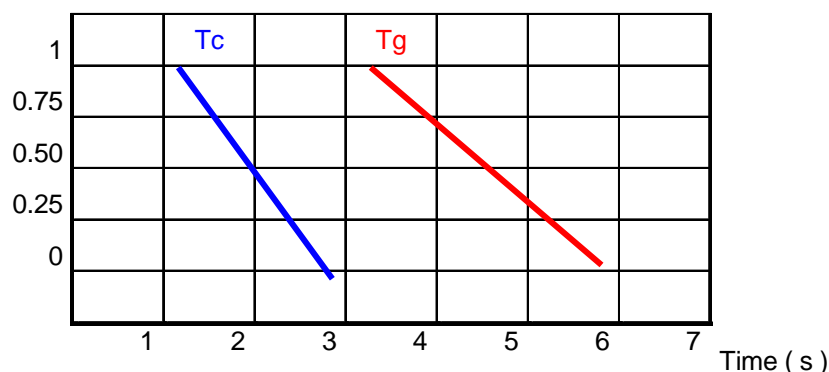
On cold surfaces, the first coat takes longer to react and growth is not usually 100%. Whereby, in these cases, the first coat should be a varnish for a heat development, which should heat the substrate providing a proper foaming of the second coat.

The recommended temperature in hoses is 30 to 50°C, depending on the weather conditions. The minimum recommended substrate temperature during spraying is 5°C.

In certain unfavourable atmospheric conditions (cold substrates, low temperature, high humidity, etc.) it is advisable and approved the addition of about 0.5% to 1% of **Activator 7014** in the polyol, in this case the drum must be mechanically agitated to provide an appropriate homogenisation (varying the cream time **-tc-** and gel time **-tg-** according to the % of activator added, see attached graphic).

The addition of any type of catalyst other than the catalyst approved by **Synthesia Internacional S.L.U.** is neither recommended nor authorised since it may affect the characteristics of the foam and produce unevenness in the process.

% Activator



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PROTECTION OF THE FOAM

Rigid PUR foams applied outdoors are darkened and brittle by the action of UV radiation. Thus, all foams that are to be used in these conditions must be protected with a suitable coating (acrylics, butyl rubber, vinyl, asphalt, mono and bi-component polyurethanes, etc.) Synthesia Internacional, S.L.U., supplies an acrylic coating (AQ 3300), a urethane mono-component (MU 7950) and urethane bi-components URESpray F-75.

The ideal coating is one which meets the following requirements:

- a.- Physical properties:
 - Resistance to atmospheric and chemical agents.
 - Good tensile strength.
 - Good foam adherence.
 - Resistance to UV radiation.
- b.- Regarding the application:
 - Fast drying.
 - Possibility of spray gun application.

COMPONENTS CHARACTERISTICS

| Characteristics | Units | H | RF-351-C |
|----------------------|-------------------|------|----------|
| Specific weight 25°C | g/cm ³ | 1,23 | 1,42 |
| Viscosity 25° C | mPa.s | 230 | 225 |
| NCO content | % | 31 | - |

SYSTEM SPECIFICATIONS

Measurement carried out in a test recipient at 22°C and at the mix ratio indicated within the company's standard method (MAN - S01) which is in accordance to the **AENOR N CERTIFICATE** method.

| | | | |
|-----------|--------|-------------|-----------|
| Mix Ratio | A / B: | 100/100 | in volume |
| | | 120/100 ± 2 | in weight |

| Characteristics | Units | RF-351-C |
|-----------------|-------|----------|
| Cream time | s | 3 ± 1 |
| Gel time | s | 6 ± 2 |
| Tack free time | s | 8 ± 3 |
| Free density | g / l | 34 ± 3 |

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FOAM SPECIFICATIONS

| Characteristics | | Units | RF-351-C |
|--|----------------------|--------------------------|--------------------------|
| Apparent Core Density | EN 1602 | kg/m ³ | 35 - 45 |
| Closed Cell Content | ISO-4590 | % | ≥90 |
| Bending Strength Deflection | UNE 53204 | Kg/cm ² mm | 2,2 15 |
| Thermal resistance and thermal conductivity | EN 12667 EN 12939 | | See performance chart |
| Reaction to fire | EN 13501-1 | Euroclass | C-s3d0 |
| Water absorption (W _p) | EN 1609 | Kg/m ² | ≤0,2 |
| Water vapour resistance factor (μ) | EN 12086 | - | ≥60 |

Performance chart

Sprayed insulation foam product CCC4 system. Diffusion open faces.

| e _p | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| λ _D | 0,028 | 0,028 | 0,028 | 0,028 | 0,028 | 0,028 | 0,028 | 0,028 |
| R _D | 0,90 | 1,05 | 1,25 | 1,40 | 1,60 | 1,80 | 1,95 | 2,15 |

e_p Thickness; mm
λ_D Declared aged thermal conductivity; (W/mK)
R_D Thermal resistance level; (m²K/W)

FIRE REACTION TEST

| Characteristics | | Units | RF-351-C |
|---|-----------|-----------|----------|
| * Fire reaction 50 mm with 7 mm naturvex support | UNE 23727 | Class | M1 |
| ** Fire resistance Euroclass SBI | | Euroclass | C s3 d0 |

* Certificates issued by GAIKER report references: P-03-377/1

** Certificates issued by APPLUS included in report references 14-8593-761-1, 14-8593-761-2

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STORAGE RECOMEMNDATIONS

VERY IMPORTANT: Poliuretano[®] RF Spray system components are sensitive to humidity and must be stored in hermetically sealed drums or containers. The storage temperature must be kept between +15 and +25°C.

Lower temperatures may build up crystallizations in the isocyanate. Higher temperatures may cause alterations in the polyol, loss of blowing agent, greater consumption and swelling of the drum.

To maintain the aforementioned characteristics of the systems, the drums should be hermetically sealed when not in use.

Properly stored, the self life is 3 months for A-Component (polyol) and 9 months for B-Component (isocyanate).

SAFETY RECOMMENDATIONS

Poliuretano[®] RF Spray system does not represent significant risks if handled properly. Avoid contact with eyes and skin. The instruction given in the Safety Data Sheet must be followed during the manufacturing and handling of the system.

SUPPLY

Normally, the product is supplied in non-returnable steel drums of 220 litres (blue for Component A and black for Component B).

ANNEX: APPLICATION TROUBLESHOOTING

Our Technical and Commercial service will provide you with guidance in any queries you may have on the preparation of this product. Nevertheless, some problems that may appear during the process are outlined below.

| Problem | Possible cause | Solution |
|----------------------------------|--|--|
| Uneven atomisation. | Gun needle wrongly adjusted or dirt in the mixing chamber. | Adjust the position. Clean the chamber. |
| Atomisation with colour streaks. | Bad mixing due to obstruction of components or differences in viscosity. | Check pressures, fix obstruction. Adjust and increase temperatures. |

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| Poor and closed atomisation. | High component viscosities. Cold atmosphere. | Increase temperatures and pressures. |
| Atomisation too open and forming mist. | Too much air in gun tip. Excessive mixing pressure. | Reduce air passage. Reduce the pressure a little. |
| The material takes too long to react, it falls off. | Cold surface. | Increase hose heating. |
| Material too fast, uneven finishing with mist. | Pressure excess. | Reduce air pressure in the gun and mixture. |
| The material is granulated as it gets on the surface and it is obstructing the gun. | Temperature excess. | Reduce hose heating. |