

Poliuretano® Spray
S-35RGB/ECO**Isocianato**
H**DESCRIPTION**

Poliuretano® Spray S-35RGB/ECO is a two-component polyurethane system (polyol and isocyanate) formulated to obtain closed-cell rigid foams to be sprayed-in-place for thermal insulation. **Poliuretano® Spray S-35RGB/ECO** was developed using the 4th generation of blowing agents which leads to a very low Global Warming Potential. **Poliuretano® Spray S-35RGB/ECO** provides an excellent performance as a Radon Gas Barrier.

COMPONENTS

COMPONENT A: **Poliuretano Spray S-35RGB/ECO**
Mixture of polyols containing catalysts, flame-retardants and blowing agents (containing HFO).

COMPONENT B: **ISOCIANATO H**
MDI polymeric (Methane diphenyl diisocyanate).

**USES**

Poliuretano® Spray systems are applied by spraying with a high pressure equipment fitted with heating, with a mixing ration of 1:1 in volume. Their main applications are the thermal insulation of building closings, houses (partitioning), industrial buildings, farms, etc.

Advantages in Application:

- Total suppression of thermal bridges. The insulation presents neither joints nor cracks, since it is a continuous insulation.
- Good adherence to the substrate. No glues or adhesives are needed for the installation.
- Possibility of insulation and waterproofing in a single process. This characteristic is due to its closed-cell and watertight structure, as well as its continuous application, which means that no joints are formed.
- Mobility. It is possible to get to any site quickly without having to transport or store bulky products such as other insulating material.
- Cavity-sealing for sound insulation.
- Increase of the living area compared with other insulating material.

CONDITIONS OF USES

For the preparation and application of polyurethane Spray systems, it is recommended to take into account EN 14315-2 << Thermal insulating products for buildings - In-situ formed sprayed rigid polyurethane (PUR) and polyisocyanurate (PIR) foam products - Part 2: Specification for the installed insulation products>>

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. A suitable primer is recommended 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 30mm.

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 30 mm, in order to avoid blistering and problems that may take place due a high exothermic reaction.

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.

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 (Acuthan AQ), and urethane bi-components POLIURETANO® URESPRAY (System F-75 and F-100). 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.

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COMPONENTS CHARACTERISTICS

Characteristics	Units	H	S-35RGB/ECO
Specific weight 25°C	g/cm ³	1,23	1,16
Viscosity	cPs	150-250 (25°C)	200-450 (22°C)
NCO content	%	30-32	-

SYSTEM SPECIFICATIONS

Measured in a test beaker at 22°C, in the indicated mixing ratio. The test is carried out according to our standard (MANS-01) which is in accordance to the AENOR N CERTIFICATE method.

Mixing Ratio A / B: 100/100 in volume
100/100 ± 4 in weight

Characteristics	Units	S-35RGB/ECO	S-35RGB/ECO -W
Cream time	s	3 ± 1	3 ± 1
Gel time	s	8 ± 3	6 ± 2
Tack free time	s	9 ± 3	8 ± 3
Free density	g / l	35 ± 3	35 ± 3

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FOAM SPECIFICATIONS

Characteristics		Units	S-35RGB/ECO
Apparent Core Density	EN 1602	kg/m ³	38-48
Closed Cell Content	ISO-4590	%	≥ 90
Thermal resistance and thermal conductivity	EN 12667 EN 12939		See performance chart
Compressive strength	EN 826	KPa	≥ 200
Dimensional stability ⁽²⁾	EN 1604	-	DS(TH)3
Reaction to fire	EN 13501-1	Euroclase	E ⁽¹⁾
Water absorption by partial immersion	EN 1609	Kg/m ²	≤ 0,2
Water vapour transmission (μ)	EN 12806	-	≥ 70

⁽¹⁾ Result of valid test for any applied thickness (60 mm of thickness)

⁽²⁾ Not declared level

Performance chart

Sprayed insulation foam product CCC4 system. Diffusion open faces.

e _p	25	30	35	40	45	50	55	60	65
λ _D	0,028	0,028	0,028	0,028	0,028	0,028	0,028	0,028	0,028
R _D	0,90	1,10	1,25	1,45	1,65	1,80	2,00	2,20	2,35
e _p	70	75	80	85	90	95	100	105	110
λ _D	0,028	0,028	0,026	0,026	0,026	0,026	0,026	0,026	0,026
R _D	2,55	2,75	3,05	3,25	3,45	3,65	3,85	4,00	4,20
e _p	115	120	125	130	135	140	145	150	155
λ _D	0,026	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025
R _D	4,40	4,80	5,00	5,20	5,40	5,60	5,80	6,00	6,20
e _p	160	165	170	175	180	185	190	195	200
λ _D	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025
R _D	6,40	6,60	6,80	7,00	7,20	7,40	7,60	7,80	8,00

e_p espesor de la espuma en mm

λ_D conductividad térmica envejecida declarada (W/mK)

R_D Nivel de resistencia térmica (m² K/W)

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Radon Gas Barrier characteristics:

Characteristics		Units	S-35RGB/ECO
Radon diffusion coefficient (D) ⁽¹⁾	Method HPA-RPD 047	m ² s ⁻¹	< 1.5 · 10 ⁻¹⁰
Radon Transmittance P ⁽²⁾	SP Method nº 3873	m/s	< 5 · 10 ⁻⁹
Radon Resistance Z ⁽²⁾	SP Method nº 3873	s/m	> 2 · 10 ⁸

⁽¹⁾ Certified by LaRUC in Cantabria (March 19, 2015). Laboratory accredited by English Public Health. HPA-RPD: Validation Scheme for Organisations Making Measurements of Radon in Dwellings.

⁽²⁾ Certified by SP Technical Research Institute of Sweden (July 25, 2015).

SAFETY RECOMMENDATIONS

Poliuretán® 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).

STORAGE RECOMEMNDATIONS

VERY IMPORTANT: Poliuretán® 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 considerably increase the polyol viscosity, rendering it difficult to apply, and 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, as well as uncontrolled foaming when the pump nozzle is placed into the drum. In order to avoid the latter, it is recommended to have the drums set-down for a certain period in a ventilated and fresh place before using them.

In case the drums are supplied with white plastic caps, special care should be taken during the handling of these caps as they are more fragile than the metallic ones and could be deformed.

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

Properly stored, the self-life is 4 months for component A; and 9 months for Component B (isocyanate).

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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.
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.
Blistering.	Coatings thickness higher than 20mm.	Apply thinner coatings.