

Poliuretano[®] Spray

DIVISION:**PU SYSTEMS**

(Summer Formulation NO HCFC)

DESCRIPTION

Poliuretano[®] Spray are two-component polyurethane systems (polyol and isocyanate) formulated to obtain closed-cell rigid foams to be sprayed-in-place for thermal insulation.

Poliuretano[®] Spray systems contain approved ecological foaming agents (**HFCs**) that are not ODP (Ozone Depletion Potential) and are mainly used to obtain excellent thermal insulation.

AENOR N CERTIFICATION



Poliuretano[®] Spray systems, composed of **CAMARAS**, **CAMARAS PLUS**, **CUBIERTAS** and **IMPERMEABLE**, have been awarded with the **AENOR N Certificate** to product quality for thermal insulation materials and their use in building, according to the certificate numbers: 020/002415, 020/002417, 020/002419 and 020/002421 valid until 27/01/2009.



DESCRIPTION OF THE COMPONENTS

COMPONENT A: Mixture of polyols containing catalysts, flame-retardants and foaming agents.

COMPONENT B: MDI (Methane diphenyl diisocyanate).

DENOMINATION OF COMPONENTS

COMPONENT A: POLYOLS **CAMARAS, CAMARAS PLUS, CUBIERTAS, IMPERMEABLE.**

COMPONENT B: ISOCYANATE **H.**

APLICACIONES

Poliuretan[®] 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, ships, tanks, cool stores, etc :

Applied Density (g/l)	System	Application type
33 – 37	CAMARAS	Building, Farms, etc.
37 – 43	CAMARAS PLUS	Tanks , Ships, etc
43 – 50	CUBIERTAS	Roofs, Flooring, etc.
50 – 60	IMPERMEABLE	Roofs, Flooring, 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 – absorption.

APPLICATION CONDITIONS

For the preparation and application of Poliuretán® Spray systems, the ATEPA Rules on the Application of Insulating Material should be taken into consideration. (www.atepa.org).

Cavitations of the pumps may cause a decompensation of the polyol mixture/isocyanate ratio producing a foam with poor quality. In order to avoid such a problem, equipment suppliers recommend the use of separate pumps.

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 as well as a minimum applied density of 40 Kg/m³.

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 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.

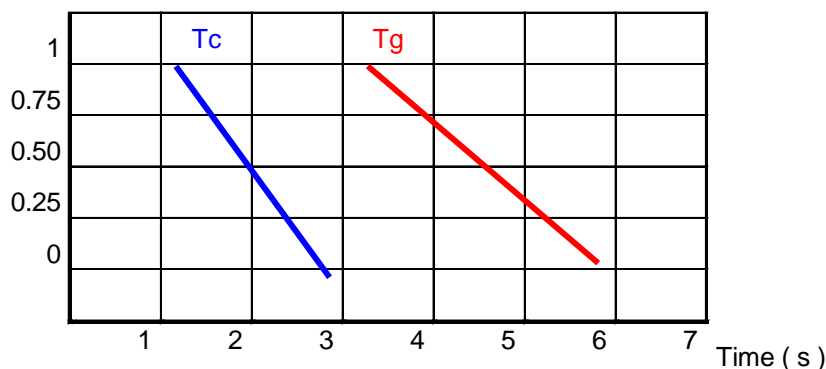
The recommended temperature in hoses is 30 to 50°C, depending on the weather conditions. The minimum recommended substrate temperature during spraying is 5°C.

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 2421*** 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 Española S.A.** is neither recommended nor authorised since it may affect the characteristics of the foam and produce unevenness in the process.

% Activador



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 Española S.A.**, supplies an acrylic coating (**AQ 3300**), a urethane mono-component (**MU 7950**), and urethane bi-components **POLIURETAN® URE SPRAY (System F-75)** and **POLIURETAN® PU SPRAY**. 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.

COMPONENT CHARACTERISTICS

CHARACTERISTICS	UNIT	H	CAMARAS	CAMARAS PLUS	CUBIERTAS	IMPERMEAB
Specific weight at 25°C	g/cm ³	1,23	1,17	1,17	1,17	1,17
Viscosity at 25°C	MPa.s	230	300	350	400	450
NCO Content	%	31	-	-	-	-

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.

SPECIFICATION	UNIT	CAMARAS	CAMARAS PLUS	CUBIERTAS	IMPERMB.
CREAM TIME	s	3 ± 1	3 ± 1	3 ± 1	3 ± 1
GEL TIME	s	8 ± 2	8 ± 2	8 ± 2	8 ± 2
FREE DENSITY	g / l	30 ± 2	33 ± 2	38 ± 2	44 ± 3

CHARACTERISTICS	UNIT	CAMARAS	CAMARAS PLUS	CUBIERTAS	IMPERMB.
Applied average density UNE-EN 1602 (Annex C)	Kg/m ³	33 - 37	37 - 43	43 - 50	50 - 60
Compressive Strength* UNE-EN 826	KPa	ND	ND	209	235
Flexural Strength UNE 53204 Arrow	Kg/cm ² mm	2.5 15	3.5 15	4 15	5 15
Water absorption DIN 53428 (1 week)	% Vol.	< 5	< 5	< 5	< 5
Dimensional Stab. -30°C 24 hours 60°C	% Vol.	< 1 < 5	< 1 < 3	< 1 < 2	< 1 < 2
R- steam water aged value (30 days at 50 C°) UNE-53226	MN.s/g.m	400-600	400-600	400-600	400-600
Results of impermeability to water** UNE-EN 1928:2000	-----	satisfactory	satisfactory	satisfactory	satisfactory

****Certificate issued by CIDEMCO Laboratory included in file reference Num: 12462.**

THERMAL CONDUCTIVITY

CHARACTERISTICS	UNIT	CAMARAS	CAMARAS PLUS	CUBIERTAS	IMPERMEB.
Closed cell content ISO-4590	%	>90	>90	>90	>90
Thermal Conductivity coefficient of calculation	W/m°C	0.028	0.028	0.028	0.028
* Thermal Conductivity coefficient 20°C 10 days UNE-92202/89	W/m°C	0.019	0.020	0.021	0.019

* Certificate issued by CEDEX Laboratory included in file references: E-S-422/03 and E-S-22/04

FIRE REACTION TEST

CHARACTERISTICS	UNIT	CAMARAS	CAMARAS PLUS	CUBIERTAS	IMPERMB.
FIRE reaction UNE 23727	Class	M3	M3	M3	M3
	Thickness	60 mm with 7 mm asbestos support			
*FIRE reaction UNE EN ISO 11925-2:2002	Euroclass	E	E	E	E
	Thickness	Valid for any thickness			

*Certificates issued by AFITI-LICOF included in report references: 0072T03-C1, 0073T03-C1, 0074T03-C1 y 0075T03-C1.

SAFETY RECOMMENDATIONS

Poliuretan[®] 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 OF THE PRODUCT

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

STORAGE RECOMMENDATIONS

VERY IMPORTANT: Poliuretan[®] 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 3 months for Component A (polyol) and 9 months for Component B (isocyanate).

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.