

Poliuretán Spray RF-351C HFO

Isocianato H

DESCRIPTION

A polyurethane system made up of two components – a polyol mixture and an isocyanate – that is sprayed in-situ to form rigid closed-cell foams for thermal insulation purposes and high fire resistance.



Poliuretán Spray RF-351C HFO has been formulated using hydrofluoroolefins (HFOs) – fourth-generation foaming agents – which means its contribution to global warming is very low.

AENOR N MARK

AENOR has certified our **Poliuretán Spray RF-351C HFO** spray system with its product-quality N Mark under standard EN 14315-1 as a thermal insulation material for buildings. Contract No. 020/000186.



Contract Nber: 020/000186
This component (A) is certified as a complete system with the component B ISOCIANATO H

REACTION TO FIRE TESTING

Characteristics	Units	RF-351C HFO
Reaction to fire (exposed foam)	EN 13501-1	Euroclass C-s3, d0

COMPONENTS

- COMPONENT A:** **Poliuretán Spray RF-351C HFO**
A mixture of polyols containing catalysts, flame-retardants and foaming agents (contains HFOs).
- COMPONENT B:** **ISOCIANATO H**
Polymeric MDI (methylene diphenyl diisocyanate).

APPLICATIONS

The **Poliuretán Spray** system is sprayed according to a mixing ratio of 1:1 by volume using heated, high-pressure equipment. Its main applications are the thermal insulation of façades, interior ceilings, floors and roofs. After application, its density is greater than 45 g/l.

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Application advantages:

- Complete suppression of thermal bridges. Since it is continuous, the insulation does not have any joints or cracks.
- Good adhesion to the substrate. No glues or adhesives need to be used for installation.
- Possibility of insulating and waterproofing in the same process. This is due, on the one hand, to its watertight-, closed-cell structure and, on the other, to the continuous manner in which it is applied, which allows doing away with joints.
- Mobility. It can be taken to construction sites in no time, there being no need to haul to or store on the site bulky products as in the case of other insulating materials.
- Sealing of gaps, thus muffling the passage of sound.
- Increase in the floor space compared to other insulating materials.

CHARACTERISTICS OF THE COMPONENTS

Characteristics	Units	H	RF-351C HFO
Specific weight 20°C	g/cm ³	1.23	1.44
Viscosity	cPs	150-250 (25°C)	200-400 (22°C)
Free NCO content	%	30-32	-

SYSTEM SPECIFICATIONS

The specifications of the system were measured in a test vessel at 22°C with the mixing ratio specified in Synthesia Technology's standard (MANS -01) and as per Annex E of product standard EN 14315-1.

A/B mixing ratio: 100/100 by volume
120/100 ± 4 by weight

Specifications	Units	RF-351C HFO
Cream time	s	4 ± 1
Gel time	s	7 ± 2
Set-to-touch time	s	8 ± 3
Free density	g/l	37 ± 3

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PREPARATION OF THE SUBSTRATE

Surfaces should be clean, dry, and free of dust and grease so that the foam can properly adhere to the substrate; if the substrate is a metal, it should also be free of rusting. In favourable conditions, the **Poliuretán Spray** foam adheres well to most building materials. Even so, should its adhesion prove to be not strong enough, a suitable primer should be used, and a minimum spray density of 45 kg/m³ attained.

Nevertheless, we cannot guarantee that this system will adhere to all types of substrates and primers. Consequently, the user should carefully study each specific case.

APPLICATION PROCESS

The foam's performance is affected by quite a few factors, which are listed below:

- The atmospheric conditions: ambient/room and substrate-surface temperature and humidity and other environmental factors (wind...).
- The settings of the equipment. The correct mixing ratio.
- The type of application: vertical, horizontal or on ceilings.
- The application method: coat thickness, use of varnish.

In order for the foam to have an optimal performance and properties, the application conditions listed in the following table should be taken into account:

		RF-351C HFO
SETTINGS OF THE EQUIPMENT		
Component mixing ratio		1:1 by volume
Temperature of the components		15-30°C
Temperature of the hoses and pre-heaters		35-50°C
Static pressure		1450-2030 psi / 100-140 bar
Maximum difference in dynamic pressure between components		290 psi / 20 bar
ENVIRONMENTAL CONDITIONS		
Ambient/room temperature		+5 to +30°C
Wind speed		≤ 30 km/h
SUBSTRATE CONDITIONS		
Temperature		from 5°C to 30°C
Moisture	Porous substrates	≤ 20%
	Non-porous substrates	No surface condensation

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The coat thickness can be controlled without any problems and modified by varying the spray rate and/or the mixing chamber of the gun, and it should range from 10 to 15 mm.

Please note that the smaller the number of coats for the same thickness, the higher the foam's performance. However, it is not advisable to spray coats with thicknesses exceeding 15 mm in order to prevent air pockets from forming and running into problems owing to the strong exothermic characteristics of the reaction and thus for the foam to maintain its properties.

FOAM CHARACTERISTICS

Characteristics		Units	RF-351C HFO
Closed cells	ISO-4590	%	≥ 90
Thermal resistance & thermal conductivity	EN 12667 EN 12939	-	See the table of characteristics below
Compressive strength	EN 826	KPa	≥ 200
Reaction to fire (exposed foam)	EN 13501-1	Euroclass	C-s3,d0 ⁽¹⁾
Water absorption (W _p)	EN 1609	kg/m ²	≤ 0.2
Water vapour resistance factor (μ)	EN 12086	-	≥ 50
Dimensional stability ⁽²⁾	EN 1604	%	DS(TH)3

⁽¹⁾ The result of testing valid for thicknesses of 150 mm or less

⁽²⁾ Level not declared in the DoP (CE marking)

Table of characteristics

Sprayed-on CCC4 insulation foam (uncoated or open to diffusion).

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	1.85	2.00	2.20	2.40
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	3.10	3.25	3.45	3.65	3.85	4.05	4.25
e_p	115	120	125	130	135	140	145	150	
λ _D	0.026	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
R _D	4.45	4.80	5.00	5.20	5.40	5.60	5.80	6.00	

e_p Thickness of the foam (mm)

λ_D Declared aged thermal conductivity (W/mK)

R_D Thermal resistance level (m²·K/W)

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SAFETY RECOMMENDATIONS

Poliuretán Spray RF-351C HFO (Component A) causes severe eye injury. In addition, it can cause irreparable damage to health and to the aquatic environment.

Isocianato H (Component B) causes skin, eye and airway irritation. It can also cause irreversible damage to human health by inhalation or through contact with the skin.

When working with the product, the workers should wear complete personal protective gear, including a full face-mask breathing apparatus (which should supply fresh air if working inside confined, unventilated spaces), protective workwear, and safety gloves. Any other workers who are not going to take part in the application of the product should stay clear from the area. In addition, additional ventilation might be required in the form of natural or forced draught ventilation to prevent gases from building up and moving into other occupied areas of the building during the spraying process.

In the case of already occupied buildings, a 24h waiting period before reoccupation is recommended.

When handling the system and/or the products, it is advisable to take all safety and precautionary measures described in each product's MSDS.

AVAILABLE FORMATS

The material typically comes in 250kg non-returnable metal drums. For other types of container, please contact the Sales Department.

STORAGE RECOMMENDATIONS

VERY IMPORTANT: The components of the **Poliuretán Spray RF-351C HFO** system are sensitive to moisture, so they should be stored in airtight drums or tanks. **The storage temperature should fall within the following temperature range: +5 to +35°C.** At lower temperatures, the viscosity of the polyols will increase considerably, thereby hindering application; in addition, the isocyanate might crystallise. Higher temperatures can cause changes in the polyols, a loss of the expanding agent, a greater consumption of product, the swelling of the drums, and uncontrolled foaming on insertion of the pump's suction tube in the drums. To prevent the latter, it is advisable to leave the drums sit for a while after having been carried by road in a well-ventilated, as-cool-as-possible area before starting to work with them.

If the drums are fitted with white plastic caps, special care should be taken when handling the latter as they are more fragile than metal caps and can become distorted.

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In order for the system to maintain the aforementioned characteristics, the drums should be kept tightly closed when not in use.

Under proper storage conditions, the shelf lives are 3 months for RF-351C HFO and 9 months for Component B (isocyanate).

APPENDIX: APPLICATION ISSUES

Our Sales and Technical Support Service is available to answer any questions you might have during the preparation of the product. Nevertheless, below we have listed some of the most common issues that can occur during the spraying process:

Issue	Possible cause	Solution
Irregularly shaped span	Improperly adjusted gun pin or dirt in the mixing chamber	Adjust the position of the pin. Clean the chamber
Span with colour veining	Poor mixture owing to components clogging the gun or having differences in viscosity	Check the pressures and unclog the gun where appropriate. Adjust and increase the temperature
Poor, closed span	High component viscosity. Cold weather	Increase the spray temperature and pressure
Very open span and misting	Too much air in the gun's nozzle Mixing pressure too high	Reduce the airflow Reduce the pressure somewhat
The material takes a while to react; it sags	Cold surface	Turn up the heating of the hoses
Material sprayed too fast; irregular finish; misting	The pressure is too high	Lower the gun's air pressure and mixing pressure
The material arrives at the surface looking granulated and clogs the gun	The temperature is too high	Turn down the heating of the hoses
Air pockets form	The coats are more than 15 mm thick	Apply thinner coats

This is the best information available, although not guaranteed, due to the complexity of the use of raw materials and equipment, which may alter the results.