POLYURETHANE SYSTEM

# CROSSIN HARD 50

TECHNICAL INFORMATION (TDS)

First release date: 09.12.2022
Version: 1

## 1. PRODUCT DESCRIPTION

CROSSIN HARD 50 is a two-component polyurethane spray system used for the production of **closed-cell** rigid foam with self-extinguishing properties. Excellent insulating properties of the foam were obtained thanks to the use of HFO - a fourth generation foaming agent from the group of hydrofluoroolefins with a low global warming potential GWP[1] = 1 and a zero ozone depletion potential indicator ODP[2] = 0.

- COMPONENT POLY: CROSSIN HARD 50 POLY
- COMPONENT ISO: ISO KOMPONENT B2

## 2. APPLICATION

CROSSIN HARD 50 is designed to perform internal and external thermal insulation by spraying. It can be used for thermal insulation of roofs, foundations and floors. The CROSSIN HARD 50 polyurethane system can be applied in residential and commercial construction, in agriculture or industrial areas.

## 3. COMPONENT CHARACTERISTICS

| COMPONENT POLY | |
|---|---|
| Formulated polyol mixture in the form of an oily liquid without suspensions, with a color from light red to dark brown depending on the production batch | |
| Density at 20°C | 1,17 ± 0,02 g/cm$^3$ |
| Viscosity at 20°C | 450 ± 100 mPa·s |

| COMPONENT ISO | |
|---|---|
| Mixture of aromatic polyisocyanates, principally diphenylmethane diisocyanate; brown color liquid, without suspensions. | |
| Density at 20°C | 1,22 ± 0,02 g/cm$^3$ |
| Viscosity at 20°C | 350 ± 100 mPa·s |

## 4. FOAMING CHARACTERISTICS IN LABORATORY CONDITIONS

Reaction times and apparent density obtained in laboratory conditions (at 20°C) with manual foaming in a laboratory vessel, at a stirrer speed of approx. 7000 rpm.

- Cream time: 5 ± 1 seconds
- Gel time: 13 ± 3 seconds
- Tack free time: 16 ± 4 seconds
- Core density: 50 ± 5 kg/m$^3$

## 5. RECOMMENDED PROCESSING CONDITIONS

CROSSIN HARD 50 is a system that should be processed using specialized foaming units equipped with a spray head. Recommendations are based on spray foam experience using a Graco Reactor H-XP3 machine with a PROBLER P2 ELITE gun (mix chamber 01).

- Volumetric components ratio **POLY : ISO - 100 : 100**
- Temperature settings o the machine:

| | |
|---|---|
| Heating of the components | POLY and ISO: 35 - 45°C |
| Heating of the hoses | 35 - 45°C |
| Component's pressure | 70-100 Bar (1015-1450 psi) |
| Component's temperature in drums | 15 – 30°C |

Pressure settings for the POLY component and the ISO component should be the same. The recommended ambient temperature is between 15°C and 35°C. However, the suggested temperature of the substrate is from 15°C to 50°C with relative humidity of the environment up to 70% and humidity of the porous substrate up to 15%. Non-porous substrate should be dry.

Insulated surfaces should be prepared in advance. They should not contain dust, oil, loose fragments and other substances that may reduce the adhesion of the foam.

Before spraying, carefully protect the surfaces of adjacent objects, floors, furniture, etc., to avoid accidental soiling during spraying - remember that the sprayed foam has very good adhesion, so it can be difficult to remove.

In order to obtain a proper insulation layer, at least two even layers of foam should be sprayed, so that the total insulation thickness is not less than 20 mm. We recommend to wait until the foam stabilizes between spraying successive layers of insulation (layer temperature below 30°C). All layers of insulation should be done in one working day.

After applying the CROSSIN HARD 50 system, it is recommended to ventilate the room until the smell disappears. In the absence of adequate ventilation, forced air movement should be ensured using dedicated devices. If the foam is exposed to direct UV radiation (e.g., sunlight), it should be protected.

When processing the CROSSIN HARD 50 system, the recommendations of the machine manufacturer as well as the instructions and information contained in the Safety Data Sheets of both components should be taken into account.

**Warning: Do not exceed the recommended layer thickness (maximum layer thickness is 25 mm)!**

[1]GWP, from Global Warming Potential - the potential to create the greenhouse effect - an indicator used to quantify the impact of a substance on the greenhouse effect.
[2]ODP, from Ozone Depletion Potential - ozone depletion potential - an indicator used to quantify the impact of a substance on the ozone layer.



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## 6. PHYSICAL AND MECHANICAL PROPERTIES OF SPRAYED FOAM

The measurements were carried out on a foam cut from a sample made using a specialized spray machine:

| Parameter | Result | Standard |
|---|---|---|
| Core density | ≥ 49 kg/m$^3$ | EN 1602:2013 |
| Reaction to fire classification | **E** | EN 13501-1:2019 |
| Resistance to external fire | $B_{ROOF}(t_1)$ | EN 13501-5:2016 |
| Short-term water absorption with partial immersion | $W_p$ ≤ 0,10 kg/m$^2$ | EN ISO 29767:2019 |
| Coefficient of thermal conductivity | $\lambda_{mean,i}$ = 0,020 W/(m·K) | EN 12667:2002 |
| | $\lambda_{90,90}$ = 0,021 W/(m·K) | EN 12667:2002 |
| Aging value $\lambda_D$ for thickness: | | |
| $d_N$ < 80 mm | 0,026 W/(m·K) | EN 12667:2002 NB-CPR/SG19-17/167r2 |
| 80 mm ≤ $d_N$ < 120 mm | 0,024 W/(m·K) | |
| $d_N$ ≥ 120 mm | 0,023 W/(m·K) | |
| Compressive stress at 10% relative strain | $\sigma_{10}$ ≥ 300 kPa | EN 826:2013 |
| Deformation under compressive load (1st stage 40kPa/48h RT, 2nd stage 40kPa/168h 70oC) | < 5% | EN 1605:2013 |
| Water vapor diffusion resistance coefficient | $\mu$ ≥ 70 | EN 12086:2013 |
| Temperature Stability: | | |
| 70°C, 90% rH, after 48h | DS(70,90)3 | EN 1604:2013 |
| -20°C, after 48h | DS(-20,-)3 | EN 1604:2013 |
| Foam adhesion perpendicular to the substrate/tensile strength | ≥ 100 kPa | EN 1607:2013 |
| Closed cell content | ≥ 90 % | EN ISO 4590:2016 |

Full mechanical properties of the foam are achieved after 48 hours of seasoning.

## 7. PACKAGING INFORMATION

CROSSIN HARD 50 system is packed in metal drums with a capacity of 216 dm$^3$ or IBC containers with a capacity of 1000 dm$^3$.

## 8. TRANSPORT AND RECOMMENDED STORAGE CONDITIONS

The CROSSIN HARD 50 system should be stored in a dry room at a temperature of 10 to 25°C. Unconditionally protect against moisture and direct sunlight. The components of the system should be stored in tightly closed packages.

The shelf life of the system in the manufacturer's original sealed packaging, under the recommended storage conditions, is: **3 MONTHS** for both components from the date of manufacture.

ADR/RID, IMDG, ICAO/IATA transport regulations do not apply to the transport of this product.

## 9. LEGAL REGULATIONS AND CERTIFICATES

- CROSSIN HARD 50 does not contain foaming agents that deplete the ozone layer, in accordance with the provisions of the European Union (EU) on the marketing and use of controlled substances - Regulation (EC) No. 1005/2009 of September 16, 2009.
- Polyurethane system placed on the market in accordance with the European Union Regulation No. 305/2011, along with the assessment of performance made in accordance with the European harmonized standard EN 14315-1:2013.
- CE marking and a Declaration of Performance: 31DOP-2022-EN.
- Product approved by the Polish National Institute of Health.

## 10. ADDITIONAL INFORMATION

The data contained in this Technical Information is based on the results of tests performed in our laboratory and on practical experience. These data do not guarantee the final properties of the finished product. The results obtained may differ from those given in the case of using the product in conditions other than those assumed.

At the same time, we would like to inform you that we provide assistance in the implementation and use of our CROSSIN HARD 50 system and, if necessary, we help in the selection of system parameters. In all matters related to the purchase and use of CROSSIN HARD 50, please contact our technical and sales representatives.



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