

## CROSSIN ATTIC HARD

Date of preparation: 01.09.2015

Updated date: 19.04.2016

Version: 1.3

### 1. PRODUCT DESCRIPTION

CROSSIN ATTIC HARD is a two-component (A+B) polyurethane system that was designed for the production of **closed-cell** self-extinguishing rigid polyurethane foam.

 COMPONENT A: CROSSIN ATTIC HARD

 COMPONENT B: CROSSIN B

CROSSIN ATTIC HARD does not contain any foaming agents that deplete the ozone layer. This is in accordance with the provisions of the European Union (EU) Regulation on Ozone Depleting Substances (ODS Regulation) - No. 1005/2009 dated September, 16th 2009.

This polyurethane system has been introduced to the market in accordance with the EU Regulation No. 305/2011, together with an assessment of the performance made in accordance with the European harmonized standard EN 14315-1: 2013.

This product has CE marking and Declaration of Performance No. 2016/02/PL.

Hygienic Certificate of National Institute of Public Health - National Institute of Hygiene (PZH): HK/B/1467/01/2015

### 2. APPLICATION

CROSSIN ATTIC HARD is intended to perform external and internal thermal insulation of ceilings, walls and facades by spraying. It can be successfully used in buildings including residential and commercial as well as in agricultural and industrial.

CROSSIN ATTIC HARD is a polyurethane system that must be processed using the special foaming units, equipped with a spray head.

### 3. COMPONENTS CHARACTERISTICS

#### COMPONENT A

Formulated polyols mixture in the form of oily liquid, dark colour, without suspensions

Density at 25°C	1.14 ± 0.02 g/cm <sup>3</sup>	
Viscosity at 25°C	430 ± 50 mPa·s	EN ISO 2555:2011

#### COMPONENT B

Mixture of aromatic polyisocyanates, especially diphenylmethane diisocyanate. Brown liquid without suspensions

Density at 25°C	1.22 ± 0.02 g/cm <sup>3</sup>	
Viscosity at 25°C	350 ± 100 mPa·s	EN ISO 2555:2011



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### 4. FOAMING CHARACTERISTICS DONE AT LABOLATORY CONDITIONS



The reaction times and an apparent density was obtained under laboratory conditions (at 22-25°C) by manual foaming in the cup.

Stirrer speed approx. 2500 rpm, mixing time approx. 2 sec.

 Cream time <sup>1</sup> :	3 ± 1 sec
 Gel time <sup>1</sup> :	7 ± 3 sec
 Tack Free time <sup>1</sup> :	9 ± 4 sec
 Apparent foam density <sup>2</sup> :	36 ± 2 kg/m <sup>3</sup>

### 5. RECOMMENDED PROCESSING CONDITIONS

The recommendations are based on experience in applying the spray foam with the machine Graco Reaktor H-XP3 with the gun PROBLER P2 ELITE (01 mixing chamber) and Twistork helix mixer.

 Volumetric components ratio:	<b>A : B</b>	<b>100 : 100</b>
 Temperature settings on the machine:		
	Components (A and B) heating temperature:	30 - 45°C
	Heating the hoses:	30 - 45°C
	Components pressure:	70 - 100 Bar (1015 - 1450 psi)
	Components temperature (in drums):	15 – 30°C

The recommended ambient temperature should be in the range between 10 and 35°C. While the recommended surface temperature should be between 15 to 50°C, whereas ambient relative humidity should be not higher than 70%. The porous surface humidity should be not higher than 15% and non-porous surface should be dry (0%).

Insulated surfaces should be prepared before, should not contain dust, water, oil, loose particles and other substances that could reduce the adhesion of the foam.

Before performing the spraying, the insulated as well as adjacent surfaces such as windows, doors, floors, furniture, etc., should be protected to prevent accidental contamination during spraying - keep in mind that sprayed foam has very good adhesion and can be difficult to remove from the undesired sites.

Spraying should be carried out using specialized spray equipment

The temperature of the hoses should be about 30 - 45°C. Pressure setting for Component A and the Component B should be the same, and between 70 - 100 Bar (1015 - 1450 psi).

To achieve proper insulation there should be at least 2 uniform spray foam layers done. The total thickness of the insulation is not less than 30 mm. All layers of the insulation should be done during

<sup>1</sup>Reaction times are measured from the beginning of mixing. *Cream time* – until the moment of rising the reaction mixture's volume. *Gel time* – until the moment of drawing out the gelled fibres from the foam. *Tack free time* – until the moment when the surface of the foam is not sticky (this procedure is according to the internal instructions **U 11 02**).

<sup>2</sup>Apparent foam density - foam weight divided by the cup's volume



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one day. When the foam is exposed to direct UV radiation (sunlight) it should be painted by at least two layers of protective paint (according to information provided by paint manufacturer).

During processing the system please keep in mind all tips and information included in the MSDS sheets for both components and the recommendations given by the machine manufacturer.

**ATTENTION: Do not exceed the thickness of the recommended layer (maximum thickness is 35 mm)!**

### 6. PHISICOMECHANICAL PROPERTIES OF SPRAYED FOAM

The measurements were carried out on the sprayed foam cut from samples made by using a special spraying machine:

Parameters	Results	Standards
Core density:	$\geq 36 \text{ kg/m}^3$	EN 1602:2013-07
Fire classification:	<b>E</b>	EN 13501-1+A1:2010
Short-term water absorption by partial immersion:	$W_p \leq 0.11 \text{ kg/m}^2$	EN1609:2013
Thermal conductivity:		EN 12667:2002
	$\lambda_{\text{mean},i} = 0.021 \text{ W/(m}\cdot\text{K)}$	
	$\lambda_{90,90} = 0.022 \text{ W/(m}\cdot\text{K)}$	
Declared aged thermal conductivity $\lambda_D$		EN 12667:2002
 $d_N < 40 \text{ mm}$	$0.027 \text{ W/(m}\cdot\text{K)}$	
 $40 \text{ mm} \leq d_N < 60 \text{ mm}$	$0.025 \text{ W/(m}\cdot\text{K)}$	
 $d_N \geq 60 \text{ mm}$	$0.024 \text{ W/(m}\cdot\text{K)}$	
Compressive stress at 10% relative deformation:	$\sigma_{10} \geq 270 \text{ kPa}$	EN 826:2013
Coefficient of water vapor resistance:	$\mu \text{ 35 - 50}$	EN 12086:2013
Dimensional stability:		EN 1604:2013
	$d \leq 4 \%$	
 $70^\circ\text{C, 90\% RH, after 48h}$	$sz \leq 4 \%$	
	$g \leq 1 \%$	
	$d \leq 2 \%$	
 $-30^\circ\text{C, after 48h}$	$sz \leq 2 \%$	
	$g \leq 0.5 \%$	
Total relative deformation, 48h, 20 kPa, 80°C	$\leq 2.57 \%$	EN 1605:2013
Adhesion of the foam perpendicular to the surface:	$\geq 300 \text{ kPa}$	EN 1607:2013
Closed-cell content:	$\geq 90 \%$	EN ISO 4590:2005

### 7. INFORMATION ON THE PACKAGING

CROSSIN ATTIC HARD system is packed in metal drums with a capacity 200 dm<sup>3</sup> or in IBC container with a capacity 1000 dm<sup>3</sup>.



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### 8. TRANSPORTATION AND STORAGE CONDITIONS

CROSSIN ATTIC HARD system should be stored in a dry place, where the temperature is between 5 and 25°C. It should be protect from moisture and direct sunlight. Both components should be stored in tightly closed containers.

Recommended storage time – **3 MONTHS** in the original sealed drums.

After having used a part of the content from the container, the rest should be tightly closed and quickly used.

### 9. ADDITIONAL INFORMATION

Data included in this technical information are based on the results from the tests performed in our laboratory as well as on the practical experience. These data do not guarantee the properties of the final product. The results obtained may differ from those listed above especially in the case when the use of the product is under the conditions other than originally intended.

We are happy to provide technical and substantive assistance in implementing and applying polyurethane system named CROSSIN ATTIC HARD. At the same time when it is necessary and possible we help in adjusting relevant parameters. In all matters related to the purchase and use of polyurethane system CROSSIN ATTIC HARD we encourage you to use a direct contact to our technical and commercial representative.

