Technical Data Sheet

Elastopor® H 2401/10

Application:

The Elastopor H 2401/10 system was developed as an injected or poured, (in-situ) thermal insulation. This system was particularly formulated to insulate any large void or cavity.
The system has a low GWP (1) and zero ODP

Chemical Characteristics:

Component A:	**Elastopor H 2401/10**	Mixture of polyols and additives (Catalysts, Surfactants and blowing agent (water). Product does not contain HFC.
Component B:	**IsoPMDI 92140**	MDI (diphenylmethane diisocyanate)

Supply:

Steel drums: 200kg Component A, 250kg Component B

Storage, Preparation:

Polyurethane components are moisture sensitive. Therefore they must be stored at all times in sealed, closed containers. More detailed information should be obtained from the separate data sheet entitled "Information for in-coming material control, storage, material preparation and waste disposal" and from the component data.

Possible Hazards:

The B-component (Isocyanate) irritates the eyes, respiratory organs and the skin. Sensitization is possible through inhalation and skin contact. MDI is harmful by inhalation. On processing these, take note of the necessary precautionary measures described in the Material Safety Data Sheets (MSDS). This applies also for the possible dangers in using the A-component (Polyol) as well as any other components.

See also our separate information sheet "Safety- and Precautionary Measures for the Processing of Polyurethane Systems. Use our Training Program "Safe Handling of Isocyanate."

Waste Disposal:

More detailed information is provided in our country -specific pamphlet.

Consumer articles, medical products:

There are national and international laws and regulations to consider if it is intended to produce consumer articles (eg articles that necessitate food or skin contact, toys etc.) or medical objects out of BASF products. Where these do not exist, the current legal requirements of the European Union for consumer articles as well as medical products should be sufficient. Consultation with our Sales Office and our Ecology and Product Safety Department is strongly recommended.

Component data:				
The following properties were obtained at a temperature of 20 ºC and correspond to the typical values.				
Property	**Unit**	**Comp. A**	**Comp. B**	**Method**
Viscosity at 20ºC	mPa.s	320	220	G133-07*
Density at 20ºC	g/cm^3	1.07	1,23	G133-08*
Shelf Life	Months	6	6	

* BASF methods

Reaction Profile and Free Rise Density: (components at 20ºC and the indicated mixing ratio)			
Property	**Unit**	**Value**	**Method**
Mixing ratio (weight)		100:115	G132-01*
Cream Time (CT)	s	18	G132-01*
Gel time (GT)	s	65	G132-01*
Tack Free Time (TFT)	s	113	G132-01*
Beaker Free Rise Density (FRB)	kg/m^3	18.0	G132-01*

* BASF method in accordance with the method described in standard EN 14315-1

Process:

The pouring process consists of projecting an impinged mixture of the two components into the cavity which is meant to be insulated. The mixture reacts on the surface, adhering to it instantaneously, and expanding into a soft foam.

The following conditions should be observed for the correct application of the system:

Machine Conditions		
Mixing Ratio of Components:		1:1 (volume)
Component Temperatures:		50 – 60 ºC
Component Pressure:		50 – 80 Bar
Environmental Conditions		
Ambient Temperature:		Between +5 and +40 ºC
Relative Humidity:		< 85 %
Wind speed:		≤ 30 km/h
Substrate Conditions		
Substrate Temperature:		Between +5 and +40 ºC
Substrate moisture content	Porous substrates	≤ 20 %
	Nonporous substrates	No surface condensation

The following procedure is used to fill hollow spaces:

Firstly, the volume of the space to be filled has to be calculated. The volume multiplied by the desired density, results in the weight of product that has to be injected.

WEIGHT = VOLUME X DENSITY

Secondly, in order to avoid any irregular development in the reaction, the material must be injected before the material starts to expand (before the cream time). When processing the components with a machine, the output rate must be considered:

Injection Time < Cream Time
Injection Time = Weight / Output rate

Also, the pressure exerted by the expanding foam has to be considered. Care should be taken when the completion of injections is approaching soffit level or below any cavity closers such as window cills.

FINAL DENSITY / FREE RISE DENSITY = DENSIFICATION FACTOR

Normally, a densification factor between 1.3 and 1.5 (final foam density of 18 - 20 kg/m^3) is used with this system. In this range, pressure exerted varies between 1 and 1.5 Kg/cm^2.
When the foam cannot expand freely, and is restrained by walls, or is forced into small cavities, the overall density increases. This is due to the loss of reaction heat, and the friction forces that are created.

The friction effect, produced by the walls of the space to be filled, increases in magnitude as the surface area to volume ratio increases. The path the foam has to follow during its expansion also has an effect on the densification. The foam should always be injected, such that the path is as short as possible.

CE Marking:

0836
0832

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EN 14318-1:2013

In-situ formed sprayed rigid polyurethane (PU) foam system

ThIB – Thermal Insulation for Buildings

Reaction to fire – F **(valid for all thicknesses)**

Thermal conductivity: **see performance chart**

Water permeability (expressed as short term water absorption by partial immersion): **2.5kg/m2**

Water vapour transmission (expressed as water vapour resistance factor μ): **10**

Compressive strength: NPD

Continuous glowing combustion: **no harmonized test method available**

Durability of reaction to fire against ageing/degradation: **reaction to fire does not decrease with time**

Durability of thermal resistance against ageing/degradation: **see performance chart**

Durability of compressive strength against ageing/degradation: **compressive strength does not decrease with time**

PU EN 14318-1-CCC1-CT18(20)-GT65(20)-TFT113(20)-FRB18.0(20)-MU10-W2.5

Performance Chart:
(in accordance with EN 14318-1):

Type of facing: None or diffusion open		
Thickness	**Declared aged thermal conductivity (λ_D)** W/m·K	**Thermal resistance level (R_D)** m^2·K/W
30 mm	**0,039**	**0.75**
35 mm	**0,039**	**0.90**
40 mm	**0,039**	**1.00**
45 mm	**0,039**	**1.15**
50 mm	**0,039**	**1.30**
55 mm	**0,039**	**1.40**
60 mm	**0,039**	**1.55**
65 mm	**0,039**	**1.70**
70 mm	**0,039**	**1.80**
75 mm	**0,039**	**1.95**
80 mm	**0,039**	**2.05**
85 mm	**0,039**	**2.20**
90 mm	**0,039**	**2.35**
95 mm	**0,039**	**2.45**
100 mm	**0,039**	**2.60**
105 mm	**0,039**	**2.75**
110 mm	**0,039**	**2.85**
115 mm	**0,039**	**3.00**

Type of facing: None or diffusion open		
Thickness	**Declared aged thermal conductivity (λ_D)** W/m·K	**Thermal resistance level (R_D)** m^2·K/W
120 mm	**0,039**	**3.10**
125 mm	**0,039**	**3.25**
130 mm	**0,039**	**3.40**
135 mm	**0,039**	**3.50**
140 mm	**0,039**	**3.65**
145 mm	**0,039**	**3.80**
150 mm	**0,039**	**3.90**
155 mm	**0,039**	**4.05**
160 mm	**0,039**	**4.15**
165 mm	**0,039**	**4.30**
170 mm	**0,039**	**4.45**
175 mm	**0,039**	**4.55**
180 mm	**0,039**	**4.70**
185 mm	**0,039**	**4.85**
190 mm	**0,039**	**4.95**
195 mm	**0,039**	**5.10**
200 mm	**0,039**	**5.20**

Declared aged thermal conductivity value (λ_D) at 10 ºC calculated with statistical procedure 90/90 and rounded upwards to the nearest 0,001 W/m·K.

Thermal resistance value (R_D) calculated with aged thermal conductivity at 10 ° C and rounded downwards to the nearest 0,05 m^2 K / W.

Foam Physical Properties declared in the CE Marking:			
The foam expansion is made by the action of CO2 (coming from the chemical reaction between water and isocyanate).			
Property	**Elastopor H 2401/10**	**Unit**	**Standard**
Thermal conductivity at 10ºC Aged value	See Performance Chart	W/(m·K)	EN 14315-1
Reaction to Fire (naked foam)	Class F (valid for all thicknesses)	-	EN 13501-1
Short term water absorption	2.5	Kg/m2	EN 1609
Water vapour resistance factor	10	µ	EN 12086

Suitable substrates:

Under favorable weather conditions, the rigid polyurethane foam Elastopor has a good adhesion to most construction materials (concrete, brick, wood, steel). They must be clean (without dust or grease), dry and, in case of metallic substrates, free of rust. If the adhesion is not acceptable under these conditions, priming may be necessary.

Nevertheless, due to the wide range of substrates and primers used in construction, it is not possible to guarantee perfect adhesion of this system to all surfaces. It is therefore recommended to test adhesion in each case.

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