

## Technical Data Sheet



We create chemistry

# ENERTITE® HY 1601/23 High Yield

Page 1/6  
Version 5  
Date 15/01/2025

## Application

The system ENERTITE® HY 1601/23 is a water-blown in-situ sprayed open-cells polyurethane foam used for thermal insulation of buildings. This system is suitable to be used in walls and ceilings in interior non-bearing loads applications.

The system is free of ingredients that contribute to global warming due to the greenhouse effect or that deplete the ozone layer.

Intended use: Thermal insulation of buildings

ATTENTION: The product is NOT suitable for its use on ventilated facades or other applications on the outside where there may be direct contact with rainwater and in those applications that may be subject to loads such as terraces, walkable roofs or floors.

Due to the higher water vapor permeability of this product, there is a certain risk of interstitial condensations, therefore it is necessary to carry out the corresponding hygrometric calculations for each construction solution with the local environmental conditions to see if the installation of a vapor barrier is necessary.

Likewise, this foam system cannot be considered, on its own, a barrier with high resistance to water filtration, so the application of additional water penetration protection measures, such as water-repellent mortars or other coatings, should be evaluated, according to the level of waterproofing required.

## Chemical Characteristic

|             |                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------|
| A-component | ENERTITE® HY 1601/23 - Polyol-Component<br>mixture of polyether-, polyesterpolyol, stabilizer and catalyst |
| B-component | IsoPMDI 92140 - polymeric Diphenylmethane Diisocyanate                                                     |

## Supply

The type of supply for the components will be decided after consultation with our Sales Office.

## Handling and Storage

Polyurethane components are sensitive to moisture. They must therefore always be stored in tightly sealed containers.

Safety-relevant information can be found in the safety data sheets of the components.

See section No. 7: Handling and Storage

## Hazards Identification

Information on possible hazards in handling of the components, can be found in the safety data sheets.

See section No. 2: Hazards Identification

## Disposal Considerations

Information on disposal can be found in the safety data sheets of the components.

See section No. 13: Disposal Considerations

# ENERTITE® HY 1601/23

## High Yield



Page 2/6  
Version 5  
Date 15/01/2025

### Regulatory Information

Regulatory information can be found in the safety data sheet of the components.  
See section No. 15: Regulatory Information and section No. 16: Other Information

### Handling and installation instructions:

Guide for the Application of Elastospray LWP, SKYTITE LWP and ENERTITE Systems

### Component Data (tested according to BASF methods)

| Characteristic | Unit | Data | Test Method |
|----------------|------|------|-------------|
|----------------|------|------|-------------|

| Component                          |       | A                    |          |
|------------------------------------|-------|----------------------|----------|
| Product Description                |       | ENERTITE® HY 1601/23 |          |
| Temperature - A-Component          | °C    | 20                   |          |
| Density                            | kg/m³ | 1030                 | G 133-08 |
| Viscosity                          | mPa s | 1000                 | G 133-07 |
| Shelf Life - as of production date | d     | 120                  |          |

| Component                          |       | B             |          |
|------------------------------------|-------|---------------|----------|
| Product Description                |       | IsoPMDI 92140 |          |
| Temperature - B-Component          | °C    | 20            |          |
| Density                            | kg/m³ | 1240          | G 133-08 |
| Viscosity                          | mPa s | 300           | G 133-07 |
| NCO-Content                        | %     | 31.5          | G 133-06 |
| Shelf Life - as of production date | d     | 180           |          |

### Guide formulaion, Reaction profile and Free Rise Density

| Guide Formulation           | Unit | Amount |
|-----------------------------|------|--------|
| Parts by weight A-component | pbw  | 100    |
| Parts by weight B-component | pbw  | 118    |

# ENERTITE® HY 1601/23

## High Yield



Page 3/6  
Version 5  
Date 15/01/2025

### Hand mixing - Cup test (by BASF method in accordance with the method described in EN 14315-1)

| Characteristic                 | Unit              | Data    | Test Method |
|--------------------------------|-------------------|---------|-------------|
| Component temperature          | °C                | 20      |             |
| Mixing ratio A:B               | pbw               | 100:118 |             |
| Mixing ration A:B - volumetric | pbv               | 100:100 |             |
| Weight A                       | g                 | 20      |             |
| Weight B                       | g                 | 23.8    |             |
| Stirring time                  | s                 | 3       | G 132-01    |
| Cream time                     | s                 | 5       | G 132-01    |
| Gel time                       | s                 | 10      | G 132-01    |
| Tack free time                 | s                 | 12      | G 132-01    |
| Beaker free rise density - FRB | kg/m <sup>3</sup> | 16      | G 132-01    |

### Process

**IMPORTANT:** It is highly recommended to stir the polyol component prior to be used, after long pauses and, if possible, continuously while spraying.

The spraying process consists of projecting an pulverized mixture of the two components onto surface which is meant to be insulated. The mixture reacts on the surface, adhering to it instantaneously, and expands into rigid foam.

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

Machine conditions:

Mixing Ratio of Components: 1:1 (Volume)

Components temperature: 50 - 60 °C (recommended 55 °C)

Components pressure: 50 - 70 bar (recommended 60 bar)

Environmental conditions:

Ambient temperature: between +5 and +40 °C

Relative humidity: < 85 %

Wind speed: ≤ 30 km/h

Substrate conditions:

Substrate humidity (porous substrates): ≤ 20 % (Concrete ≤ 5%)

Substrate humidity (nonporous substrates): without condensations on substrate

The distance from the spray gun to the substrate is recommended to be approx. 80 cm.

|                                  | Unit              | Data      |
|----------------------------------|-------------------|-----------|
| Foam density range - Indicative  | kg/m <sup>3</sup> | 7 - 10    |
| Layer thickness - Recommendation | mm                | 100 - 300 |

Remark for foam density range: this is depending on application technique and conditions. Non-binding recommendations for processing

Page 4/6  
Version 5  
Date 15/01/2025

**CE Marking**



**0679**

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**22**

EU CE - DOP-No.: **ES19-0036-01-CPR-22**

[www.elastospray.eu/dop](http://www.elastospray.eu/dop)

**EN 14315-1:2013**

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

ThIB – Thermal Insulation for Buildings

Reaction to fire – **NPD**

Thermal conductivity: **see performance chart**

Water permeability (expressed as short term water absorption by partial immersion): **NPD**

Water vapour transmission (expressed as water vapour resistance factor  $\mu$ ): **NPD**

Compressive strength: **NPD**

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

Durability of reaction to fire against ageing/degradation: **NPD**

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

Durability of compressive strength against ageing/degradation: **NPD**

**PU EN 14315-1-DS(TH)2-CCC1-CT5(20)-GT10(20)-TFT12(20)-FRB16(20)**

Page 5/6  
Version 5  
Date 15/01/2025

### Performance Chart (in accordance with EN 14315-1)

| Type of facing: Cut foam without facings |                                                             |                                                           | Type of facing: Cut foam without facings |                                                             |                                                           |
|------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|
| Thickness                                | Declared aged thermal conductivity ( $\lambda_D$ )<br>W/m·K | Thermal resistance level ( $R_D$ )<br>m <sup>2</sup> ·K/W | Thickness                                | Declared aged thermal conductivity ( $\lambda_D$ )<br>W/m·K | Thermal resistance level ( $R_D$ )<br>m <sup>2</sup> ·K/W |
| 210 mm                                   | 0,039                                                       | 5,35                                                      | 300 mm                                   | 0,039                                                       | 7,65                                                      |
| 215 mm                                   | 0,039                                                       | 5,50                                                      | 305 mm                                   | 0,039                                                       | 7,80                                                      |
| 220 mm                                   | 0,039                                                       | 5,60                                                      | 310 mm                                   | 0,039                                                       | 7,95                                                      |
| 225 mm                                   | 0,039                                                       | 5,75                                                      | 315 mm                                   | 0,039                                                       | 8,05                                                      |
| 230 mm                                   | 0,039                                                       | 5,90                                                      | 320 mm                                   | 0,039                                                       | 8,20                                                      |
| 235 mm                                   | 0,039                                                       | 6,00                                                      | 325 mm                                   | 0,039                                                       | 8,30                                                      |
| 240 mm                                   | 0,039                                                       | 6,15                                                      | 330 mm                                   | 0,039                                                       | 8,45                                                      |
| 245 mm                                   | 0,039                                                       | 6,25                                                      | 335 mm                                   | 0,039                                                       | 8,55                                                      |
| 250 mm                                   | 0,039                                                       | 6,40                                                      | 340 mm                                   | 0,039                                                       | 8,70                                                      |
| 255 mm                                   | 0,039                                                       | 6,50                                                      | 345 mm                                   | 0,039                                                       | 8,85                                                      |
| 260 mm                                   | 0,039                                                       | 6,65                                                      | 350 mm                                   | 0,039                                                       | 8,95                                                      |
| 265 mm                                   | 0,039                                                       | 6,75                                                      | 355 mm                                   | 0,039                                                       | 9,10                                                      |
| 270 mm                                   | 0,039                                                       | 6,90                                                      | 360 mm                                   | 0,039                                                       | 9,20                                                      |
| 275 mm                                   | 0,039                                                       | 7,05                                                      | 365 mm                                   | 0,039                                                       | 9,35                                                      |
| 280 mm                                   | 0,039                                                       | 7,15                                                      | 370 mm                                   | 0,039                                                       | 9,45                                                      |
| 285 mm                                   | 0,039                                                       | 7,30                                                      | 375 mm                                   | 0,039                                                       | 9,60                                                      |
| 290 mm                                   | 0,039                                                       | 7,40                                                      | 380 mm                                   | 0,039                                                       | 9,70                                                      |
| 295 mm                                   | 0,039                                                       | 7,55                                                      |                                          |                                                             |                                                           |

Declared aged thermal conductivity value ( $\lambda_D$ ) at 10 °C 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<sup>2</sup>·K /W.

Page 6/6  
Version 5  
Date 15/01/2025

| Foam Physical Properties declared in the CE Marking |       |                                              |                 |
|-----------------------------------------------------|-------|----------------------------------------------|-----------------|
| Characteristic                                      | Unit  | Data                                         | Test Method     |
| Thermal conductivity at 10°C                        | W/m*K | declared aged value<br>see performance chart | DIN EN 14315-1  |
| Closed cells content                                | %     | < 20                                         | DIN EN ISO 4590 |
| Dimensional stability - 48h at -20°C - H/W/L        | %     | ≤ 1 / ≤ 2 / ≤ 2                              | DIN EN 1604     |
| Dimensional stability - at 70°C and 90% rel. humid  | %     | ≤ 5 / ≤ 9 / ≤ 9                              | DIN EN 1604     |

### Suitable substrates:

Under favorable weather conditions, this system 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, a previous treatment like a primer 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.

See our our different applicaton guide (see at point "Handling and installation instructions:") for more detailed information about the general installation process and the suitable substrates.

### Complementary Information:

Guide for the Application of Elastospray LWP, SKYTITE LWP and ENERTITE Systems

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