INSTRUCTIONS FOR USE

Introduction

This instruction is intended exclusively for professional application companies (using properly functioning equipment) that use the **HONTER Company EXY 34®HFO** product. Its goal is to ensure correct application and maximum yield. In case of any ambiguity, please contact HONTER® Company. The product is not intended for lay use or applications outside of the specified purposes.

The application of spray foams from HONTER® Company requires special equipment and training. The aim is to provide comprehensive information on the proper storage, preparation, application and safety precautions in the processing of **EXY 34®HFO** closed cell sprayed polyurethane insulation foam.

EXY 34®HFO is a two-component sprayed insulation material made of polyurethane foam with closed cell structure, which forms a seamless insulation layer after application. It is formed by a chemical reaction between isocyanate and polyol. Polyol (Component B – Light Colours) can only be processed with isocyanate (Component A – Dark Brown colour) supplied by HONTER® Company. When this material is mixed in the mixing chamber of a spray gun, a chemical reaction occurs in which heat is released. This heat, or exothermic reaction, causes the expansion of chemicals and the formation of foam. The final cured product **of EXY 34®HFO** is yellow in color. The foam uses HFO-1233zd(E) as its blowing agent. Basic technical information is provided in the product data sheet, which is available together with the safety data sheets of components A and B as well as on the HONTER® Company website.

The product is placed on the market with the CE marking according to the harmonized standard EN 14315-1. The Declaration of Performance (DoP) of the product is available on request from HONTER® Company s.r.o.

1 ESTIMATED AVERAGE AND MINIMUM LIFETIME FOR THE INTENDED USE (SHELF LIFE)

Based on the requirements of EN 14315-1 and the current state of science and technology, the estimated average service life of PUR foam is set at 25-50 years when applied correctly and under normal operating conditions. The minimum service life if the recommended installation procedures are followed is 25 years.

2 STORAGE, DURABILITY AND TEMPERATURE OF THE MATERIAL

- *Component A (isocyanate) – shelf life of 12 months at a storage temperature of 15-25 °C.*
- *Ingredient B (polyol) – shelf life of 6 months at a storage temperature of 15-20 °C.*

PUR foam and its components (A and B) must be stored and handled under strict conditions to ensure their safety and quality. Storage and handling of PUR foam (fabrics) must be carried out in accordance with the safety data sheets and manufacturer's instructions. Failure to comply with storage conditions can lead to degradation of the material, deterioration of its properties or dangerous situations.

The material must not be exposed to temperatures outside the specified values. When stored or handled at temperatures below 15 °C, the contents of the barrels can be negatively affected – the ingredient becomes inhomogeneous and can begin to crystallize. Barrels must be stored on pallets, protected from direct sun and frost. Recommended temperature of the material in the barrel during application: 20-25 °C. Using the product after the expiration date will result in the production of an uncertified product.

3 MATERIAL PREPARATION

When handling drums, it is necessary to avoid contamination of the ingredients. The pump used for component A may only be used for component A, the pump for component B only for component B. ***Components from different manufacturers must not be mixed***.

4 SUBSTRATE PREPARATION

It is recommended to perform a test adhesion test before starting the application. On metal surfaces, the use of a primer or mechanical cleaning (wire brush, sandblasting) is required. It can be applied to concrete only after at least 28 days of maturation, the wood must not have a moisture content higher than 18 %.
The substrate must be dry, clean, non-greasy, not frozen and firm. It must not crumble and an adhesion test must be performed. The minimum substrate temperature is 0 °C. The surface must be completely dry.

5 TECHNOLOGY SETTINGS

- Mixing ratio of components A and B: 1:1
- Pressure (dynamic): 1200-1400 psi /85-95 bar
- Main heating temperature: 42-46°C
- Hose temperature: 42–-46°C
- Spray distance 70-100cm
- Recommended nozzles: 00 (2929), 01 (4242), 02 (5252), 03 (6060) according to the required power and pressure

The specific temperature and pressure settings depend on atmospheric temperature, humidity, altitude, substrate type, equipment used, and other factors. *During application, the application engineer must continuously monitor the properties of the foam and adjust the temperature and pressure as necessary to maintain the correct cell structure, adhesion, cohesion and overall quality of the foam.* ***The applicator bears full responsibility for the processing of the chemical and the production of PUR foam***. ***The material must always be applied in accordance with the specified specifications.***

6 APPLICATION TECHNIQUE, LAYER THICKNESS AND MULTIPLE LAYERS

The heat generated by the exothermic reaction during application poses a risk of burn and/or fire, as well as irritating odours. This risk increases with higher layer thickness. It *is necessary to maintain a minimum of a few minutes of cooling between the individual layers (15 minutes recommended) in order to dissipate the reaction heat.* ***The maximum thickness of one layer must not exceed 5 cm.*** After each layer, it is necessary to wait for the foam to cool below 35 °C or to ambient temperature before the next layer is applied. Failure to comply may result in fire or odour release. Apply the foam evenly in a smooth motion, the individual strokes of the gun must overlap by at least 30 %. With multiple layers, sufficient cooling time is required. The individual layers must cool below 35 °C! The level of odor of sprayed polyurethane foam depends on the correct application using the recommended processing parameters and on ensuring sufficient ventilation during application. *During foam processing, the applicator must constantly monitor the properties of the foam and adjust the temperature/pressure to maintain the correct cell structure, adhesion, cohesion and overall foam quality. The applicator is fully responsible for ensuring that the foam is processed and applied according to the specified specifications. The material is too cold – it hardens slowly, runs and drips, becomes denser, the yield decreases. If the material is too warm – it hardens quickly, it can shrink and crack as it cools*.

7 PRECAUTIONS

Before starting work, it is necessary to carry out a test spray on a small area to verify the correct setting of the technology. The application company should keep daily records of the quality of execution and parameters of the application. The effect of the heat of reaction on surrounding building materials, especially cables and plastic pipes, which may have lower temperature resistance, must be taken into account.

- Mandatory use of PPE (respiratory protection, full face mask with air supply, Tyvek protective clothing and Nitrile gloves).
- Active ventilation is required during application and for at least 24-48 hours after its completion.
- Unauthorized persons must not move around the application area.
- All work with an open flame (welding, soldering, cutting) must take place at least 15 m from the place of application.

8 SUBSTRATE TYPES AND USES

EXY 34®HFO is suitable for insulation of walls, attics, ceilings, vaulted ceilings, attics, wooden buildings and energy houses. It can be used indoors and outdoors.

9 COMPATIBILITY WITH OTHER MATERIALS OR PRODUCTS

EXY 34®HFO foam is generally compatible with a wide range of building materials, if specific application conditions are met. To ensure optimal grip and functionality, the following aspects must be considered:

Compatible materials

- Concrete, masonry, wood and wood composites.
- Metal surfaces (steel, aluminum) provided they are clean, dry and degreased.
- Plasterboard, insulation boards and other substrate materials commonly used in the construction industry.

Compatibility Conditions

- **Surface cleanliness:** Surfaces must be cleaned of dirt, grease, moisture or loose particles before application.
- **Surface preparation:** It is recommended to use a suitable primer on problematic or absorbent surfaces.
- **Temperature range:** Application should be carried out within the temperature range recommended by the manufacturer.

Incompatible materials

- Greasy, silicone or Teflon surfaces that prevent adhesion.
- Surfaces with high humidity or permanently wet materials.
- Surfaces that contain substances that negatively affect the chemical curing of the foam.
- PVC, Plastic wrap, plastic

Use with other products

- PUR foam can be combined with top layers such as coatings or foils that provide additional protection (e.g. against UV radiation or mechanical damage).
- When used with waterproofing materials, compatibility with these materials must be verified based on the manufacturer's specification.

10 ENVIRONMENTAL CONDITIONS

• When used outdoors, the wind speed must not exceed approx. 15 km/h, otherwise protective screens must be used.

• The application must not take place if the ambient temperature is closer than 5 °C to the dew point (risk of condensation).

11 MAINTENANCE INFORMATION

EXY 34®HFO foam is a low-maintenance material when applied in accordance with the manufacturer's recommended procedures and protected from adverse external influences. PUR foam is not normally open to maintenance in the structure. Any interventions should only be carried out by professionals and in accordance with the manufacturer's technical specifications. To ensure maximum durability and proper functionality, it is recommended to carry out regular visual inspections of the condition of the protective layers and detect any mechanical damage or degradation.

12 MINIMIZING LIFE-CYCLE GREENHOUSE GAS EMISSIONS

Minimizing greenhouse gas emissions is a key goal during the development and production of PUR foam, with the benefits of reducing energy consumption during use significantly outweighing the environmental footprint associated with its production.

13 THE MOST COMMON MISTAKES IN USE

Applications without sufficient protection of personal aids:

- Insufficient protection (e.g. absence of a respirator-mask) during application can lead to exposure to chemicals and health problems.

Use outside of recommended conditions:

- Application at temperatures or humidity outside the recommended ranges may result in improper curing and reduced foam performance.
- It can lead to foam shrinkage.

Unsuitable application on incompatible surfaces:

- Application to surfaces with high humidity or surfaces that are not pre-cleaned can lead to a lack of adhesion and a reduced lifespan.

Insufficient UV protection:

- If the foam is not protected by a suitable layer, it can be degraded by sunlight.

Use as a supporting structure:

- PUR foam is not intended to be used as a carrier material and may fail if used incorrectly in this way.

14 TROUBLESHOOTING THE MOST COMMON ISSUES

- **Uneven foam** – can be caused by poor mixing ratio or technology settings.
- **Foam too white, rubber** – excess of component B.
- **Fragile foam, darker in colour** – excess of component A.
- **Odor or overheating** – failure to comply with the maximum layer thickness or insufficient cooling time.
- **PUR foam does not grow** - wrong mixing ratio, lack of one of the substances, insufficient temperature and pressure, or clogged mixing chamber.

15 RECOMMENDATIONS FOR MINIMIZING RISKS

Follow the manufacturer's instructions, including application conditions and recommended top coats. Wear appropriate personal protective equipment during application. Do not use the product outside of the recommended purposes or conditions specified in the data sheet.
It is not recommended to apply to materials that have a thermal degradation temperature of less than 100 °C. Application to polymeric materials with a glass transition of less than 100 °C may affect their dimensional stability.

***Note**: The product is intended for professional use only and the application must be carried out by trained personnel in accordance with the manufacturer's safety instructions and applicable legislation.*

Manufacturer's Liability Statement

The manufacturer is responsible for the conformity of the product with the declared characteristics at the time of placing it on the market.
The applicator is responsible for the correct execution of the installation.

This document is based on the current knowledge of science and technology and the experience of HONTER Company s.r.o. and HONTER CZ s.r.o. as of the date of its publication. The information contained therein serves as general guidelines for the correct application of the product.

Since the specific conditions of application may vary and are not under the full control of the manufacturer, HONTER Company s.r.o. and HONTER CZ s.r.o. do not bear any legal responsibility for the results of the application or for any damage caused by improper use of the product.

In case of any ambiguity or doubt, it is always necessary to contact the manufacturer's technical department. Only trained and qualified personnel are allowed to apply the product in accordance with the data sheets, safety data sheets and applicable legislation.

Use of the product outside of the recommended purposes or conditions specified by the manufacturer is prohibited and is entirely the responsibility of the applicator. For professional use only.