

# Product Data Sheet

## HYTHERM® CG (Cellular Glass) INSULATION TAPERED

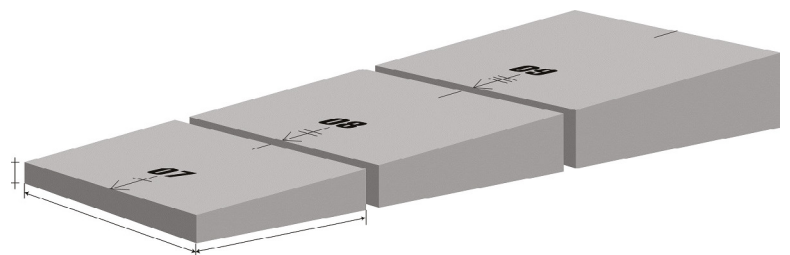
### Non-combustible, high performance tapered insulation\* for warm roof constructions

Hytherm CG Tapered cut to falls insulation is a robust, non-combustible insulation material that can play a crucial role in the fire safety of a building as well as providing long-lasting thermal performance in a flame free (self adhesive or adhered) or torch-applied warm roof waterproofing system.

Hytherm CG is manufactured from specially graded recycled glass (>60%) and natural raw

materials such as sand, lime, dolomite. In Hytherm CG Tapered systems, the cellular glass slabs are tapered across their width or sometimes their length. A central arrow stamped onto the top surface indicates the direction of fall. They do not combust, support fire, produce fumes or present a fire risk with the building structure. The material meets the most stringent European fire classification.

The inherent characteristics of this robust material ensure that Hytherm CG Tapered insulation provides secure, long-lasting performance without degradation together with design flexibility on the most aesthetically and technically demanding of projects.



## Key benefits

**Non-combustible** to classification EN 13501-1 A1. No propagation of flames in the event of fire (chimney effect) in ventilation space.

**High compressive strength** due to cell structure. Long-term compressive loads can be applied without movement of deformation.

**Waterproof** due to hermetically sealed closed cell glass structure. Does not absorb water or swell.

**Vapour and gas resistant;** provides constant thermal performance for the lifetime of a building.

**Dimensionally stable;** no warping, creep, swelling or shrinkage.

**Resistant to acids and organic solvents;** not damaged by aggressive environments.

**Rot- and vermin-proof** due to being inorganic; no risk of nesting or seed germination.

**User-friendly;** easy to cut with simple tools and to install.

**Ecological;** contains recycled glass and can be safely recycled after use.

**Environmental credentials:**

- Inert and non-toxic
- Manufactured to ISO 14001
- GWP (Global Warming Potential) = <1.5
- ODP (Ozone Depletion Potential) = zero

## Performance

Hytherm CG Tapered has a hermetically sealed, closed glass cell structure. It is non-toxic, does not combust or support fire nor does it produce fumes. Its structure also prevents water penetration or tracking by capillary action. If fully bonded (including the board edges) the insulation and its adhesive are vapour tight, fulfilling both insulating and air and vapour control properties in one material. Please contact Axter for more details.

## Use

Hytherm CG Tapered insulation is designed for use in a flame free (self adhesive/adhered) or a torch-applied warm roof bitumen, PVC or TPO waterproofing system on concrete, timber or metal decks.

Due to its low coefficient of thermal movement, Hytherm CG Tapered is simply bonded onto the deck with adhesive, avoiding thermal bridging and corrosion of mechanical fixings. It is ideal as part of waterproofing design for heavy traffic roofs due to it having one of the highest compressive strengths, including at edges, of any insulating material.

## Adhesives

The following Axter adhesives are recommended for use with Hytherm CG Tapered insulation:

### Hyrastik Evo - non-flammable, solvent-free, polyurethane cold applied adhesive

Hyrastik Evo is a high performance, single-component, moisture-curing polyurethane insulation adhesive developed to provide a safe, flame free and effective solution to bonding insulation securely to roof decks.

Supplied in a 6 litre tin which includes a spout for simple pouring.

|                                |                        |                            |                                   |
|--------------------------------|------------------------|----------------------------|-----------------------------------|
| <b>Product</b>                 | Hyrastik (100% solids) | <b>Open Time (10°C)</b>    | 15 minutes                        |
| <b>Appearance</b>              | Brown                  | <b>Open Time (20°C)</b>    | 7 minutes                         |
| <b>Application Temperature</b> | 5 - 30°C               | <b>Open Time (30°C)</b>    | 4 minutes                         |
| <b>Temperature Resistance</b>  | -30 - 100°C            | <b>Coverage</b>            | 30-60 m <sup>2</sup> / 6l (6.5kg) |
| <b>Cure Time (10°C)</b>        | 60 minutes             | <b>Viscosity (CPS)</b>     | 4,000                             |
| <b>Cure Time (20°C)</b>        | 30 minutes             | <b>Storage temperature</b> | 5 - 30°C                          |
| <b>Cure Time (30°C)</b>        | 15 minutes             | <b>Environmental</b>       | Solvent-free<br>Non-flammable     |

Full details are given in the Axter Hyrastik Evo Product Data Sheet and Safety Data Sheet.

### Starcoat R - cold applied bitumen adhesive

Starcoat R is a single-component, polyurethane bitumen adhesive for insulation, with integrated anti-root protection. It is a flame free, cold applied product and is ready to use with no mixing.

Starcoat R is also ideal for the waterproofing of complex details and localised repairs on new and existing bitumen membranes on inaccessible areas, areas with pedestrian and light vehicular traffic and on living roofs. Eliminating the need for naked flame gas torches, it is the ideal choice for high risk detail and perimeter zones.

Application of Starcoat R in a continuous coat, sealing all board edges, will negate the need for an air and vapour control layer (AVCL).

Supplied in 4 x 4kg or in 20 kg drum. Application is by brush or roller.

|                                |            |   |  |
|--------------------------------|------------|---|--|
| <b>Product</b>                 | Starcoat R | <b>Coverage rate **</b>   | 1.5kg / m <sup>2</sup>                       |
| <b>Appearance</b>              | Black      | <b>Coverage rate/unit/m<sup>2</sup> **</b><br>4x4kg drum<br>20kg drum | 10.67 m <sup>2</sup><br>13.33 m <sup>2</sup> |
| <b>Application Temperature</b> | 5 to 35°C  | <b>Drying time hour/layer*</b>  | 3 to 24                                      |

\*drying time will vary, figures assume 25°C and 50% humidity.

\*\*coverage rates will vary depending on porosity and condition of substrate.

Full details are given in the Axter Starcoat R Brochure, Technical Data Sheet and Safety Data Sheet.

### Ruberfix Bitumen Mastic - hot applied adhesive

Ruberfix is a bitumen mastic (no oxidised bitumen content) for use with Hytherm CG insulation, bitumen waterproofing membranes and also to fill joints and bridge cracks. Application of Ruberfix bitumen mastic in a continuous coat, sealing all board edges, will negate the need for an air and vapour control layer (AVCL). The bitumen blocks are heated with the plastic film intact in a thermostatically-controlled bitumen boiler with regulator and the mastic is applied from a pouring can with a large aperture prior to installation of the insulation.

Supplied in 20kg blocks wrapped in thermofusible film.

## Green Roofs

Hytherm CG Tapered can be incorporated into an extensive or intensive living roof. Depending on structural conditions it is suitable for concrete, timber or metal decks. It is resistant to the increased amount of vapour and moisture on roofs with planted areas and because it is inorganic, it is highly resistant to all forms of infestation and vermin. The closed glass cells do not store moisture and provide an effective shield against root penetration. There is no risk of fertilizer damaging the insulation as it is resistant to chemicals.

## Environment and Ecology

Hytherm CG Tapered is manufactured from minimum specially graded recycled glass ( $\geq 60\%$ ), including scrap vehicle glass and off-cuts from the glazing sector, and natural raw materials (sand, dolomite, lime). It is an inert and non-toxic material and at the end of a building's life the Hytherm CG Tapered insulation can be safely incorporated into hardcore or landscaping.

The glass cell structure of the material is naturally produced and is inorganic and free from ozone-depleting propellants, flame retardants or binders. It is without VOC or other volatile substances. Mutagenic or carcinogenic chemicals are not used during production.

## HYTHERM CG TAPERED – Standard Thicknesses & Characteristics

| Length x width (mm)    | 600 x 450 |    |    |    |     |     |     |     |     |
|------------------------|-----------|----|----|----|-----|-----|-----|-----|-----|
| Average thickness (mm) | 60        | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |

Standard angles of inclination: 1.1%, 1.3%, 1.7%, 2.0%, 2.8%, 3.0%, 3.3%, 4.0%, 4.4%, 5.0%, 5.6%, 6.7%

## HYTHERM CG TAPERED – Product Characteristics

| Product characteristics to EN 13167 | Measure unit      | Value  | Standard       |
|-------------------------------------|-------------------|--|----------------|
| Reaction to fire                    |                   | Euroclass E<br>Core material complies with Euroclass A1, non combustible, no toxic fumes | EN 13501-1     |
| Density ( $\pm 15\%$ )              | kg/m <sup>3</sup> | 105  | EN 1602        |
| Thickness $\pm 2$ mm                | mm                | from 60 to 140mm   | EN 823         |
| Length $\pm 5$ mm                   | mm                | 699  | EN 822         |
| Width $\pm 2$ mm                    | mm                | 450  | EN 822         |
| Thermal Conductivity                | W/m.K             | $\lambda_D \leq 0.039$   | EN ISO 10456   |
| Point load                          | mm                | $PL \leq 1.5$  | EN 12430       |
| Compressive strength                | kPa               | $CS \geq 600$  | EN 826 Annex A |
| Bending strength                    | kPa               | $BS \geq 450$  | EN 12089       |
| Tensile strength                    | kPa               | $TR \geq 50$   | EN1607         |

Environmental Product Declaration: EPD-PCE-20150042-IBA1-DE (ISO 14025 and EN 15804)

| Product characteristics to EN 13167 | Measure unit        | Value                  | Standard      |
|-------------------------------------|---------------------|------------------------|---------------|
| Service temperature limits          | °C                  | -265 to +430           |               |
| Water vapour resistance             | μ                   | ∞                      | EN ISO 10456  |
| Thermal diffusivity at 0°C          | m <sup>2</sup> /sec | 4.2 x 10 <sup>-7</sup> |               |
| Hygroscopicity                      |                     | zero                   |               |
| Capillarity                         |                     | zero                   |               |
| Melting point                       | °C                  | >1000                  | cf DIN 4102-7 |
| Thermal expansion coefficient       | K <sup>-1</sup>     | 9 x 10 <sup>-6</sup>   | EN 13471      |
| Specific Heat                       | J/(kg.K)            | 1000                   | EN ISO 10456  |

## Technical Guidelines

### Application

Application of Hytherm CG Tapered should preferably take place when the ambient air temperature and temperature of the deck/roof slab are above 5°C.

All expansion and movement joints should be continued through the structure.

### Decks

#### Metal

|                              |  |
|------------------------------|--|
| Thickness                    | Minimum 0.7mm  |
| Trough width                 | Maximum 60% of total surface   |
| Minimum insulation thickness | in function of the trough width (l1)<br>0mm < L1 ≤ 80mm = thickness 50mm (minimum)<br>80mm < L1 ≤ 110mm = thickness 60mm<br>110mm < L1 ≤ 140mm = thickness 70mm<br>140mm < L1 ≤ 180mm = thickness 80mm |
| Maximum deflection           | <b>1/240</b> of the span if the height of the corrugations is less than 90mm<br><b>1/300</b> of the span if the height of the corrugations is equal to or more than 90mm                               |

Metal sheets to be fastened following manufacturer's guidelines.

On top of the galvanized metal sheet a spirit-based primer (cutback) coating should be applied (consumption +/- 150gm/m<sup>2</sup>). On pre-coated sheets it is not necessary to apply a primer.

## Continuous supports

The deck must be clean, dry and free of any irregularities. Irregularities of the deck must not exceed 3mm over 600mm or 5mm over 2m.

In the case of a concrete roof slab and if required an appropriate levelling screed shall be applied.

If composed of pre-cast concrete beams, irregularities must not exceed 3mm between each section.

\*Axter Product Data Sheets are also available on Hytherm CG Adhered and Hytherm CG Torched insulation. Please contact Axter to obtain copies or for technical and design assistance.

The manufacturer reserves the right without prior notice to modify the composition of these products. Characteristics provided in this publication derive from data obtained under controlled test conditions. Axter Ltd makes no warranties, express or implied, as to the properties and performance under any variations from such conditions in actual construction and accepts no liability for use of these products that does not comply with Axter Ltd specifications.