Hygrothane Waterproofing Membrane

Product Description

Hygrothane is a spray applied, two-component polyurea waterproofing system designed to provide long lasting protection against water and moisture for various applications. Applied using a high-pressure system, Hygrothane cures quickly to form a seamless monolithic waterproofing membrane which conforms easily to irregular surfaces.

The complete system optimizes construction schedules by allowing installation at a wide range of temperatures. The polyurea membrane is extremely resilient. It protects the substrate from soil, rocks and other abrasive materials while remaining flexible enough to bridge any cracks that may form.

Recommended Applications

- Residential and commercial construction
- Poured concrete and masonry waterproofing systems
- ICF foundation wall systems
- Elevated roadways and bridges
- Wastewater and sewage applications
- Elevator pit waterproofing
- Below grade waterproofing in both hydrostatic and nonhydrostatic conditions

Features

- VOC-free formula
- Can be applied in below freezing temperatures
- Solvent free, 100% solids
- High chemical resistance
- High abrasion resistance
- Flexible and seamless membrane
- Tack free in 30 seconds
- Impact resistant

Approvals and Certifications

CCMC compliance testing as an alternative solution that complies with Canadian provincial building code requirements (CCMC #14144-R).

LEED documentation and International Certified EPD available. Manufacturer inventory reporting content inventory with product threshold of 100 ppm (0.01%).

Installers are encouraged to receive training from the manufacturer if they are unfamiliar with the chemicals and equipment used to manufacture polyurea coatings.

Technical Properties

Attribute	Test	Results
Dry Film Thickness	ASTM D5147	1.27 mm (50 mils)
Tensile Strength	CAN/CGSB 37-GP-56M	392N (MD) 400N (XD)
Elongation	CAN/CGSB 37-GP-56M	334% (MD) 347% (XD)
Water Vapour Transmission	ASTM E96	58 ng / (Pa·s·m^2) @ 1.27mm or 50 mils
Peel Strength	CAN/CGSB 37.58-M86 ASTM C794	1726 N/m
Water Absorption	CAN/CGSB 37.58-M86	0.43%
Low Temp Flexibility	CAN/CGSB 37.58-M86 ASTM C794	-40°C No Crack
Dimensional Stability	CAN/CGSB 37.58-M86	0.38% (MD) 0.43% (XD)
Horizontal Burn	UL 94	HB (Self extinguishes)
Static Puncture	CAN/CGSB 37-GP-56M (-15°C)	Pass Rating 4
Dynamic Puncture	CAN/CGSB 37-GP-56M (-15°C)	Pass Rating 4
Crack Bridging	ASTM C1305 (-20°C & 40°C)	Pass No splitting or loss of adhesion
Water Tightness*	CAN/CGSB 37.56-M86	Pass
Lap Peel	ASTM D1876	1680 N/m
Pull Adhesion on Concrete (With Primer)	ASTM D4541	5.84 MPa 847 lb/in^2
Pull Adhesion on Concrete (Without Primer)	ASTM D4541	3.56 MPa 516 lb/in^2
Adhesion of Poured Concrete to Hygrothane**	ASTM D4541-M	10,000 N/m^2 1.45 lb/in^2
Resistance to Hydrostatic Head	ASTM D5385	92 m 301 ft
CCMC #	-	14144-R
Colour	-	Black

*After puncture, impact, chemical aging, heating aging and UV aging
**With acrylic concrete primer

Liquid Component Characteristics

Component A: MDI (ISO)
Colour: Clear
600 - 1200 cps @ 25ºC
1.22 g/ml @ 25ºC

Component B: Resin
Colour: Black
1.02 g/ml @ 25ºC

Mix Ratio by Volume: 1:1 of A:B

The Component A (ISO) used in this system is not the same ISO used in the production of spray foam. It is required that the both the A and B sides of the equipment be flushed out when switching between spray foam systems and polyurea systems. The ISO container should be sealed during use to prevent water or humidity from reacting with the component. A desiccant filter should be used on the air inlet for the ISO container during use.

The Resin must be mixed for a minimum of 30 minutes with an electric or pneumatic mixer prior to use (i.e. Graco Low Viscosity Agitator with Expanding Blades 26C818, or equivalent). The materials can be circulated through the processing equipment to raise the temperatures in the drums. Care should be taken to not overheat the recirculating material as this could have adverse effects on the performance of the chemicals.

Processing Parameters and Equipment

Pressures (dynamic): 2000-2500 psi (138-172 bar)
A&B Preheat Temperature: 155-165°F (68-74°C)
Hose Temperature: 155-165°F (68-74°C)
Container Temperature in Use: 68-104°F (20-40°C)

For optimal processing of the Hygrothane waterproofing coating, Elastochem recommends the above proportioner settings when applying the material with a Graco Fusion AP/CS gun equipped with an AR 2929 or AR 2020 chamber. Larger gun chambers may result in diminished physical properties. Other guns are available (i.e. Graco Fusion MP) which can provide adequate mixing for the chemical, and processing parameters for different spray equipment can be made upon request.

The use of a high-pressure equipment, such as a Graco EXP-2 machine, equipped with high pressure lines, is recommended to ensure that enough heating capacity and pressure are supplied to the gun. Machines commonly used for spray foam may not have the required pressure or heating capacity to process this material. Due to the high viscosity of the ISO, it is recommended that heavier duty transfer pumps are used to feed the proportioner (equivalent of T2 or T3 Graco pumps).

Substrate Preparation

The key steps for a successful membrane installation are as follows: fill large gaps, pack joints with backing material, mask area, clean substrate, and prime (if necessary).

Fill Large Gaps:
Hygrothane is buildable to fill small gaps and cracks present in foundation walls less than ½" in size. Larger gaps, honey combing, missing/loose material, holes and other penetrations should be filled/parged with a suitable cementitious material before installation.

The cement shall be allowed to fully cure and dry (<20% moisture content) prior to the application of Hygrothane.

Pack Joints with Backing Material:
Inspect the project for any control joints that must be filled with backing rods. Unless the installation of the backing rods is included in the scope of work, have the general contractor correct any deficiencies prior to installation.

Mask Area:
The installation of the membrane is completed through a high-pressure mixing and spray process. Although the applicator can control the direction of the spray to a relatively small area, overspray will be present.

Inspect and determine areas which must be masked to protect the building and surrounding property from overspray. A thin plastic sheet secured with tape, staples or glue should be placed over windows, equipment and other sensitive areas.

It may be required to move vehicles away from the downward direction the wind, as the overspray can carry in strong winds. For areas which require a clean edge, such as window openings and the ground level of the membrane, additional attention may be required. The use of TrimWire tape or similar products may be used to create a crisp edge after installation. A clean edge can also be achieved with regular tape and careful cutting using a utility knife.

Substrate Conditions

Concrete:
Concrete and masonry surfaces must be fully cured, structurally sound, clean, dry (<20% moisture content) and free of contaminants.

If form release agents or surface contaminations are present on a concrete substrate, they must be completely removed by using an approved cleaning agent such as isopropyl alcohol.

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If non-film-forming release agents have been used, adhesion testing must be done to ensure proper bonding to the substrate. The rough surfaces of these substrates can be prepared by sandblasting, mechanically abrading, wire brushing, grinding, or any combination of these preparation methods. The CSP of the substrate will be dependent on whether a primer is to be used. A lower CSP will allow for better coverage of thin film primers and bonding of the Hygrothane will be primarily achieved through chemical bonds when a primer is used.

When no primer is used, a CSP of 3 to 6 is recommended and adhesion will need to be verified to ensure that it meets the requirements of the project.

The dust and particles created from these procedures must be treated as contaminants and thoroughly removed with oil-free compressed air, power washing, or brushed off the surface.

Metal:
Non-porous substrates such as metal must be cleaned of any oil, dirt or contamination. A primer must be used prior to application of Hygrothane.

Other Substrates:
Refer to Hygrothane Surface Preparation Guidelines.

Prime Surface:
Priming the substrate is typically recommended prior to the application of Hygrothane. The typical substrates that will be encountered in construction are concrete (masonry) and metal. Elastochem recommends the following primers for these cases:

- SwiftSeal Prime EP100 – Cementitious
- SwiftSeal Prime PR105 – Metal

Primers should be tested for compatibility on each project they are used for. Application information and use of the primers can be found in the primer Technical Data Sheets. Specialty primers may be required depending on site conditions. Contact Elastochem for additional information.

Certain substrates, such as ICF, drainage board, polyurethane foam and exterior gypsum board, will not require a primer prior to Hygrothane. Consult Elastochem for guidance on surfaces not included in the Technical Guide.

Application Information

A minimum of 1.27 mm (50 mils) thickness is required as per the guidelines of the CCMC evaluation. Since Hygrothane contains 100% solids, the initial spray thickness will be equal to the final dry film thickness.

When applying Hygrothane around substrate penetrations, gaps, cracks, seams and transitions, ensure that a flashing of Hygrothane, with the appropriate overlaps, is installed prior to the application of the main membrane. Specific wall details are available for common foundation types, wall penetrations, and horizontal applications. If an architectural detail is unavailable, or a unique recommendation is required for a project, please consult with the manufacturer. The project designer has the ultimate responsibility for the design.

Master Specifications are available for:
- Positive Side Waterproofing
- Blindside Waterproofing
- Elevated Roadways and Bridges

If a gap or crack is too large to fill with Hygrothane, fill the area with mortar, or grout, or other suitable material and allow to fully cure (< 20% moisture content) before coating.

The Hygrothane material has no maximum pass thickness or thickness limitations. Passes of material can be applied directly over each other with no required wait time. When applying multiple passes, spray each layer in alternating directions (horizontally and vertically) to create a crosshatch pattern. This will provide consistent coating thickness, coverage from different angles, resulting in better material performance.

Apply the Hygrothane material only when the surfaces and ambient temperatures are within manufacturers' prescribed limits.

- Substrate temperatures: Must be above -5°C to ensure proper adhesion and curing of the material.
- Moisture content: Concrete must be < 20%.

The membrane should be inspected and treated for:

Delamination and Bubbling:
Affected sections should be cut away from the substrate and resealed with coating. If necessary, apply primer before recoating to achieve adhesion.

Pinholes and Fish Eyes:
Can be caused by surface contamination. Coat with an additional layer or Hygrothane to seal the area.

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Off-ratio material:
Tacky or brittle coating on the wall, indicates the material has not properly cured and must be removed and replaced. Identify the issue with the equipment which caused the material to go off ratio and ensure all equipment is working correctly before resuming spray. It may be required to clean the area of any chemical residue before resuming application of the waterproofing membrane.

Backfill and Curing:
The material can be protected and backfilled within 20 minutes of application. Since all the components needed to fully cure the coating are contained within the two-part system, curing will continue even after being covered with protection board and backfilled. A full cure will be reached after 24 hours.

Specific wall details are available for common foundation types and wall penetrations. If an architectural detail is unavailable, or a unique recommendation is required for a project, please consult with the manufacturer. The project designer has the ultimate responsibility for the design.

Health and Safety Handling

When spraying or handling Hygrothane, the following protective steps and equipment are recommended:

Protective Equipment
- Fabric coverall
- Nitrile gloves (when handling raw compounds)
- Palm dipped gloves (while spraying)
- Supplied full face fresh air respirator (recommended)
- Full face respirator with organic vapour cartridges (minimum)
- Use personal protective equipment (see SDS)

Exposure
- Avoid all contact with skin
- Avoid all contact with eyes
- Do not ingest
- Do not inhale the vapours

In case of exposure, please refer to the SDS for first-aid measures.

Spills
In case of spills, contain and collect spillage with a non-combustible absorbent material, such as: sand, earth, clay-based oil absorbent (kitty-litter), etc.

For larger spills, contact Elastochem 1-877-787-2436 or any agency specialized in chemical damage control (e.g., CANUTEC at 613-996-6666).

Chemical Storage

All materials provided by Elastochem are to be sealed until ready for use. Keep containers closed during storage and out of a humid environment. Ensure the ISO container is purged with nitrogen gas if opened and placed back into storage.

Drum Storage Temperature:

ISO (A)	15-30°C (59-86°F)
RESIN (B)	15-30°C (59-86°F)

Part A and B chemicals have a 6-month shelf life.

Conditions and Limitations

Hygrothane does not require the addition of a dimpled membrane on the exterior for mechanical protection when applied at a minimum thickness of 50 mils, in accordance with manufacturer's application instructions. More information regarding Hygrothane Mechanical Protection Testing can be provided upon request.

The foundation wall must be backfilled in accordance with the requirements of Subsection 9.12.3., Backfill, of Division B of the NBC 2015.

The membrane must be protected from Ultraviolet light (UV) within six weeks of application.

Exposed Hygrothane must be covered with a compatible coating or flashing material. Contact manufacturer for suggestions of approved finish materials.

Patching materials used to fill voids in the substrate wall system must be compatible with the substrate and the membrane.
If the foundation is made of a material other than concrete masonry units or poured concrete, the manufacturer must be contacted to determine suitability of the substrate (i.e. insulated concrete forms).

Disclaimer: Technical information as shown in this document is intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product.

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