

# PREPRUFE® 400T

Pre-applied waterproofing membrane that bonds integrally to poured concrete for tunnel applications

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## Product Description

PREPRUFE® 400T membrane is a unique composite sheet comprised of a thick polyethylene film, an aggressive pressure sensitive adhesive and a protective coating. Unlike conventional non-adhering tunnel membranes, which are vulnerable to water ingress tracking between the unbonded membrane and tunnel, the unique PREPRUFE® bond to concrete prevents ingress or migration of water into the structure.

The PREPRUFE® Tunnel System includes:

- **PREPRUFE® 400T**—heavy duty pre-applied waterproofing membrane for drill-and-blast, bored and cut-and-cover tunneling applications
- **HYDRODUCT® Tunnel Drain**—composite sheet that collects and transports water for use in drained tunnels
- **HYDRODUCT® Tunnel Mat**—geotextile for surface leveling for use in non-drained tunnels
- **PREPRUFE® Tunnel Tape**—6 in. tape used to seal all side laps, end laps, cut edges, roll ends, penetrations and detailing
- **PREPRUFE® Detail Tape**—double-sided tape used to seal all end laps and detailing
- **BITUTHENE® Liquid Membrane**—for sealing around penetrations, detailing etc.

PREPRUFE® 400T membrane is applied against a prepared substrate. Concrete is then cast directly against the adhesive side of the membrane. The specially developed PREPRUFE® adhesive layer forms a continuous and integral seal to the structure.

## Product Advantages

- **Fully-adhered technology**—provides an intimate seal to the structure
- **Micro-compartmentalized system**—prevents lateral water migration between the waterproofing and the structure
- **Solutions for all tunnel types**—used for drill-and-blast, bored and cut-and-cover tunneling applications
- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack
- **Easy to install**—waterbars not necessary for compartmentalization that include complex sealing of joint

## Application Procedures

### Safety, Storage and Handling Information

All construction products must be handled properly. SDS (Safety Data Sheets) are available on the web site and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the SDS before use.

## Installation

PREPRUFE® 400T is installed by a GCP approved waterproofing applicator.

GCP provides designers and engineers with a customized solution for the most complex waterproofing challenges.

## Concrete Placement

Ensure the plastic release liner is removed from all areas of PREPRUFE® Membrane and Tape. Concrete must be placed and compacted carefully to avoid damage to the membrane. Never use a sharp object to consolidate the concrete. Formwork must remain in place until the concrete has gained sufficient compressive strength for the PREPRUFE®

PREPRUFE® 400T	4 FT. WIDE
Roll Length	Custom to order
Palletization	16 Rolls per pallet
Storage	Store upright in dry conditions below 95 °F (35 °C)
PREPRUFE® Tunnel Tape	6 in. wide x 49 ft. (150 mm x 15 m)
PREPRUFE® Detail Tape	2 in. wide x 50 ft. (50 mm x 15.2 m)
BITUTHENE® Liquid Membrane	1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)
HYDRODUCT® Tunnel Drain	39 in. x 150 ft. (99.1 cm x 45.7 m)
HYDRODUCT® Tunnel Mat	7 ft. x 75 ft. (2.1 m x 22 m)

## Physical Properties

PROPERTY	TEST METHOD	TYPICAL VALUES
Thickness	ASTM D3767	0.066 in. (1.68 mm)
Elongation at Break	SIA 280	Pass
Cold Bend Behavior	SIA 280	Pass
Dimensional Stability	SIA 280	Pass
Slit Pressure Resistance	SIA 280	Pass
Heat Aging	SIA 280	Pass
Long Term Compression and Impermeability	SIA 280	Pass
Microorganisms Resistance	SIA 280	Pass

Resistance Against Aggressive Liquids	SIA 280	Pass
Resistance Against Asphalt	DIN 16937	Pass
Crack Cycling at -10°F (-23°C), 100 Cycles	ASTM C836	Pass
Elongation, minimum <sup>1</sup>	ASTM D412	500%
Tensile Strength, Film, minimum	ASTM D412	4000 psi (27.6 MPa)
Water Absorption, maximum	ASTM D570	0.50%
Peel Adhesion to Concrete, minimum <sup>2</sup>	ASTM D903	5 lbs/in. (880 N/m) width
Lap Peel Adhesion <sup>3</sup>	ASTM D1876	2.5 lbs/in. (440 N/m) width
Low Temperature Flexibility	ASTM D1970	Unaffected at -10°F (-23°C)
Resistance to Hydrostatic Head, minimum <sup>4</sup>	ASTM D5385	231 ft (70 m)
Puncture Resistance, minimum	ASTM E154	150 lbs (667N)
Permeance to Water Vapor Transmission	ASTM E96 - B	0.03 PERMS

**Footnotes:**

1. Test performed at a rate of 2 in. (50 mm) per minute.
2. Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
3. The test is conducted 15 minutes after the lap is formed (per GCP published recommendations) and run at a rate of 2 in. (50 mm) per minute.
4. Test performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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Last Updated: 2018-08-24

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