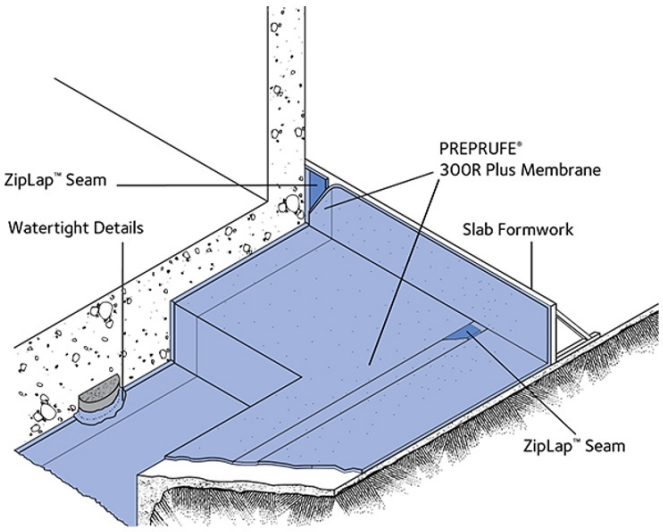
PREPRUFE® Plus Membranes (UK/IE Version)

New Generation PREPRUFE® Membranes with unique PREPRUFE® Ziplap™ specifically designed for waterproofing and the protection of concrete slabs and below ground concrete walls poured in confined space conditions.

Product Description

GCP Applied Technologies ("GCP") PREPRUFE® 300R Plus & 160R Plus membranes are the latest generation of PREPRUFE® membranes with the unique PREPRUFE® ZipLap™ seam. The ZipLap™ seam allows for fast, simple and secure applications in a wide range of seasons and climates. PREPRUFE® 300R Plus & 160R Plus membranes are designed to develop an integral watertight adhesive bond to poured concrete to prevent water migration between the concrete and the waterproof membrane.



Drawings are for illustration purposes only.
Please refer to gcpat.com for specific application details.

Product Advantages

- Fast, Simple and Secure – engineered for efficient jobsite application and long term waterproofing performance.
- Advanced Bond Technology™ reduces risk – develops an intimate and continuous adhesive bond to concrete proven to resist water migration between concrete substrate and the waterproofing membrane
- PREPRUFE® ZipLap™ dual adhesive watertight laps – easy to execute year round even in harsh conditions; laps stay clean and dry until the seal is made.
- Gas resistance – PREPRUFE® 300R PLUS LT will restrict the ingress of methane, carbon dioxide and radon gases into buildings from landfill and naturally occurring sources and satisfy the performance criteria for a gas-resistant membrane, as defined in BS 8485 : 2015+A1:2019, Table 7.
- Reduces cost and saves time – fast installation, only 2 operator crew.

- No hidden extras – no primers, sealants, fillets or specialist equipment.
- Extended exposure time – unique UV barrier coating allows exposure up to 56 days prior to concreting, for programme flexibility or delays.
- Lightweight, easier handling – reduced storage area and better safety vs thicker, heavier, bulky technologies.
- Simple system – membrane and only single tape and liquid detailing to install the waterproofing system.
- Easy detailing - flexible membrane in use but keeps its shape and conforms to corners and other construction details.
- Smooth, non-absorbent surface – unlike fabric, fleece or mesh faced membranes, smooth surface allows for cleaning before concreting to ensure intimate bonding.
- No compartments – full integral adhesive bond eliminates the need for complex welded compartments used with unbonded membranes.
- Cold applied, single layer – no hot works, double layers or protection screed.
- Tough HDPE waterproof geomembrane –durable, tough, chemical and gas resistant. Designed to isolate structure from salts and sulfate attack.
- 25 Year Track Record – PREPRUFE® Membranes have been used successfully on major projects around the world for more than 25 years.
- Passive waterproofing – unlike bentonite based systems, does not rely on water exposure activation, is designed to be unaffected by most groundwater contaminants, rain or wet/dry cycling
- Total GCP system – full range of GCP hydrophilic and PVC waterstops are available for concrete joint protection including wide movement joints (seismic area). Can be used in combination with GCP post-applied self-adhered waterproofing systems and accessory products.

Applications and Assessments

- Water and vapour proofing for all basement grades to BS 8102:2009.
- Waterproofing civil engineering sub-structures.
- Gas resistance - PREPRUFE® 300R PLUS LT will restrict the ingress of methane, carbon dioxide and radon gases into buildings from landfill and naturally occurring sources and satisfy the performance criteria for a gas-resistant membrane, as defined in BS 8485:2015+A1:2019, Table 7. Independent test results available upon request.
- Protection of reinforced concrete structures in most aggressive ground exposures including conditions experienced in the Arabian Peninsula.
- Certifications available upon request.
  - BBA Certificate No. 97/3325.
  - Mott MacDonald Special Services Report May 2001.
  - Technische Hochschule Nuremberg (THN) Report February 2017.
  - STUVAtec report December 2016.
  - International Certifications.

System Components:

Membrane

- PREPRUFE® 300R Plus/300R Plus LT Membrane heavy-duty 1.2mm grade can be used in horizontal applications below concrete slabs and on rafts (i.e. mud slabs) and can be applied to vertical concrete substrates poured using blind side single sided formwork systems. PREPRUFE® 300R Plus Membrane is designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- PREPRUFE® 160R Plus/160R Plus LT Membrane 0.8mm grade for vertical use with single sided formwork systems, PREPRUFE® 160R Plus may also be applied horizontally where concrete slab thickness will not exceed 500mm.
- PREPRUFE® 300R Plus LT & 160R Plus LT Membranes - PREPRUFE® Plus LT membranes are specifically designed for installation with reduced taping requirements in low temperature application conditions.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.uk)

- PREPRUFE® Tape – Detailing tape is manufactured with PREPRUFE® adhesive system coating and is designed to provide continuous concrete adhesion at taped edges, details and concrete joints. PREPRUFE® Tape is available in two grades:
  - PREPRUFE® TAPE LT– Low temperature tape for covering cut edges, roll ends, penetrations, concrete joints and detailing in cold weather. PREPRUFE® LT tape is designed for optimal handling when application temperatures are between -4°C and 15°C. PREPRUFE® Tape LT can be applied at temperatures up to 30°C
- BITUTHENE® LM (E) - high performance liquid membrane for detailing terminations at pile caps and pipe penetrations
- ADCOR® 500S - hydro expansive waterstop system for preventing water entry through joints in concrete sub-structures.
- ADCOR® 500T - hydro-expansive waterstop for preventing saline and brackish water entry through concrete construction joints.
- ADCOR® 550MI/ 550 T-MI - hydro-expansive injectable waterstop for added security of concrete construction joints.
- SERVITITE® AT 200/SERVISEAL® AT 240 - High security PVC waterstop system with coextruded hydrophilic bulbs to provide a unique combination of active and passive protection for joints in concrete
- PREPRUFE® 800PA – Non-bituminous synthetic self-adhesive membrane specifically designed for direct application to concrete walls after removal of two sided formwork
- PREPRUFE® 300R Plus LT and 160R Plus LT membranes designed for application in cold weather conditions- equal alternate membranes to PREPRUFE® 160R Plus and PREPRUFE® 300R Plus membranes . PREPRUFE® 300R Plus LT and 160R Plus LT membranes do not require PREPRUFE® Tape on side laps.

This document is applicable to projects and applications in the UK only. Please refer to the local website for further information at gcpat.uk, or contact your GCP representative.

Limitations of Use

- PREPRUFE® 300R Plus and PREPRUFE® 160R Plus and their "LT" versions are only intended for use as specifically detailed in this product data sheet or consistent with other information that can be found at gcpat.uk. Contact GCP Technical Services where any other use is anticipated or intended.
- PREPRUFE® 300R Plus & 160R Plus membranes and their "LT" versions are designed for in-service temperatures below 49°C
- PREPRUFE® 160R Plus and PREPRUFE® 160R Plus LT Membranes can be applied horizontally on the following substrates: Concrete blinding, heave boards and/or rigid insulation. Concrete slab thickness must not exceed 500mm.
- PREPRUFE® 800PA is recommended for application to poured concrete walls where walls will be accessible after removal of two sided formwork. Where PREPRUFE® 300R Plus or 160R Plus and "LT" Membranes are used with conventional two-sided formwork, patching of tie-bar holes must conform with the GCP methods statement available from GCP technical services.

Note that because of local regulations, test standards and customs, product literature and offerings may be different in various locations. If you have any questions or comments, please contact your local customer service at info-gb@gcpat.com or +44 (0) 1480 478421.

Safety and Handling

Users must read and understand the product label and Safety Data Sheets (SDS's) for each system component before use. All users must acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office.

Storage

- All products must be handled and stored consistent with PREPRUFE® 300R Plus/160R Plus methods statement.
- Sequence deliveries to avoid delays and minimize movement and on site storage.
- Product shelf life: 1 year from date of manufacture at recommended storage conditions.
- Store all materials in dry conditions off ground under tarps or otherwise protected from rain and ground moisture.
- Do not double stack pallets.
- Must be stored upright at all times.
- Store in dry conditions between 4.5°C-32°C.

Installation

Technical Support, Details and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.uk or from your local GCP Representative. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature. (PREPRUFE® Plus Application Manual.) Before using this product, it is important that information be confirmed by accessing www.gcpat.uk and reviewing the most recent product information, including without limitation Product Data Sheets, Methods Statements, Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of PREPRUFE® 300R Plus & 160R Plus Membranes.

Support is available on all matters by full-time technically trained GCP Applied Technologies field sales representatives and technical service personnel, backed by a central research and development technical services staff. For technical assistance with detailing, application and problem solving please contact your local in country GCP representative.

CAUTION - Documents in hardcopy or found on alternative websites may be out of date. For the most up to date information visit www.gcpat.uk.

Temperature Guidelines and Requirements

- Installation of PREPRUFE® 300R Plus & 160R Plus membranes in cold or marginal weather conditions (<13°C) requires the use of PREPRUFE® Tape LT for all side laps, end laps and detailing. All surfaces to receive PREPRUFE® Tape LT must be clean and dry.
- PREPRUFE® 300R Plus LT & 160R Plus LT membranes are designed for optimal application at temperatures between -4°C and 15.5ºC. Maximum temperature during application is 30ºC.
- Maximum in service temperature of PREPRUFE® 300R Plus & 160R Plus and their "LT" versions is 49ºC.

Suitable Substrates and Substrate preparation

Suitable substrates include:

- Concrete blinding.
- Well compacted sand on rolled crushed stone.
- Rigid insulation.
- Clay heave boards.
- Permanent formwork .
- 19 mm plywood.
- HYDRODUCT® drainage sheets.
- Adjacent stable sub-structures (e.g. concrete foundations of adjacent buildings).

Substrate Preparation

All surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 12 mm. Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical - Use concrete, plywood, insulation or other approved facing to provide support to the membrane. Board systems must be close butted to provide support and must not be more than 12 mm out of alignment. HYDRODUCT® 200 or 220 drainage sheet can be used to bridge voids, gaps and out of alignment up to 50mm prior to PREPRUFE® 300R Plus and 160R Plus membrane installation.

Membrane Application

PREPRUFE® 300R Plus and 160R Plus membranes have coloured ZipStrips™ at the top and bottom of the selvedge area on the edge of the roll. Both ZipStrips™ cover an aggressive adhesive. Once the green ZipStrip™ on the top of the membrane and the blue ZipStrip™ on the bottom of the membrane are removed, a strong adhesive to adhesive bond is achieved in the overlap area. This PREPRUFE® ZipLap™ provides an enhanced sealing of the overlaps in harsh conditions combined with a fast and easy way of execution without specialized equipment, heat or power.

Horizontal substrates – PREPRUFE® 300R Plus Membrane
PREPRUFE® 300R Plus membrane can be applied on a smooth prepared substrate as described above. Kick out the membrane with the green ZipStrip™ facing towards the concrete pour. End laps should be staggered to avoid a buildup of layers. Leave green and blue ZipStrips™ during the positioning of the membranes for overlap completion. When positioned. Peel back and remove both the green and blue ZipStrips™ from the overlap area (75 mm) to achieve an adhesive to adhesive bond. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller.

- Rebar Chairs: See PREPRUFE® Methods Statement
- Horizontal Application of PREPRUFE® 160R Plus: PREPRUFE® 160R Plus Membrane can be applied horizontally on the following substrates: Concrete blinding, heave boards and/or rigid insulation. Surface preparation and all recommended practices that prevent penetration of the PREPRUFE® 160R Plus Membrane during application must be scrupulously followed. Concrete slab thickness must not exceed 500mm.

Vertical substrates –
Apply the membrane with the green zip strip facing towards the concrete pour. Mechanically fasten the membrane vertically using flat headed fixings appropriate to the substrate. The membrane may be installed in any convenient length. Secure the top of the membrane using a batten or fixing 50 mm below the top edge. Use fixings at typically 600 mm centres to secure the membrane flat against the substrate. Fixings can be made through the selvedge, this allows firmly rolled overlaps, which are covered by the subsequent strip of PREPRUFE® Plus membrane. Any exposed fixings should be patched with PREPRUFE® membrane. Peel back and remove both the green and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Ensure a continuous bond is achieved without creases and roll firmly. On completion of the installation, completely remove the plastic zip strips from all overlaps and Tape.

- Note that PREPRUFE® 800PA is recommended for application to poured concrete walls where walls will be accessible after removal of two sided formwork. Where PREPRUFE® 300R Plus or 160R Plus Membranes are used with conventional two-sided formwork, patching of tie-bar holes must conform with the GCP methods statement available from GCP technical services.

Roll ends and cut edges

Overlap all roll ends and cut edges by a minimum 75 mm and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow surface to dry and apply PREPRUFE® Tape LT centred over the lap edges and roll firmly. Immediately remove the light blue release liner from the tape.

Penetrations

It is critical to seal around all penetrations in strict compliance with PREPRUFE® 300R Plus and 160R Plus standard published details. To seal around penetrations such as service pipes, pile heads, lightning conductors, etc. mark and cut membrane tight to the penetration. If the membrane is not aligned within 12 mm of the penetration, apply PREPRUFE® Tape lapped onto the membrane and butted tight to the penetration. For pipe penetrations, wrap the pipe with PREPRUFE® Tape. Mix and apply BITUTHENE® LM(E) around the penetrations using a fillet to provide a watertight seal between the PREPRUFE® Plus membrane and Tape.

Membrane Repair

Inspect the Membrane before installation of reinforcement steel, formwork and final placement of concrete. The Membrane can be easily cleaned with low-pressure power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and other contaminants and allow the Membrane to dry. Repair all punctures and slices by applying a patch of PREPRUFE® Plus Membrane. Extend the patch 150 mm beyond the damaged area. Seal all edges of the patch with PREPRUFE® Tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh PREPRUFE® Tape. Any areas of damaged adhesive should be covered with PREPRUFE® Tape. All PREPRUFE® Tape must be rolled Firmly and the light blue release liner removed.

Slices or relief cuts can be butted or overlapped and repaired by applying PREPRUFE® Tape centered over the edge of the overlap or center of the butt joint. Where it is not possible to create a butt joint or overlap, repair with fresh Membrane and PREPRUFE® Tape as detailed above.

Pouring of Concrete

Ensure all zip strips and release liners are removed prior to pouring concrete. Under most climatic conditions concrete should be poured within 56 days of membrane installation. Where ambient temperatures will exceed 38°C for more than a total of 7 days, concrete should be placed within 42 days of installation of the membrane. Concrete must be placed and compacted carefully to avoid damage to the Membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

A minimum concrete compressive strength of 20 MPa. is required prior to stripping formwork supporting PREPRUFE® Plus Membranes. Timeframe to reach this minimum required strength is generally 3 to 7 days but is subject to ambient temperature and concrete mix design. Premature stripping may result in displacement of the Membrane and/or spalling of the concrete.

After removal of the formwork and prior to backfilling, all exposed PREPRUFE® Plus Membranes must be protected from damage with an approved protective course.

Inspect the PREPRUFE® Plus membrane around the perimeter edge of the concrete slab. Identify any exposed non-selvedge overlaps in PREPRUFE® Plus membrane. To ensure continuity of the fully bonded system, carefully cut and remove a 75 mm triangular piece of the top flap of PREPRUFE® R Plus membrane only, as shown shaded in the standard detail, Slab Perimeter Detail - non selvedge lap.
Please refer to PREPRUFE® Plus Application Manual for more details.

NBS Specification:

Refer to clause J40 297.

Supply

	PREPRUFE® 300R Plus Membrane	PREPRUFE® 160R Plus Membrane
Thickness (nominal) (mm)	1.2	0.8
Roll size[1] (m)	1.18 x 31.1	1.18 x 36.5
Roll weight (kg)	49	42
Minimum edge/ end laps (mm)	75	75

Note 1: Individual roll length may vary +/-1%

Ancillary Components: The most current supply information for ancillary products can be found at gcpat.uk

Typical Properties

Property	Typical Value PREPRUFE® 300R Plus	Typical Value PREPRUFE® 160R Plus	Test Method
Colour	white	white	
Lateral Water Migration Resistance	Pass at 71 m (231 ft) of hydrostatic head pressure	Pass at 71 m (231 ft) of hydrostatic head pressure	ASTM D5385[1]
Long Term Lateral Water Migration Resistance, After 3 Years Water Immersion	Pass at 71 m (231 ft) of hydrostatic head pressure	Pass at 71 m (231 ft) of hydrostatic head pressure	ASTM D5385[1]
Low temperature flexibility	Unaffected at -29°C (-20°F)	Unaffected at -29°C (-20°F)	ASTM D1970
Resistance to hydrostatic head	71 m (231 ft)	71 m (231 ft)	ASTM D5385[2]
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836[3]
Puncture resistance	1000 N (200 lbs)	445 N (100 lbs)	ASTM E154
Peel adhesion to concrete	1750 N/m (5 lbs/in.)	1750 N/m (5 lbs/in.)	ASTM D903[4]
Lap peel adhesion	1750 N/m (8 lbs/in.)	1750 N/m (8 lbs/in.)	ASTM D1876[5]
Methane permeability, Radon Diffusion	[6]Independent laboratory reports available on request		

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against the membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of PREPRUFE® membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 3 mm (0.125 in.) 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.
3. Concrete is cast against the PREPRUFE® membrane and allowed to cure (Seven days minimum).
4. Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (Seven days minimum). Peel adhesion of the membrane to concrete is measured at a rate of 50 mm (2 in.) per minute at room temperature.
5. The test is conducted 15 minutes after the lap is formed and run at a rate of 50 mm (2 in.) per minute at 22°C (72°F).
6. PREPRUFE® 300R Plus LT and 160R Plus LT , independent laboratory tests available on request.

Declared Values

Property	Declared Value		Test Method
	160R Plus	300R Plus	
Visible defects - MDV	None	None	EN 1850-2
Straightness - MDV	Pass	Pass	EN 1848-2
Length (m) - MDV	36.65 ± 0.25	31.15 ± 0.25	EN 1848-2
Thickness (mm) - MDV	0.81 ± 0.06	1.23 ± 0.08	EN 1849-2
Width Carrier Sheet (m) - MDV	1.18 ± 0.010	1.18 ± 0.010	EN 1848-2
Mass per unit area (g/m^2) - MDV	810 ± 50	1150 ± 70	EN 1849-2
Water tightness to liquid water	700kPa	700kPa	EN 1928
Resistance to impact (Al-board (mm) - MLV)	≥ 250	≥ 400	EN 12691
Resistance to tearing (Nail Shank)- unreinforced sheets (N) - MLV	≥ 300	≥ 450	EN 12310-1
Joint strength (N/50mm) - MLV	≥ 480	≥ 850	EN 12317-2
Water vapour transmission (μ= sD/d) - MDV	700,000 ± 30%	700,000 ± 30%	EN 1931 Method B
Durability of water tightness against ageing/degradation (at 60 kPa)	Pass	Pass	EN 1296 EN 1928 Method B
Durability of water tightness against chemicals (at 60 kPa)	Pass	Pass	EN 1847 Method B EN 1928 Method B
Compatibility with bitumen	Pass	Pass	EN 1548
Resistance to static loading	≥ 20 - Pass	≥ 20 - Pass	EN 12730
Tensile properties - unreinforced sheets (Maximum tensile force in N/6 mm) - MLV	Long[1] ≥ 60 Trans[2] ≥ 60	Long[1] ≥ 110 Trans[2] ≥ 120	EN 12311-2 Method A

Tensile properties - unreinforced sheets (Elongation at maximal tensile force %) - MLV	Long[1] ≥ 4.5 Trans[2] ≥ 4	Long[1] ≥ 4.5 Trans[2] ≥ 4	EN 12311-2 Method A
Reaction to fire (Class; test conditions)	E	E	EN 13501-1

Footnotes:

1. Longitudinal - related to the roll direction 2. Transversal - related to the roll direction

3. MDV: Manufacturer Declared Value 4. MLV: Manufactured Limiting Value 5. NPD: No Performance Declared

All declared values shown in this data sheet are based on test results determined under laboratory conditions and with the product sample taken directly from stock in its original packing without any alteration or modification of its component parts.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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gcpat.uk/solutions/products/preprufe-plus-pre-applied-waterproofing-membrane/preprufe-plus-membranes