



Effective

Below Ground

Waterproofing

The Importance of Below Ground Waterproofing

Successful waterproofing for any structure built on ground or below ground is essential as it is very difficult and costly to do something about leaks later. The problems associated with failures in below ground or basement waterproofing are even more serious, as these are difficult to reach areas for repairs. Costly and complicated problems can arise from soil conditions, water tables, ground water conditions and environmental changes, improperly cured concrete, improperly designed foundations, poor workmanship, and so on.

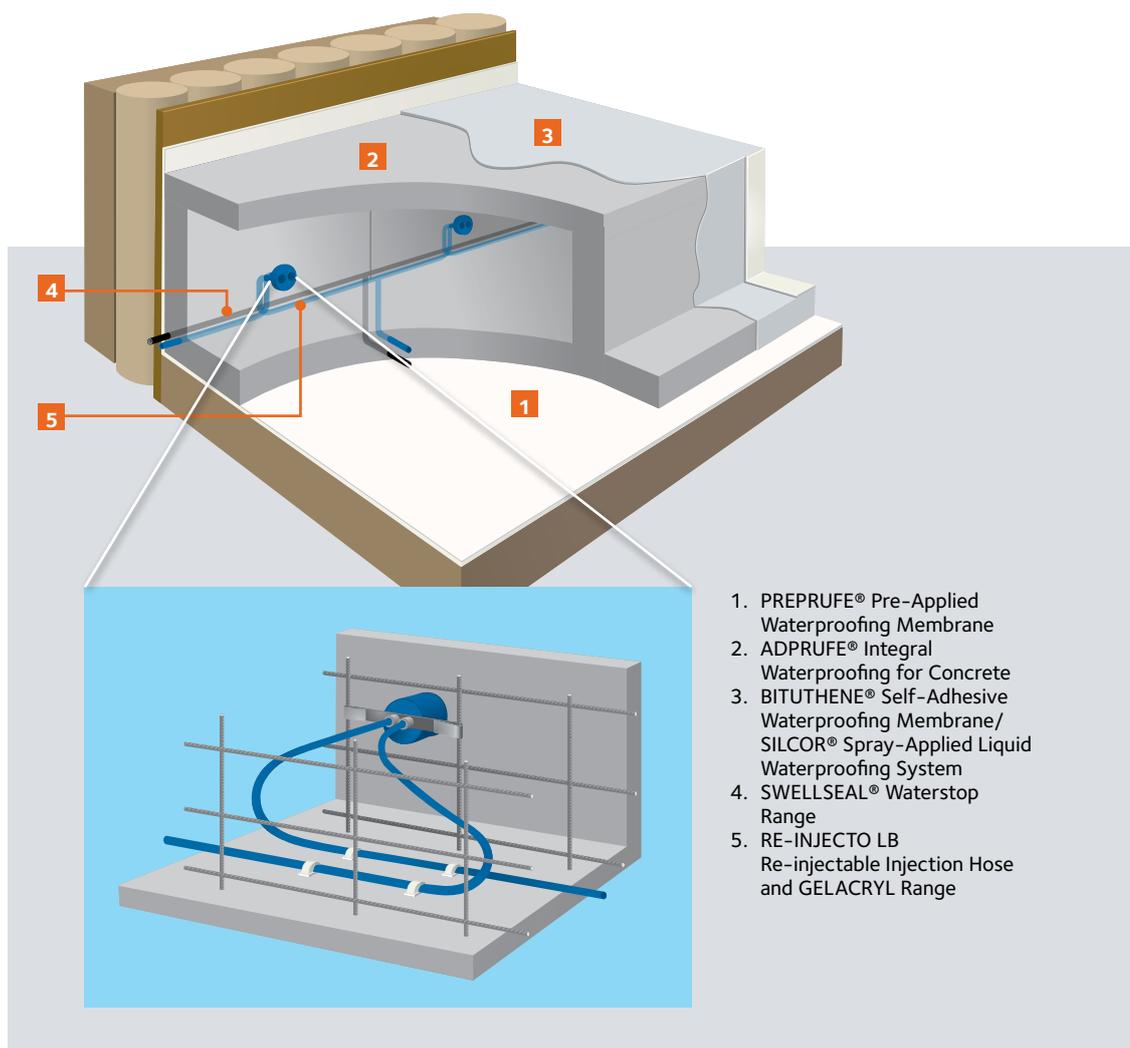
A truly effective waterproofing solution requires not only a permanent and fully bonded waterproofing membrane system but protection for joints and connections where a majority of leaks occur.



GCP's Building Envelope Systems for Below Ground Waterproofing

To prevent the migration of water – that is water tracking between the waterproofing and structure – waterproofing must bond to the structural elements. Depending on project requirements and site conditions, waterproofing can be pre-applied, post-applied or integral.

In addition, adequate waterproofing protection must be provided for protrusions and joints. The majority of leaks occur at 1 percent of the building's exterior, at its terminations and transition detailing, such as joints, structural connections, and cracks in concrete. That is why proper planning and the specification of the appropriate waterproofing system at the beginning of a project are important.



A Comprehensive Range of Joint Protection Products

GCP's range of joint protection products has been proven in numerous projects all over the world with over 40 years experience and track record. Its waterproofing products can be used during new construction and include bentonite strips, hydrophilic mastics and rubbers, injection hoses and cementitious coatings for basement waterproofing.

SWELLSEAL® Waterstop Range

SWELLSEAL is an expansive hydrophilic waterproofing strip for sealing horizontal and vertical construction joints, pipe penetrations and concrete to steel joints. They swell in contact with water to block water ingress. Easy to install, they are capable of reversible swelling in case of wet-dry cycles and have good impact and chemical resistance.

RE-INJECTO LB Injection Hose

These are re-injectable injection hose for consecutive injection with OMNITEK Inject micro fine cement or GELACRYL resins, to seal construction joints, pipe joints, joints between diaphragm walls and slabs. They are easy to install and handle, using the twinbox. Re-injection allows for future remedial work in case of leaks.

GELACRYL Range

A range of poly-acrylate gel developed for injection into pores, cracks, capillaries, voids and honeycombed concrete. For preventative waterproofing, it can be injected into RE-INJECTO LB injection hoses. GELACRYL has excellent adhesion to concrete and good chemical resistance.



“The 90%/1% principle: 90 percent of all water intrusion problems occur within 1 percent of the total building or structure exterior surface area.”

MICHAEL T. KUBAL,
CONSTRUCTION
WATERPROOFING
HANDBOOK, 2008



PREPRUFE® Pre-Applied Waterproofing Membrane System

The world’s first waterproofing system engineered for below slab and blind side applications, PREPRUFE has been installed and proven in some of the most challenging building projects worldwide. Composed of resilient HDPE layers, PREPRUFE is inherently waterproof, with excellent chemical resistance and low vapour permeability.

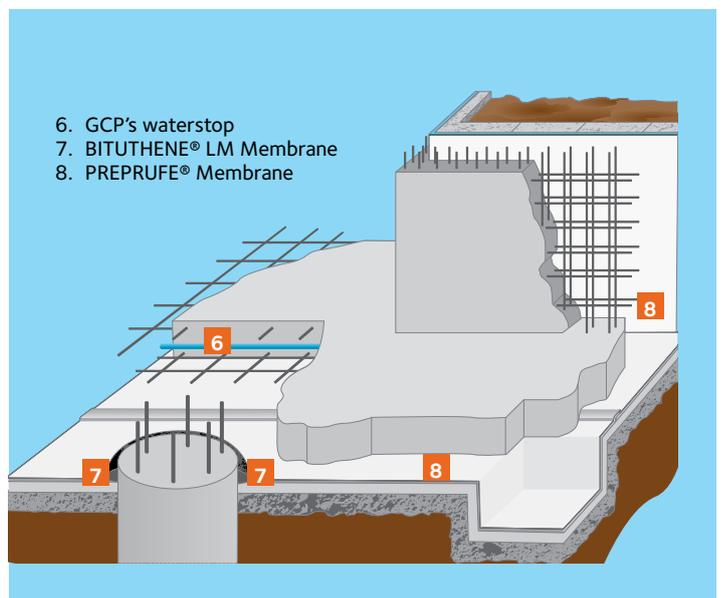
GCP’s patented Advanced Bond Technology™ enables concrete to aggressively adhere to PREPRUFE. PREPRUFE’s full and unique bond to concrete prevents any water tracking between the waterproofing and the structure. The PREPRUFE seal to concrete remains unaffected by ground settlement beneath slabs.

Advantages

- Continuous adhesive bond to poured concrete
- Zero water tracking for low cost leak remediation
- Fully sealed laps that also maintain continuous bond to concrete
- Water, vapour and gas proof
- Unaffected by ground settlement
- Lightweight and easy to install
- Backed by GCP’s expertise
- Proven performance on major projects worldwide

Applications

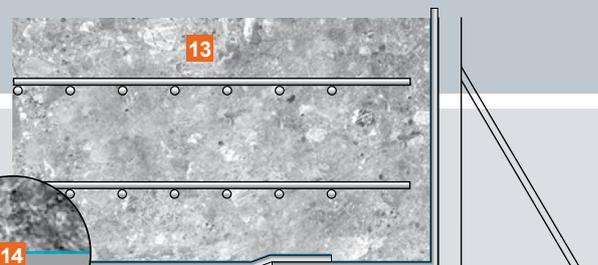
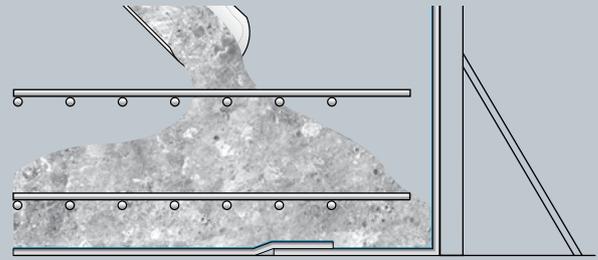
- Basements
- Underground parking
- Foundations
- Tunnels
- Subway/ Mass Rapid Transit
- Libraries and archives
- Underpasses
- Retaining walls



PREPRUFE®'s Advanced Bond Technology™

HOW IT WORKS

- PREPRUFE® membrane is applied to prepared substrate or formwork before concreting.
- Steel rebar and concrete is placed directly on membrane with no need for additional protection.
- A permanent, continuous adhesive bond develops as concrete hardens.



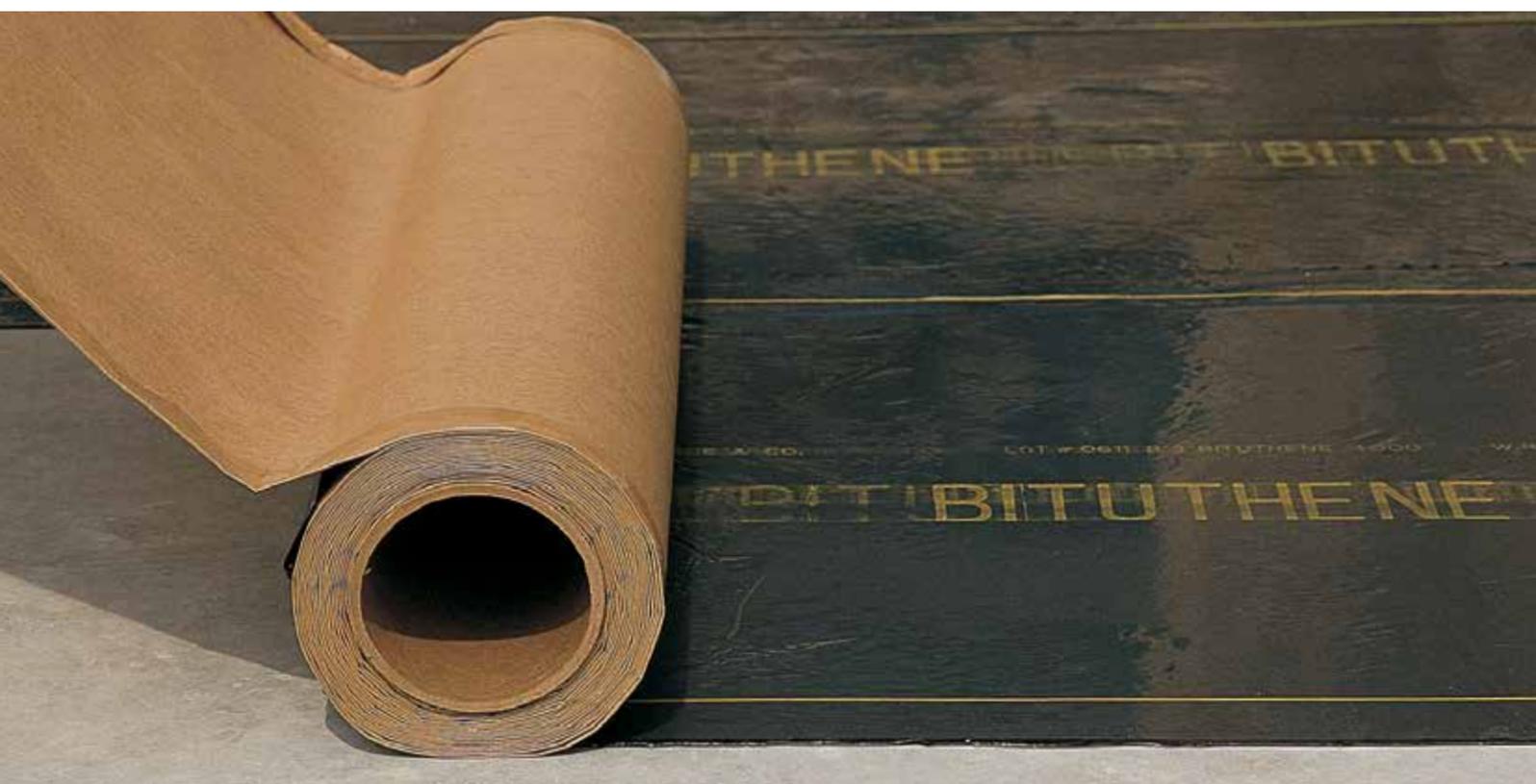
BITUTHENE® Self-Adhesive Waterproofing Membrane System

Virtually the industry standard for self-adhesive membranes since its introduction more than 40 years ago, over 300 million square metres of BITUTHENE have been installed in projects all over the world. Composed of cross-laminated HDPE film and self-adhesive rubber bitumen compound,

BITUTHENE membranes are formulated to be applied and perform under a variety of temperature conditions. Supplied in easy-to-apply rolls, Bituthene installs quickly and cleanly without the hazards associated with hot applied systems or the need for specialist equipment.

Product Features	Benefits
Self-adhesive	Full continuity at overlaps
Cold applied	No flame hazard with no heating equipment required
Flexible	Accommodates minor settlement and shrinkage movement
Cross-laminated film	Provides dimensional stability, high tear strength, puncture and impact resistance
Single layer	Simple, reliable, low labour cost with benefit of site programmed installation
Controlled thickness	Factory-made sheet ensures constant, non-variable site application
Chemically resistant	Provides effective external protection against aggressive soils and ground water

Application	BITUTHENE 3000	BITUTHENE 5000	BITUTHENE 6000	BITUTHENE 8000
Basement	●	●	●	●
Sub-structure	●	●	●	●
Flat deck	●		●	●
Roof assembly	●		●	●
Elevated or grade level podium	●	●	●	●
Plaza deck/ roof garden/ terrace	●		●	●
Bridge deck		●		
Gas proofing				●
Electrical insulation	●		●	
Over slab damp proof membrane	●		●	●
Sound insulation	●		●	●



Detailing Ancillaries

Terminations, penetrations, and joints are among the 1 per cent of the building where leaks occur. At these points, it is essential to achieve an effective seal between the membrane and the penetration or joint. BITUTHENE LM, a trowel-applied liquid membrane specially developed by GCP Applied Technologies to seal such penetrations, has an excellent adhesion to most substrates and is elastomeric when cured. BITUTHENE LM, compatible with GCP waterproofing products, further reduces the risk of water penetration into structures.

SILCOR® Spray-Applied Liquid Waterproofing System

SILCOR liquid-applied waterproofing is specially developed by GCP Applied Technologies, incorporating the latest technical advancements in polyurea, to optimise product application and durability. It is a two-component liquid system that cures rapidly to form a seamless, monolithic membrane fully bonded to the substrate. Based on advanced polyurea chemistry, SILCOR is exceptionally durable with excellent wear and chemical resistance, offering your structure long lasting waterproofing protection.

ADPRUFE® Integral Waterproofing for Concrete

Combining its expertise in structural waterproofing and concrete chemistry, GCP Applied Technologies has developed a system to integrally waterproof concrete. Its ADPRUFE System is an innovative admixture system that reduces permeability and drying shrinkage of concrete. It not only helps to meet the challenges of waterproofing complex building structures, but delivers scheduling flexibility and control over fast track construction programmes.

GCP Applied Technologies® – Single Source Solution for Below Ground Waterproofing

GCP's complete systems-based approach to waterproofing and its extensive range of fully compatible waterproofing products and accessories allow effective enveloping of foundations with a flexible, fully adhered waterproofing barrier. GCP is a single source solution for virtually any below ground application.

Furthermore, a range of DE NEEF® products are available if there is water ingress at a later stage. Applied by specialist applicators, these injection resins are also often used during tunnel and underground constructions to prevent infiltrating water from hindering the normal progress of the works. The HYDRO ACTIVE® series of high performance, phthalate-free, solvent-free injection grouts is designed to cut off gushing water leaks with a high flow rate and/or high pressure. The DE NEEF range also includes products for soil and rock stabilisation. For more information, please contact your local GCP representative or visit gcpat.com.

ASIA PACIFIC KEY LOCATIONS

AUSTRALIA

GCP Australia Pty. Ltd.
14 Colebard Street West
Archerfield
Queensland 4108
Tel: +61 7 3275 7500
Fax: +61 7 3875 1365

CHINA MAINLAND

GCP Applied Technologies
(China) Company Ltd.
19th Floor K. Wah Centre
1010 Huai Hai Zhong Road
Shanghai 200031
Tel: +86 21 3158 2888
Fax: +86 21 3158 2828

HONG KONG

GCP (Hong Kong) Ltd
6 On Chuen Street
On Lok Tsuen Ind Area
Fanling, Hong Kong
Tel: +852 2675 7898
Fax: +852 2676 4370

INDONESIA

PT GCP Applied Technologies
Indonesia
Cikarang Industrial Estate Kav
C-32
Cikarang, Bekasi 17530
Tel: +62 21 893 4260
Fax: +62 21 893 4315

JAPAN

GCP Chemicals K.K.
6F Create Building
1-8-10, Lidabashi, Chiyoda-ku
Tokyo, 102-0072
Tel: +81 3 5226 0231
Fax: +81 3 3239 2251

KOREA

GCP Korea Inc.
70B-1L Gojan-Dong
301 Cheong Neung-Daero
Namdong-Gu,
Incheon City 405817
Tel: +82 32 820 0800
Fax: +82 32 820 0803

MALAYSIA

GCP Applied Technologies
(Malaysia) Sdn. Bhd.
Formerly known as W. R. Grace
(Malaysia) Sdn. Bhd.
7 Lorong CJ 1/1A
Off Jalan Balakong
43200 Cheras Jaya
Kuala Lumpur
Tel: +60 3 9074 6133
Fax: +60 3 9074 7322

PHILIPPINES

GCP Applied Technologies
Products (Phils.) Inc.
Progress Avenue corner
C.A. Yulo Avenue,
Silangang, Canlubang,
Calamba City, Laguna
Philippines 4028
Tel: + 632 236 6820 to 6824

SINGAPORE

GCP (Singapore) Pte. Ltd.
25 Tanjong Penjuru
Singapore 609024
Tel: +65 6265 3033
Fax: +65 6265 9232

THAILAND

GCP Applied Technologies
Holdings (Thailand) Limited
253/2 Bangpoo Industrial Estate
Sukhumvit Road, KM 34
Tambol Praksa, Amphur Muang
Samutprakarn 10280
Bangkok
Tel: +66 2 030 9700
Fax: +66 2 030 9718

VIETNAM

GCP Vietnam Company Ltd.
Lot B14, Section B, Street No. 12
Xuan Thoi Son Small Scale Arts &
Crafts Group
National Road 22
Xuan Thoi Son Village
Hoc Mon District
Ho Chi Minh City
Tel : +84 8 3710 6168
Fax: +84 8 3710 6167

Hai Duong Province:

Lot XN12, Dai An Industrial Zone
Km 51, Highway No. 5,
Tu Minh Ward
Hai Duong Province
Tel: +84 320 3555 135
Fax: +84 320 3555 133

WORLDWIDE HEADQUARTERS

GCP Applied Technologies Inc.
62 Whittemore Avenue
Cambridge, MA 02140
U.S.A.
Tel: +1 617 876 1400

gcpat.com | For technical information: asia.enq@gcpat.com

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

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