

Protecting Infrastructure Assets

Innovative Waterproofing for Bridges & Tunnels

PITCHMASTIC PmB

www.tremcocpg-asiapacific.com

About

Pitchmastic PmB is at the forefront of technological developments in the world of structural waterproofing and was established over 70 years ago with a commitment to developing new and more effective ways of waterproofing structures.

Pitchmastic PmB has established local applicator partnerships in Europe, Middle East, America, Africa and Asia Pacific.

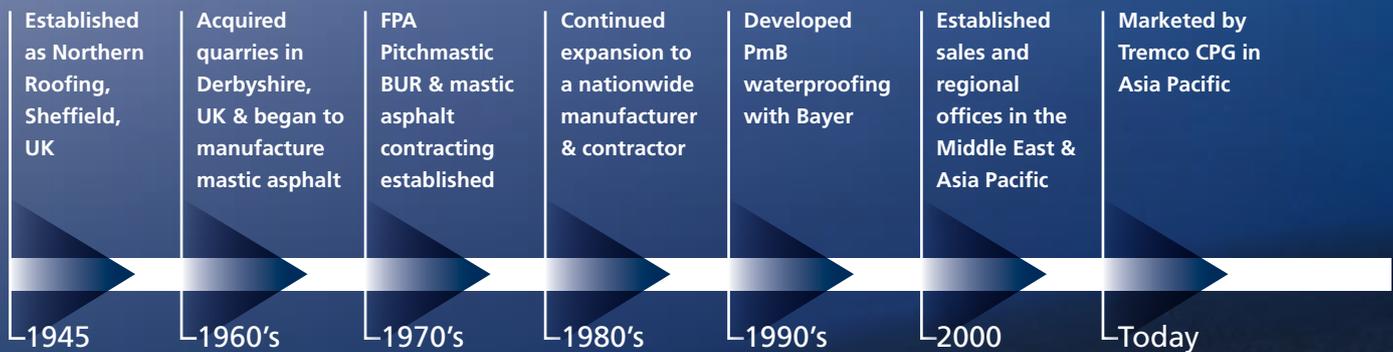
Pitchmastic PmB is a USL Group brand, marketed by Tremco Construction Products Group across Asia Pacific.



Our markets



Evolution of the Brand



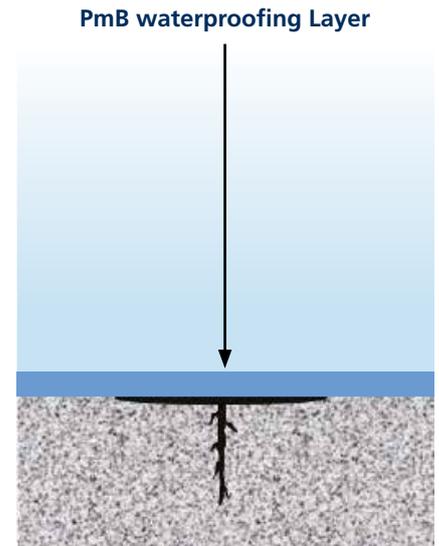
Why Waterproof Structures?

The Effects Of Structural Corrosion

- Constant repair & maintenance
- Reduction in the service life of structures
- High cost of remediation
- Operational shut down cost caused by water ingress & repairs

Key Engineering Considerations

- **Crack Bridging**
 - Surface cracks are inevitable in concrete construction
 - Tensile strength
 - Bond to substrate
- **Typical Design Life**
 - Bridge structure must be designed to stand the test of time
 - Non-degradable
 - Durable & robust
- **Resistance To Chemicals & Chlorides**



Key Design Considerations



Resistance To Abrasion



Adhesion



Crack Bridging



Resistance To Fire



Rapid Installation

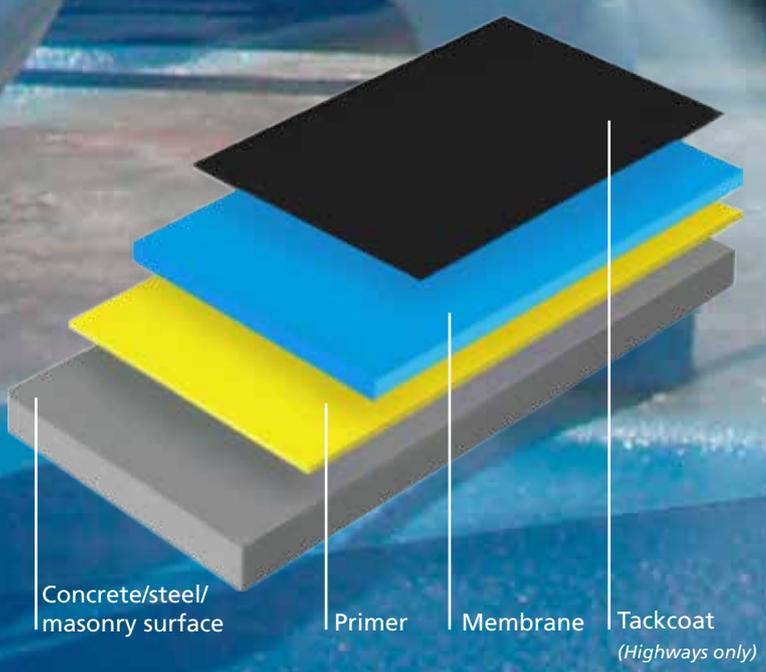
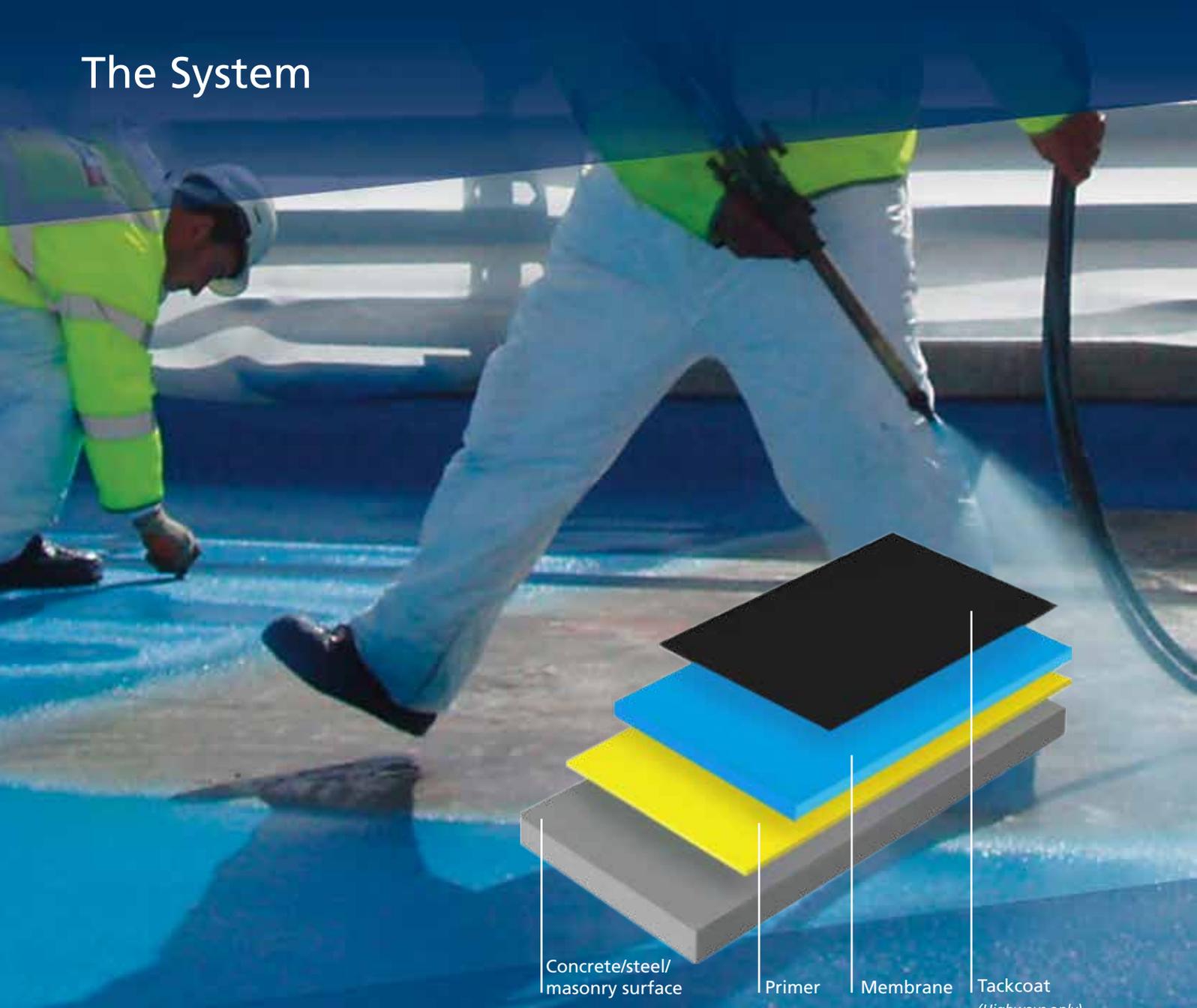


Water Tightness



Weather Resistance

The System



What is PmB?

- Two component PUR spray system
- 100% solids reactive resin content
- Solvent free
- No fillers / extender loading
- Rapid setting – 5-8 seconds gel time
- Tack free after approximately 1 minute
- Can be walked on after approximately 10 minutes
- Elastic after approximately 45 minutes

Spray Applied, Seamless Bridge Deck Waterproofing

PmB forms a flexible, chemically resistant seamless membrane tough enough to outlast the design of many structures. PmB has exceptional bond strength to all commonly used substrates, has excellent crack bridging capability, a life expectancy in excess of 30 years and holds British Board of Agrément approval. Tested and approved throughout the world to the highest standards, the PmB system now adds the UK's Network Rail and London Underground (LUL) approvals to its ever growing list of accreditations.

System Benefits:

- Spray applied - rapid curing
- Excellent global track record
- Seamless membrane
- Excellent crack bridging properties
- Quality assured - including pin hole survey
- Durable, corrosion protection waterproofing
- BBA / HAPAS certified
- Longevity in service life

Applications:

- Bridges
- Footbridges
- Culverts
- Tunnels
- Walkways

History – PmB

- 1966** | Baytec Elastomer Developed by Bayer AG
- 1967** | PmB first applied to pipelines and marine applications
- 1970** | PmB first applied to bridge deck and swimming pools
- 1975** | Application of PmB to bridges and tunnels
- 1986** | Pitchmastic UK developed PmB with Bayer based upon Baytec technology
- 1994** | Signed global agreement with Bayer
- 1995** | First applications in GCC and APAC
- 1996** | Second Severn Crossing - Largest Bridge in the UK at the time!
- 2000** | Dubai International Airport, UAE waterproofed using PmB
- 2001** | Structures protected in Republic of Ireland with PmB for the first time
- 2005** | Palm Jumeriah Gateway and Crescent Bridge, UAE
- 2010** | Sheikh Zayed Bridge, UAE completed
- 2012** | Marina Coastal Expressway, Singapore C485 Completed
- 2014** | Danube Bridge, Bulgaria completed
- 2016** | Completed RA166 and RA167 Projects in Kuwait totalling 520,000m²
- 2018** | Completed Doha Link, Kuwait one of the largest structures of it's kind in the Middle East totaling 13.7km long
- 2019** | Completed Temburong Bridge project in Brunei. A 30km bridge commissioned to provide improved access for residents of Temburong District.
- 2021** | Tremco Construction Products Group begins marketing Pitchmastic PmB in Asia Pacific.



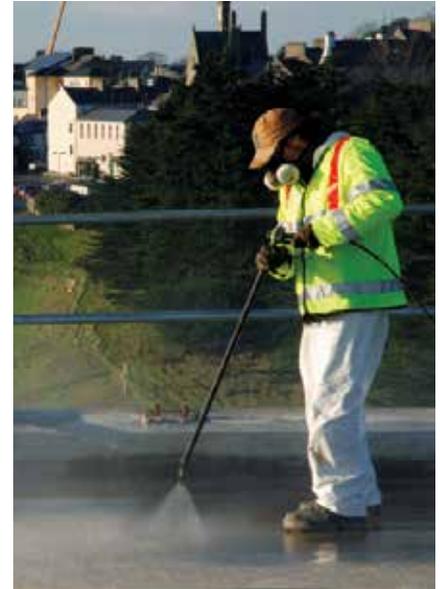
Dr. Otto Bayer of Bayer Group invented Polyurethane in **1937**



Bayer Group developed an Elastomeric Polyurethane system (Baytec) in **1966**



Installation Process



Pre Installation Checks

Surface Preparation

- No system will perform if preparation is not carried out satisfactorily
- Clean, dry and free of contamination

Primer

Applied by airless spray or roller



Application Layer

Tackcoat

- Polymer modified
- 95°C Softening point Bitumen emulsion
- Applied by squeegee over sanded key layer

Sanded Key Application Layer

1. Primer PMCS/01
 2. 1-3mm Silica sand
- Provides enhanced bonding to overlay



Membrane

- PmB two part Polyurethane spray applied elastomer
- Installed using computerised two component spray machines

Spray Technology

- Versatile to suit access, application area and clients programmes and productivity requirements

QA/QC Application



Application QA/QC – Pinhole Check

QA/QC Quality Testing

QA/QC Quality Thickness

International Test Accreditation

Global Approvals

- Abu Dhabi DOT
- ADA Saudi Arabia
- Al Ain Municipality
- Dubai RTA
- Lusail Development, Qatar
- Ashghal, Qatar
- Muscat Municipality and MOTC
- Kingdom of Bahrain Roads and Housing
- Qatar Petroleum
- Kuwait MPW
- Department of Transport BD47/99, BBA HAPAS UK
- LSETR Cert RAT 9359 Finland
- BAM Institute ZTV-BEL B3/87 Germany
- LTA Singapore
- EMPA Cert 4944-1-2-3 Switzerland
- THSR Specification 07140 Taiwan
- New Jersey Rail, New York DOT
- MASS DOT Highways, USA



HAPAS
Pitchmastic PmB Ltd
Parsons House
184 Attercliffe Road
Sheffield S4 7WZ
Tel: 0114 270 0100 Fax: 0114 276 8789
email: info@pitchmasticpmb.co.uk
website: www.pitchmasticpmb.co.uk



HAPAS Certificate
10/H164
Product Sheet 1

PITCHMASTIC BRIDGE DECK WATERPROOFING SYSTEM

PmB BRIDGE DECK WATERPROOFING SYSTEM

This HAPAS Certificate Product Sheet is issued by the British Board of Agreement (BBA), supported by Highways England (HE) acting on behalf of the Chairing Organisations of the Department for Transport, Transport Scotland, the Welsh Assembly Government and the Department for Regional Development, Northern Ireland, the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisors Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years. (1) Hereafter referred to as 'Certificate'.

This Certificate relates to the PmB Bridge Deck Waterproofing System for use as a waterproofing system for concrete decks of highway bridges.

CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal triennial review.



KEY FACTORS ASSESSED

Performance — this system meets the requirements of the Guidelines Document for the Assessment and Certification of Waterproofing Systems for Use on Concrete Decks of Highway Bridges (see section 5).

Durability — provided the installed system is not damaged during subsequent resurfacing, it will provide an effective waterproof layer to the concrete bridge deck (see section 8).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agreement


 Simon Wraes
 Head of Approvals — Engineering


 Claire Curtis-Thomas
 Chief Executive

Date of Second Issue: 6 April 2016
Originally certified on 22 September 2010

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and date issue section of the Agreement Certificate by either visiting the BBA website or contacting the BBA direct

British Board of Agreement
Bucknalls Lane
Widford
Leics WQ25 9BA

©2016

tel: 01923 665300
fax: 01923 665301
www.bbacerts.co.uk
www.bbacerts.co.uk

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Project Case Studies



CP3, A Lusail Qatar

25,000m² of PmB waterproofing applied to bridge deck & underpass of this super structure.

Case Studies



Doha Link, Kuwait

Supply and installation of 280,000m² PmB structural waterproofing.



King Abdullah Aziz Flyover, Riyadh, KSA

31,500m² of PmB structural waterproofing was applied to the main steel deck and approach bridges.



Sheikh Zayed Bridge, UAE

58,000m² of PmB waterproofing applied to this prestigious bridge.



New Spire Bridge, UK

9,000m² of PmB
waterproofing was applied
to the concrete bridge deck.



Second Severn River Crossing, UK

Application of 176,000m²
of PmB spray applied
waterproofing.



Temburong Bridge, Brunei

PmB structural
waterproofing system was
applied to the entire length
of this mega bridge.

PITCHMASTIC PmB

Marketed by Tremco CPG in Asia Pacific



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