

# CYRUS

INFRASTRUCTURE

A Division Of Cyrus Group

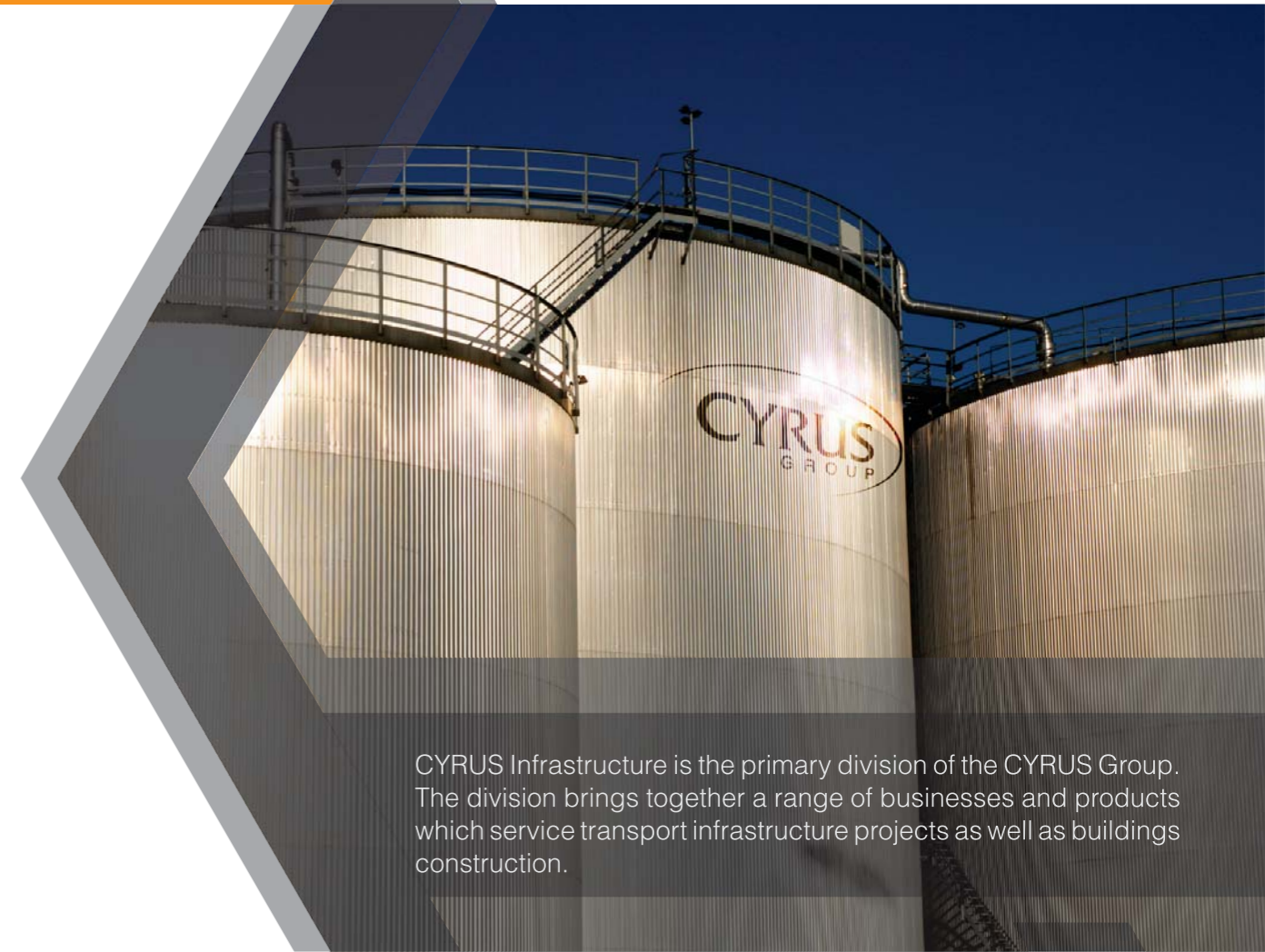


INNOVATION QUALITY & PERFORMANCE

[www.cyrusgroup.com](http://www.cyrusgroup.com)



## INTRODUCTION



CYRUS Infrastructure is the primary division of the CYRUS Group. The division brings together a range of businesses and products which service transport infrastructure projects as well as buildings construction.

The cornerstone of the CYRUS group has for many years been CYRUS General Trading which focuses on Bitumen trading activity throughout the MENA region, India and East Africa via CYRUS Shipping Services.

For more than 20 years this primary trading activity has been supplemented by the addition of specialist manufacturing facilities and technical support services under CYTECH International which provides significant added value to the core business.

Today, CYTECH has become the premier supplier of specialised bitumen products to some of the region's highest profile projects including Abu Dhabi International Airport and Hamad International Airport, Doha.



## Product Range

- ▶ Penetration, Viscosity & Oxidised Grade Bitumen
- ▶ Performance Grade (PG) Bitumen
- ▶ Polymer Modified Bitumen (PMB)
- ▶ Emulsified and Cutback Bitumen
- ▶ Pavement Rehabilitation & Repair systems
- ▶ Bridge-deck expansion joint systems
- ▶ Liquid Waterproofing Membranes
- ▶ Elastomeric multi-component Joint Sealants
- ▶ Mould Release Agents
- ▶ Concrete Curing Agents & Admixtures
- ▶ Grouts and Tile adhesives

## CYTECH Technical Support Services

Bitumen and Polymer technology expertise with specialist knowledge of asphalt mixture and pavement design to support clients and customers.

Total quality management and R&D test facilities including project sites.



## CYTECH SIGNATURE PROJECTS

CYTECH International was one of the first major manufacturers outside the USA to supply Polymer Modified Bitumen using the Multiple Strain Creep Recovery (MSCR) specification AASHTO M332-14.

Supplying MSCR grades, PG 76-10 'V' & 'E', to major Expressway projects for the Ashghal Public Works Authority in Qatar, CYTECH has become a world leader in the application of this binder specification in the extremely hot climate of the Middle East region.



Signature projects using specialist binders supplied by CYTECH include:

- ▶ Abu Dhabi International Airport, UAE
- ▶ Hamad International Airport, Doha, QATAR
- ▶ Muscat International Airport, OMAN
- ▶ Expressway Projects, QATAR
- ▶ Dubai Autodrome Race Track, UAE
- ▶ Doha Speedway Track, QATAR
- ▶ Duqm Airport, OMAN
- ▶ The Palm Project, Dubai, UAE
- ▶ Durrat Al Bahrain, BAHRAIN
- ▶ Military Airfields (NATO, RAF) - Afghanistan, Eastern Europe & GCC
- ▶ REF/USAID/World Bank/ADB funded Road Projects - Central Asia

## PENETRATION, VISCOSITY & OXIDISED GRADE BITUMEN

A full range of standard bitumen grades are available to various international standards used in different countries:

**Penetration grade bitumen** complying with **ASTM D946**.

Additional Penetration grades complying with **EN 12591** can also be sourced depending on project requirements.

40/50 PEN | 50/70 PEN | 60/70 PEN | 80/100 PEN | 100/120 PEN | 120/150 PEN

**Viscosity grade bitumen** complying with **ASTM D3381, AASHTO M226** and **IS 73:2006**.

VG10 | VG20 | VG30 | VG40

Available for shipment in both Containerised and Bulk cargo or by road in bulk 25-40 MT tanker, 20 MT bitutainer or 200L Drums.

**Oxidised grade bitumen (115/15)** complying with **BS EN 13304:2009** for Industrial applications.



## POLYMER MODIFIED BITUMEN (PMB)

CYTECH International has unparalleled experience across the Middle East region complying to different specifications for PMB asphalt binders on major infrastructure projects with special focus on binder performance in the Middle East climate e.g. Abu Dhabi (PG 82-22) and Doha (PG 76-22 / PG 76-10E) International Airports. CYTECH can supply PMB to any of the following standard specifications:

**AASHTO M320** using state-of-art hybrid polymer technology.

**AASHTO M332-14** using hybrid polymer technology to meet the full range of PMB asphalt binders graded by performance, using the multiple stress creep recovery (MSCR) test. Grading designations are related to the average seven-day maximum pavement design temperature, minimum pavement design temperature, and traffic loading. This specification incorporates T 350 for determining S, H, V and E designations using non-recoverable creep compliance. These designations are specified for standard, high, very high or extremely high traffic loading, respectively.

**EN 14023** using elastomeric hybrid binders designed to suit climatic conditions and complying with the European Specification Framework for PMB.

SPECIAL '**PMB**' grades which are bespoke polymer modified bitumen grades designed to meet project specific requirements.

## PERFORMANCE GRADE (PG) BITUMEN

A range of PG grade binders complying with **AASHTO M320** are available, selection of which depends on climatic variation in different countries.

CYTECH has the expertise and know-how from many years of international supply using a variety of bitumen sources with different binder modifiers including polymers when appropriate to achieve the required properties.

For cooler climates, PG grades may require little or no modification whereas for the very hot climate of the Middle East region, CYTECH has typically supplied PG 76-22 and for some contracts, PG 82-22.



## CUTBACK BITUMEN

Incorporating selected high quality solvents Cyrus Infrastructure manufactures all grades and types of Cutback bitumen to meet the requirement of different project specifications:

### Medium Curing Cutbacks

Manufactured to comply with ASTM D2027M-13 and AASHTO M82 Standard Specifications for Medium-Curing cutback petroleum bitumen in the construction and treatment of pavements.

MC-30 | MC-70 | MC-250 | MC-800 | MC-3000

### Rapid Curing Cutbacks

Manufactured to comply with ASTM D2028M-15 and AASHTO M81 Standard Specifications for Rapid-Curing cutback petroleum bitumen in the construction and treatment of pavements.

RC-70 | RC-250 | RC-800 | RC-3000

CYTECH International also offers specialist on-site technical expertise for customers requesting advice and guidance on Cutback selection and application rates.

Available in 25MT Bulk road tanker, 20 MT Bitutainers, 200L Drums.

## EMULSIFIED BITUMEN

All types of rapid to slow setting bitumen emulsion both anionic and cationic are manufactured in compliance with the following Standard Specifications:

**ASTM D977-13** and **AASHTO M140** for all ANIONIC Emulsified bitumen for pavement construction.

**BS 434-1:2011** Bitumen road emulsions Part 1 - Specification for ANIONIC bitumen road emulsions e.g. K1-40 and K1-60. (These grades are still specified for use on some contracts but please note this specification applies only to anionic emulsion. BS 434-2:2006 Specification for Cationic bitumen emulsions has been withdrawn and is replaced in Europe by BS EN 13808:2013 Framework for specifying Cationic bitumen emulsions).

**ASTM D2397M-13** and **AASHTO M208** for all CATIONIC Emulsified bitumen for pavement construction.

### ANIONIC GRADES

SS-1  
SS-1h  
K1-40  
K1-60

### CATIONIC GRADES

CRS-1  
CRS-1h  
CSS-1h

Available in 25MT Bulk road tanker, 1 MT IBC, 200L Drums.



## BRIDGE-DECK EXPANSION JOINTS

High Modulus asphaltic plug joint material is produced as a component of hot process, in-situ constructed expansion joint systems which provide a flexible, waterproof joint whilst accommodating minimum structure movement and providing a smooth transition between the approach pavement and the bridge deck.

**CYTOJOINT** Aggregate reinforced polymer modified elastomeric joint compound providing flexibility to withstand horizontal and vertical movement of  $\pm 25\text{mm}$ . The use of granite aggregates in combination with bitumen, polymers, fillers and stabilisers give good fluidity, low and high temperature stability for excellent load bearing capacity and high resistance to wheel tracking, i.e. excellent anti-rutting characteristics.

## PAVEMENT REHABILITATION & REPAIR SYSTEMS

CYTECH produces a range of polymer modified bituminous repair materials for the purposes of sealing and rehabilitating cracked surfaces in asphalt and concrete pavement structures.

Suitable for various applications ranging from roads, airfields, ports to car parks and industrial areas.

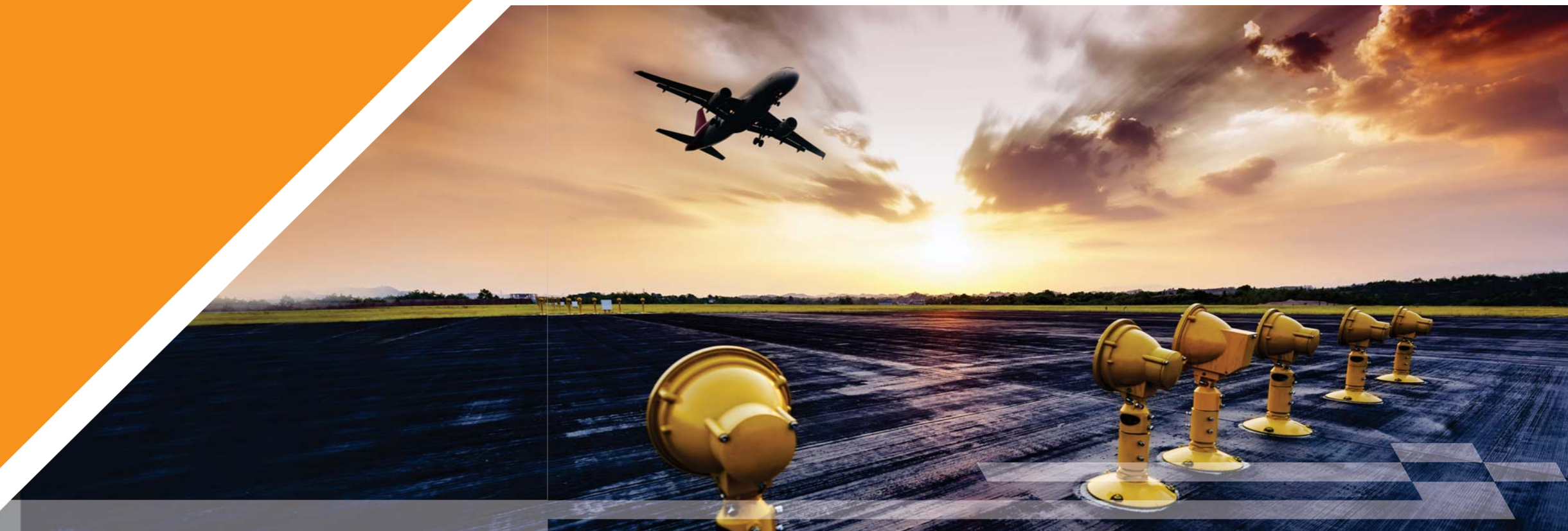
**CYTOPAVERR** Polymer modified bituminous crack sealant for asphalt and concrete pavements using 'rout and seal' method. Sealant is a hot applied single component giving excellent adhesion to both asphalt and concrete substrates without the need for a primer.

**CYTOPAVERS** Polymer modified bituminous crack sealant for asphalt and concrete pavements using 'recess' method. Sealant is a hot applied repair compound containing fibre, rubber and granite aggregate.

**CYTOSEAL F1** Fuel Resistant, hot applied elastomeric Pitch/PVC Sealant for Joints and Cracks in Portland Cement Concrete highway and airfield pavements. Complies with ASTM D7116-05 and formerly BS 2499:1993 Type F1 (now withdrawn).

**CYTOSEAL N1** Hot applied elastomeric bituminous Joint Sealant for Concrete and Asphalt pavement joints particularly in airfield applications with no risk of fuel spillage. Complies with ASTM D6690-15 and formerly BS 2499:1993 Type N1 (now withdrawn).

**CYTOSEAL LS** Polyester Loop Sealant for electric cable trenches in airfields and roads. Complies with ASTM D149-13 and BS 6319-2:1983 and BS 6319-3:1990.







## ADHESIVES, PRIMERS & LIQUID WATERPROOFING MEMBRANES

A wide range of products are manufactured including adhesives, coatings, liquid waterproofing products, both water and solvent based as well as epoxy polysulphide liquid membranes for many different applications.

### ADHESIVES

**CYTOFLEXFAM** Bituminous SBS polymer modified adhesive offering flexibility and superior adhesion. The thixotropic properties of the single component bitumen rubber and asbestos-free composition give a neutral hardening mastic which acts as a high quality adhesive for both APP- and SBS-modified membranes. Complies with physical properties described under ASTM D4479 and application performances as per ASTM D3409.

### PRIMERS

Supplementing the liquid waterproofing membranes is a range of solvent and water-based bituminous primers for surface priming prior to application of the liquid waterproofing membrane.

#### Solvent based primers

**CYTOPRIMES** Medium drying (6-8hrs) all-purpose bitumen primer for use on steel concrete prior to application of protective coatings.

**CYTOPRIMES-D41** Fast drying (2 ± 1 hrs) all-purpose bitumen primer for damp-proofing and waterproofing above or below ground level in use with asphaltic roofing and for application to concrete, masonry, metal, and asphalt surfaces. Complies with ASTM D41M-11 (2016).

#### Water based primers

**CYTOPROOF B 26** Thixotropic Bitumen emulsion primer for general water-proofing and damp-proofing of concrete, masonry, roofing felts, metals, timber. Complies with ASTM D1227, Type 2, Class 2.

**CYTOPROOF B 30** High viscosity thixotropic Bitumen emulsion primer for non-slump performance in general water-proofing and damp-proofing of concrete, masonry, roofing felts, metals, timber. Complies with ASTM D1227, Type 2, Class 2 and ASTM C309-11.

### LIQUID WATERPROOFING MEMBRANES

CYTECH manufactures an extensive range of liquid waterproofing membranes from solvent based high performance elastomeric membranes to a variety of water-based liquid membranes and also epoxy polysulphide membranes.

#### Epoxy polysulphide liquid membranes

**CYTOCOAT EPS** Two component chemical resistant Epoxy Polysulphide elastomeric coating. Protective coating against wide range of chemicals, oils, fuels, sea water and sewage.

#### Solvent based liquid membranes

**CYTOFLEX 800** Single component, cold applied elastomeric bituminous membrane giving a highly flexible water barrier for a wide range of application including wet areas, foundations, basements, retaining walls and roofing. Complies with ASTM C836.

#### Water based liquid membranes

##### BITUMEN EMULSION

**CYTOPROOF B40** For Damp-proofing of foundations and isolated footings.  
**CYTOPROOF B60** Complying with ASTM D1227.

##### FIBRATED BITUMEN EMULSION

**CYTOPROOF FBE 40** For Damp-proofing of foundations and isolated footings.  
**CYTOPROOF FBE 50** Complying with ASTM D1227.

##### RUBBERISED BITUMEN EMULSION

CYTECH manufactures a complete range of rubberised bitumen waterproofing emulsions varying in viscosity and elastomeric properties depending on the application and project requirement.

**CYTOFLEX 3505**      **CYTOFLEX 5010**  
**CYTOFLEX 3510**      **CYTOFLEX 6010**  
**CYTOFLEX 5005**      **CYTOFLEX 6510**

These rubberised Bitumen Emulsions provide a firm, flexible, joint free waterproof and protective membrane for general water-proofing of concrete, masonry and roofing. Compliant with ASTM C309-11 and ASTM D1227-13.





## ELASTOMERIC MULTI-COMPONENT JOINT SEALANTS

CYTECH offers a range of multi-component elastomeric polysulphide joint sealants for horizontal and vertical applications.

### Polysulphide Sealants

**ECOSEAL PS PG** Pouring Grade, multi-component elastomeric horizontal expansion Joint Sealant, is self-levelling for stress relieving construction joints in floors or other horizontal surfaces. Available in Grey or Black. Complies with ASTM C920-98, Type M, Class 25; BS 4254(now BS EN ISO 11600); TT-S-00227E.

**ECOSEAL PS GG** Gun Grade, two component elastomeric vertical expansion Joint Sealant for application in civil structures and high rise buildings. Available in Grey or Black. Complies with ASTM C920-98, Type M, Class 25; BS 4254 (now BS EN ISO 11600); TT-S-00227E.

**ECOSEAL PSW** Two component elastomeric Joint sealant in White colour.

**CYTOSEAL PS FR** Elastomeric Fuel resistant expansion Joint Sealant applications e.g. Airports & Bus Stations.

**CYTOSEAL PS BR** Elastomeric expansion Joint Sealant for biologically active environments.

**CYTOSEAL PSP** Solvent based, single component Primer for polysulphide sealants.

### Polyester loop Sealant

**CYTOSEAL LS** Polyester Loop Sealant for electric cable trenches in airfields and roads. Complies with ASTM D149-13, BS 6319-2:1983 & BS 6319-3:1990.

### Pitch / PVC Sealant

**CYTOSEAL F1** Fuel Resistant, hot applied elastomeric Pitch/PVC Sealant for Joints and Cracks in Portland Cement Concrete highway and airfield pavements. Complies with ASTM D7116-05 and formerly BS 2499:1993 Type F1 (now withdrawn).

## GROUTS AND TILE ADHESIVES

**CYTOGROUT EP** Epoxy based grout, a solvent free flowable three component epoxy based grout for dynamic/repetitive load applications. Ideal for grouting anchors, rails, bolts, bridge bearing seats, pile head encapsulation etc.

**CYTOTITE PE** Polyester based grout, a Two component free flow polyester grout. It is designed specifically for anchoring bolts and dowels in concrete, rock, brick and masonry application.

**CYTOTITE EP** Epoxy tile adhesive, a Two component epoxy tile adhesive based on a high grade epoxy resin system with superior adhesion, chemical resistance and application properties. It can be applied on a variety of substrates.



## CONCRETE SHUTTERING RELEASE AGENTS

Mould Release agents are chemicals used to prevent other materials from bonding to surfaces, by producing a low surface tension and a high contact angle. Cyrus Infrastructure offers both water-based and solvent-based agents as well as a semi eco-friendly version.

### Water based

**CYTOSTRIKE EF** Mould release agent, off-white in colour, is water based to give reduced environmental impact in concrete shutter release application.

### Semi eco-friendly

**CYTOSTRIKE SEF** Mould release agent, milky white in colour, is a specially formulated blend of solvent in water to give optimum results.

### Solvent based

**CYTOSTRIKE SB** Mould release agent, amber in colour, giving an excellent concrete finish exhibiting a smooth,hard uniform result with no negative effect on the concrete properties.

## CONCRETE ADMIXTURES & CURING AGENTS

### ADMIXTURES

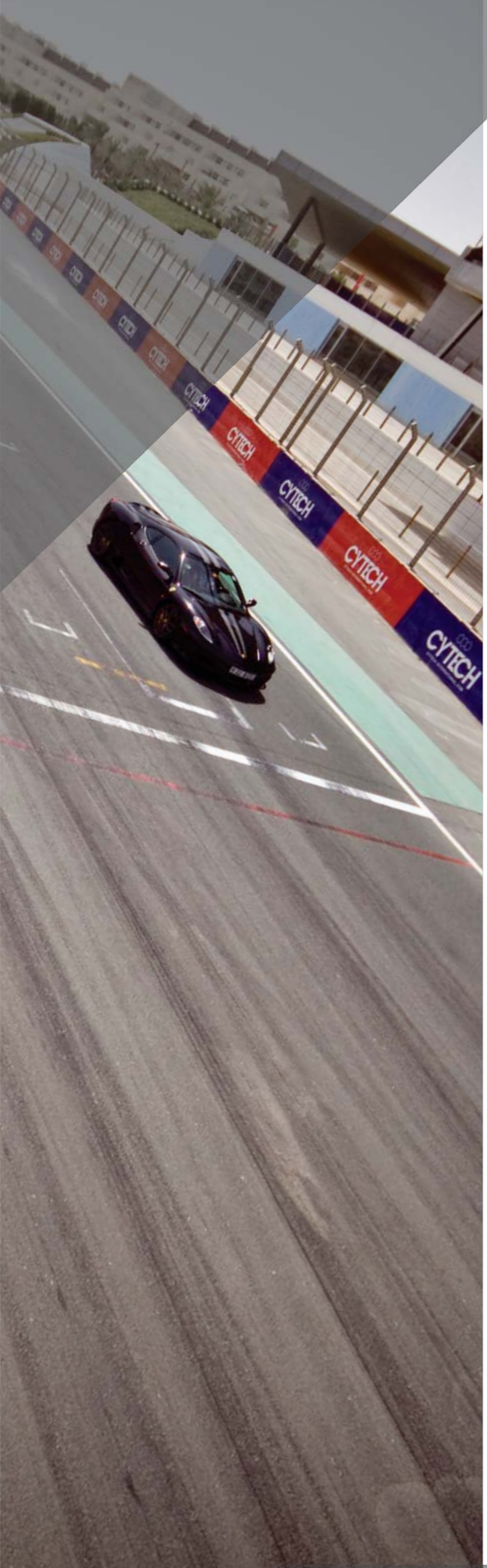
#### CYTOMIX

Corrosion-inhibiting admixture for increasing passivation of concrete reinforcement and other embedded steel to protect concrete from chloride ingress or carbonation particularly in coastal and below ground structures where saline water is present. Cytomix is a Calcium Nitrite solution added to concrete during production which creates an 'integral' corrosion-inhibitor. Available in IBC.

### CURING AGENT

#### CYTOPROOF B40L

Concrete curing agent is a single component brush applied bitumen emulsion containing mineral and stabilizing additives which acts as a water retarder in providing control of moisture and temperature during the most crucial first seven days. Cement, the active ingredient in concrete requires constant moisture to gain strength. Complies with ASTM C309. Available in 200L drums.



## COMMITMENT TO INNOVATION, QUALITY AND PERFORMANCE

CYRUS Infrastructure, the primary division of CYRUS Group has made it a top priority to define and implement uniform policy guidelines to be applied throughout the businesses of the Group, including the adoption of a code of conduct, the creation of an ethics committee and the development of a sustainable policy for growth reflecting the Group's commitment to quality and Environment management.

The CYRUS Group is and will always be committed to meeting Client's requirements and needs, thereby, increasing client satisfaction through continual improvement of its products, services, and established management system objectives.

### International Standard and Accreditations.

- ▶ ISO 9001 - Quality Management
- ▶ ISO 14001 - Environmental Management
- ▶ OHSAS 18001 - Occupational Health and Safety Management



# CYRUS

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A Division Of Cyrus Group

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