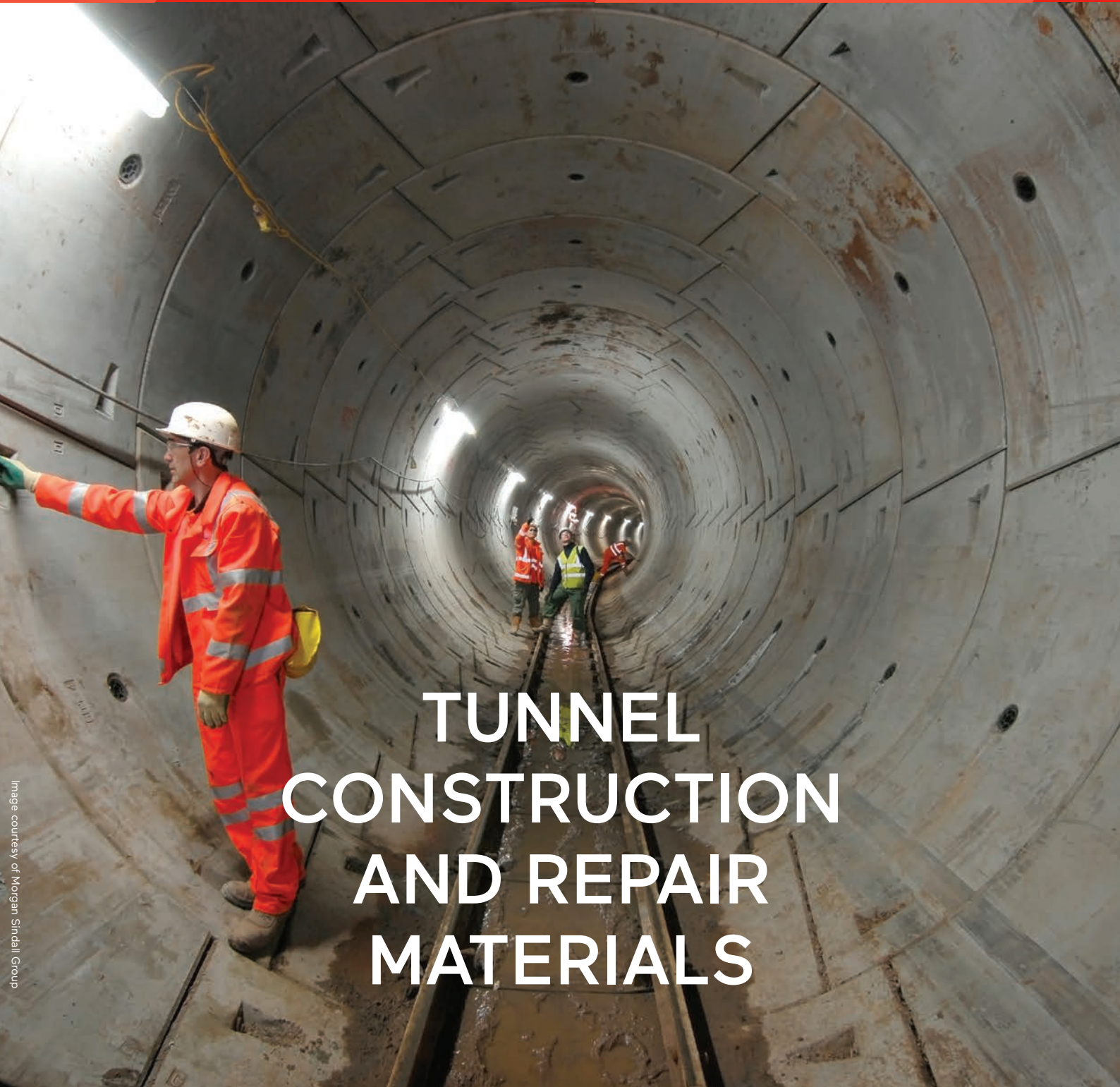


PAREX
Building expertise, together



**TUNNEL
CONSTRUCTION
AND REPAIR
MATERIALS**

www.parex.co.uk

TUNNEL CONSTRUCTION AND REPAIR MATERIALS

PAREX is a leading manufacturer of quality assured materials specifically developed for use in the construction of tunnels, culverts and other underground structures.

Not only are Parex products among the best-known technical mortars available, they are also backed by the highest levels of knowledge, technical back-up and specialist support offered by any UK manufacturer.

Parex Technical Sales and Support Managers, with practical experience of working in tunnels and other underground structures, provide hands-on product and application support to clients and contractors who specify and use its products in performance critical applications.

Parex has a significant successful history in new tunnel construction over the years and an established track record of developing materials for refurbishment and repair including super-strong and fast setting mortars, concrete repair materials, caulking and jointing compounds.

Parex develops purpose-made materials for specific applications. In wedge-block segment design, Parex developed a unique key-void infill mortar system, resulting in a

significant potential increase in production meterage per shift.

A critical aspect of this construction method is the infilling of 'keystone' in the tunnel roof area. Parex Terracaulk 40AAF was designed for this application, and has been used in a number of projects.

The Parex grouting system 'Gelthix' used where tunnels have been constructed in water laden conditions has proved to be an extremely successful addition to the portfolio of products, winning approval on tunnelling projects in Switzerland and the UK, including the 'London Power Tunnels' where Costain was the main contractor.

Other successful schemes with Parex involvement over recent years include:

- Crossrail Project London
- The Heathrow Terminal 5 Tunnels
- The Piccadilly Express Tunnel
- Southern Water Outlet Tunnels
- The Heathrow Express Tunnel
- The Belfast Sewer Project
- Channel Tunnel Rail link project
- Heathrow Baggage Handling Tunnel



Materials suitable for use in the construction of tunnels

ACRYLIC MORTAR

Acrylic Mortar is an exceptional concrete repair product with low alkali content, moderately fast setting and high ultimate strength properties. Both summer and winter grades are available for the repair of precast, in-situ and reinforced concrete. Skilled repairs to decorative units can be accomplished to give coloured and textured finishes.

ACRYLIC MORTAR MEETS BD 27/86 PT6 DEPARTMENT OF TRANSPORT SPECIFICATION FOR BRIDGE REPAIRS.

EPOXY MORTAR EFG

Fine grade, high strength version of Epoxy Putty, as below to provide support in critical situations including precast concrete, bridge beams, steel units, etc.

EPOXY PUTTY

Putty designed for smooth finish repairs to concrete units and also for high strength bedding of precast concrete, steel units, stanchions and for anti-vibration installations.

GELTHIX ABT, MS, LV & TS

A family of grouting products specifically formulated for annulus grouting using fully automated and hydraulic grouting systems. Gelthix admixture technology is unique providing controlled retardation, anti-bleed, anti-washout, volume stability plus flexible performance. Controlled retardation 6 -12 hrs protects against delays, de-railments or breakdowns.

HIGH BUILD PROTECTIVE COATING

A two-part solvent-free epoxy resin material applied as a high build protective coating to steel, concrete and other construction materials.

LA CONCRETE ACCELERATED

Quick setting low-alkali micro concrete which is self-compacting, non-shrink and suitable for pouring or pumping. It is designed for use on bridges or soffits and is suitable for cathodic protection projects. The material conforms to; EN1504-3 repair principles 3.2, 4.4, 7.1, 7.2, DTp BD27/86 Clause 4 and «Specification for Highways Works» Clause 1704.6.

LIGHTWEIGHT MORTAR RAPID

A lightweight fast setting repair mortar which is suitable for use in vertical and overhead applications.

TUNNEL SEGMENT REPAIR MORTAR

High strength repair mortar used to repair damaged concrete tunnel segments. The rapid setting mortar enables repairs to be carried out with excellent finish with the benefit of high early and final strengths. The repaired concrete and steel sections are protected from further deterioration.





SPRAYCRETE

A dry spray concrete designed for application by dry spray delivery, with water added at the nozzle, polymer reinforced and shrinkage compensated: for all shotcrete applications. Meets DTp BD27/86 pt 5. Available in summer and winter grades Spraycrete can be sprayed onto concrete, brick and masonry structures.



TERRACAULK 30

A hand-applied caulking mortar used to improve water-resistance to segmental tunnel joints. The mixed product may be hand-applied into caulking grooves within segmental precast concrete tunnels and for capping off bolthole pockets. Once applied it is easily finished to the required profile. The product is chloride free and is safe to use in contact with steel elements.



TERRACAULK 40 AFF

A reinforced caulking mortar suitable for infilling of wedge block key voids in rail tunnels and placing in vertical and haunch positions. Chloride-free and safe to use in contact with steel elements.



TERRAPOINT C10/C18/C40

A family of pointing mortars designed for re-pointing joints in brick arches, tunnels, culverts and brick sewers, together with repair works on sea walls, docks and harbours.

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PRODUCT SELECTOR

	PRODUCTS
New Tunnel Construction Shaft Sinking (bolted segments) Caulking segment joints and infilling bolt pockets	Terracaulk 30 (TCK01)
Protection of bolt heads and other metal elements in an aggressive environment	High Build Protective Coating (TM41)
Grout additives for shaft sinking in severe water conditions	Gelthix ABR, MS, LV & TS
Construction of New Bolted – Segmental Tunnels Grout additives to manage annulus infilling in severe ground water conditions or in submerged or subsea locations	Gelthix TS (TG109) Gelthix ABR (various) Gelthix MS/LV (TG138)
Caulking of bolted-segmental joints and bolt pockets	Terracaulk 30 (TCK01)
Damage repairs to segments in completed tunnels	Repair Mortar Epoxy Putty Epoxy Mortar EFG
Construction of Wedgeblock Segmental Tunnels Infilling of 'key voids' in all positions, working from the TBM during construction, where adequate access is available OR Retrospective infilling of 'key voids' in all positions including overhead from temporary access	Terracaulk 40AAF (TCK21) Terracaulk 40AAF (TCK21)
Repairs to Existing Tunnels in Concrete, brick or masonry construction or lining type Concrete Tunnels Hand applied Concrete Repair Mortars W = Winter S = Summer	Acrylic Mortar (ACR02s/ACR02w) Lightweight Mortar Rapid (TP127)
Shutter and Pour/Pump Micro Concrete	LA Repair Concrete (TP64) LA Concrete Accelerated (TP133)
Dry Sprayed Guniting W/S W = Winter S = Summer	Spraycrete (ACR18) Summer (ACR19) Winter
Wet sprayed High Strength Micro Concrete Brick and masonry constructed tunnels Brick and masonry lined tunnels	Spraycrete MEF70 (TP136)
Mechanical Repointing Mortars	Terrapoint C10 (TPC03) Terrapoint C18 (TPC05) Terrapoint C40 (TPC09)
Brick or stone replacement	Terracaulk 40AAF (TCK21)
Infilling missing brickwork	Terracaulk 40AAF (TCK21)
Concrete Protection Protection of all concrete structures or metal elements in structures or metal elements in structures exposed to aggressive effluents or located in an aggressive environmental location.	High Build Protective Coating Standard Grey (TM41)

Full details of all these products, along with Health and Safety Data Sheets are all available on-line at www.parex.co.uk or for concise product details, reference numbers and brief instructions for use, why not request a copy of the Parex Technical Mortars Pocket Guide. For assistance and advice on the most suitable products for specific applications please contact our Technical team on 01827 711755.

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