



Tunnelling and Mining



Global Construction Chemicals

- ▶ TBM
- ▶ Sprayed Concrete
- ▶ Grouting & Injection
- ▶ Waterproofing Systems
- ▶ Tunnel Support Systems

normet
FOR TOUGH JOBS

Waterproofing

Leak Sealing

Ground Stabilization

Concrete Admixtures

Construction and Repair

Tunnelling and Mining

Equipment



Global Construction Chemicals



Tunnelling and Mining

TAM International is widely recognised as a major player in the global Tunnelling and Mining industry and our recent partnership with underground equipment manufacturer 'Normet' has strengthened our presence in this specialist sector. We understand the needs and requirements of our customers and can recommend products and solutions offering high productivity with a strong emphasis on safety.

From our state-of-the-art manufacturing facilities supplying the highest quality products through to our Tunnelling and Mining experts who travel the world to support you the customer, TAM has an enviable reputation as being a “one-stop-shop” for our International clientele. Our employees are experts in this field and bring with them a wealth of knowledge in such areas as:

TBM

Sprayed Concrete

Grouting & Injection

Waterproofing Systems



In keeping with advancements in sprayed concrete technologies, TAM International have developed high performance water reducing admixtures, hydration control admixtures, hyper plasticizers and alkali-free set accelerators. Following on from our recent partnership with 'Normet' we can also supply a full range of equipment to handle any Tunnelling and Mining project both large and small and can support you through on-site training and application methods for both the machinery and chemistry.



▷ TBM

With the constant improvements in Tunnel Boring Machine (TBM) technology, together with an ever growing demand for higher TBM production and output capabilities, there is a strong requirement for improved admixture and material technology to support and enhance these increased advance rates. With this in mind, we are constantly improving and adding products to our TBM technology range, covering hard rock, EPB, open face and slurry type machines.

Soil Conditioning Foams / Clay dispersants

We understand how the geological conditions can change from one advance to the very next and the need to adjust technology parameters [FIR & FER] such as using Soil Conditioning Foams to ensure the highest excavation efficiency of all soil types, whether sandy silt, clay or highly abrasive rock.

Product Range

TamSoil 100CF
TamSoil 200CF

Backfill Grout Admixtures

TAM understands the performance requirements and the difficulties our customers have in designing specific grouts, whether single component, active and non-active, A+B grout mixes, etc based on the TBM equipment and logistics available. TAM International have a full range of admixtures to suit all backfill grout application methods, together with experts in the field to support you all the way.

Product Range

TamCem 23SSR
TamCem 8BFG
TamCem CG
TamCem HCA

Pre-excavation Injection Systems

Water ingress can cause major problems on any project, both inside the tunnel and in the surrounding geographical surface area. Our non-toxic products, such as Polyurethanes, Acrylics, Colloidal Silicas and Microfine and Ultrafine Cementitious injection systems offer a complete solution for initially preventing water ingress through pre-injection and also sealing of water ingress in post-grouting situations.

Product Range

TamAcryl 1000
TamAcryl 2000
TamPur 100
TamPur 125
TamPur 130
TamCrete 400CS
TamCrete UFC





▷ TBM

Pre-Cast & Lining Concrete Admixtures

High workability, high early and ultimate strengths, accelerated de-moulding time and segment durability are the main performance parameters we focus on when developing our range of pre-cast admixture technologies. TamCem state-of-the-art, high-range water reducing admixtures provide the following benefits:

- ▶ Reduced cement consumption
- ▶ Superior surface finishing
- ▶ Reduced labour and energy costs
- ▶ Increased impact resistance
- ▶ Savings on segment repair costs

Prevention is always better than cure!

Concrete repair

Our Range of TamRez epoxies have a proven track record in tunnel applications. From ultra low viscosity resins for structural crack injection to high strength bonding of pre-cast elements such as concrete segment cones and plugs.

Our range of TamCrete cementitious spray and trowel applied repair systems, gunite, slow, medium and rapid set mortars have been developed with durability, strength and ease of use in mind.

Related Products

- ▶ Waterproofing membranes for spray, roller and brush applied applications.
- ▶ Re-Injectable grout tubes
- ▶ Grout and Chemical Injection Packers
- ▶ Pumps and Mixers

Technical Support

We have a team of experienced TBM tunnel professionals offering full technical support, training and site services to the most important aspect of our business, our customers!

Product Range

TamCem 23SSR
TamCem 28HE
TamCem 53
TamCem 60
TamCem HCA
TamCem PP
TamCem PPC

Product Range

TamRez 220
TamRez 220U
TamRez 310
TamCrete FM
TamCrete Plug
TamCrete PolyPlug
TamCrete TP
TamCrete TopShot



▷ Sprayed Concrete

The use of wet sprayed concrete has increased dramatically during the last 15 years. As both a temporary support and permanent support element, it has been accepted as a replacement for traditional lining concrete in many permanent tunnel, mine and underground construction applications. The introduction of High-Range Water Reducing Admixtures, Hydration Control Admixtures, Fibres and Alkali-Free Accelerators together with the existing quality control procedures at the concrete producers batching plant has assisted in the rapid growth of Sprayed Concrete usage across the globe.

TAM International are at the forefront with our latest “state-of-the-art” admixture developments which inhibit long open time, workability, low water cement ratios, high early and ultimate strength developments and lower dust emissions, creating a cleaner working environment.

Sprayed Concrete Equipment

To complete our Sprayed Concrete portfolio, TAM International has a range of Sprayed Concrete equipment for both wet and dry applications. Our Tam Centurion 6E is a 0-6m³/hr compact, twin piston, wet sprayed concrete pump with an integrated accelerator dosing system, specially developed for small tunnels and shafts where hand spraying applications are required. The Centurion 6E can also be linked to any robotic spraying boom. In addition, we also supply a range of robotic equipment to suit any small, medium or large tunnel project.





▷ Sprayed Concrete

TamCem Range - Admixture Technology

Our TamCem admixtures have been specially developed using cutting edge technology for all types of Sprayed Concrete. They are especially effective where only poor quality aggregate and sand grading are available and significantly enhance the ultimate performance.

Ultra High Range Water Reducers

These products ensure the highest possible strength development is achieved no matter what the quality of cement and other constituents of the mix may be. Due to the cohesiveness of the mix, both aggregate and steel fibre rebound is substantially reduced, saving both time and cost.

Hydration Control Admixtures

TamCem HCA is a special admixture that prevents the early hydration of cement. It can be added at the concrete batching plant or directly into the truck mixer on site to extend the working life of both Concrete and Sprayed Concrete. The dosage depends on the working time required, and the open time of Sprayed Concrete can be extended from between 3 hours to 72 hours. This is ideal for tunnel applications where sprayed concrete has to be available at all times during excavation in bad geology.

Shotcrete Accelerators

TamShot 80AF & TamShot 80PAF are high performance, alkali-free accelerators for Sprayed Concrete applications.

With a typical dosage rate of 5% - 6%, TamShot 80AF's unique function also suppresses dust development, providing for a cleaner working environment.

Product Range

TamCem 21MR
TamCem 23
TamCem 23SR
TamCem 23SSR
TamCem 57
TamCem 60

Product Range

TamCem 53
TamCem 60
TamCem 23SSR

Product Range

TamCem HCA

Product Range

TamShot 80 AF
TamShot 80 PAF





▷ Grouting & Injection

Water ingress in Tunnels and Mines can have catastrophic consequences to the structural integrity, the surrounding environmental area, safety and to the cost of a project. This has created a demand for higher performance grouting materials.

TAM International have developed an extensive range of pre and post injection technologies to suit all rock and soil conditions, including Microfine and Ultrafine Cements, Colloidal Silica Gels, Polyurethanes, Acrylic Gels and Combination Grouts.

Microfine and Ultrafine Cementitious Injection Systems

Our TamCrete Microfine and Ultrafine cements are produced from pure ground Portland cements and therefore have total blaine particle sizes ranging from 650 to 900m²/kg, and D95 of <15 microns down to <10 microns. These unique products allow the adoption of ultra high water/ cement ratios which provide excellent results in terms of penetration, ultra low bleed (<2% characteristics) and initial setting times of less than 60 minutes. This helps to accelerate grout cycle times and reduce project costs.

Product Range

TamCrete MFC
TamCrete MFC SR
TamCrete UFC
TamCem HCA
TamCem 23

Colloidal Silica Gel

Colloidal Silica is considered to be the lowest viscosity grouting material available. Our TamCrete 400CS system is an ultra-low viscosity, nano-solution silica gel that has a highly variable gel-time depending on the accelerator dosage used. This environmentally friendly system ensures excellent penetration of fine fissures, sands and silt where micro-cements cannot penetrate. TamCrete 400CS can be mixed with any traditional grout mixing and pumping equipment and is injected as a single component material.

Product Range

TamCrete 400CS





▷ Grouting & Injection

Grout Admixtures and Grout Enhancers

Driven by technology advancement, TAM International have developed a range of Grout Admixtures and Grout Enhancing Admixtures which improve the stability of active cementitious and non-active lime grouts. Our technologies offer stabilization, anti-washout, low water/cement ratio's, highly flowable grouts, reduction of bleed water, long open times and enhance early and ultimate compressive strengths.

Product Range

TamCrete CG
TamCem 77TG
TamCem 23SSR
TamCem HCA

Acrylic Gels and Grouts

The TamAcryl range of Acrylic Gels and combination grouts offer total flexibility to adjust the gel times from seconds to hours, achieve variable gel consistencies and adjust compressive, bond and tensile strengths through the addition of various inert components. TamAcryl gels and grouts can be injected as 2 component systems where rapid gel development is required for water sealing or as a single component system where high penetration capabilities are required. All of our Acrylic gels and grouts are non-toxic, environmentally friendly and carry potable water certification. None of our Acrylic technologies contain Acrylamides.

Product Range

TamAcryl 1000
TamAcryl 2000

Polyurethanes

TAM International have long been considered the industry leaders in the development of polyurethane grouts both for leak sealing and ground consolidation. Our extensive portfolio includes rigid, flexible, semi-flexible, water activated and low viscosity Polyurethane Grouts. Our 2-part structural and expanding Polyurethane Grouts have proved invaluable to our customers where rapid water sealing and enhanced structural integrity of the rock is required.

Product Range

TamPur 100
TamPur 125
TamPur 130
TamPur 150





▷ Waterproofing Systems

“A watertight structure” is a frequent term used in many modern tunnel and underground structure specification. Tunnel waterproofing is no longer solely based on Pre-formed Polymer Membrane (PPM) especially when adopting the more commonly used Permanent Sprayed Concrete Lining system. The use of spray applied waterproof membranes offers a fast and efficient system and simple, lightweight application equipment enhances the user friendliness. TAM International have developed a range of spray and hand applied waterproofing systems for tunnels and underground construction.

TamSeal 800 – a high performance, single component, spray applied membrane which offers a tough, but highly flexible waterproof membrane. Application is by a simple dry rotor machine process and excellent production rates can be achieved (>200m²/hour). The unique raw material combination and sprayed texture offers an excellent bond strength to concrete, sprayed concrete and steel (rock bolts and protrusions).

TamSeal 10F – a two-component, flexible spray or hand applied waterproof membrane for tunnels and water retaining structures.

TamSeal Drainage Fleece – a lightweight, double sided polyester needle felt with integrated polyurethelene sheet for use in various locations that require pressure relief such as drained tunnel areas. TamSeal Drainage fleece is also used to provide a dry substrate on which to apply the TamSeal range of waterproof membranes.



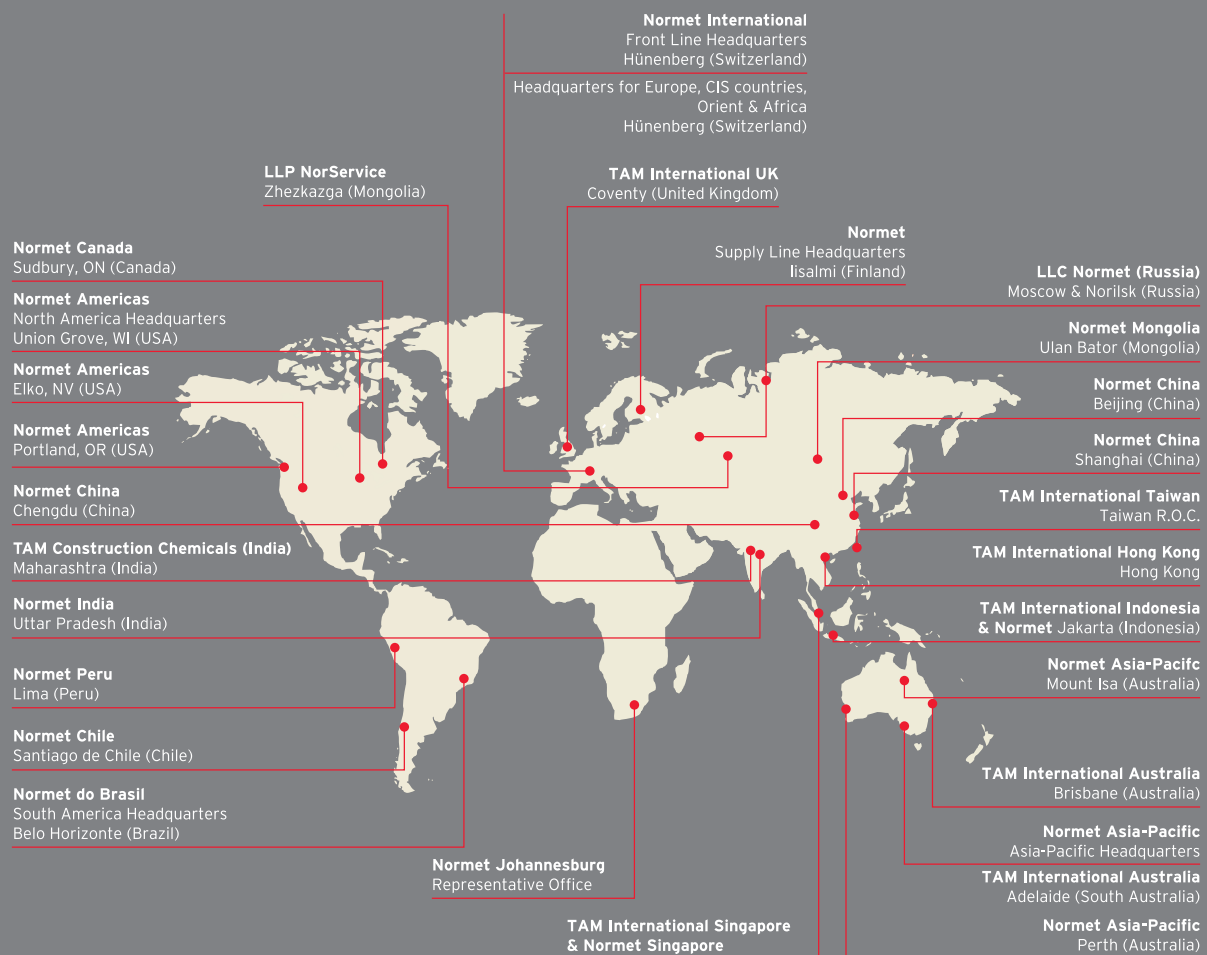
▷ Tunnel Support Systems

TAM International are now successfully marketing and supplying Tunnel Support Systems which includes the design, profile and manufacturing of Lattice Arch Girders, Canopy Tube Systems (including drill bits and rods) and Titanex Friction Rock Bolts. Please contact your local TAM International sales representative for more details.



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For your local TAM International representative, visit our website www.taminternational.com



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