



# SOLUTIONS for MINING and UNDERGROUND CONSTRUCTION



## MAPEI's Underground Technology Team

MAPEI has a track record of 80+ years of solving problems on a global basis for the construction industry. For nearly two decades, MAPEI's Underground Technology Team (UTT) has developed solutions for the many complex ground-control challenges and conditions facing the underground construction, tunneling and mining industries.

MAPEI mining solutions have been developed over time to meet the needs of this huge global market. These solutions improve productivity, reduce overall costs and enhance safety for the mine operators and mining contractors who specialize in serving their needs.

### OUR SOLUTIONS

- **Chemical grouting solutions**
  - Cementitious grouting products
  - Organic-mineral grouting products
  - Anchoring and cable grouting products
- **Waterproofing solutions**
- **Shotcrete solutions and accelerators**
- **Admixture solutions for concrete, shotcrete and mining backfill products**
- **Dust-suppression solutions**

Our goal – for the products and technologies manufactured by MAPEI and developed by the UTT Team – is to completely satisfy all the technical requirements of our clients, from those who apply them right down to the end user.





# CHEMICAL GROUTING PRODUCTS

## WATER MITIGATION – INFLOWS

**Foamjet F [NA]** is an ultra rapid-setting, two-component polyurethane resin with fluid consistency, to be injected for consolidating and waterproofing structures subject to relatively weak water ingress.

**Foamjet T [NA]** is a high-viscosity, ultra rapid-setting, two-component polyurethane resin, to be injected for consolidating and waterproofing structures subject to strong water ingress.

**Foamjet 260 LV** is a two-component polyurethane elastic and low-viscosity resin for injection and waterproofing.

**Resfoam 1K-M [NA]** is a one-component, ultra fluid, polyurethane resin applied by injection for waterproofing structures and geologic areas subject to intense percolating water. The reaction time may be regulated.

## CAVITY AND VOID FILLING

**Silicajet EXP [NA]** (high-expansion) is a two-component, organo-mineral (polyurea silicate) resin that is a fast-reacting and high-foaming solution for void filling. It has an expansion factor of up to 40 and has a low exothermic reaction temperature (210°F or 99°C). It is self-extinguishing if exposed to flame.

**Silicajet EXP 20 [NA]** (medium-expansion) is a two-component, organo-mineral (polyurea silicate) resin that is a fast-reacting and high-foaming solution for void filling. It has an expansion factor of up to 20 and has a low exothermic reaction temperature (210°F or 99°C). It is self-extinguishing if exposed to flame.

**Silicajet EXP/4 [NA]** (low-expansion) is a two-component, organo-mineral (polyurea silicate) resin that has fast-reacting and moderate-expansion properties (an expansion factor of 4 with higher foam density for added strength). Its exothermic reaction temperature and fire resistance properties are similar to *Silicajet EXP*.

**Silicajet ST HP** is a two-component, structural, organo-mineral, non-expanding resin, with high mechanical characteristics, to be injected for consolidating and waterproofing of structures subject to the presence of water.



# CEMENTITIOUS GROUTING PRODUCTS

**Microcem 8000** and **Microcem 12000** are micro-fine hydraulic binders with pozzolanic action for ground consolidation and ground waterproofing throughout injections of cementitious mixes.

**Mapegrout Compact [NA]** is a remixed injection grout characterized by great resistance to wash-out as well as controlled rheology and fluidity.

**Expanjet** is a special hydraulic binder with a high degree of fineness and expanding behavior.

**Expanfluid** is a plasticizing, anti-shrinkage agent designed for preparing slurries for injection.

**Cablejet** is a plasticizing, high-performance, anti-shrinkage agent for preparing slurries for injection.



# ANCHORING GROUTING PRODUCTS

**Stabilcem T** and **Stabilcem AG** are one-component, pre-blended, thixotropic mortars with controlled shrinkage for anchoring, by injection, of tie rods and bolts in all types of ground.

**Stabilcem HSR [NA]** is a one-component, shrinkage-compensated, pre-blended thixotropic mortar that is highly resistant to sulphates, designed to anchor tie rods and bolts by injection into all types of ground.

**MAPEI Rock-In** is a one-component, pre-blended cementitious mortar characterized by a very quick development of mechanical strengths, designed to anchor tie rods and bolts by injection into all types of substrates.

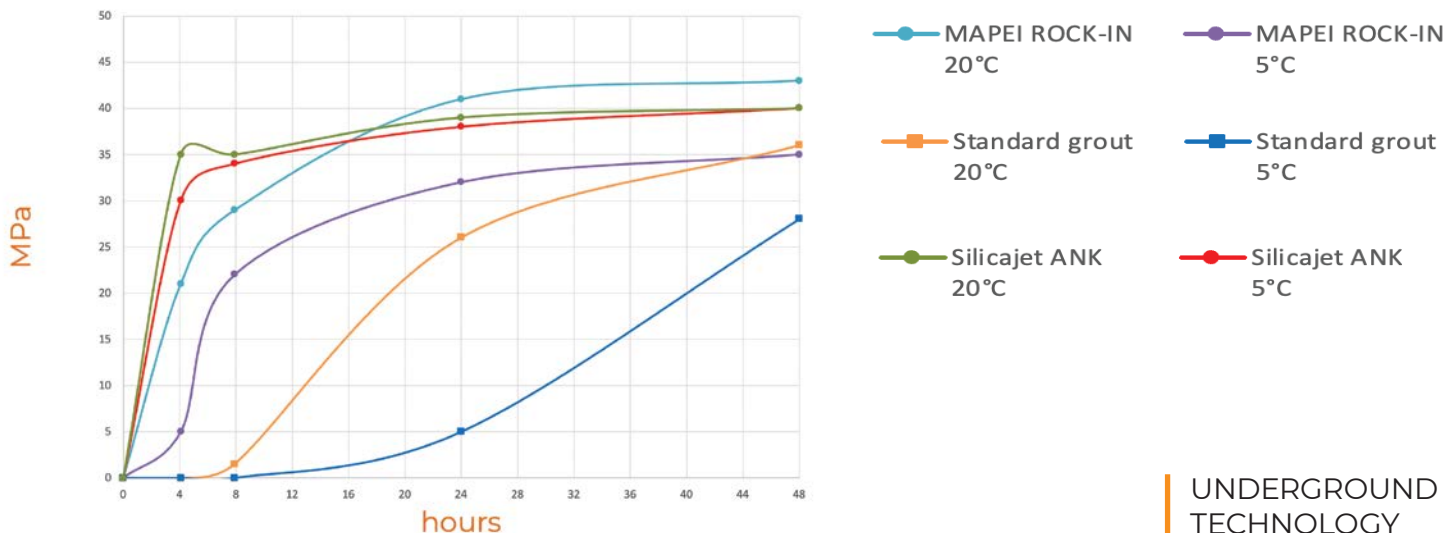
**Silicajet ANK [NA]** is a two-component, organo-mineral resin that is free of CFC and halogen, designed for the anchoring of structural bars.

**Mapefix PE SF** is a styrene-free, polyester resin, chemical fastener for heavy loads.

**Mapefix VE SF** is a styrene-free, hybrid vinyl resin-based, chemical anchor for structural loads.



## DEVELOPMENT OF RESISTANCE FOR ANCHORING PRODUCTS



# WATERPROOFING PRODUCTS

**Mapelastic TU System [NA]** is a one-component, ready-to-use polymeric sprayable membrane for waterproofing tunnels and underground structures.

*Mapelastic TU System* promotes excellent watertightness characteristics and, thanks to its attributes, is particularly suitable for underground applications.

- No-mix and ready to use
- Dust-free; no rebound
- High flexibility
- Crack-bridging ability
- Excellent bond strength to shotcrete/concrete
- High resistance to water pressure
- Double color (white/green) available

**Mapeplan TU** is a PVP-P synthetic waterproofing membrane for basement and underground structures.

The membrane is produced in one multi-extrusion process, with a high-quality raw material.

- High workability and good welding characteristics
- High mechanical strength
- High resistance to permanent pressure
- High resistance to low temperatures
- Conforms to EN 13967 and EN 13491 standards

**Mapeproof AL AP** is a pre-applied, fully bonded HDPE waterproofing membrane for below-grade applications.

*Mapeproof AL AP* bonds integrally to poured concrete, forming an adhesive bond to protect below-grade structures from water intrusion and lateral water migration. It is a convenient adhesive side lap that forms watertight laps between successive sheets. It is ideal for horizontal slabs and vertical blindside applications.

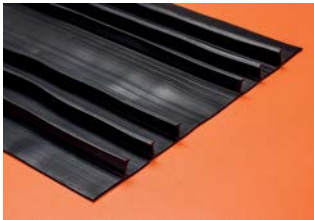


**Mapedrain Diamond Net** is a drainage system for use in tunnels and underground structures.

*Mapedrain Diamond Net* makes it possible to channel drips and small percolations of water completely and permanently in newly built underground structures or in rehabilitation works, thus avoiding the accumulation of water.

*Mapedrain Diamond Net* is to be used in combination with *Mapelastic TU System* one-component polymeric sprayable membrane for waterproofing and *Mapeplan* synthetic waterproofing membranes.

## JOINT-SEALING SOLUTIONS



### **Mapeplan Waterstop**

PVC-P waterstop for sealing structure joints, expansion joints



### **Idrostop Multi**

PVC-P re-injectable hoses for waterproofing injections



### **Idrostop CV**

Hydrophilic swelling profile for watertight construction joint



### **Mapeproof Swell**

Hydro-expansive, rubber-based hydrophilic sealant paste in tubes, applied using an extrusion gun



### **Mapeplan PVC Tape**

Flexible glass-reinforced PVC tape with non-woven polyester fabric strips on one side



### **Mapeband Flex**

High-performance joint sealing system for construction joints, expansion joints, connection joints and cracks



### **Mapegel UTT System**

Three-component hydrophilic gel for consolidating grounds and for creating sealing barriers through injection



### **Mapepoxy UV-S IT**

Epoxy-based putty suitable for underwater application



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# SHOTCRETE PRODUCTS AND ACCELERATORS

## BAGGED SHOTCRETE MIXES

**Mapegrout Gunitite** is a premixed, one-component, multipurpose, fiber-reinforced, non-accelerated, cementitious mortar applied by using either wet- or dry-process spraying technique.

**Mapegrout Gunitite 300 AF** is a premixed, one-component, fiber-reinforced, cementitious mortar with accelerated setting for dry-mix shotcrete.

**Mapegrout Gunitite Shot Gun [NA]** is a premixed, one-component, fiber-reinforced, cementitious mortar that is densified for water tightness and has an accelerated setting for dry-mix shotcrete.

**Planitop Shotcrete** is a premixed, one-component, silica-fume-enhanced, non-accelerated mortar with no fiber reinforcement. It is applied by a wet- or dry-process spraying technique.

## ALKALI-FREE POWDERED ACCELERATOR

**Mapequick AF 300 Dry** is a powdered alkali-free setting accelerator for shotcrete.

## ALKALI-FREE LIQUID ACCELERATORS

**Mapequick AF 70 [NA]** is a liquid, stable suspension, alkali-free accelerator that produces shotcrete characterized by rapid setting time and very quick strength development.

**Mapequick AF 701 S [NA]** is an ultra low-viscosity, stable-solution, liquid accelerator based on alkali-free inorganic salts developed for shotcrete with very rapid setting time.

## REINFORCING FIBERS

**Mapefibre IT 39 NV** are structural, wavy monofilament, polypropylene fibers for making high-ductility concrete and shotcrete.

# ADMIXTURES FOR CONCRETE, SHOTCRETE AND MINING BACKFILL PRODUCTS

## HIGH-RANGE WATER REDUCERS (HRWR)

**Dynamon SX [NA]** is a superplasticizer based on acrylic polymer for concrete.

**Dynamon 850** is a normal-setting, multi-range, water-reducing admixture for concrete utilizing polycarboxylate technology.

## VISCOSITY-MODIFYING ADMIXTURES (VMA)

**Mapecrete V3K [NA]** is a liquid admixture specially formulated for use in the production of ready-mixed and precast concrete that requires high fluidity with no segregation.

**Mapecrete VMA** is designed to improve the viscosity of highly flowable mixes, decrease the potential for segregation and improve the finishing characteristics of lean concrete mixes.

## RETARDER

**Mapetard R** is a highly concentrated liquid admixture conforming to ASTM C494, Type D. *Mapetard R* reduces the quantity of mixing water required to produce concrete of a standard consistency with the benefit of extended slump life and workability.

## ACCELERATOR

**Mapefast Super Set** is a non-chloride, water-reducing admixture formulated to accelerate the strength development and setting time of concrete in cold weather.

## AIR ENTRAINER

**Mapecair SA [NA]** is a multi-component, air-entraining admixture that has been stabilized to produce an air-void system consistent with industry requirements and standards.

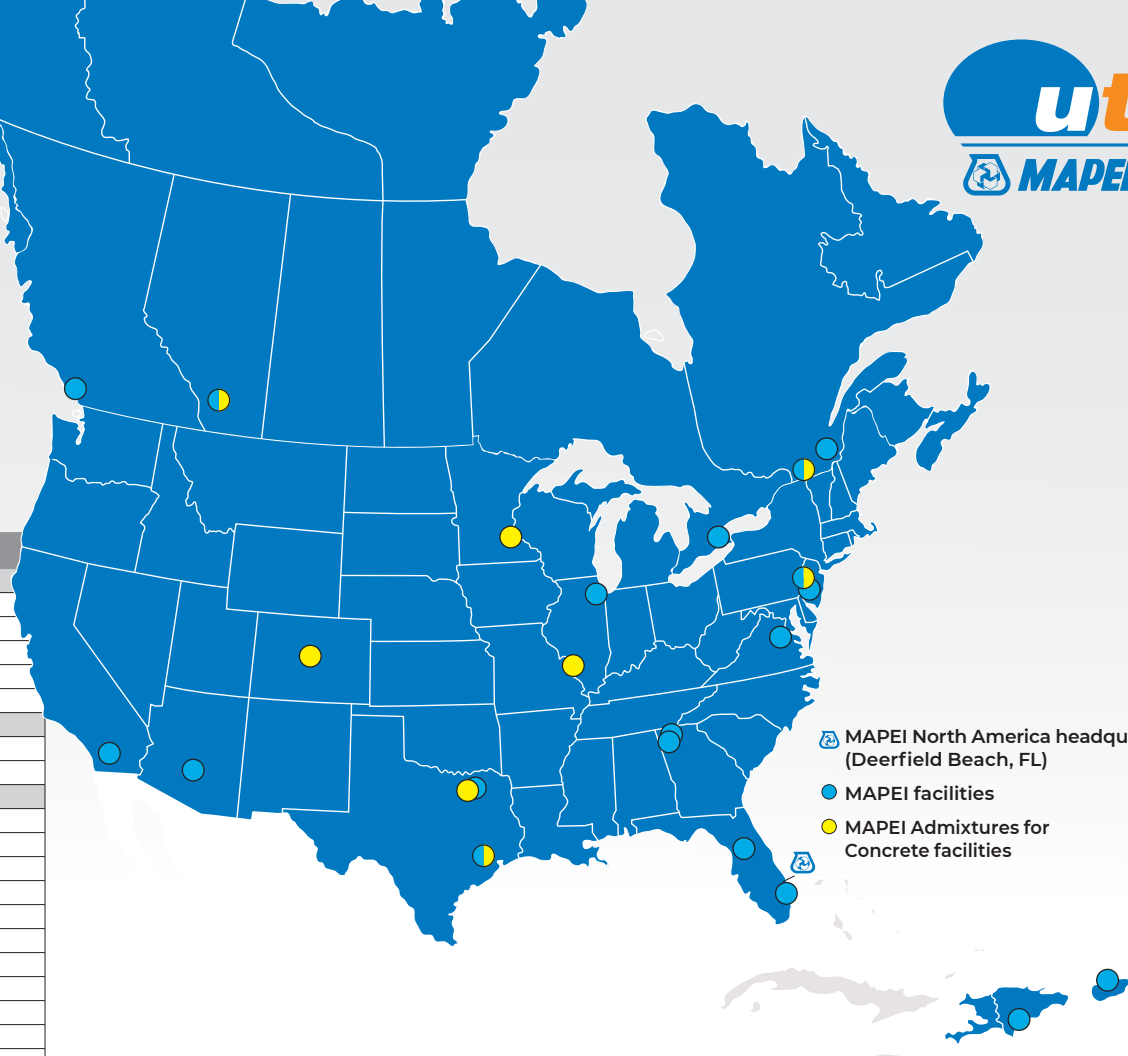
## MICROSILICA

**Mapeplast NS 20** is a liquid suspension of amorphous silica fume used in high-quality concrete and mortar.




## DUST-SUPPRESSION PRODUCT

**MAPEI Dust X** is a biodegradable solution for dust dispersion control; for roadways, especially for unpaved roads; for excavation materials; and for material piles in general.





FACILITIES	
Canada – MAPEI	
	Brampton, ON
	Calgary, AB
	Delta, BC
	Laval, QC
	Maskinongé, QC
Caribbean – MAPEI	
	Dorado, PR
	Santo Domingo, DR
USA – MAPEI	
	Atlanta (Calhoun), GA
	Atlanta (Dalton), GA
	Denver (Berthoud), CO
	Dallas (Garland), TX
	Des Moines (Grimes), Iowa
	Ft. Lauderdale, FL
	Fredericksburg, VA
	Lansing (Fowlerville), MI
	Houston, TX
	Kansas City, KS
	Madison, IL
	Minneapolis (Eagan), MN
	Orlando (Wildwood), FL
	San Bernardino, CA
	Swedesboro, NJ
	Tempe, AZ
	West Chicago, IL

-  MAPEI North America headquarters (Deerfield Beach, FL)
-  MAPEI facilities
-  MAPEI Admixtures for Concrete facilities

## FACILITIES IN THE USA, CANADA AND CARIBBEAN

### MAPEI Underground Technology Team

#### Why MAPEI UTT?

- High-quality products
- High-qualified technical service: Technical assistance is provided free of charge before and during the execution of the project and other associated work, including:
  - Laboratory support work.
  - On-site specialized project/mine support.
- Tailored products for underground solutions, including injection and chemical solutions
- Proven global expertise, with references spanning the world
- Innovative formulations for lower environmental impact
- Several products that feature water hazard classifications
- Logistic and administrative team to meet all jobsite needs

UNDERGROUND  
TECHNOLOGY  
BY **MAPEI**



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