



The Chemical Company

Solutions for tunneling and mining

Fire Protection



Expanding Horizons

Underground





Avoid the Unexpected

The Total Package

MEYCO® Global Underground Construction (MEYCO) is a world leader in the provision of reliable, customer oriented product solutions focused on your needs in the tunneling and mining industries. We are part of BASF, The Chemical Company, a well established multinational company with the extensive support frameworks and resources of a leading worldwide construction chemicals supplier.

BASF recognizes that your success is founded on delivering solutions that meet or exceed your customers' critical needs. By integrating with you from project start-up and understanding the issues that are important to you, we can contribute to your success. As many underground projects attract international contractor and design teams, our global presence supports the seamless transfer of technology and services to any of your projects, anywhere in the world.

In light of catastrophic tunnel fires that have occurred in recent years, MEYCO has developed MEYCO Fireshield 1350 for the protection of underground structures. This unique cementitious thermal barrier eliminates both explosive spalling and the structural deterioration of concrete and steel reinforcement.

Durable Fire Protection

MEYCO Fireshield 1350 is a unique product developed for tunnel environments. It has an extremely good thermal insulation effect that will prevent heat from damaging the structural concrete lining in even the most severe tunnel fire. MEYCO Fireshield 1350 is durable and environmentally friendly both during application and after installation. It is able to sustain dynamic and collision loads and is compatible with all cleaning and maintenance methods without the need for additional surface protection.





Design Flexibility

The MEYCO concept is to provide expert design, high performance systems, state-of-the-art robotic spray equipment and, last but not least, excellent service throughout the project.

MEYCO Fireshield 1350 is a versatile product and may be:

- applied as sprayed concrete
- cast in situ
- precast as panels

It gives the designer the necessary flexibility to provide clients with the best possible solution. Due to its high bond strength to pre treated concrete, MEYCO Fireshield 1350 can be designed as a fully bonded solution without requirement for mechanical fixing with mesh.

Ease of Application

Mixed with water, MEYCO Fireshield 1350 can be used as a normal mortar and applied with the conventional equipment and techniques used in wet sprayed concrete. Its application benefits from the know how available in the industry. Simply by adding an alkali free accelerator at the nozzle, the mortar can be sprayed by hand or robotic application at the required layer thickness in one pass.

Durable

Its performance characteristics give MEYCO Fireshield 1350 substantial advantages and durability which are essential in a tunnel environment.





Construction Simplicity

Wet-mix Application

The MEYCO team is committed to providing you with state-of-the-art solutions for the application of fire protection systems for your tunnel.

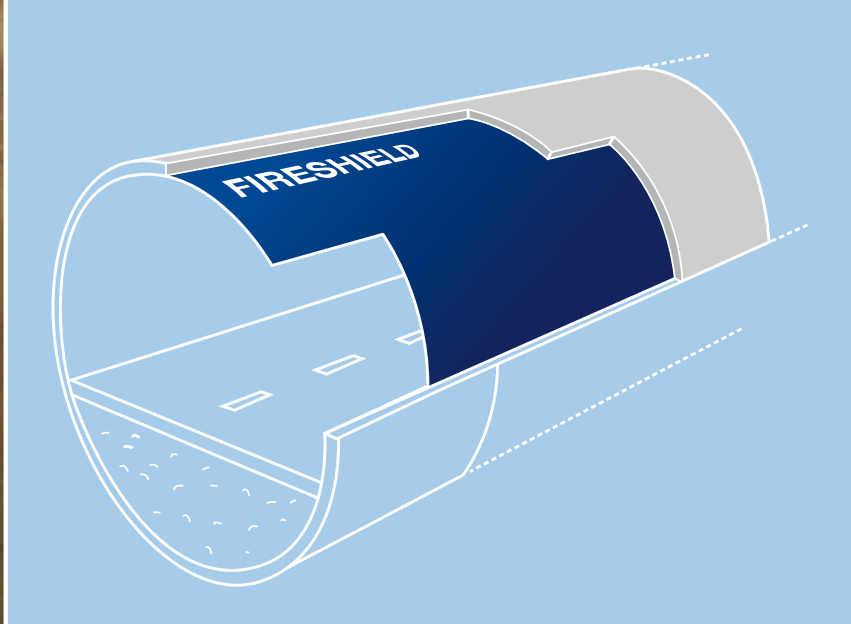
- MEYCO Fireshield 1350 is a versatile product that can be spray applied or cast in-situ using simple equipment for hand application or sophisticated robotic equipment such as the MEYCO Logica for large projects
- If required, MEYCO Fireshield 1350 can be float finished in order to achieve a smooth surface that can be coated with the required reflective paint system
- Simply by adding the correct amount of set accelerator the applicator can spray the required layer thickness by hand or robotic application in one pass
- MEYCO Fireshield 1350 can be mixed like normal concrete using a typical small mortar mixer, a truckmixer or, if high volumes are required, a pan or drum mixer
- The 3 hour open time allows the product to be mixed outside the tunnel and provides the applicator with a simplified logistical solution
- The unique high strength development of the product allows safe application during limited closures of tunnels in daily operation

Full Project Support

Our solution represents a total package approach, including:

- MEYCO Fireshield 1350 passive fire protection system
- Testing, modelling and product support
- MEYCO equipment and support
- On-site training and application guidance
- Aftersales support throughout your project





Design Flexibility

Design Package

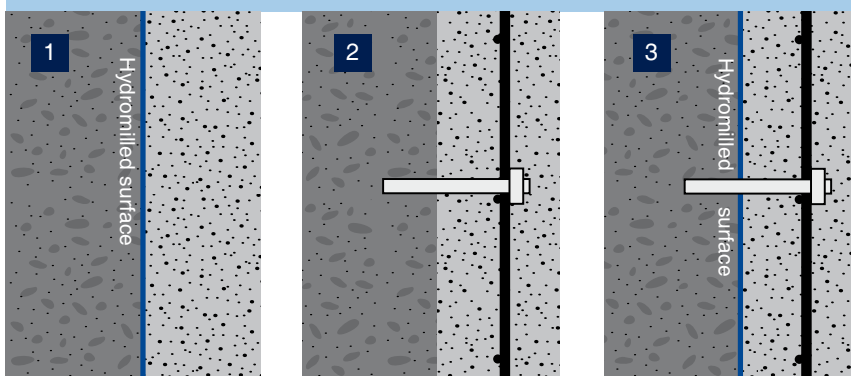
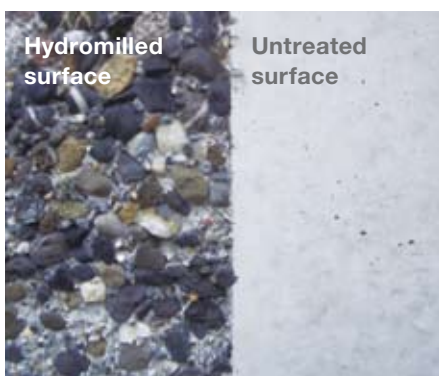
Bonding MEYCO Fireshield 1350 to the structural tunnel lining can be achieved by three methods:

- 1** Fully bonded
 - Substrate roughening preparation by hydromilling
 - No mesh required
 - As a fully bonded system, without steel mesh and fixings, the design life of the thermal barrier system can be extended
- 2** Mechanically bonded
 - Stainless steel light mesh
 - Stainless steel mechanical fixings
 - No substrate preparation except cleaning
- 3** Both adopted for extra «perceived» safety
 - Both hydromilling and mesh fixing

Design support

MEYCO can support your Design team:

- Comprehensive design guidelines and tables for all the current time - temperature curves
- Independent fire and durability test reports
- In-house fire test facility for project related requirements
- Software tool for project specific fire protection requirements
- Design documents with project related proposals are available on request





Operational Security

Long Service Life

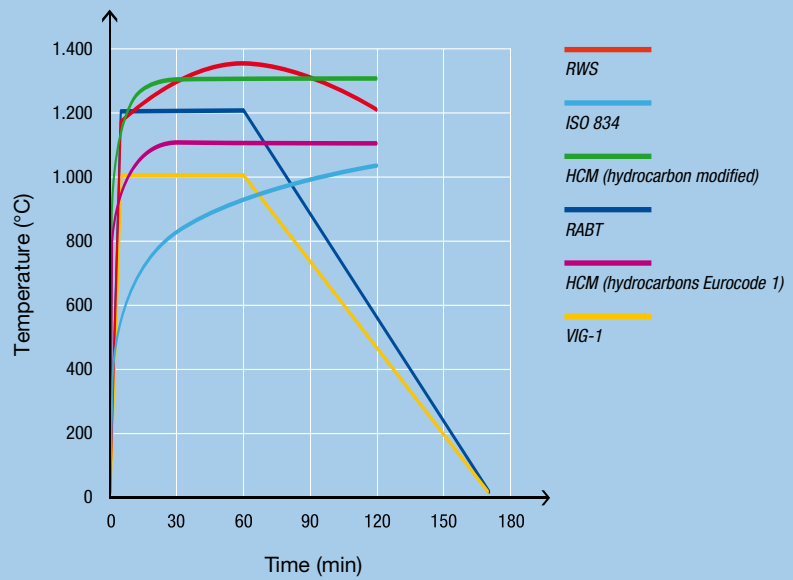
MEYCO Fireshield 1350 has been specially developed for the tunneling industry, providing the long service life of the passive fire protection system during the total life cycle of the tunnel:

- As a passive fire protection system, MEYCO Fireshield 1350 will always protect the structure during any fire
- The system allows proper maintenance and inspection of the structural lining during the operational life of the tunnel
- MEYCO Fireshield 1350 is essentially a light weight aggregate concrete and has a similar design life, giving the following advantages:
 - Resistant to cleaning with high pressure jet washing, brushing and detergents
 - Impact resistant
 - Chemical and water resistant
- Can be easily upgraded to protect against more severe fire scenarios by applying additional thickness
- Can achieve the desired surface finish and reflectance using appropriate paint systems
- Easily repaired following a fire event

MEYCO Fireshield 1350 offers unique durability properties:

- As a fully bonded system, any distress in the structural lining will not be masked by the thermal barrier, allowing for effective inspections for cracking and water ingress
- The design thickness of the thermal barrier can be applied in one homogeneous layer, permitting enhanced structural integrity
- No protective coatings are needed; compatible with tunnel paint systems
- High chemical and impact resistance





Technical Tools and References

Technical Support

Numerous documents and tools are available, helping designers and applicators in finding the right solutions:

- Calculation tool for application rates
- Project cost calculation
- Method statements for application and quality control

Design support for your team:

- Calculation tool for standard design fires (RWS, HCM, ISO834) or project specific scenarios
- Design documents in order to support your team for optimized solutions

References

Job references are available:

- San Pedro de Anes, Spain
- Switzerland, Alp Transit
 - Mitholz
 - Engstlige
 - Bodio
- Chamoise, France
- Soderledstunnel Stockholm, Sweden
- Weston-Super-Mare, United Kingdom
- Escape tunnel protection, Athens



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