

Suspension Spray

Your Simple Solution for a Perfect Coating



**Plasma
Spray**

Perfect solutions through optimum materials and innovative technologies

Oerlikon Metco is a global leader in surface engineering solutions and services offering:

- A broad range of thermal spray and other advanced surface technology equipment
- Integrated systems and materials
- Specialized coating and surface enhancement services
- Customer support services

Oerlikon Metco provides a comprehensive manufacturing, distribution and service network, catering to aviation, power generation, automotive and other strategic growth industries.

To take control of your surface engineering challenges, contact your Oerlikon Metco sales office, visit our web site at

www.oerlikon.com/metco

or e-mail us at

info.metco@oerlikon.com

About Oerlikon Surface Solutions Division

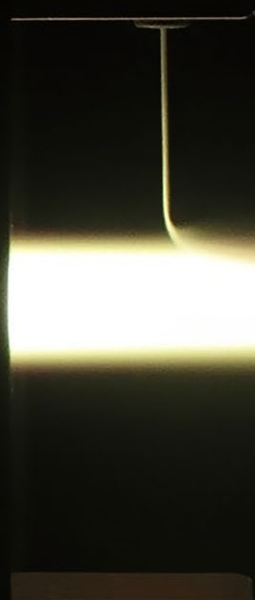
Oerlikon is a leading global provider of surface and additive manufacturing solutions and services. The division offers an extensive portfolio of market-leading thin-film, thermal spray and additive manufacturing technologies, equipment, components and materials. Emission reduction in transportation, maximized longevity and performance of tools and components, increased efficiency and intelligent materials are hallmarks of its leadership. Pioneering technology for decades, the division serves customers with standardized and customized solutions across a worldwide network of more than 170 sites in 37 countries. With its technology brands – Oerlikon Balzers, Oerlikon Metco and Oerlikon AM – Oerlikon's Surface Solutions division focuses on technologies and services that improve and maximize performance, function, design, reliability and sustainability, which are innovative, game-changing advantages for customers in the automotive, aviation, tooling, general industries, luxury, medical, semiconductors, power generation and oil & gas markets. The division is part of the publicly listed Oerlikon Group, headquartered in Switzerland, which has 12 000 employees and generated CHF 2.65 billion in revenue in 2021.

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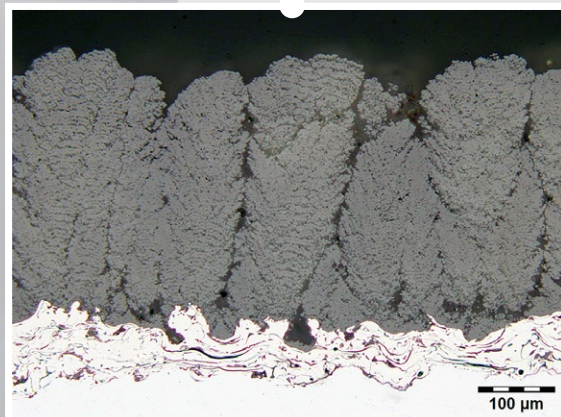


Increased performance and new application possibilities

Coatings produced using submicron and nanoscale powders are becoming increasingly popular for coatings with advanced microstructures. Especially demanding applications such as gas turbine hot-section components and solid-oxide fuel cells can benefit from the improved physical and mechanical properties that these coatings can offer.

Suspension spray combines the versatility and rapid deposition rate of Atmospheric Plasma Spray (APS) with the ability to produce advanced microstructures from submicron and nanoscale powders. It also provides the possibility of a full range of material compositions that include oxide ceramics, alloys, carbides, blends and more. Suspension spray can generate columnar microstructures that are similar to electron-beam physical vapor deposition (EB-PVD) Thermal Barrier Coatings (TBC) but at a much lower investment cost.

To ensure consistent coatings with repeatable characteristics it is essential that the suspension feedstock and liquid feed system are perfectly matched. For good flow, the particles in the suspension must be well dispersed and homogeneous throughout the coating operation. Oerlikon Metco suspension spray technologies combines material, equipment and application expertise to ensure repeatable quality coatings.



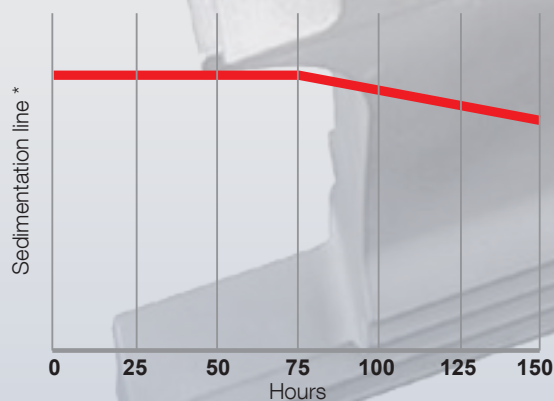
Columnar microstructure of Metco 6608 thermal barrier coating (TBC)

Superior suspension consistency

The suspension must be designed to resist settling and agglomeration. Well-dispersed suspensions have slow sedimentation rates and low viscosities that serve to maintain suspension consistency and promote good feed characteristics.

The sedimentation rate is significantly reduced with the use of an effective dispersant such as that used in Metco 6608.

Metco 6608 has a low viscosity that results in a slow and stable sedimentation rate.



Metco 6608

Metco 6608 Properties

Solids content (wt%)	25.0
Viscosity (cP)	1.50
Specific Gravity (g/cm ³)	1.017

* the sedimentation rate test was performed by placing well-mixed suspensions in clear glass containers and measuring, over time, the total height of the liquid less the height of sediment to get the height of the suspension.

Tailored materials

Every successful coating solution starts with the right material choice. Oerlikon Metco provides unique formulations for suspension plasma spray of thermal barrier coatings that are a cut above the rest.

- Manufactured with our HOSP™ process and milled to submicron particle size.
- Comparable composition and exceptional purity as that of our highest quality $8Y_2O_3$ ZrO_2 products.
- Designed for low viscosity and high stability required of liquid suspension feedstocks.

Accurate and continuous feeding technology

Feeding of extremely fine, submicron and nanostructured powders can be problematic. However, the Metco LFS 400 accurately and continuously feeds suspension feedstock materials for thermal spray processes in production environments.

- Pulse-free operation while maintaining a consistent suspension without sedimentation to ensure the highest feed accuracy.
- Dual-canister design allows for continuous feeding making it the ideal feeder for R&D, prototyping and production operations.
- Designed for quick, simple maintenance and trouble-free operation.

The best application technology

Our best-selling plasma spray guns are readily and simply adapted for suspension plasma spray:

- TriplexPro-210 triple cathode cascading arc gun for highest consistency, lowest process drift and best throughput.
- SinplexPro single cathode cascading arc guns for excellent stability and process reliability at high throughput, which retrofits into your existing plasma spray system.
- Metco F4MB-XL and Metco 9MBM conventional plasma spray guns are well-known worldwide, and engineered for reliable performance.

