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MIOTAG HL Products

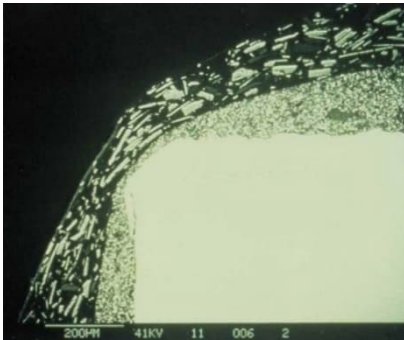
Advantages - Applications - Properties

Micaceous Iron Oxide (MIO) coatings have been known for their unique protective properties for nearly a century. By incorporating MIOTAG, long-term corrosion protection is ensured, extending maintenance-free periods and enabling cost savings.

Product Benefits

An anti-corrosion paint pigmented with MIOTAG micaceous iron oxide forms a dense, lustrous coating upon application.

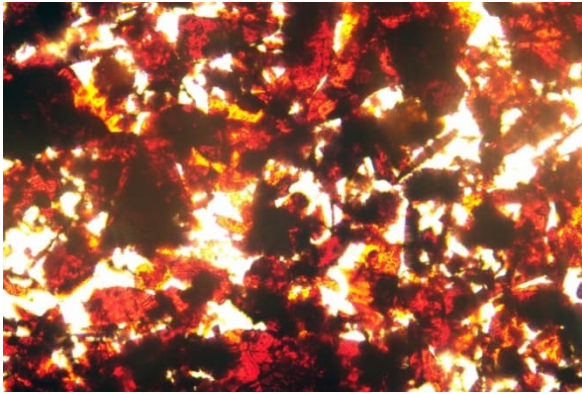
A cross-sectional view obtained via scanning electron microscopy clearly shows that the platelets are oriented parallel to the steel surface within the paint film.



During the drying process, the extremely thin, platelet-shaped pigment particles align nearly parallel to the surface within the coating, overlapping each other.

This layering resembles fish scales or the overlapping of roof tiles.

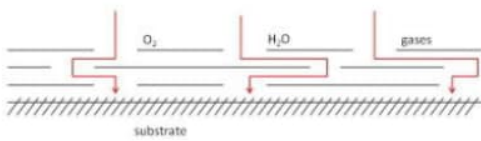
As a result, a dense barrier layer is formed, which prevents environmental influences such as salt spray, sulfur dioxide, ammonium salts, and other airborne contaminants. The penetration of moisture and oxygen is also effectively inhibited.



HL stands for High Lamellar

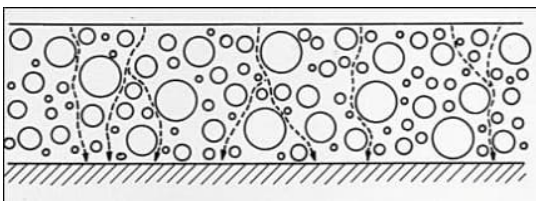
While the ISO 10601 standard defines a Grade A MIO having more than 65 % lamellar content, the **MIOTAG HL** products show a lamellarity of far beyond that standard showing values of > 80 % and even more.

Barrier Effect

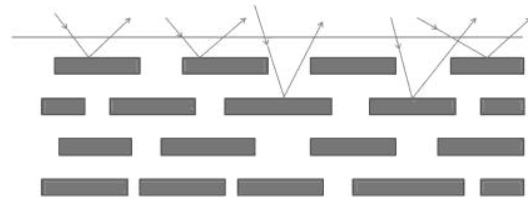


The illustration demonstrates how **MIOTAG**, due to the parallel orientation of its platelets, prevents the rapid penetration of water and environmental contaminants.

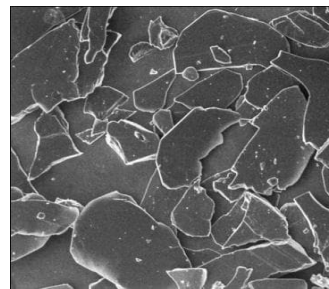
Conventional pigments, however, allow environmental influences to penetrate to the steel much more quickly. There is essentially no barrier effect present.



Shielding Effect



The **MIOTAG** platelets present on the surface of the coating reflect IR and UV radiation, thereby protecting the binder from rapid degradation.



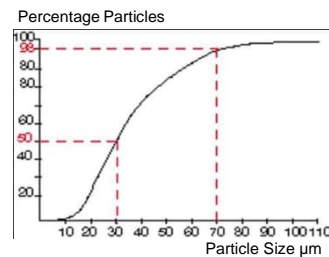
The scanning electron microscope image of a **MIOTAG** acrylic rubber coating after 10 years of outdoor weathering clearly demonstrates how the **MIOTAG** platelets located on the surface protect the underlying binder.

Paint Film Reinforcement

The evaporation of the solvent, repeated wetting and drying cycles, as well as mechanical stress and temperature variations, place considerable stress on the coating. MIOTAG platelets within the paint film make the coating more resilient and prevent the destruction of the protective coating.

Particle Size Distribution

The lamellar fraction of the representative sample is approximately 70 - 80%, with the thickness of the platelets being approximately 2 - 4 μm . Larger platelets are primarily responsible for the shielding effect of MIOTAG. The non-lamellar fraction consists mainly of the smallest particles, up to approximately 5 μm . In combination with the lamellar particles, this results in a very high packing density within the paint film.



Particle size distribution characterizing the lamellar component of a representative MIOTAG sample.

Adhesion Improvement

Pigmenting with MIOTAG improves both the adhesion of the coating to the substrate and the intercoat adhesion. This is particularly evident when applying to hot-dip galvanized surfaces.

Thick-film coatings, which are applied in a single coat, are already pigmented with MIOTAG in many countries. These coatings are primarily used on high-voltage power transmission towers.

To an increasing extent, the improved adhesion properties resulting from pigmentation with MIOTAG are now also being used to enhance the performance of epoxy coatings. This is because pigmentation with MIOTAG allows for problem-free overcoating, eliminating the need for extensive surface preparation.

Abrasion Resistance

The transport of steel structures to the construction site requires particularly abrasion-resistant "transport coatings" that meet the demands of storage, transport, and erection at the construction site. MIOTAG, thanks to its compactness and abrasion resistance, is ideally suited for such transport coatings.

Chalking Reduction

High UV radiation causes "chalking" - a process in which the pigment particles on the coating surface detach due to the oxidative degradation of the binder. The individual binders have different degradation rates, with epoxy resins exhibiting the highest. Pigmentation with MIOTAG solves this problem due to its shielding effect.

Applications

- ✓ Heavy-Duty Corrosion Protection:
- ✓ Bridges, offshore platforms, tanks, structural engineering, industrial plants, etc.
- ✓ Decorative Metal Protection:
- ✓ Garden gates, fences, signs, etc.
- ✓ Plastics Industry
- ✓ Ceramics Industry
- ✓ Paints and Coatings Industry

Properties of MIOTAG® Micaceous Iron Oxide

- ✓ Lamellar structure
- ✓ High specific gravity, resulting in orientation of the micaceous iron oxide particles at the substrate
- ✓ Barrier effect
- ✓ UV and IR radiation reflection instead of absorption
- ✓ Reinforcement of the paint film
- ✓ High decorative effect

Product Overview /Technical Data

Product	MIOTAG HL1	MIOTAG HL2	MIOTAG HL3	MIOTAG HLR
Color	gray with metallic sheen			
Particle Shape	lamellar			
Grade (ISO 10601)	A			
Type (ISO 10601)	1	2	3	
Iron Content (Fe ₂ O ₃ after ISO 1248)	> 88 %			
Density g/m ³ (ISO 787/10)	> 4,8			
Bulk Density g/cm ³ (EN ISO 60)	approx. 1,4	approx. 1,5	approx. 1,6	
Loss on Ignition - LOI (800° C)	< 3 %			
pH-Value (ISO 787/9)	8,5 +/- 1			
Oil Absorption g/100 g (ISO 787/5)	19 +/- 1	18 +/-1	16 +/-1	
Screen Residue 45 µm (EN ISO 4610)				
Screen Residue 63 µm (EN ISO 4610)	max. 5 %	5 - 15 %	25 - 35 %	
Screen Residue 75 µm (EN ISO 4610)				
Screen Residue 100 µm (EN ISO 4610)	Traces			
Screen Residue 1000 µm (EN ISO 4610)				max. 2 %
d ₅₀ µm (Lasergranulometrie)				
d ₉₈ µm (Lasergranulometrie)				

The values in our data sheets and publications are the results of careful investigations. However, they do not constitute specifications but rather are average values without legal obligation.



Eiffel Tower in Paris



Offshore Platforms



Windparks