

## UNDERSTANDING MICACEOUS IRON OXIDE IN OUR HIGH PERFORMANCE COATINGS

*In the interest of providing a simple and concise understanding of what micaceous iron oxide (MIO) is, and what benefits it provides in a high-performance industrial coating we have listed various statements from technical articles published in various trade periodicals. The comments concerning the performance of our product are our own.*

"MIO is a naturally occurring, but rare form of crystalline iron ore. This plate-like pigment improves the longevity of any coating by a factor of up to three times"

"The flaky structure of the iron oxide is the distinguishing feature since chemically it is substantially ferric oxide, similar to hematite in chemical nature".

"The name "micaceous" is used to indicate its similarity to mica in its crystalline form, but no mica mineral is associated with this pigment product".

"Adhesion of the MIO coatings is consistently better than non-MIO equivalents. Demonstrations have shown that when MIO filled coatings are applied to a surface, the platelets tend to align themselves roughly parallel to the substrate. This produces layers of overlapping and interleaving particles which obstruct the permeation of moisture and other contaminants".

According to Dr. Malcolm Hendry and Werner Klugman, "*The use of MIO coatings helps to avoid the three most common causes of coating failure:*

*When heavy industrial coatings fail, they usually do so for one of the following reasons:*

- *Loss of adhesion, initiated by blistering. Water, gas or other fluids pass through the coating, collecting at the coating/substrate interface, destroying the adhesion of the coating.*
- *Weathering causes erosion and gradual disappearance of the coating. Or wet/dry cycles and temperature changes cause stresses in the coating, leading to cracking and substrate corrosion.*
- *Loss of coating adhesion when applied over surfaces which resist initial adhesion".*

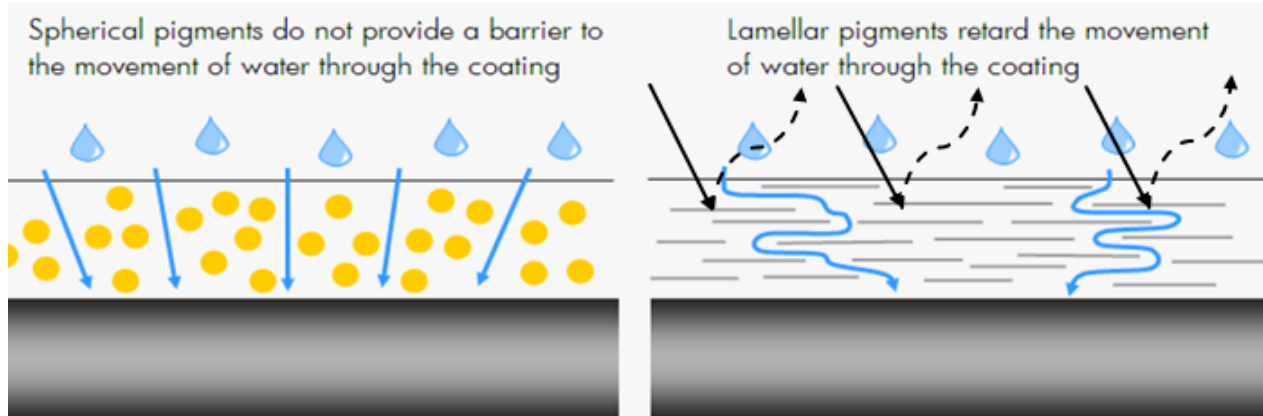
MCU-Coatings is the world's largest user of high quality MIO in high-performance coatings. We find that MIO gives improvements in many areas and clearly has advantages when compared with aluminium in highly corrosive environments. In internal and external tests we have proven conclusively that when we incorporate high grade, naturally occurring MIO in our specialized single component, moisture-cure urethane coatings they substantially outperform conventional plural component epoxy and urethane products, especially when applied with our zinc rich primers and when overcoating 'good old' coatings.

The dramatic improvements in adhesion, longevity, blister resistance and synergy with zinc that we have achieved has allowed us to solve many of the toughest coating problems. Furthermore, the application advantages guarantee that our MIO filled coatings are also the easiest of all high-performance coatings to apply, all year round and even in the harshest climates.

The use of MIO in our protective coatings also provides additional benefits, including:

- UV shielding
- Improved erosion and abrasion resistance
- Enhanced inter-coat adhesion (between our primers, intermediates and topcoats)
- Better protection of metal edges and corners
- Improved compatibility with zinc primers
- Barrier / porosity properties

These illustrations illustrate two of MIO's key properties:



The diagram on the left shows what happens when manufacturers use low quality ingredients and do not get the sizing right. The barrier effect is significantly diminished

The diagram on the right shows how the inter-leaving MIO particle flakes in MCU-Coatings reinforce and strengthen the coating film, to impede the penetration of moisture, contaminants, and UV. This 'structure' also avoids the accumulation of moisture and gas entrapment by allowing micro-permeable dissipation.

Just one more reason to join the MCU revolution