

## HessAmerica Standard Finishes Micaceous Iron Oxide Coating Product Bulletin

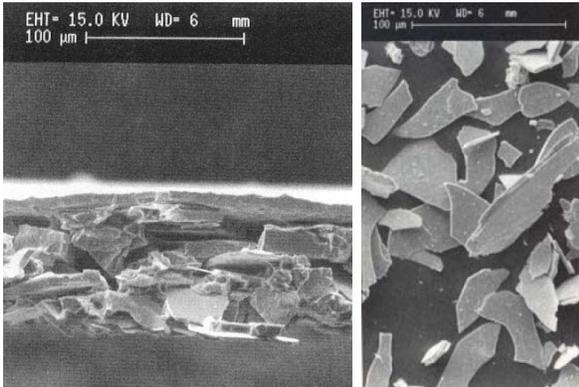
The standard textured finishes from HessAmerica are one of the visible quality features common to many painted luminaires and poles within our product portfolio. Known as micaceous iron oxide, this protective coating has been used around the world with great success for over one hundred years. Notable installations protected with this coating include the Eiffel Tower in Paris, the Sydney Harbor Bridge in Australia, and Big Ben in London. Although more commonly used in Europe, the finish is used in environments where long-term corrosion protection is critical, such as off-shore platforms, refineries, bridges, and electrical transmission towers. The benefits and performance attributes of this wet-applied finish make for an excellent specification feature.



*Micaceous iron oxide is a mined material available in great supply in certain regions of the world.*

The base material of the paint is micaceous iron oxide. This is a mined mineral with the chemical symbol  $\text{Fe}_2\text{O}_3$ , also known as hematite. It is a crystalline form of iron oxide that has a flaky, plate-like structure similar to mica, hence its name. This inert material is insoluble in water, organic solvents, and alkalis; is un-reactive to most chemicals; and is heat stable up to its melting point of over  $1000^\circ\text{C}$  ( $2700^\circ\text{F}$ ). Micaceous iron oxide is non-toxic, non-oxidizing, non-corrosive, and non-flammable. As a result of these environmental characteristics, paint formulators world-wide have

long considered this type of coating to be their primary choice in their arsenal of anti-corrosive protective finishes.



*Microscopic view of micaceous iron oxide particles showing the lamellar structure in side profile and from the top.*

### Color Palette:

The flat surfaces of the micaceous iron oxide particles act like mirrors, giving the applied coating a metallic luster with a satin surface finish. The oxide material is typically grey in color, so finishes will be limited to darker colors such as our standard offerings of matte silver grey metallic, dark grey, graphite grey, or black.



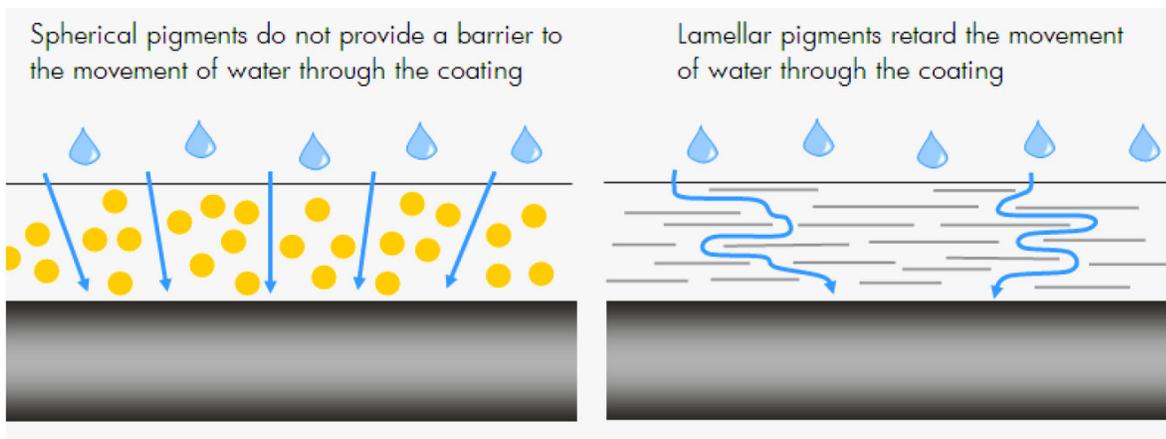
*The color palette for micaceous iron oxide finishes range from light grey to black.*



## Barrier Protection:

The plate-like structures or flakes of micaceous iron oxide align parallel to the surface when applied to the substrate, forming an armor-like layered shield similar to fish scales or roofing tiles. This alignment is key to providing enhanced barrier protection, ultraviolet light absorption, paint film reinforcement, and increased intercoat adhesion.

This tendency of the micaceous iron oxide particles to align parallel to the surface produces a barrier effect. The overlapping particles form a protective shield around the substrate that prevents the intrusion of moisture, organic solvents, and alkalis.



*Contrasting views of spherical and lamellar pigments illustrate differences in barrier protection capabilities.*

Micaceous iron oxide is also impervious to UV radiation. This quality, combined with the layered structure of the material, protects the surface of the binder system in the coating from UV degradation and other weathering elements, giving this finish a service life of approximately twenty years. While this “built-in” protection ensures longevity of the paint surface for the long-term, other finishing techniques such as powder coating may exhibit signs of chalking or fading under extreme conditions of ultraviolet exposure that are commonly found in many southern regions of North America.

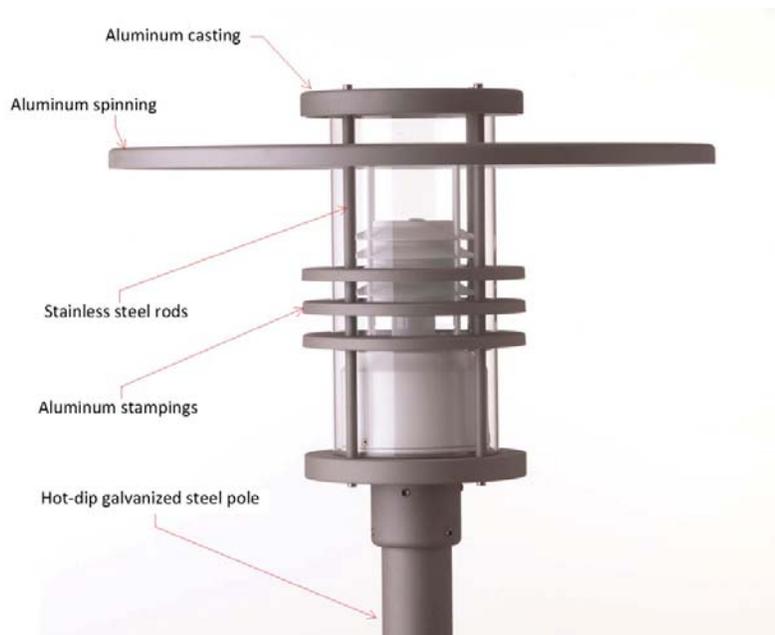
The use of micaceous iron oxide additionally toughens and strengthens the coating, leading to greatly improved performance against blistering and increased substrate adhesion. The micro texture formed by the lamellar flakes creates a surface profile that allows for better adhesion between coats when the coating is dry.

### Other Attributes:

Since the majority of the micaceous iron oxide coating is iron oxide (over 65%), it has a coefficient of expansion similar to the metal substrate that it is protecting. This minimizes the possibility of cracking, flexing, or lifting of the paint from the surface, such as in extreme conditions of heat or cold.

Micaceous iron oxide coatings provide additional benefits that are often difficult to achieve with alternative finishing techniques. In the case of HessAmerica luminaires and poles, the wet-applied technique of micaceous iron oxide is used for both, thus ensuring a match in finishes between the two components. This can be problematic when employing other finishing techniques, particularly with taller poles, which may not fit in paint booths or other equipment required for powder coating or electro coating.

This finish also masks the substrate, architecturally enhancing the appearance of the finished product. Using the Avalon 650 post-top luminaire shown below as an example, we see several base materials in use, such as an aluminum spinning for the shade, aluminum casting for the luminaire top and base, stainless steel rods for the vertical supports, and the hot-dip galvanized pole. Each of these materials is quite different in surface detailing when viewed in their raw form, yet they all take on the same finished appearance after painting and assembly.



*The Avalon 650 uses aluminum and steel in several forms; the base materials do not telegraph through the finish, providing an excellent architectural presentation.*