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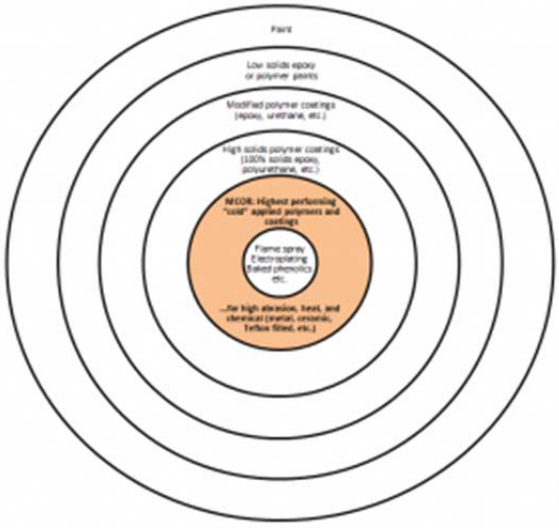
## Making sense of high performance coatings in the convoluted world of paints

In the vast world of paints and coatings, every type is distinct. Paints and epoxies often get combined in the same category, when they are in fact completely different serving distinct purposes. These differences are important to note because cost, performance, and your return-on-investment (ROI) are key factors when choosing a paint or coating. Paints are relatively inexpensive compared to high-performance coatings and understanding the difference can save you money and prevent incorrect expectations!




At MCOR™, manufacturer and supplier of advanced industrial repair compounds and coatings, we understand the differences between the various classes of protective coatings, and educating our customers is an integral part of our business. As the diagram above shows, there are various categories of paints and coatings. Each category is unique with a different performance scale. From the largest, most basic category of paint to the most advanced, high-performance category of flame spray and electroplating, each type serves a different purpose. Once the limitations and expectations of each type are understood, you can make better decisions regarding the necessity of each. Coating characteristics can be further explained in the following three groups:

- Paint, by definition, is any liquid, liquefiable, or mastic composition that converts to a solid film after application to a substrate in a thin layer. Its main purpose is to leave behind a color on a wall, and some are slightly enhanced for use in different environments (i.e. - outside vs. inside). Paint is typically stored, sold, and applied as a liquid, but most types dry into a solid. For all common purposes though, when we define paint in the world of coatings, we are talking about aesthetics. The protection paint provides is minimal, if any. Without a protective overcoat or undercoat, paints usually do not stand up to UV, corrosion, or other weathering factors because their sealing ability is somewhat non-existent, especially when immersed or when other harsher elements are in play. The protective quality is nominal because once the paint has dried, most of the organics evaporate and only the binder and pigment are left to color the surface. Paints certainly have a tremendous number

of purposes (both household and commercial), but when dealing with corrosion, chemicals, immersion, and other aspects of asset protection, one should not expect paint to do the job.

- The next three categories of coating can be grouped together as low, medium, and high solid polymer/epoxy coatings. These coatings provide pigmented films, like those found with paint, but they provide a level of denser film that protects and seals the surface beneath it. From a chemistry standpoint, a polymer system has a base and curing agent that congeals and cures when combined to leave an organic or enhanced film with a dense matrix. Unlike paint, in which the evaporating diluent leaves behind a binder and pigmentation, the performance elements in epoxies and similar polymers do not evaporate but rather leave behind a dense, cured film (like a plastic sheet) with various performance constituents built into the matrix of the film. Coatings in this category protect against many corrosive environments, such as immersion, providing protective coatings and meeting other sealing and resistance needs found in various industries.

- Advanced coatings include the final two categories of protective coatings, which are extremely specialized and specifically engineered. When an industry induces the rate and aggression of corrosion with heat, chemicals, and/or abrasion, generic polymer coatings often suffer when exposed to these elements. At that point, advanced, highly engineered performance coatings are necessary. These are the engineered protective coatings used in chemical treatment plants, nuclear facilities, energy plants, etc. They have highly advanced chemical properties, and they should never be compared to paints or even generic coatings. Advanced, high-performance coatings and polymer compounds are engineered to specifically combat the aggressor in mind (usually high levels of heat, chemicals, and/or abrasion). When specific kinds of chemicals need to be contained, an engineered polymer coating must be designed and formulated to deal with that type of chemical. This also applies to heat tolerance and abrasion requirements because advanced, high-performance, anti-abrasive materials (i.e. ceramics, tungsten carbide, boron nitride, etc.) are incorporated into formulations to specifically reduce wear. Some specialty coatings require heat curing or electroplating, while others, such as those in the MCOR line, can be “cold” applied, eliminating complications in the application. MCOR shines in this category because of its innovative line of products, which can be used in the harshest environments where induced corrosion is found. The difference between these advanced coatings (i.e., between heat applied coatings, electroplating systems, and MCOR), is that MCOR formulates the highest-performance “cold” applied coatings and compounds for convenience and ease of application.

Example of an asset that would require an advanced protective coating, such as MCOR.

When shopping for protective coatings, it is important to consult with experts who have a clear understanding of coatings' differences and who pass that knowledge to their customers. Often, a medium-grade modified polymer will suffice, and paying for advanced performance just is not necessary. You would not want to pay for a Ferrari when a Toyota can get you where you need to go. Likewise, you might want to invest in that Ferrari if long-lasting speed, appearance, and optimal performance are necessary. The key is in understanding the difference between protective coatings, keeping your budget in mind, and knowing what to expect before you invest.

To learn more MCOR and the complete product line, visit mcor.net.