



Reliable intumescent coating through Perstorp's Charmor™

More and more companies are turning to Charmor™, Perstorp's brand of market-leading micronized products for intumescent coatings that provide outstanding fire protection to steel structures. With building fire safety standards around the world becoming increasingly strict, Charmor™ puts Perstorp in a strong position to help coating companies satisfy safety-conscious specifiers. And with Perstorp's latest offering, Charmor™ Care, the company is continuing with its mission of increasing sustainability and reducing carbon footprint.

So what exactly is Charmor™, and what makes it a class leader? As the name implies, it makes intumescent coatings char more, and in so doing it protects the structures they cover for longer in a fire—helping them retain their integrity, providing occupants with more time to escape, and giving fire fighters extra valuable time to put out the blaze.

Steel is in itself not combustible, but it does lose its strength and structural integrity in a fire if it is not protected against the heat. During a fire, the temperature of steel can rapidly reach temperatures close to 1000°C if it is not properly protected. Already at temperature around 500°C, steel frameworks will begin to lose their strength and increase the risk of collapse in the structure, whether it be a hotel, an office building or an industrial complex.

Alternative passive protection systems such as concrete and gypsum board are either not as effective or not as attractive: the last thing architects want when they design a new building to show off its impressively delicate skeleton, is to have to cover it up! Intumescent coatings do not disguise the underlying structure, and it is possible to create smooth surfaces, applied by mainly by, in a wide range of attractive colors.

Charmor™ are incorporated into coating systems that are applied at a thickness of several millimeters, which under normal circumstances look no different from any other type of coating. However, in a burning building, as the temperature rises, the coatings come to life.

Intumescent coatings begin their work when temperatures reach around 200-225°C, when the resin melts and the components mix together. As the temperature continues to rise, the APP (ammonium polyphosphate)—the acid donor—decomposes to form polyphosphoric acid that then reacts with the carbon donor—the Charmor™ to form polyphosphoric acid esters.



Henrik Bernquist
Product Manager,
BU Specialty Polyols

“Perstorp has a passive fire safety solution that works extremely well and consistently, and which specifiers can rely on”



Finally, a third element in the intumescent system, melamine, decomposes to form inert nitrogen gas, which makes the foam rise, while the esters decompose to a char. In the end, what is created on the surface of the structure is a fire resistant protective foam, up to 100 times as thick as the original coating, made completely out of carbon.

Intumescent coatings are most often used in coatings applied to steel structures, but they can be used on wooden beams too. In certain plastic and textile materials, intumescent coatings slow combustion, cut heat and smoke release rates and reduce melt dripping.

Charmor™ is available for waterborne and solvent-based coating formulations. There are four different grades, with different levels of water solubility, and two different particle sizes: 40 and 15 microns. The finer the particles, the better distribution in the paint, giving a more even and higher foam with very good thermal insulation.

Henrik Bernquist, Perstorp Product Manager for Charmor™, draws attention to the consistent quality of all grades. “Coating companies can rely on Perstorp to deliver what they want, when they want, every time,” he says. “Perstorp exercises tight control over the complete in-house production chain from sensitive raw materials, through manufacturing and milling, to bagging and distribution.” This ensures the consistent high purity and narrow particle size distribution that are essential to achieving high and consistent performance, as well as ease of handling and formulation.

Charmor™ Care, the most recent addition to the portfolio, uses raw materials partially derived from renewable resources. “This provides paint formulators with an extra tool for reducing their carbon footprint,” Bernquist points out. Perstorp production facilities are also very sustainable, using, for example, boilers that run on renewable alternatives rather than fossil fuels.

Bernquist concludes: “Perstorp has a passive fire safety solution that works extremely well and consistently, and which specifiers can rely on. This is important because an intumescent only has to work once, but when it does need to work, it needs to work well. With Charmor™, we are providing quality without compromise.”



Henrik Bernquist
Product Manager,
BU Specialty Polyols