PPG Powder Coatings

FAQ: Powder Coating Flammability

When discussing fire-resistant coatings, it is important to distinguish between intumescent coatings and non-flammable powder coatings. Intumescent coatings act as a protective barrier by preventing the substrate from heating up, thereby reducing the risk of injury caused by substrate warping. In contrast, fire-resistant powder coatings are designed to inhibit flame spread and minimize the generation of toxic smoke. The powder coatings currently available fall into this latter category, inherently supporting fire suppression through their natural properties. It is important to note that intumescent coatings are not yet available in powder form.

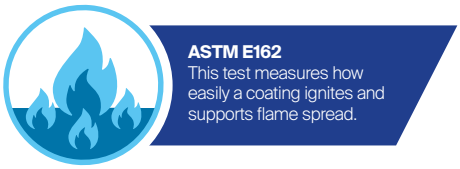
Why are fire retardant coatings important?

Fire retardant coatings play a critical role in enhancing fire safety by delaying the onset of catastrophic damage to substrates or materials. When exposed to open flames, these coatings slow down the ignition process and reduce the speed and spread of fires, providing valuable time for evacuation and fire control measures.

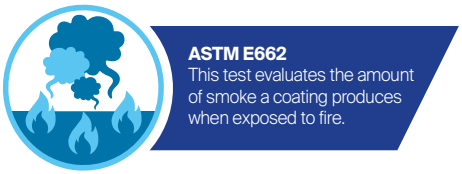
How is the flammability of powder coatings tested?

Several standardized tests evaluate the flammability, smoke generation and toxicity of smoke produced by powder coatings. These tests help determine the safety and suitability of coatings for various applications:

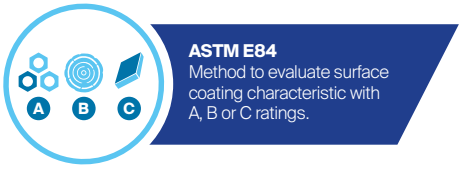
- ASTM E162 – Surface Flammability Test: This test measures how easily a coating ignites and supports flame spread. It is widely used across industries to assess fire risk, especially following incidents such as the King's Cross fire in the UK, which highlighted the importance of flame-resistant materials.



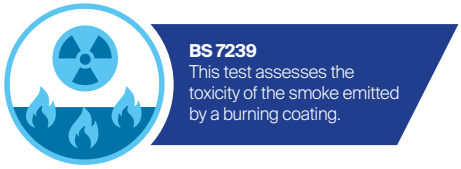
- ASTM E662 – Smoke Density Test: This test evaluates the amount of smoke a coating produces when exposed to fire. High smoke density can reduce visibility and increase danger during evacuation. The test helps determine whether the smoke levels are within safe limits for human exposure.



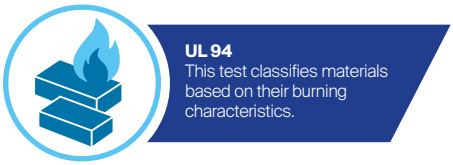
- ASTM E84 is a test method used to evaluate the surface burning characteristics of a coating system. The ratings, classified as A, B, or C, depend on the combination of the substrate and the coating. Powder coatings typically achieve an A rating when applied over metal substrates. However, when applied to more combustible substrates such as MDF or wood, the rating may be lower due to the increased flammability of the underlying material.



- BS 7239 – Smoke Toxicity Test: This test assesses the toxicity of the smoke emitted by a burning coating. The chemical composition and formulation of the coating influence the toxicity level, which is critical for ensuring that smoke inhalation does not pose severe health risks.



- UL 94 – Standard for Safety of Flammability of Plastic Materials: This test classifies materials based on their burning characteristics, including how quickly they extinguish after ignition and whether they drip flaming particles.



Can you provide examples of fire retardant powder coating products?

Examples of fire retardant powder coatings include:

- PCTT80107
- PCTB89127
- PCM90200C
- PCM90133C
- PCF10103

These products have been formulated and tested to meet specific fire safety standards. Generally, powder coatings perform well for non-flammable testing but it is wise to avoid certain chemistries like urethanes based on their toxic smoke ratings.