

Empirical Determination of Full Cure Point for Air Cured Wax Coating Considering Environmental Factors

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Protective coatings, such as water-borne and solvent-borne products, are commonly used in the automotive industry to provide a layer of resistance against corrosion and other physical damage. Water-borne products are popular for their low-VOC levels but typically require an oven for full product curing. Solvent-borne products are a common option when air curing is required, even in non-ideal environmental conditions, but are known to have high VOC levels. SWT Group was able to develop a solution to answer both demands, a solvent-free air-curing cavity wax with low VOC levels, capable of curing at different thicknesses in various environmental conditions.

Curing time was part of the focus when developing this product, as coatings reach their maximum performance potential once they are fully cured. This raises a broader question regarding the point at which a coating can be considered “fully cured”, in order to deliver complete performance. In this presentation, we answer this generational question through an empirical approach, providing a detailed and thorough analysis of the curing behaviour of this new coating in efforts to give a concrete definition to the expression “fully cured”. The study gives a sense of confirmation to both chemists and engineers that a product successfully reaches full cure based on the guidelines and parameters reviewed in this work.