

### Background

It is well known in the industry that applying two coats of a powder coating improves corrosion resistance on sharp edges as opposed to one coat. Many powder coaters are choosing to apply a primer for corrosion resistance and a topcoat for a finished glossy appearance.

This brief describes recommendations for application of a powder topcoat over a powder primer.

### Primer Application

Powder coatings have high hardness and very little softening when rebaked. For this reason, the best intercoat adhesion is achieved when the powder coating primer is NOT fully cured before topcoating. This process is called “fusing” the primer.

The key with fusing is to allow the primer to flow out and form a uniform film but not be fully cured.

Lowering oven temperature provides the best consistency in the primer surface. Overbaking, oven hot spots, or thin gauge metals attached to thick gauge metal areas can be potential places for intercoat adhesion failure.

Another option is to fuse the primer with IR panels between the primer spray booth and topcoat booth. This can improve efficiency by eliminating the need for multiple trips through the oven and changing oven or line speed.

### Topcoat Application

Apply the topcoat at normal film thickness levels. This may require slightly more passes when spraying because the primed part will be somewhat insulated from the ground. Bake as recommended for topcoat cure. The primer and topcoat will melt together and cure at the same time.

### How Do I Know It Was Done Right?

Check physical properties, like adhesion, and MEK rubs.

Many customers also have a corporate specification that includes testing on production substrate. A Cyclic Corrosion Test is the best method for real-world correlation results.

When using a primer, preparation of the substrate is still important for corrosion resistance. Deburring, mechanical abrading, and pretreatment procedures must be implemented when using a primer, perhaps even to a higher degree.

Ask your Diamond Vogel Representative if you need further information.

PRIMER SELECTION		
	Corrosion	Overbake Resistance
Epoxy	Excellent	Poor
Epoxy-Polyester Hybrid	Excellent	Fair
Polyester	Very Good	Good

Adding zinc to any above system increases primer corrosion resistance

FUSING METHODS
<p><b>Lower Oven Temperatures</b> Oven set point: 250°F – 300°F Line speed: normal</p>
<p><b>Faster Line Speeds</b> Oven set point: same as topcoat cure temperature Line speed: very fast</p>
<p><b>IR Panels</b> Before convection oven</p>