

TRL 3 - Undergoing active development

Corrosion resistant

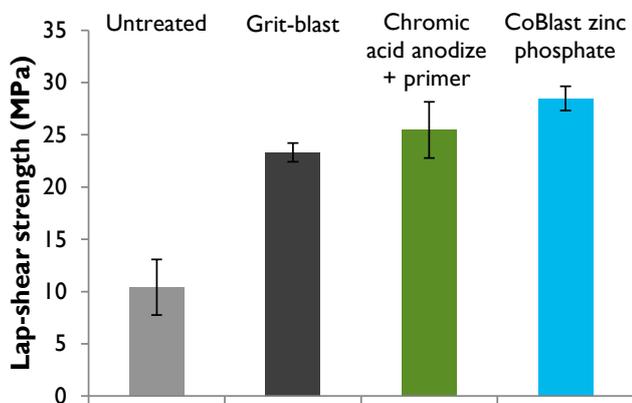
Adhesive primer

VOC-free

Inorganic

Dry, one-step process

ENBIO's CoBlast zinc phosphate Skin offers a unique method to deposit a corrosion resistant and adhesive promoting primer without the need for hazardous wet chemistry. Traditional zinc phosphate conversion coatings requiring the use of multiple acid and alkali baths can be replaced with a dry one-step process.



Lap-shear strength (ISO 2243-1) of a titanium-to-composite joint. The untreated and grit-blast samples resulted in interfacial failure between the titanium and adhesive. CoBlast zinc phosphate achieved the same cohesive failure mode as the much more complicated industry standard chromic acid anodize + primer surface preparation.

CoBlast

Remove the oxide layer

The oxide layer presents a barrier to coating adhesion that must be removed for the application of high performance coatings.

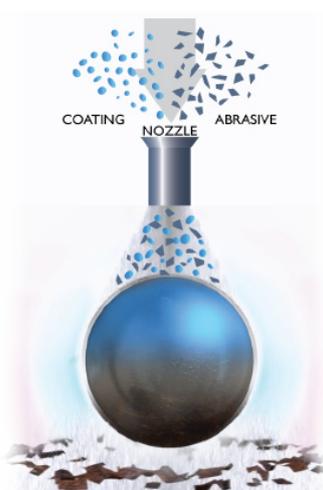
Roughen the metal surface

Roughening the substrate and exposing unreacted metal provides an ideal surface for exceptional coating adhesion.

Apply unique Skins

CoBlast Skins are highly integrated with the substrate. This gives them excellent durability and stability, and allows previously impossible properties to be achieved.

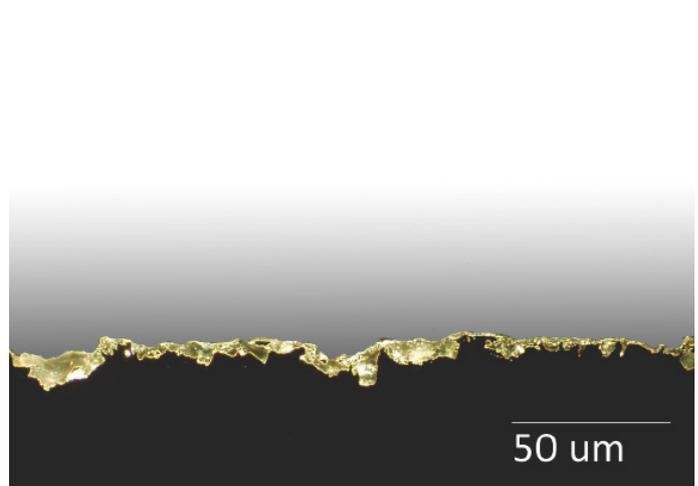
In One Step



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Name	Zinc phosphate
Application	Paint / adhesive primer
Key Properties	Corrosion resistant Adhesion promoting
Typical thickness (µm)	2-5
Substrates	Low carbon steel, stainless steel, titanium, aluminium
Lap-shear test (ISO 2243-1)	Cohesive failure using aerospace epoxy film adhesive
Salt fog test (ISO 9227) Corrosion test (ISO 18782)	< 2 mm corrosion growth after 1000 h in salt fog
Cross-cut test (ISO 2409)	Rank 0 (no flaking) of polyurethane paint after 1000 h in salt fog



Dark field cross-section of CoBlast zinc phosphate on mild steel substrate



CoBlast zinc phosphate versus zinc plating as a tie-layer for a clear epoxy paint. The two samples were placed in a salt fog for 56 days. The zinc plated coupon exhibited excessive undercutting and delamination of the epoxy paint while the CoBlast zinc phosphate layer confined corrosion to the region of the scratch.