ionbond

THE SURFACE ENGINEERS™

Coatings for chrome & cadmium replacement

IHI GROUP

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Green Alternative to Electroplating

The upcoming implementation of the REACH and ROHS initiatives forces aircraft manufacturers and their suppliers to look for alternatives to Cr and Cd electroplating. Although not being one to one replacements, PVD and PACVD coatings offer viable alternatives to their galvanic counterparts in many applications.

Alternative for Hardchrome

Ionbond's Tribobond™ series of PVD metal nitride and PACVD DLC coatings have been proven to be very effective as replacement for hard chromium plating in applications where increased wear protection is required. The coatings provide outstanding protection against fretting, galling, and abrasion, thereby clearly outperforming galvanic coatings. Tribobond™ coatings with a typical thickness of 5–10 microns are significantly thinner than hard chromium, offer increased hardness, a reduced coefficient of friction, and enhanced adhesion with fewer tendencies to crack. Fine features like threads, recesses, etc. are maintained.

Alternative for Cadmium and IVD

Tribobond™ 66 Al has shown very good results in many applications where traditionally electroplated Cd is used for corrosion protection. The PVD process allows for oxygen free deposition of high purity aluminum with excellent uniformity, adhesion, and corrosion protection. Tribobond™ 66 Al shows comparable characteristics to IVD (ion vapour deposition) Al coatings with resistance to corrosion in salt spray testing of over 1000 hours without the need for chromic conversion post processing.Tribobond™ coatings are available from dedicated Ionbond coating centers in France, the UK, and in the USA. The centers have aerospace-specific certifications and are qualified by aircraft manufacturers and their suppliers.

	Coating Composition	Micro hardness HV 0.05	Fretting Protection	Galling/Seizing Protection	Corrosion Protection
Tribobond™ 01	TiN	2000 – 2800	• • • •	• • • •	• • •
Tribobond™ 30	CrN	1800 – 2300	• • • • •	• • • •	• • • •
Tribobond™ 31	Cr2N	2500 – 2900	• • • • •	• • • •	• • • •
Tribobond™ 40 WCC	Cr + a-C:H:W	1000 – 1800	• • • • •	• • • • •	• • •
Tribobond™ 41 DLC	Cr + a-C:H:W + a-C:H	2000 – 2800	• • • • •	• • • • •	• • •
Tribobond™ 42 DLC	Cr + CrN + a-C:H	2000 – 2800	• • • • •	• • • • •	• • •
Tribobond™ 43 DLC	(Cr/Si)+ a-C:H	2500 – 4000	• • • • •	• • • • •	• • • •
Tribobond™ 66	Al	n/a	n/a	• • • •	• • • • •