Chrome VI-free Coating | Nano Passivation A3K in accordance to ISO 4042

Background

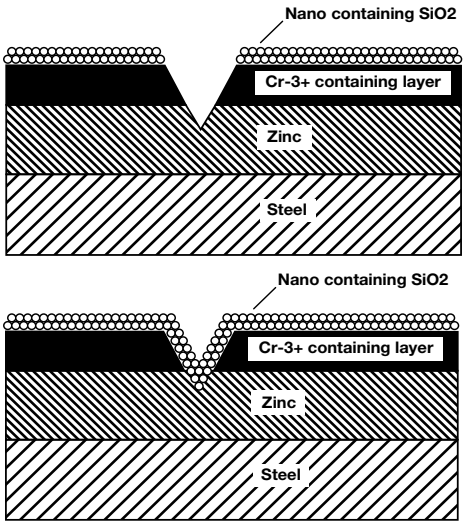
Legal guidelines, such as the "EU End-of-life Vehicles Directive" 2000/53/EC, the WEEE 2002/96/EC and the ROHS 2002/95/EC prohibiting the use of Cr-6 in coatings, require the compliance with certain limit values which are used, for example, for electronic and electric equipment, as well as in the automotive industry.

Solution

When opting to offer our stock articles also with a Cr-6-free coating, quality, price and availability where the decisive factors. In the process, nano passivation appeared to us to be the most convincing overall: Nano passivation is an improved evolution of the proven Cr-6-free blue- and thick film passivation, which offers a stable process.

Self-healing effect

Smaller damages, which are caused by handling, transportation or automatic feeding systems are compensated thanks to the self-healing effect. This ensures a high corrosion protection also after assembling.



"Self-healing" effect

The passivation consists of a Cr-3+ rich layer and a layer of SiO2 nano particles in a Cr-3+ matrix.

If the zinc coating is exposed by damage, a positive surface charge is generated at the damaged spot.

The SiO2 particles have a negative surface charge. They move towards the damaged spot and cover it.

Corrosion protection

Especially the automotive industry requires higher corrosion-protective values:

+ 96 hours white rust / 168 hours red rust
+ still effective after heat ageing test, 24 h at 120° C, without additional sealing

Standards/designations

Until now there is no generally applicable standard for this coating. In regards to the requirements for corrosion resistance of Cr-6-free coatings, the VDA sheet 235-104 applies.

The basis for the definition and evaluation of all other criteria of nano passivation is ISO 4042 (Fasteners – Electroplated coatings).

Additional characteristics

+ Coloring = silver with a pale yellow hue
+ Layer thickness = approx. 300 - 500 nm
+ Easy passivation of zinc and zinc alloys

Alternatives

Of course, we offer other Cr-6-free coatings such as zinc-nickel or zinc flake. Compared to nano passivation, however, these coatings are more expensive. Experience has also shown that the zinc flake coating is not suitable for certain component geometry.

At a glance:
the advantages of the nano passivation

Economical

+ Easy passivation of zinc (alloys)
+ More economic than other Cr-6-free coatings

Sustainable

+ Evolution of the proven blue- and thick film passivation
+ Improved corrosion protection
+ "Self-healing effect"

Reliable

+ Defined according to ISO 4042
+ Stable process

Contact

For further questions on the subject, please contact our staff in the sales department:

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