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Nanopassivation A3K ISO4042

The innovative economical technology among Cr-6-free surface coatings

Order code for parts with Nanopassivation 8µ: A3K (Nano)

Background:

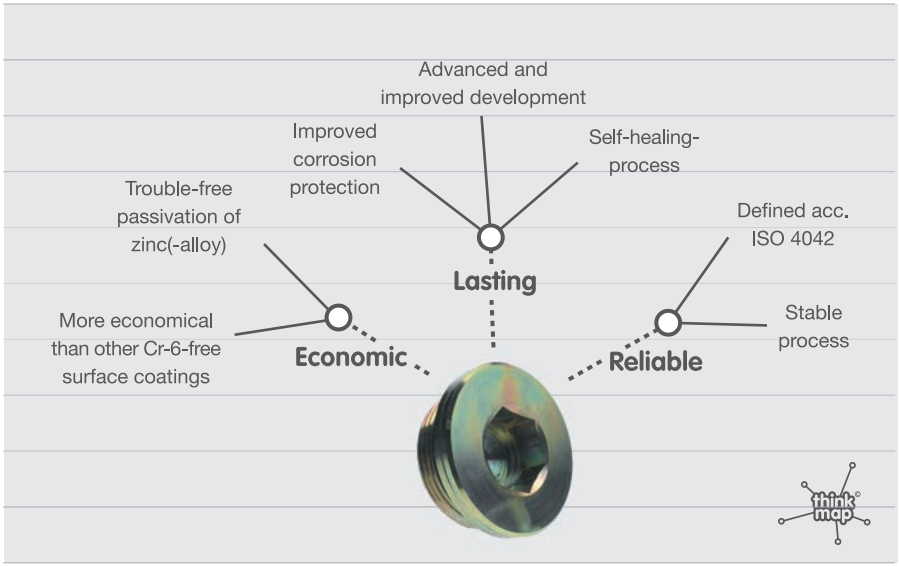
These directives require the compliance with certain limits of Cr-6 for parts used among others in electrical and electronically mountings as well as in the automobile industry.

Solution:

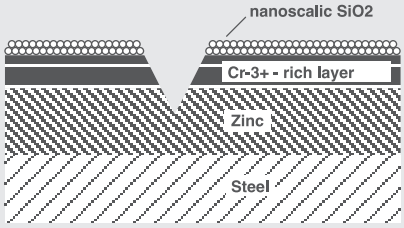
Quality, price and **availability** were equal important criteria when discussing the possibility to offer stock articles with Cr-6-free surface coating. The total picture showed the **Nanopassivation** as the best fit for us, due to the following reasons.

- It is an **advanced and improved development** of the established Cr-6-free blue-passivation and thick-coating-passivation
- It offers a **stable process**
- In comparison to the common Cr-6- containing surface treatments, **it provides a similar or improved corrosion protection.**
- It possesses the **self-healing-process** characteristics for the yellow chromate plating.

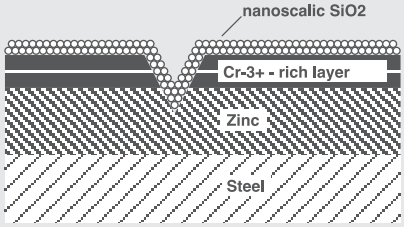
The benefits of Nanopassivation



Pict. 02: HN8-WD sealing plug with nanopassivation



The passivation consists of a Cr3+ -layer and a layer of SiO2-nanoparticles in a Cr3+ matrix



In case the zinc coating is disclosed through damage, a positive surface charge is created. The SiO2 particles carry the negative surface charge and move to the damaged area. Thereby, the damaged area is covered: this leads to the selfhealing-process.

Pict. 01: The selfhealing-process

Self-healing-process

Small damages through handling, transport and automatic feeding systems will be compensated by the self-healing-process (Pict. 01). Thus, even after the assembly, the high corrosion protection is for granted.

Corrosion protection

Especially in the automobile industry, higher corrosion protections are required.

- 96 hours white rust/168 hours red rust
- This is also valid 24 hours after heat treatments of 120 °C (248 F), without the necessity of additional sealing treatment.

Norm/Identification

Until now, no universal norm is released for this surface coating. The VDA-paper 235-104 is used as reference concerning the requirements to the corrosion consistency of Cr-6-free surface coatings. The basis for the definition and evaluation of all further criteria of the Nanopassivation is the ISO 4042 (fasteners – electro-plated coatings).

Further Characteristics

- Color = silver basic tint with a pale yellow component
- Thickness of coating = approx. 300 – 500 nm
- Unproblematic passivation of zinc and zinc composition

Alternatives

We certainly also offer other Cr-6-free surface coatings, such as zinc-nickel or zincflake coatings. However, in comparison to the Nanopassivation, these surface coatings are more expensive and frequently, the parts geometry have to be taken into consideration.

For further questions regarding the Nanopassivation, please do not hesitate to contact **Mrs. Hiltrud Heinrichs**

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