

Surface treatment of Aluminium

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TRIVALENT CHROMIUM PASSIVATION

ENHANCEMENT OF THE LAYER FORMATION BY SURFACE ACTIVE SUBSTANCES

Over the past years, the research on Trivalent Chromium Passivation (TCP) processes for aluminum surfaces strongly was extended. In order to gain best technical performance, process safety and reliability, the surface preparation prior to the passivation was reviewed, the working parameters of the passivation process itself were evaluated, and the possibility of additional post dips or sealants was discussed.

Recent research has shown positive effects applying surface active components in the TCP electrolyte. This presentation will indicate process parameters using such surface active components and will demonstrate the effects on the layer formation as well as the corrosion resistance. Especially the mechanism of the layer formation will be explained, monitoring the conversion reaction at the surface by SEM/EDX and XPS analyses and the free corrosion potential measured in-situ during the processing.

Post Treatment of Anodising Layers

Low Temperature and High Performing Ni-free Alternatives

Low temperature sealing processes typically apply nickel compounds. Nickel salts, however, are harmful to the environment. They are toxic and carcinogenetic, having irreversible effects on the human body and health.

Furthermore, nickel containing wastewaters are difficult to treat, especially when also aluminium is present.

New nickel-free technologies have been developed accordingly, enabling:

- low temperature treatment, in order to save energy
- best corrosion protection, exceeding the performance of hot water sealing
- improved pH-resistance of anodised surface, extending the application field of anodised aluminium
- the mutual waste water treatment together with aluminium, applying only one precipitation step

Within the presentation, alternative technologies are described, showing impressive results from the field.