



**Hexavalent Chromium Free
Post Treatment Processes**

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The End-of-Life Vehicle Directive of the European Parliament comes into effect on July 1st 2003. Annex II exceptions list that from 2007 onwards the content of hexavalent chromium in corrosion preventing coatings is restricted to a maximum of 0.1 % (w/w) per homogeneous material. Driven by environmental concerns, suppliers to the automotive industry will have to guarantee completely hexavalent chromium free products without compromising corrosion protection.

Atotech's efforts are focused on avoiding hexavalent chromium in passivate conversion coatings. This will ensure that your production will also remain competitive in the future. For the demand of the automotive industry we provide a whole range of hexavalent chromium free processes for different corrosion requirements.

EcoTri

EcoTri is a passivate process used to produce a thick layer iridescent passivate coating perfectly compatible with Atotech zinc and zinc alloy plating processes. It is completely free of hexavalent chromium and fluoride. By using a higher trivalent chromium concentration in an optimized bath formulation and high operation temperature, a conversion coating of a layer thickness (0.3 µm estimated) comparable to a conventional yellow chromate can be produced. The corrosion resistance is significantly better compared to conventional blue passivates. After heat treatment the performance of EcoTri even exceeds that of a conventional yellow chromate coating. For highest corrosion performance especially after heat treatment EcoTri HC is the preferred product. Recirculation of the rinse water is recommended in order to reduce the consumption and the use of an ion exchanger system will ensure a very long bath life with consistent performance.

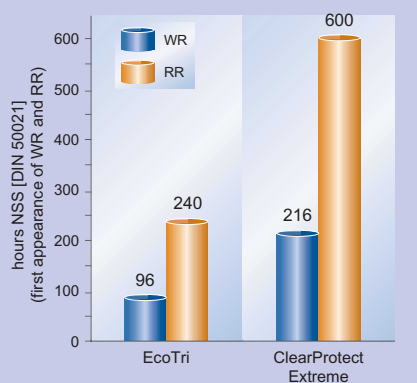


Clear color and outstanding corrosion resistance with ClearProtect

ClearProtect

Sealers are used to improve overall corrosion protection. They are thin layers with a thickness from 1 to 2 µm. Corrosil CFS-R (Plus 501) and Corrosil Plus 401 are based on colloidal silicon dioxide and are therefore environmentally friendly. The sealer penetrates into the passivate layer, stabilizes it, and seals any cracks and pores.

Barrel/Basket-Application



Corrosion Protection (DIN 50021 SS) of EcoTri, ClearProtect and ClearProtect Extreme on cyanide-free alkaline zinc coating Protolux 3000 (8 µm) in rack application (right) and barrel/basket application (above)

Rack-Application



ClearProtect is a combination of a trivalent blue passivate called CorroTriBlue with a chromium free sealer Corrosil CFS-R (Plus 501). It can be used in existing rack plating equipment and is easy to operate.

ClearProtect is perfectly compatible to Atotech zinc and ZnFe plating processes. The corrosion protection is excellent, with an attractive transparent color similar to stainless steel appearance. The sealer prevents the passivate from dehydration during heat treatment. Therefore ClearProtect is especially good in corrosion protection compared to conventional chromates if heat resistance is required.

ClearProtect Extreme is a combination of EcoTri with Corrosil CFS-R (Plus 501). It is perfectly compatible with Atotech zinc and zinc alloy plating processes. When using ClearProtect Extreme for barrel application, the work should be transferred from the plating barrel into passivating baskets.



ClearProtect Extreme 401 provides best performance for brake calipers

For fasteners, the friction coefficient can be adjusted to meet automotive industry standards.

ClearProtect Extreme 401 is a combination of EcoTri and Corrosil Plus 401, which does not contain any organic lacquer and is therefore the preferred product for braking systems.

The ClearProtect Coatings are approved by the automotive industry and meet the highest automotive industry corrosion standards.

BlackProtect

BlackProtect ZnFe is a combination of a trivalent black passivate called CorroTriBlack ZnFe with the clear sealer Corrosil CFS-R (Plus 501). It can be used in existing rack plating equipment and is easy to operate. BlackProtect ZnFe is perfectly compatible to ZnFe alloy process Protedur Plus. The corrosion protection is good and the homogeneous black color is very attractive.

The sealer can be used for ClearProtect and BlackProtect finishes.



Excellent corrosion performance for mass articles with ClearProtect Extreme

Features and Benefits

EcoTri

- Completely free of hexavalent chromium and fluoride
- Excellent passivate adhesion on Zn and Zn alloy
- High level of corrosion resistance, even after heat treatment
- Attractive iridescent appearance indicates directly the lack of hexavalent chromium
- Economical when used with recirculation of rinse water
- Long bath life when used with ion exchanger system
- Replaces conventional yellow chromates

ClearProtect / ClearProtect Extreme

- Completely free of hexavalent chromium
- Excellent adhesion on Zn and Zn alloy
- Outstanding corrosion resistance, even after heat treatment
- Meets the highest automotive industry corrosion standards
- Accepted by the automotive industry
- Attractive transparent color with stainless steel appearance

BlackProtect

- Completely free of hexavalent chromium
- Attractive black color
- Excellent adhesion on ZnFe alloy
- Easy to operate
- Good corrosion resistance even after heat treatment
- Environmentally friendly
- Can be used in existing rack plating equipment

*ClearProtect and BlackProtect –
two hexavalent chromium free
post treatment processes for the
automotive industry*

