



Zinc Plating – The Program

Three Steps to Superior Corrosion Protection:
Zinc Plating, Conversion Coating, Sealer

The Components – Zinc Plating

Functionality and aesthetics

Zinc electrolytes are suited to more applications than standard industrial zinc plating of mass articles.

From weak-acid, bright zinc baths through environmentally safe cyanide-free alkaline zinc electrolytes to high performing zinc alloy electrolytes and mechanical plating zinc solution, the following processes demonstrate the versatility of our product range enabling our customers to fulfil a variety of coating requirements.

Zylite

Zylite is a hot-working, weak-acidic, ammonium-free zinc electrolyte used for rack and barrel plating. The effective levelling achieves brilliant, high-gloss zinc coating of chromium-like appearance. Zylite provides high ductility deposits across a wide current density and temperature range. The constant high cloud point allows an operating temperature of up to 45 °C. Less cooling saves energy. Good electrolyte conductivity and high current efficiency ensure reduced plating costs.

Excellent covering properties make Zylite ideal for zinc plating cast iron. Whenever a decorative finish is required Zylite is the perfect answer.



Chromium-like appearance with Zylite

Protolux for complex-shaped parts



Protolux

Protolux is an alkaline, cyanide-free zinc plating process for decorative and functional zinc plating. As a reliable process requiring very few additives, Protolux is perfect for universal use. The electrolyte contains no complexing agents and the low metal concentration makes waste water disposal simple and economical.

The new generation process is characterised by outstanding coating thickness distribution, high brightness and ductile coatings. Minimum coating thickness – particularly in the low current density range – is rapidly achieved. Productivity is increased by its excellent throwing power allowing to put more parts on the racks. Therefore Protolux is well suited for plating complex shaped components.



Reflectalloy

Reflectalloy are alkaline electrolytes for depositing high corrosion-resistant zinc-iron or zinc-nickel coatings in barrel or rack operations.

Zinc-iron alloys are economical coatings for effective corrosion protection. A constant inclusion rate of 0.5 – 0.8 % Fe over the entire current density range results in uniformly chromated coatings. The protection to white rust is ten times better compared to non-alloyed zinc coatings. Advantages include excellent coating thickness distribution, outstanding ductility and excellent chromate adhesion. These surfaces of technical brightness are in high demand in the automotive industry.

Zinc-nickel alloys are used where extremely high corrosion protection is required. The 12 – 15 % Ni content in the coating ensures improved protection against red rust corrosion even when heat treated and meets automotive industry specifications.



High corrosion protection with Reflectalloy

Especially in contact to aluminium zinc-nickel alloys are recommended because of the reduced contact corrosion. The increased deposit hardness and extended wear resistance are additional derived characteristics for a number of automotive applications.



Tru-Plate

Mechanical plating is an economical method for applying zinc on metal parts. The result is functionally equal to or superior in all respects to hot dip galvanising and electroplating. The deposit is slightly porous and semi-bright in finish, providing excellent corrosion protection without hydrogen embrittlement.

Tru-Plate ensures absence of hydrogen embrittlement

The Components – Conversion Coating and Sealer

Conversion Coating

To avoid zinc corrosion (white rust), parts coated with zinc are subsequently chromated. Chromate coatings in different colours are produced by immersing the parts in solutions containing hexavalent or trivalent chromium compounds.

The colour of the chromate changes with coating thickness and composition of the film from blue, through yellow to olive and black. The various colours not only achieve the desired decorative effects, they also offer different corrosion protection properties. Blue passivates are generally preferred where a chromium-like gloss is required. Yellow and olive chromates are chosen for their superior corrosion protection. Black chromates as used on zinc alloys achieve attractive decorative effects combined with outstanding corrosion protection.

Atotech supplies a wide colour range of chromates. These chromate coatings are perfectly compatible to the zinc plating process. They can be precisely



Conversion coatings available in all colours

analysed and ensure simple bath management. Chromated surfaces also provide an ideal base for lacquers.

A variety of Cr(VI)-free passivates is available for the new requirement of the automotive industry.

Sealers

Economic and technical requirements of corrosion resistant coatings are becoming more and more demanding. Sealers are used to improve over all corrosion protection. They are thin layers with a thickness between 0.5 and 2 μm . They penetrate into the chromate layer, stabilise it and seal any cracks and pores. At the same time, they increase the surface strength and meet the highest automotive industry corrosion standards.

Sealers are also used to reduce the iridescence of the chromate coating and give a special visual effect.

Sealers are available on inorganic basis, organic basis or mixtures of both chemistries. The sealers are perfectly compatible to the Atotech chromate process. They also provide special torque tension requirements.



Improved corrosion protection by use of sealers

Zinc Plating – The Program

Zinc plating

Preventing material corrosion and wear resistance requires optimal protection. Processes used to achieve this protection must be both economical and environmentally safe. The Atotech GMF zinc plating program is a very good example. The different components are perfectly matched to provide optimal results in today's production operations.

The Atotech zinc program:

- Zinc
- Conversion coating
- Sealer

Traditional electrolytically or mechanically deposited zinc forms the basis of the program. In a subsequent treatment step, the zinc coating is chromated. This protects the zinc from "white rust". In order to stabilise the chromate layer, a sealer is used as an additional coating. These three steps ensure the best possible corrosion protection.

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Atotech service

The fourth component in the zinc program is the Atotech service. Our experts are on-site to ensure smooth operation of all process stages. The Atotech zinc program offers more than visually attractive results – it also provides outstanding protection. And this makes the Atotech zinc an economic alternative to other corrosion protection coating.

Tradition and innovation

Atotech is backed by years of experience in zinc plating. We are the experts when it comes to solving problems. Because your success depends on professional know-how and cutting edge technology. Our research and development centres are active worldwide to continuously improve our products and engineer new processes. We consistently focus on finding the optimal combination for each application. This enables us to meet the increasingly high standards set by our customers. The automotive industry is a perfect example.

The new EU regulation "End of Life Vehicle" (ELV) comes into effect on July 1st 2003. One of its provisions restricts the content of Cr(VI) in corrosion preventing coatings from July 1st 2007 onwards to a maximum of 0.1 % (w/w) per homogeneous material. Atotech is working on eliminating Cr(VI) in chromate conversion coatings. This helps you to ensure that your production remains competitive in the future.

Advantages at a Glance

Program advantages

- Optimally coordinated components
- Excellent corrosion protection
- Economic applications
- Individualised on-site service

Zinc

- Meets functional and decorative requirements
- A wide selection of zinc and zinc alloy products meeting customer specifications
- Environmentally safe processes

Conversion coating

- A full range of chromate products
- Simple handling
- Perfectly matched to zinc plate
- Ideal paint base
- Cr(VI)-free passivates available

Sealer

- Selection of inorganic and organic sealers
- Maximum corrosion protection
- Simple handling
- Provides special visual effects and torque tension requirements

