STERLING

WHAT IS ZINC GALVANISING & WHY IS IT USED ON TRUCKS?

The Higher Standard.

WELL, FIRST OF ALL, WHAT IS ZINC?

Zinc is a chemical element with the symbol Zn and atomic number 30.

Marco Polo saw the production of zinc oxide in Persia. Simultaneously, the Persians used a solution of zinc vitriol ($ZnSO4{\times}7H2O$) to treat eye inflammations. Zinc sulphate ($ZnSO4$) is used in medicine as an adstringent and antiseptic even today.

It is believed that protecting steel was originally developed in France around 1742 which involved coating iron in molten zinc. A patent was granted in France in 1836, and England granted a patent to a similar process the year after. Within 14 years of the process starting, England was using around 10,000 tons of Zinc a year for galvanising steel. Once started, it caught on fast!

Since then the process has been widely used in many different industries across the world. For over 150 years galvanising has been used to protect steelwork in almost every major industry in which steel is fabricated. Galvanised steel has a life of over 50 years on average, and has been steadily increased over the years. With all major countries wanting to be environmentally friendly and reduce carbon emissions, it was particularly noticed in the 70's when there was a significant reduction in acid rain.

Zinc ore mining is significant in Latin America, China, Australia and North America (mainly Canada), each with a production of more than 1.5 million tonnes per year of zinc in concentrates. For those concerned about the damage to the environment, the good news is that Zinc is easily recyclable.

Much of the zinc used today has probably been used before. It has been calculated that every 90 seconds, across the world, one tonne of steel turns to rust. This means that of every tonne of steel made, half is to replace rust. The extended life of galvanised steel and its easy recyclability means it is probably one of the most environmentally friendly methods of protecting steel.

The process involves dipping the steel into a series of tanks, to first clean off any impurities and to remove any rust. It then goes to the final tank which is the 'kettle' full of molten zinc. See this great video here for a full explanation of the galvanising process.

GALVANISED STEEL HAS A LIFE OF OVER 50 YEARS ON AVERAGE

SO, WHAT'S SO GOOD ABOUT ZINC TO PROTECT STEEL?

Well, the secret to its success is the fact it has a self-healing mechanism.

THE SURROUNDING ZINC ACTUALLY CORRODES FIRST, SACRIFICING ITSELF TO PROTECT THE EXPOSED STEEL.

When the steel item is dipped into the bath of molten zinc, at a temperature of around 450 C, a chemical reaction happens between the zinc and the steel. This creates a metallurgical bond between the two, and binds the zinc layer into the steel. Once the galvanising process is complete, the steel is coated with a shiny new layer of zinc. Over the next 6-12 months, a natural weathering process takes place which lays down a thin, tightly bonded layer of zinc oxide. This will have a matt grey colouring, and is very resistant to further corrosion. The corrosion rate of the zinc coated steel is actually around 1/30 of the rate of the underlying steel.

So, what happens if that layer is damaged? Well, that is the interesting bit. The bond between the steel and the zinc is now extremely strong, and difficult to break. If it does get damaged in a localised area, the surrounding zinc actually corrodes first, sacrificing itself to protect the exposed steel. The process continues as long as there is any zinc attached in the vicinity. This method is used to protect ships, where zinc is used as sacrificial anodes attached to the hull to protect from the effects of saltwater on the hull.

SO, IF USED ON SHIPS, WHY NOT TRUCKS?

Well, we think it's an excellent choice.

Traditionally most truck bodies are painted. Paint is very labour intensive to apply and is easily damaged. In the Plant transport industry paint damage is difficult to avoid so a nice bright new paint finish rapidly becomes covered in scratches which then turn to rust. Therefore, low initial cost, longevity and quickness puts forward galvanising as a very versatile and economic way of protecting your truck from the harsh environments you provide your service in.

The British Standard (BS EN ISO 1461), specifically defines hot dip galvanising which in turn ensures consistency and reliability throughout the whole galvanising industry. The thickness of coverage is easily specified and as the steel is dipped in molten zinc, all parts of the surface of the steel are coated even awkward corners and narrow gaps which are almost impossible to protect in any other way. Furthermore, with a protective finish galvanised steel simplifies inspection of the body. The zinc coating is such that the coating looks continuously good and provides sound protection.

So, that's why it's used on your new truck body! If you want your truck keeping its good looks, no matter what you throw at it, make sure it is hot dip galvanised!

THE ZINC COATING IS SUCH THAT THE COATING LOOKS CONTINUOUSLY GOOD AND PROVIDES SOUND PROTECTION.

ABOUT THE AUTHOR

Antony James
Co-Founder and Managing Director

As co-founder of Sterling, Antony sets the long term vision of the company and manages strategic planning. With a wealth of experience, Antony is also at the centre of product development, ensuring Sterling is at the forefront of the industry. He is also responsible for finances and budgets, maintaining profitability and target growth.

Email
antony.james@sterlinggp.com

LinkedIn
Connect with me

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