Sherardizing - Rubber to Metal Bonding

What is Sherardizing?

Sherardizing is a thermal diffusion coating process providing uniform thickness and corrosion protection which ensures product functionality in often harsh environments. Steel components are placed inside a retort, together with an inert media and zinc powder. The mixture is rotated at 4 rpm and heated to around 400°C (750°F) for approximately two hours. During this process the zinc powder vaporises and diffuses into the component surface, forming a zinc alloy layer. Coating thicknesses are available in the ranges 15 – 40 Microns (0.0006 – 0.0016 inches) and 30 – 60 Microns (0.0012 – 0.0024 inches), based on ISO EN 13811 standard coating thickness requirements.

Quality

Quality is an advantage to be expected of a well established process developed over half a century by a leading provider of metallurgical services. Bodycote places great importance on close consultation between its staff and customers to ensure that there is a complete understanding of the anticipated performance of Sherardizing and the extent to which it will prolong the working life of a product. Bodycote facilities hold numerous national accreditations and customer approvals and our Sherardizing is carried out in accordance with the specified quality standard for Sherardizing, ISO EN 13811.

Rubber to Metal Bonding Applications

For a long time Sherardizing has been recognised as an ideal surface for rubber to metal bonding applications. Rubber to metal bonding is used throughout industry to reduce vibration and noise in the work place and in automobiles. The surface finish required for the metal to bond to rubber must be clean, dry and free from defects. The metal surface is then prepared with a bonding agent before the rubber is applied. The adhesion of the rubber to metal bond is put under extreme conditions of loading in many applications. If the metal begins to corrode under the bond, the interface adhesion is compromised and will ultimately fail. By using Sherardizing as the corrosion protection failure at the interface of the component bond is prevented.

Sherardizing has been proven to be the best corrosion protection system for rubber bonded parts due to the surface texture it produces which has a high coefficient of friction. With Sherardizing the rubber to metal bond strength is not reduced, as is the case with electroplated zinc coatings.

Monroe suspension struts for Ford motors - the inner and outer bushes are Sherardized before rubber to metal bonding.

'V' mount rubber to metal suspension bracket for Jaguar.

Automotive cross tube suspension mounting bracket.

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Why use Sherardizing?

The table below shows why Sherardizing is a better choice when choosing a coating for rubber to metal bonding applications.

Coating Properties Comparison:

Type of Coating	Coating Properties
Sherardizing	Ideal
Hot Dip Spin Galvanizing	Surface unable to sustain adhesive bond
Mechanical Plating	Shiny surface results in poor adhesion. Size limitation on components
Organic Coating Magni – Delta Protekt	Surface unable to sustain adhesive bond
Zinc Electroplating	Surface unable to sustain adhesive bond

Other Bodycote Metallurgical Coatings services include:

Abrasion Resistant Coatings
Advanced Coatings
Anti-fouling Coatings
Anti-coking Coatings
Anti-rusting Coatings
Anti-seizure Coatings
Carbide Coatings
Ceramic Densification
Ceramic Overlay
Chrome Densification
Chrome Seal
CoatAlloy™ Coatings
Decorative Coatings
Diffusion Coatings
Duplex Coatings
Engineering Coatings
Erosion Resistance
Flame Spray Coatings
Hard Coatings
HVOF
Low Friction Coatings
Passivation
Plasma Spray Coatings
Sacrificial Coatings
Surface Protection
Surface Sealants
Thermal Diffusion Coatings
Tribological Coatings
Wear Resistant Coatings

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Testing
Thermal Processing