Global Shield™ Rod Coating Technology

A Dramatically Different Approach to Resisting Corrosion

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

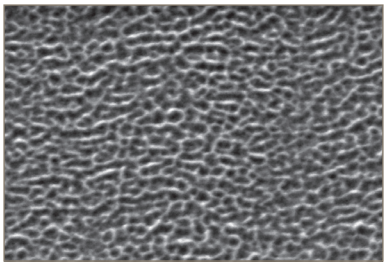
Parker

ENGINEERING YOUR SUCCESS.

The New Standard for Corrosion-Resistant Performance

Parker's **Global Shield™ rod coating technology** was specifically designed to address corrosion resistance requirements of challenging industrial applications.

Combined with our internal rod coating capabilities, Global Shield is immediately available to upgrade your Parker cylinder performance.



Parker's Global Shield coating features a sub-micron structure (shown here magnified 4000 times) that eliminates surface micro-cracks and delamination.

When compared to traditional rod coatings, Global Shield™ has the following advantages:

- **Significantly Improved Corrosion Resistance** from the single-layer, fully-dense, submicron structure and the lack of micro-cracks inherent to chrome plating
- **Lower Friction**
- **Ductile and Tough** so when the rod bends, it does too
- **Engineered Hardness** (HRC 54 minimum) for wear-resistance

The Game Has Changed

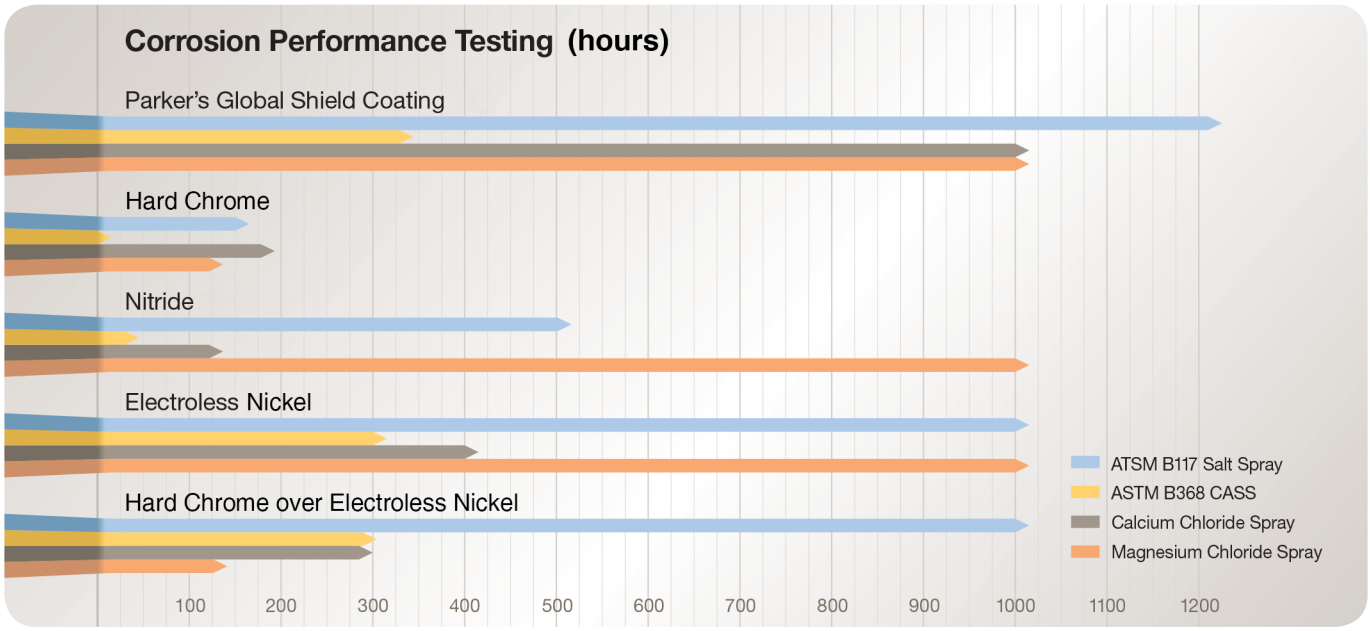
Why remain with chrome, chrome over nickel, or some other multi-layer/multi-process rod plating technology when Global Shield can improve your cylinder performance with better initial and long-term ownership costs?

The **value** that you will receive from **Global Shield™** includes:

- **Less Downtime** from reduced maintenance intervals (cylinder repairs and seal replacements)
- **Longer Seal Life** in corrosive environments
- **Lower Service Costs** since you won't need to replace the piston rod due to corrosion

Markets

- Marine
- Valve Actuators
- Offshore Oil & Gas
- Renewable Energy
- Civil Engineering Projects
- Primary Metals
- Material Handling
- Food Processing
- Wood Processing
- Waste Processing
- Testing & Analysis

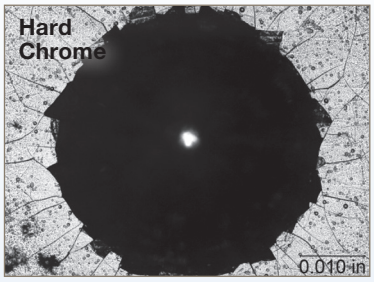


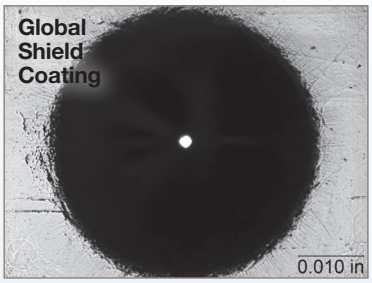
Performance Validated in the Lab and in the Field

This breakthrough proprietary technology, owned and manufactured by Parker Hannifin Corporation, has been thoroughly tested in the lab and in the field to validate performance in the areas of corrosion and dynamic wear resistance. Cylinders protected with Parker's Global Shield coating have demonstrated resistance to corrosion **up to 8X longer** than conventional coatings. Tests also confirm **leak-free performance** even after 1 million cycles and 2000 hours of salt spray. Comprehensive testing data is available from your Parker technical representative.

Indentation/ Delamination Testing

When compared to Hard Chrome and using the Rockwell "C" Indentation Test protocol, Parker's Global Shield coating exhibited exceptional interfacial adhesion and outstanding impact resistance, with almost no micro-cracking, chipping, spalling and delamination.





Although a superior rod coating on its own, it *may* also be an **economic alternative to corrosion resistant steels** (i.e. stainless steel) when applied to carbon steel. However, like all coatings, rod end machining would expose the carbon steel substrate, so additional measures would be necessary for protection of the exposed section. In addition, some cylinder applications require high strength stainless steel (ASTM A564 Type 630, or 17-4 PH stainless steel) for tensile strength and fatigue resistance, so please contact us for guidance on material substitution.

Availability

- Rod Diameters from 1/2" to 15" (12 to 380mm)
- Rod Lengths to 13' (3.96m)
- Standard thickness – .001" (25µ)

Up to 0.020" (500µ) available; corrosion protection increases as the thickness increases

- Standard substrate – 1045/1050 carbon steel

Other substrates available

- Cylinder barrel inside diameters – Consult Factory

Environmentally Safe – the **Global Shield**™ edge

- **No Chromium** in the coating or process
- **RoHS Compliant** (Directive 2011/65/EU)
- **No Hexavalence** and no hazardous waste stream
- **Recyclable** coating materials
- **No PEL** (Personal Exposure Limits) concerns

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01/15 / Bulletin HY08-0896-B1/NA