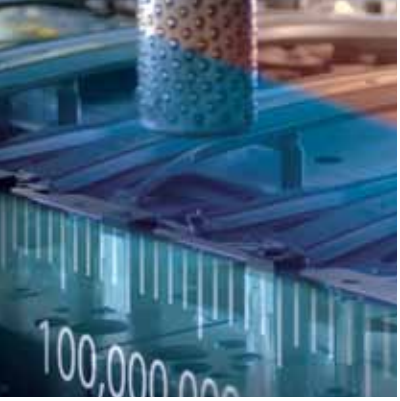
**Eaton®** Guardian Seal™

# Plating technology guarding against corrosion in the most challenging environments

EATON

*Powering Business Worldwide*



Eaton is proud to announce the introduction of a new corrosion resistant plating technology called Guardian Seal on carbon steel Walterscheid™ tube fittings.

For many years, both equipment manufacturers and users have requested improved corrosion resistance on carbon steel fluid conveyance connections in order to support improved equipment performance, reduce replacement costs, and maintain the original equipment appearance. With the introduction of Guardian Seal plating technology, Walterscheid tube fittings meet the need for higher corrosion protection that is required in the most challenging environments.

Guardian Seal, when used on carbon steel Walterscheid metric tube fittings, is proven to protect against red corrosion up to a minimum of 720 hours. The advanced protection provided by Guardian Seal on Walterscheid products has been proven to provide seven (7) times greater protection than the minimum industry requirements.

**Corrosion:**

Corrosion occurs as a processed metal reverts back to its natural state. This process is known as oxidation. It cannot be stopped but it can be controlled by creating a barrier that isolates the base metal from electrolytes. In the fluid conveyance market we typically reference two types of corrosion: 1) White Corrosion which signifies the oxidation of the zinc layer on a metal part, and 2) Red Corrosion which signifies the oxidation of the base metal of the plated part. The negative impacts of corrosion include:

- Threat to the integrity of the fluid conveyance system
- Risk of safety or failure of the system
- Costly downtime
- Early replacement cost
- Decreased equipment utilization
- Unpleasant aesthetic appearance

Minimizing the occurrence of these impacts and slowing down the corrosion process are the proven capabilities and objectives of Guardian Seal plating.

**The New Standard:**

Continuing the tradition of being a technological leader, Eaton is utilizing Guardian Seal as the new standard plating on Walterscheid metric tube fittings. Utilizing current part numbers Guardian Seal is being implemented as a running change, therefore, inventory changes, part segregation and or unique part numbers are not required. Most importantly, Guardian Seal is fully interchangeable with current hex chrome free zinc plated Walterscheid products. As a result assembly and torque requirements remain unchanged. Guardian Seal is our new standard.

**The Markets:**

Whether your application is an oil rig built in the Netherlands, ice removal equipment used at the Frankfurt International Airport, or simply new machinery that will be used in a harsh environment, Guardian Seal provides the necessary protection that extends the service life of your tube fittings. Guardian Seal is the right solution for the most demanding applications including those in the following market segments: Agriculture, Alternative Energy, Construction and Mining, Manufacturing, Mobile Material Handling, Offshore & Marine, Oil & Gas, and Transportation.

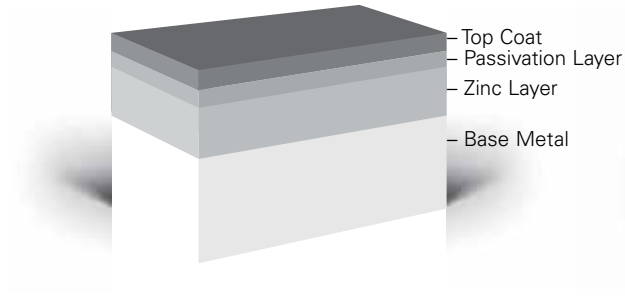
## The Plating Evolution

**Pre 2008**
Hexavalent Chrome
(Yellow / Silver Optics)

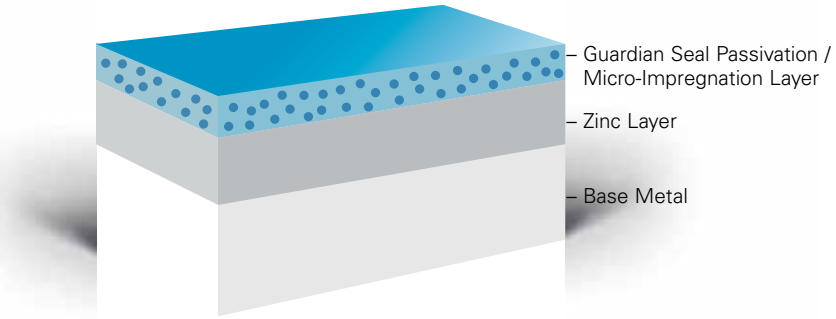
**2008 - 2012**
Hexavalent Chrome
Free Plating
(Bright Silver Optics)

**2013 And Beyond**
**Guardian Seal**
with micro particle
impregnation
(Bright Silver Optics)

**Hexavalent Chrome Free Plating**




**Guardian Seal Plating**




# Guardian Seal – When Standard Protection Simply Is Not Enough!

Guardian Seal utilizes advanced micro-molecular chemistry to create an almost impermeable protection layer

## Creating the Protection Barrier

Extending service life is the direct result of the corrosion barrier created by Guardian Seal. Guardian Seal is a 100% matched plating process that begins with the design, degreasing and acid cleaning requirements of each part. The parts then move through four highly controlled plating process steps:

- Galvanic zinc plating of the base material
- The zinc layer is then passivized resulting in an open-pored structure
- Organic micro-particles are then impregnated into the open-pored structure in an optimized emersion process adapted to the chemical system
- The cross-linked polymerisation of the top layer is then completed via a unique curing process

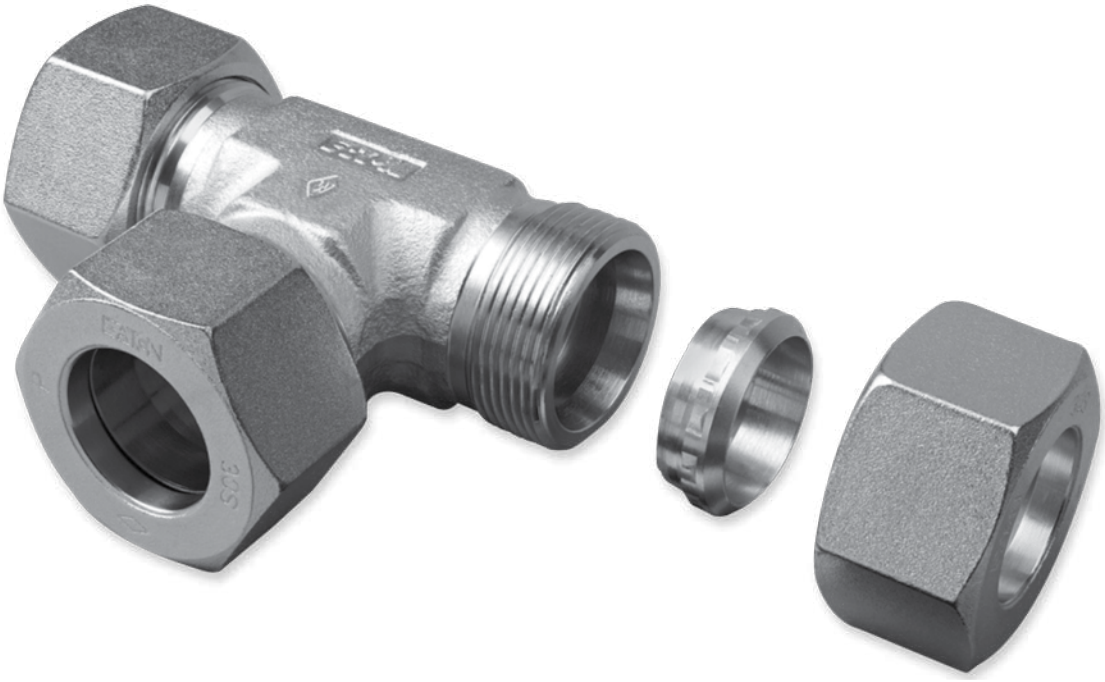
The result is a durable and highly corrosion-resistant layer that substantially improves corrosion resistance.

## The Performance: Protection for extended equipment life.

- Corrosion protection meeting 360 hours to white corrosion and 720 hours to red corrosion
- Meets and or exceeds VDMA24576 K5 / SAE J514 and J1453, and DIN EN ISO 8434 requirements
- Fully interchangeable with current hex chrome free zinc plated Walterscheid carbon steel metric tube fittings
- Assembly techniques, torque requirements, and coefficient of friction remain unchanged and are identical to current Walterscheid products in the same part number
- An environmentally friendly "Greener" plating solution:
  - Nickel-free
  - Solvent-free
  - Meets Global RoHS, ELV and REACH requirements
- Superior coefficient of friction characteristics when compared to zinc nickel plating alternatives
- Optics are similar to standard zinc plating. Segregation of inventory is not required
- Resistant to corrosion inducing chemicals

# Eaton Guardian Seal Plating Technology

## When Standard Protection Simply Is Not Enough!



Exclusively on all Walterscheid Carbon Steel Tube Fitting Systems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