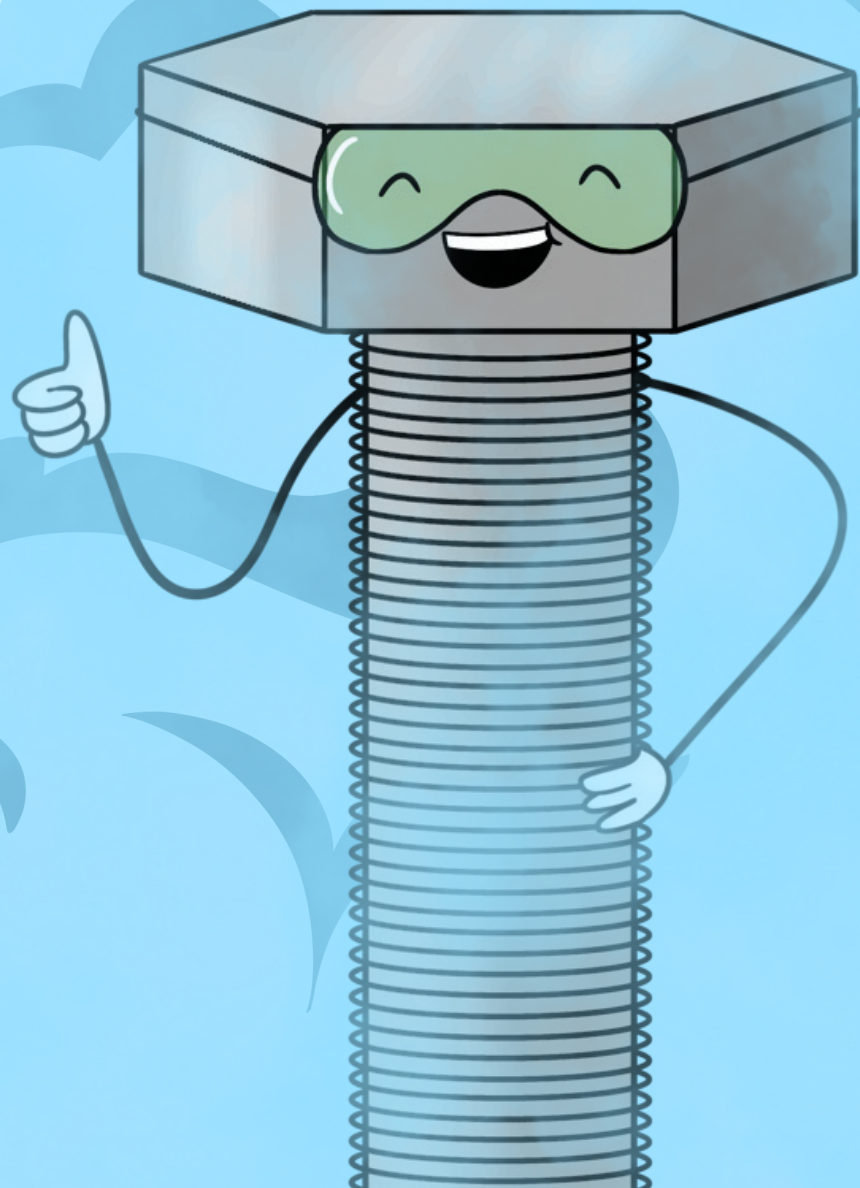




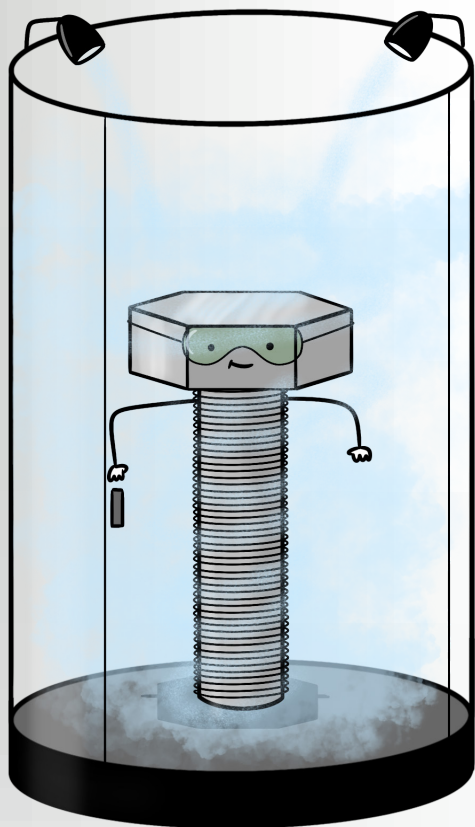
Onward Through the Fog:

Demystifying Salt Spray Testing



What is Salt Spray Testing?

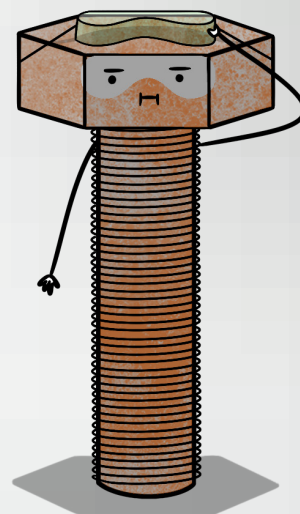
Salt spray testing, also called salt fog testing, is an industry standard test (per ASTM B117) used to measure the corrosion resistance of platings and coatings used on fasteners. During this process, a fastener is held in a salt spray cabinet, maintained at a consistent temperature, and subjected to an abrasive salt water attack – all to simulate an accelerated corrosive environment (in lieu of extended and hard to track field tests, which could take years).



The fastener is monitored throughout the test to see how long a specific plating or coating will protect their underlying metal surface. The number of hours a finish lasts in the cabinet without signs of corrosion is its salt spray score. Typical scores range from 24 hours to 1,000 hours of protection.

It's important to note, a 24-hour salt spray score does not mean your fastener will be vulnerable after 24 hours in its field application. The correlation between the test and the actual lifespan of a plating or coating in application is weak, because there are

many real-life factors not present in the salt spray cabinet. However, the salt spray test is a consistent, quick, and cost-effective technique, which allows us to compare the corrosion resistance of surface finishes against each other.

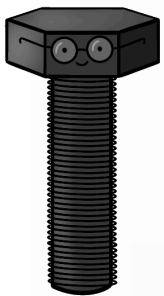


Why Do We Use Salt Spray Testing?

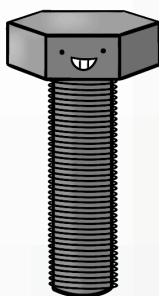
Salt spray testing is used to measure a plating or coating's corrosion resistance and helps determine which finish is suitable for a specific application without extended field testing.

Highly corrosive applications will need a higher salt spray score, but a high score isn't necessary in all industrial applications. Therefore, it's important to understand what level of salt spray protection your application requires because higher levels of salt spray protection will usually come at a higher cost.

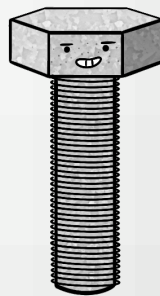
Finishes Most Commonly Tested with Salt Spray:



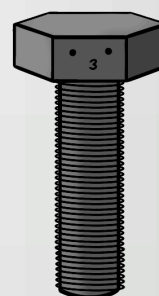
Black Oxide



Cadmium



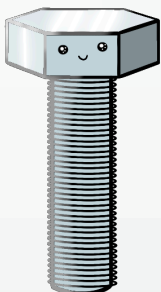
Hot Dipped
Galvanized



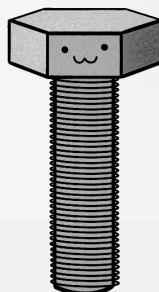
Phos & Oil



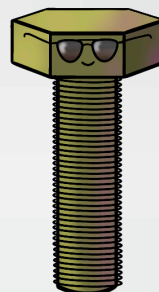
Zinc Black



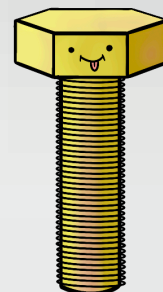
Zinc Clear



Zinc Flake



Zinc Olive Drab



Zinc Yellow

White Corrosion vs. Red Rust

We often receive quotes at Earnest Machine from customers requesting a specific salt spray requirement. An example would be a coating applied to a #3 Head Plow Bolt that meets “120 hr to white / 480 hr to red”. This is a common designation for a coating that will need to last at least 120 hours before the appearance of white corrosion and at least 480 hours before the appearance of red rust.

The appearance of white corrosion on your fasteners signifies the applied surface finish has started to degrade. Over time, this chalky white residue will flake off the fastener and expose the underlying steel. Once exposed, the fastener will begin to develop red rust, which is when the base material of the fastener begins to corrode. It's important to note that white corrosion will only occur on surface finishes that contain Zinc or Cadmium, while other coatings like Phos & Oil will only develop red rust.

Once a fastener starts developing red rust it is more likely to fail because the rust damages the structural integrity and ductility of the fastener. We recommend fasteners be replaced once red rust appears to maintain the integrity of your assemblies and to reduce any potential damage to your equipment.

Customers needing a higher level of salt spray protection, or a non-standard surface finish, can work with an Earnest sales representative to determine which plating or coating will be best for their specific needs.

