

Galvanized Subplate and Component Oxidation

One of the commonly encountered problems with galvanized coatings of all kinds is oxidation or stain. It is manifested as a stain, sometimes white, powdery deposit that forms rapidly on the surface of the galvanized coating under certain specific conditions.



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In order to help minimize the occurrence of oxidation of galvanized parts, immediately remove all packaging and store in such a manner that there is space between the parts, so air can move in and around the parts.



-Image of oxidation on a galvanized subpanel.

This oxidation is a post-galvanizing phenomenon that rarely progresses past this superficial stage and is part of its protective properties.

This phenomenon commonly occurs in storage or in transit when the parts are most vulnerable to condensation of high humidity, dew or rain, in an oxygen deficient environment or when they are tightly packed and loaded on a truck or shipping container. When conditions are right, condensation will collect on the steel by trapping moisture between the packaging and the part, reacting in a matter of minutes or hours.

The surface of galvanized coatings is almost 100% zinc. It is the durability of the zinc that provides the outstanding anti-corrosion performance for steel, yet zinc is a relatively reactive metal. It is the stable oxides that form on the zinc's surface "Galvanizing" that determine overall durability; these oxides are formed progressively as the zinc is exposed to the atmosphere and changing from a bright silver color to a darker and darker color over time. Carbon dioxide in particular is a contributor to the formation of these stable oxides.

The zinc's surface of newly galvanized steel has been subjected to little oxidation and is at its most vulnerable. For this reason, a chromate passivation is used in conjunction with galvanizing operations to provide protection to the galvanized coating during the youth period of the coating. This passivation coating provides short term protection to the zinc to give the stable oxides time to form on the surface.