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"Fastening Systems and Solutions for Commercial Construction

FASTENING SYSTEMS TECH CENTER

STATEMENT OF COMPLIANCE

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Subject: ASTM A153 Hot Dipped Galvanized on Screws | TRI-SEAL® Long-life Coating Alternative

This paper provides information about screws specified with hot-dip galvanized per ASTM A153, and how TFC TRI-SEAL® coated screws compare with regard to corrosion.

Overview: Hot dip galvanized (HDG) coating per ASTM A153 refers to the standard specification for zinc coating (hot-dip) on iron and steel hardware. Although this specification does not specifically reference self-tapping screws; Class D specification most closely pertains to these types of screws: *Fasteners 3/8in. [9.52 mm] and under in diameter, rivets, nails and similar articles; ASTM A153 Specification (Class D) minimum coating thickness: 1.4 mils (.0014").*

The following information pertains to the standard and a possible alternative that is commercially available by TFC.

Self-tapping screws are not available with hot-dip galvanized (HDG) finish per ASTM A153. The main reasons are:

1. The hot-dip process may damage the performance of a case hardened screw.
2. HDG zinc has a tendency to fill the screw's recess drive, which can cause installation problems.

Because of these issues, zinc plated self-tapping screws are commercially available using mechanical or electrical galvanizing. These processes are unable to apply a thickness of zinc greater than .8 mils, which does not equal the HDG specification of 1.4 mils. Ordinary zinc plated screw are not recommend for exterior applications.

To equal the performance of the ASTM A153, zinc plated screw must have a post treatment "topcoat" applied over the zinc to improve the corrosion resistance. Our screws utilize TRI-SEAL®, a proprietary ceramic topcoat applied over an electro-zinc base. Extensive laboratory testing (ASTM B117 | salt spray) along with real world jobsite results shows that TRI-SEAL® performs similar to HDG zinc and is approved for use in treated lumber.

Test Results:

Salt Spray Per ASTM B117: 1,000 hours | no red rust
SO_2 Testing per ASTM G87 – 1.0 liters: 30 cycles | no red rust

Please note: In severe marine environments, you should consider using other alternatives like stainless steel screws, zinc head screws, or stainless steel head screws, and choose materials that minimize galvanic corrosion.

Joe Stager
Vice President