

STEEL vs. ZINC?

Steel has been used for years in the manufacture of many electrical products. Why would the best fittings not be made of steel? The answer lies in the performance requirements of conduit fittings. These standards are specified in UL 514B, and are based on the National Electrical Code. A properly designed and manufactured zinc alloy fitting can exceed the requirements of UL 514B, and offer several functional advantages besides a savings in installation cost. The perception that steel fittings will outperform similar type fittings manufactured from die cast zinc is untrue. In fact, just the opposite may be true.



During the listing process at Underwriters Laboratories, ALL fittings, regardless of material, are tested to the same stringent UL 514B standard to comply with application requirements of the National Electrical Code.

For example, ALL EMT connectors are subjected to the following tests:

- Method of assembly
- Screw torque test (set screw type) or Hex nut torque test (compression type)
- Metallic coating thickness test (steel only) Concrete-Tightness test (set screw type or compression type) or Rain-Tight test (compression type)
- Bend test and Pull test
- Electrical Resistance test
- Ground Fault current test
- EMT deformation test (set screw type only)

The same parameter test values are used throughout the UL testing procedure *regardless* of material. Some functional tests include set screw torque of 35 in-lbs. (160 in-lbs. for hex head screw), compression nut torque of 175 in-lbs. (1") to 1600 in-lbs. (2" and up), conduit pull test of 300 lbs. (1") to 1000 lbs. (2" and up), and current test of 1180 amperes for 4 seconds (1") to 5050 amperes for 9 seconds (3" and up).

In addition to similar performance characteristics, zinc die cast fittings are accepted by Federal Specifications A-A-50553, A-A-50552, A-A-50563, and ANSI/NEMA FB 1.

PRIMARY BENEFITS OF DIE CAST ZINC FITTINGS

1. DIMENSIONAL CONSISTENCY

Perhaps the most important advantage is that of dimensional consistency. The high quality zinc alloys Bridgeport uses are unique in their ability to hold very close tolerances in our properly designed dies. A maximum variation of +/- .002" in a particular dimension from one casting to another is not unusual. Long-term consistency of this kind is difficult to achieve in steel.

2. CORROSION PROTECTION

An important advantage of zinc alloys over steel is its inherent corrosion protection. The NEC requires that all ferrous metal surfaces be protected with a coating, typically zinc plating. Zinc alloy fittings do not need protective coating because the protection goes all the way through. The corrosion resistance of Bridgeport's fittings is enhanced by a burnishing process, which is applied to each cast component immediately after the casting and trimming process. Burnishing closes the surface porosity, and gives Bridgeport's fittings their characteristic shine.

3. FUNCTIONAL ADVANTAGES

One of the most noted advantages of zinc fittings is with their ease of assembly with a locknut. Threading a zinc locknut onto a zinc connector is much easier than with the same assembly in steel. The reason lies in zinc's inherent surface smoothness and lubricity not found in steel or zinc-plated steel fittings. The result is a locknut that can easily be threaded onto a connector by feel and with little effort. One other functional advantage is the reduction in weight vs. a steel fitting. Pound for pound, die cast Zinc is about 16% lighter than cold rolled steel. This translates into easier handling of inventory.

