



Galvan Industries, Inc.

Galvan Top-10...Ground Rod Electrode Questions! *...not in any particular order!*

• Why is so much importance placed on soil conditions in terms of rod electrode life expectancy?

FACT: There are many factors influencing life of a ground rod electrodes including existing conditions such as soil pH, resistivity, moisture, permeability, stray current (ac or dc), aeration, dissimilar metals, chlorides, chemical contamination, sulfates, etc. And don't overlook man-made additions including chemical/material backfill used to enhance lowering resistance of existing soil conditions, which has been known to cause rod degradation.

• Are counterfeit rods in the domestic US really non-compliant, or do they simply present a marking or non-performance traceability issue?

FACT: Actually, there is a little of both. Importers who broker foreign rods often do not have their names marked on the rods, yet comply with listing requirements for they act as a reseller. When a rod is found to be non-compliant with UL467 or ANSI / NEMA GR-1, there is little anyone can do to determine the source of the rod if it is not 'marked', creating an identification problem. Without a name on the ground rod there is no traceability. If an issue does arise and the rod could not be traced to a manufacturer, the electrical distributor and/or contractor could be held liable for costs incurred.

• Stainless-steel rods are often specified. Is the reliability really that much better than a zinc or copper-coated rod?

FACT: No question that solid-stainless or solid-copper rods are more noble in terms of the electrolytic series of metals. Under similar circumstances you might expect service life to be extended compared to coated rods. However, price becomes an issue, for both solid stainless and solid copper rods are very costly and generally relegated to circumstances where zinc (galvanized) or copper-coated ground rods do not provide adequate life based upon actual history in that environment. While these circumstances are occasionally encountered, they are not to be considered routine.

• It is becoming more common to see reference to RoHS or MSDS. What does this have to do with ground rod electrodes of any type of coating?

FACT: Ground rods (copper or zinc coated) when used for the purpose intended, grounding of electrical systems, fully comply with RoHS and no file nor MSDS is required.

- Why do some manufacturers, including Galvan, place so much emphasis and importance on the need for “listing” a product? Some unlisted ground rods comply with national codes.

FACT: Galvan has always taken the high road in terms of having all rods certified by a listing agency. The cost to the customer is little to nothing, and yet provides a confidence that the production is being monitored by an independent third party to assure compliance to the appropriate specification. In addition to plant inspections, customers also benefit from marking which allows a path for traceability in the rare event of a problem. In addition to all Galvan’s copper and zinc-coated rods (an industry first!) being ‘listed’ by a NRTL (Nationally Recognized Testing Laboratory), our stainless-steel rods are also listed, also an industry first!!

- Has the desire for ‘color-coding’ ground rods gained in interest? What is benefit?

FACT: Yes, color-coding continues to grow in popularity because it solves a problem in the supply chain. It was initially brought to our attention by electrical distributors that they were inadvertently shipping ½ x 8 copper coated rods for 5/8 x 8 10-mil rods, and vice versa in any combination. Then when the time came to ship 5/8 rods there were none in inventory while the computer indicated they were a stock item. Visually there is little difference! With the color-coding in place this problem immediately disappeared. After implementation we received several calls regarding the value of this feature, which was started by Galvan and continues.

- Most manufacturers presently list (by a NRTL, eg CSA, UL, etc) only copper-coated ground rods. Isn't there a value in having all ground rods listed?

FACT: Yes, for two reasons. First, using listed products that are clearly marked within the top 12-inches (Galvan limits the distance to 6-inches to make it easier to examine after being driven) allows electrical inspectors to more easily audit and certify an installation. It reduces the liability of the inspector, contractor and distributor should a non-code compliant product contribute to a failure resulting in equipment failure, system reliability or loss of life. Secondly, there is less risk of a failure with listed products. For safety sake and for the peace of mind of everyone involved, we think all ground rods should be listed.

- When there is a need to drive ground rods to deep depths, would you suggest threaded or threadless couplings, and why?

FACT: This is generally a personal preference. Historically sectional rods were always coupled using a threaded coupling with ground rods having 2-3 inches of thread on each end of the rod. Within the past 20-years threadless couplings have become more common for a number of reasons. During the driving process a threaded coupling actually will loosen, much like when you were unable to get a rusty nut off of an old piece of equipment and you squarely hit the nut head with a hammer. However, with a threadless or compression coupling the connections continues to become more secure until it hits a stop in the coupling. Threadless also assures a longer lasting connection generally not subject to corrosion and increasing resistance to ground due to compromised continuity from one rod section to the next.

- Why not use a larger diameter rod as a standard? Doesn't it provide a better path to ground with significantly greater surface area?

FACT: Ground rod resistance effectiveness is influenced more by electrode length than diameter. The important fact is that the soil be properly compacted to the rod, which over time generally improves. Length also allows customers in the northern United States to assure that installations are below the frost line providing confidence that the ground rod system is providing a good path to ground, year round! Remember that the key purpose of grounding is to provide equipment protection, system reliability, and personnel safety!

- What coating type would Galvan suggest for my application?

FACT: You might start by talking to your local electrical inspector or see what the electric utility serving your area is using. This is NOT the only or best way to pursue rod selection, but certainly is a guide as to what may have worked in that specific environment in the past. Just because one type of rod coating has been used does not mandate that the same rod be used in the future. Talk to a soils engineer from the area who may have suggestions based on other projects in the area and their 'actual' experience. Don't accept 'because it has been done that way for 25-years' as a technically sound conclusion to what is a more complicated analysis.