



TECHNICAL SERVICES DEPARTMENT

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Dissimilar Metals for Conduit and Tubing per the National Electrical Code

There have been many questions in the industry regarding the revisions made to the dissimilar metals sections for Articles 342 (Intermediate Metal Conduit; Type IMC), 344 (Rigid Metal Conduit; Type RMC), and 358 (Electrical Metallic Tubing; Type EMT) of the National Electrical Code® (NEC®).

Sections 3XX.14 of these Articles were changed from:

- **2014 Language:** Where practicable, dissimilar metals in contact anywhere in the system shall be avoided to eliminate the possibility of galvanic action. Aluminum fittings and enclosures shall be permitted to be used with galvanized steel.

to:

- **2017 Language:** Where practicable, dissimilar metals in contact anywhere in the system shall be avoided to eliminate the possibility of galvanic action. Aluminum fittings and enclosures shall be permitted to be used with galvanized steel where not subject to severe corrosive influences. Stainless steel shall only be used with stainless steel fittings and approved accessories, outlet boxes, and enclosures.

The 2017 NEC was revised to limit the use of galvanized couplings and fittings with stainless conduit since the galvanized couplings surface area is significantly smaller than the stainless steel conduit or tubing which has superior corrosion protection than the galvanized steel conduit. The galvanized couplings or fittings will act as a sacrificial component in the system for corrosion. This could cause the galvanized fitting, box, or coupling to corrode prematurely and compromise the system especially if it was being used as an equipment grounding conductor. The revised language was never intended to not allow a transition from stainless to galvanized in the same run. To do this a stainless fittings, box, or coupling could be used with a piece of galvanized conduit/tubing to transition between the two conduits.

To help alleviate the confusion with the 2017 NEC wording and make the code easier for installers and inspectors to use, NEMA submitted a Public Input to the 2020 NEC revising Sections 3XX.14 for Dissimilar Metals. The following is the current language that has been accepted in the 2020 NEC:

- **2020 NEC Language:**
 - **344.14 Dissimilar Metals.** Where practicable, dissimilar metals in contact anywhere in the system shall be avoided to eliminate the possibility of galvanic action. Stainless Steel and Aluminum couplings, fittings, and enclosures shall be permitted to be used with galvanized steel RMC, and galvanized steel fittings and enclosures shall be permitted to be used with aluminum RMC where not subject to severe corrosive influences. Stainless steel rigid conduit shall only be used with the following:
 1. Stainless steel fittings
 2. Stainless steel boxes and enclosures
 3. Steel (galvanized, painted, powder or PVC coated and so forth) boxes and enclosures when not subject to severe corrosive influences
 4. Stainless steel, nonmetallic, or approved accessories

The language in Sections 342.14 and 358.14 are harmonized with 344.14. As stated within the Code, there are plenty of ways to transition from Stainless conduit/tubing to galvanized conduit or other wiring methods that will reduce the chances of corrosion impacting the joint.

One topic that comes up is transitioning from stainless steel conduit/tubing to galvanized conduit/tubing when the stainless is no longer needed. To make this transition a stainless-steel coupling or fitting can be used in between the stainless conduit/tubing and the galvanized conduit/tubing. However, a galvanized couplings and fittings should not be used to connect galvanized conduit/tubing to stainless steel conduit/tubing.

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