

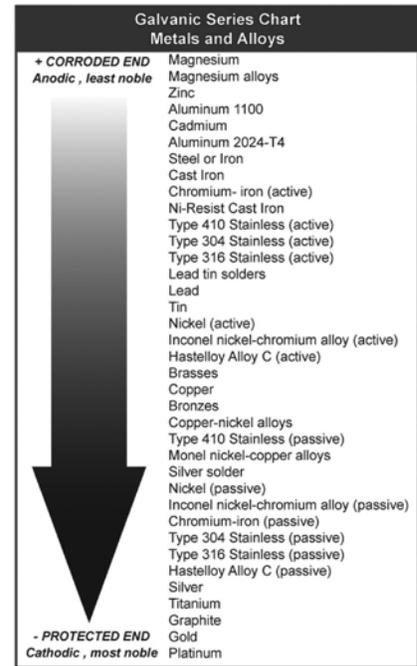
GALVANIC CORROSION - COMPATIBLE METALS CHARTS

To minimize galvanic corrosion, fasteners should be considered based on their material compatibility with the substrates.

Determine the materials being fastened and choose a fastener material that is close in proximity on the chart. The closer together the material are on the chart the less galvanic action will occur.

Metals listed on the top of the chart (anodic) will corrode faster than the metals on the bottom of the chart (cathodic).

Contact a corrosion specialist to determine the best material for your application.



Fastener Material Selection Based on the Galvanic Series of Metals

Revised by TFC: 0315JS

Table developed using information supplied by AISI Committee of Stainless Steel Producers.

Key

- A. The corrosion of the base metal is not increased by the fastener.
- B. The corrosion of the base metal is slightly increased by the fastener.
- C. The corrosion of the base metal may be considerably increased by the fastener material.
- D. The plating on the fastener is rapidly consumed.
- E. The corrosion of the fastener is increased by the base metal.

		FASTENER MATERIAL			
		STEEL Zinc Plated	STAINLESS STEEL Type 410	STAINLESS STEEL Type 302, 304, 316	ALUMINUM
BASE METAL	Zinc Galvanized ZN/Al Coated Steel	A	C	C	B
	Aluminum	A	¹ Not Recommended	B	A
	Steel / Cast Iron	A,D	C	B	A
	Brass, Copper, Bronze	A,D,E	A	B	A,E
	Stainless Steel 300 Series	A,D,E	A	A	A,E

Footnotes

1. Because aluminum can expand a large distance, the high hardness of 410 SS case harden screws may lead to screw to failure due to lack of ductility or stress corrosion cracking.

NOTE: Organic coating to the screw will improve the corrosion resistance. Environments can affect the rate of corrosion and change the activity of the metals.

Special Note: Preservative-Treated Lumber Applications

ACQ, Penta, CA or CBA preservative-treated lumber can be incompatible with certain types of fasteners. In those cases where any type of metal roof or wall cladding materials are being attached to preservative treated lumber, the following fasteners are not compatible: zinc plated screws, zinc-alloy headed screws, stainless capped screws, aluminum, copper and copper alloy. When attaching metal panels to those types of preservative-treated lumber, a moisture barrier should be used between the lumber and the panel material. Metal panel fasteners that are compatible with preservative-treated lumber are stainless steel fasteners, or hot dip galvanized nails manufactured to ASTM A153 class D or heavier. Other types of fasteners coated with proprietary anti-corrosive technologies are also available for use with preservative-treated lumber. In addition, zinc-plated screws can be used in CCA and MCQ pressure-treated lumber.