

ANODE SELECTION GUIDE

What is Electrolytic / Galvanic Corrosion?

Corrosion on the metal parts of your boat located below the waterline is the result of "electrolytic corrosion," or "galvanic corrosion." The scientific term "electrolytic" or "galvanic" corrosion describes the type of corrosion that anodes are intended to absorb. Galvanic corrosion, an electromechanical action, causes metal parts to decompose. The process is similar to that which happens when batteries are left in a flashlight -- an electrical current is created and continues until one of the metals is eaten up -- the battery goes "dead."

Why Do I Need Anodes?

You need anodes on your engine because when two different metals are present in water — especially salt water, which is a good conductor — electrons will flow from the more negatively charged metal (anode) to the more positive metal (cathode). If you want to protect both types of metal from corrosion, you must add a third metal such as zinc, although magnesium and aluminum are also used. This active metal becomes the anode for both metals. The zinc or aluminum sacrifices itself to protect the other two metals, hence the term "sacrificial anode."

How to Choose the Correct Type of Anode?

The three main water types are salt, fresh, and brackish, a combination of the two. Zinc anodes only protect in salt water. Aluminum anodes protect very well in salt and brackish waters. Magnesium anodes are designed for fresh water use only, never in salt water.

DO NOT MIX Zinc and Aluminum Anodes on the same vessel.

- **Zinc Alloy Anodes -- Salt water only**
 - * Not recommended for use in fresh water.
- **Aluminum Alloy Anodes -- Salt, Fresh or Brackish water**
 - * Not recommended, but can be used in fresh water.
(The Performance Metals Navalloy anodes is very different from normal aluminum and can be used in all waters.)
 - * Proven to last longer than zinc due to increased capacity
 - * Can be left permanently immersed and on boats lifted out of water or trailered



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- **Magnesium Alloy Anodes -- Fresh water only**

- * For use with boats in fresh water
- * It is not recommended to use magnesium anodes in salt or brackish water. The result may be an accelerated corrosion rate, which may damage the metal parts of your boat and leave you with no anode protection in a short period of time.
- * **Note:** Fresh water is a much less conductive environment than salt water, therefore magnesium anodes are your best choice. The result is increased efficiency, thus superior protection for your underwater metal components. Performance Metals Navalloy anodes can also be used in fresh water, providing protection in all waters. This is great for trailered boats, which may be used in both salt and fresh water locations.



Some General Tips

- Change anodes when 50% corroded. Some Performance Metals brand anodes have a built in wear indicator that make it clear when a change is needed
- Never paint anodes. This prevents them from working. Mounting surface must be clean and free of paint.
- Protect trim tabs individually (do not bond). Even stainless steel tabs can corrode and need protection provided by sacrificial anodes.
- Sterndrives need to remain in the water for the anodes to work
- For sterndrives, use new fasteners as even stainless steel will corrode. (Use MareLube to isolate dissimilar metals)
- Do not mix anode types on sterndrives or outboards as aluminum anodes will try to protect zinc anodes on the same bonding circuit. (Adding aluminum anodes to an "inboard" vessel protected elsewhere with zinc will generally improve protection.)
- Do not use zinc anodes on aluminum outdrives as they will not protect properly.
- Do not use magnesium anodes on outdrives in salt or brackish water.
- Zinc anodes can coat over if exposed to air and need to be burnished before re-immersion