



## 2205 Stainless Steel – Advantages

Traditionally aluminium bronzes have been well established with a good reputation for corrosion resistance in marine environments. However in more recent years metallurgists have developed superior metals known as Duplex stainless steels (2205), these are achieved by increased levels of chromium, nickel, molybdenum and nitrogen to levels higher than is present in ordinary marine grade 316. The result is a stainless steel that provides very good resistance to pitting and crevice corrosion in a seawater environment, making 2205 stainless steel far superior to 316 and 316L.

Benefits of 2205 stainless steel include: good weldability and workability, high resistance to fatigue corrosion, stress corrosion cracking (especially salt water stress corrosion cracking), erosion corrosion, and high-energy absorption. Other advantages are low thermal expansion and contraction, high strength, good resistance to sulphide stress corrosion, high resistance to chloride pitting and crevice corrosion.

The properties of duplex stainless steels are the reason they are now heavily used in the offshore seawater market and why Arctic Steel casts all strainers using 2205 stainless steel.

Other factors to consider:

- The density of 2205 stainless steel is slightly higher than that of bronze and is also significantly stronger, this allows finer details and smaller sections when casting, which often results in weight saving.
- Thermal and electrical conductivity of bronze is 2 to 3 times that of the 2205 stainless steel. The end result is that bronze will carry a galvanic current far more efficiently than SS. Being a softer and less noble metal, bronze will therefore be subject to galvanic corrosion at an increased rate. This should be taken into account in any mixed metal seawater environment. Your anode system will usually be the only material softer than bronze in this environment, making connections critical.
- A marine engine room is dominated by steel and stainless steel components (e.g. engine block, stainless propeller shaft). Ideally we strive to keep the mix of metals to a minimum, which avoids galvanic corrosion, this is why stainless steel seawater strainers are a better choice.
- Bronze corrodes at an increased rate compared to 2205 in polluted seawater where sulphides are present.

Unlike any other seawater strainer manufacturer in the world, **ARCTIC STEEL** has committed to manufacturing all cast stainless steel strainers with 2205 stainless steel.

Arctic Steel strainers have a fully cast one-piece strainer body, eliminating the corrosion weaknesses inherent at welded joints. To further enhance our strainers, all bodies and lids are electro polished, which removes surface contaminants, providing even greater resistance to corrosion and a unique chromium rich shine to our strainers.

Not only are the materials used, better than any other strainer in the World, the robust design and function of **Arctic Steel** strainers are second to none, providing commercial vessels with unrivalled performance and operational efficiency.

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