



Austenitic Stainless Steels

The salt spray tests as per standard ASTM B117

The salt spray tests, per standard ASTM B117, are useful for a quick and qualitative ranking of the behavior of materials in marine conditions.

However, they cannot be used reliably to estimate the lifetime of stainless steel components in marine environments. In effect, the salt spray tests do little more than illustrate the pitting sensitivity of various stainless steels in chloride environments through the occurrence of various amounts of corrosion rust.

It is well known and widely documented that adsorbed chloride ions can damage the passive surface layer which insures the protection of stainless steels from various types of corrosion. Such situations are typically encountered in marine or brackish environments.

These adsorbed ions can generate "localized corrosion" - pitting corrosion, initiated on small surface defects favoring the chloride ions adsorption - crevice corrosion which results from the progressive acidification by the chloride ions in a confined area at the surface of the stainless steel.

Fortunately, Molybdenum addition to stainless steels provides a good protection of the passive layer against chloride ions adsorption and, in a proper amount, eliminates the risks of localized corrosion in such chloride-containing environments.

Thus, Molybdenum bearing grade 316L, with over 2% Mo, has long been recognized as the choice material for marine applications and is used in numerous such applications in rigging, cables, nails, screws, boat deck equipment, etc.

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