

# Atmospheric Salt Fog Testing to Evaluate Chloride Induced Stress Corrosion Cracking of Type 304 Stainless Steel

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## ABSTRACT

Nuclear power plants are now storing spent nuclear fuel in onsite dry storage containers because of the limited room in spent fuel storage pools. Some of these dry storage containers are located in chloride-rich environments near coastal areas. Because many of the dry storage containers are made of austenitic stainless steels, a potential concern is the susceptibility of the canisters to chloride-induced stress corrosion cracking. The objective of this work is to evaluate how the concentration of marine salt and other atmospheric deposits affects stress corrosion cracking of austenitic stainless steels. To that end, type 304 stainless steel U-bend samples were fabricated and placed in an environmental chamber. Simulated sea salt was deposited on the surface of the samples, using a salt fog procedure. The U-bend samples were heated to 35 and 45 °C temperatures and subjected to accelerated corrosion, involving cyclic changes in relative humidity.