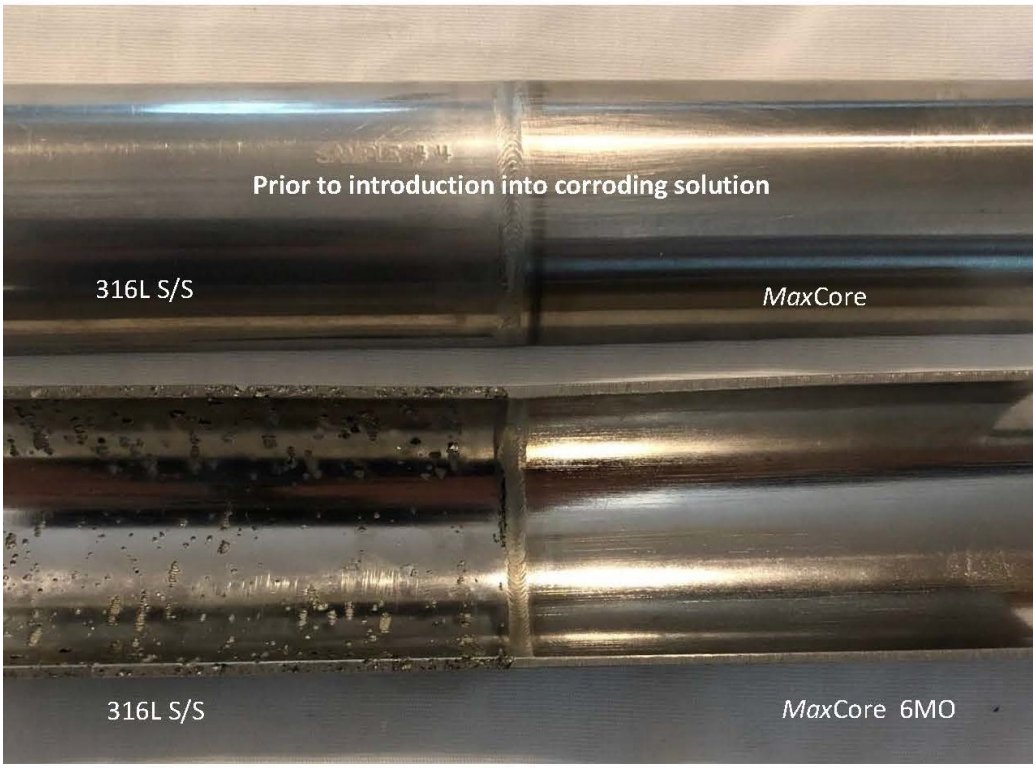
Welding 316L to 6 Mo Materials



This picture shows a comparison of the corrosion resistance of 316L material vs. MaxCore 6Mo material. The materials were orbital welded together with no weld filler then put into a ASTM G-48 Practice C (modified immersion test) solution of 6%$FeCl_3$ + 1% HCl at 50º C (122º F) for 72 hours

MaxCore 6Mo and 316L stainless steels can easily be welded together using standard welding practices for austenitic stainless steel. For best corrosion resistance, it is recommended this joining be made out of the corrosive environment whenever possible. When joining two different materials together it is important to consider the galvanic potential between the two materials. MaxCore 6 Mo contains higher levels of chromium, nickel, and molybdenum then 316L stainless steel making it the cathodic material with a higher potential then the anodic 316L. When joining these two materials together by welding and in the presence of an electrolyte (the liquid product) an exchange of current between the anode and cathode is achieved. As the voltage between the two materials flow, molecular particles of the anodic material (316L) is also removed with the voltage flow. The higher the potential difference between the two materials, the quicker the failure by consumption of the anode will be achieved. As the anode is consumed and therefore becomes smaller, the larger the potential difference becomes increasing the speed by which the anode is consumed.

In addition, the use of a alloy weld ring when making a joint between 316L and a 6% Molybdenum product will not stop this process from taking place. In actuality, the addition of the higher cathodic alloy 22 in the weld puddle when a weld ring is used tends to increase the differential.

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