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**Welding Properties and Processes for Titanium and Titanium Alloys
for use in Corrosive Applications**

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Abstract

Titanium is currently being used in numerous chemical and petrochemical applications where its excellent corrosion resistance is required. Titanium alloys are employed in many types of industries including chemical, petrochemical, aerospace, armor, medical, metal finishing, power generation, as well as oil and gas. These titanium applications will require fabricated equipment such heat exchangers, columns, reactor vessels, pumps, piping, valves, trays, fasteners, ancillary equipment and down-hole support equipment. Titanium can be machined, welded, and fabricated using similar equipment and processes used for other more common construction materials but with additional considerations. This paper will review the common processes and procedures for welding titanium equipment to help insure that high quality titanium welds are achieved. This will include the common welding processes and procedures and show the necessary cleanliness and shielding that is used to produce welds for all types of applications. This paper will also explore the grades of titanium alloys that can be joined together and their applicable weld filler metals.