

Industeel


ArcelorMittal

Duplex Stainless Steels Welding Guidelines



Cleaning, pickling and passivation of welds

Cleaning of welded zones is commonly performed by chemical methods. Mechanical methods can be preliminarily used. Welds can be finely ground and polished, sand-blasted or micro-beaded (products without iron particles). Surface cleaning must be performed after pickling.

Pickling can be performed by immersion in a fluo-nitric bath (duration twice than that of 316L) or using a commercial pickling paste as for others stainless steels. These operations must be conducted with high security (ventilation, protective clothing and rubber gloves).

Heat treatment

UR™ 2205Mo is delivered in the solution-annealed and water-quenched condition (1040/1080 °C – 1904/1975 °F). The chemical composition of UR™ 2205Mo is optimized in order to obtain, after heat treatment, nearly a 50% ferrite / 50% austenite microstructure.

These solution-annealing conditions must be respected for final or intermediate heat treatment in case of forming. When a solution annealing or a stress relieving treatment is required after welding, the solution annealing with water cooling will be carried out in the temperature range 1080 – 1090 °C (1975 – 1995 °F) taken into account the effect of the higher Ni content of the filler material on the secondary phases stability.

All other heat treatments, particularly those with holding times or with slow cooling rates in the 300 to 1000 °C (570–1830 °F) range must be avoided.