

ER2594

ER2594 is a duplex stainless steel that provides higher properties that are similar to wrought duplex alloys such as 2507. Exhibiting enhanced corrosion resistance and mechanical properties compared to conventional duplex stainless steels ER2594 also features good ductility, impact toughness, and better corrosion resistance than ER2209 Duplex.

It is suitable for use in Oil & Gas, Marine, and Chemical Industries for the fabrication of various parts that require high strength, at high temperatures in corrosive environments.

Wire Classification

AWS A5.9 ER2594, EN ISO 14343:2009 2594NL

Wire Diameter

1.2 mm

Shielding Gas

Argon

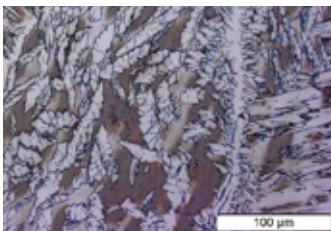
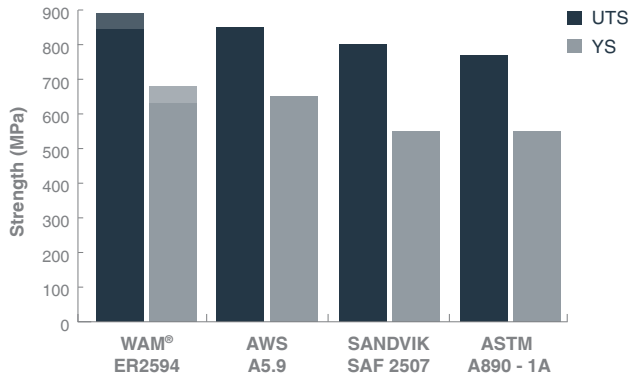
Process

WAM® – DED-Arc

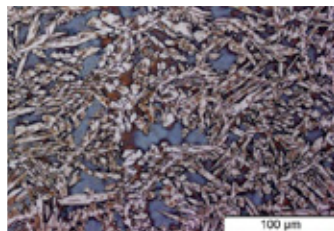
Equivalent Designations

ASTM A240, UNS S32750, SAF2507, AS 3992, S39209.

WAM® ER2594 Tensile Strength Comparison



ER2294 Longitudinal section showing view general view of microstructure.



ER2294 Transverse section showing view general view of microstructure.

WAM® Test Number 210014AM-11-36, MTS-35663 CWS. Mechanical property values for the 'as-deposited WAAM' values are based on the median value and repeatability testing. Deposited density can be lower than wire density. AWS data source: D20.1/D20.1M:2019 Specification for Fabrication of Metal Components Using Additive Manufacturing.

Properties

Composition	Amount %
Carbon	≤ 0.03
Manganese	≤ 2.5
Nickel	8.0 - 10.5
Chromium	24 - 27
Molybdenum	2.5 - 4.5
Silicon	≤ 1.0
Copper	≤ 1.5
Phosphorus	≤ 0.03
Sulfur	≤ 0.02
Nitrogen	0.2 - 0.3
Tungsten	≤ 1.0
Iron	Rem

Mechanical	WAM® X & Z Typical	AWS Typical
Ultimate Tensile Strength (MPa)	840 - 890	> 760
0.2% Proof stress (MPa)	640 - 680	650
Reduction in area (%)	NA	-
Elongation (%)	25 - 32	> 15
Condition	as built	
Classification	AWS A5.90	
Density (kg/m³)	7800	
Ferrite Range (%)	45 - 55	
Charpy Impact Test (J)	100 (-29°C)	
Stress Analysis (mm) (Neutron Detection)	Comp. > 25	
Ductile / Brittle Transition	-150°C	
Fatigue Limit (MPa / Cycles)	275 - 350 @10 ⁷	
Corrosion Resistance	G48 Pitting Resistance - no weight loss	



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