

ER5183 + 0.2%Sc

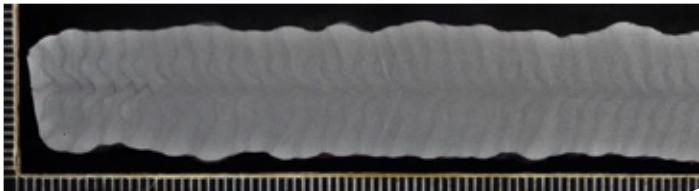
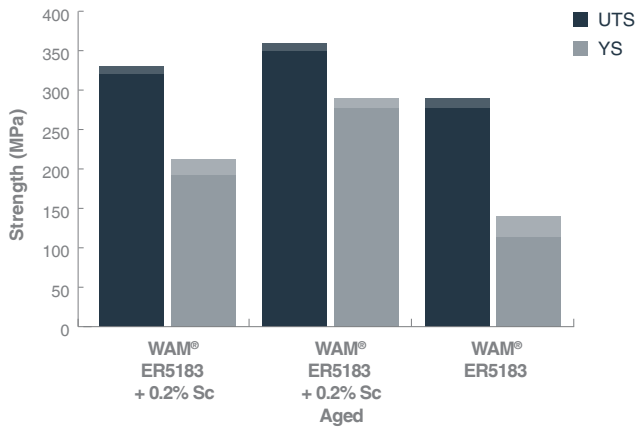
Aluminium scandium wire feedstock with a composition of ER5183 “+0.2% Sc” refers to an aluminium alloy that contains a small addition of scandium. Scandium is a rare earth element known for its ability to enhance the properties of aluminium alloys, particularly in terms of strength, weld-ability, and corrosion resistance.

By adding a small percentage of scandium to the ER5183 alloy, the resulting aluminium scandium (AlSc) wire feedstock has improved properties compared to traditional aluminium alloys. Scandium forms fine precipitates within the aluminium matrix, strengthening and refining the grain structure leading enhancing mechanical properties.

Wire Classification

Wire Diameter 1.6 mm **Shielding Gas** Argon **Process** WAM® – DED-Arc

WAM® ER5183 + 0.2% Sc Tensile Strength Comparison



ER5183 + 0.3%Sc macro examination photo.

WAM® Test Number 180151AM-29 180151AM-55. 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 %
Scandium	0.24
Silicon	0.04
Iron	0.08
Copper	< 0.01
Manganese	0.59
Magnesium	4.65
Chromium	0.1
Zinc	0.23
Titanium	0.13
Strontium	<0.001
Zirconium	< 0.005
Aluminium	Rest

Mechanical	WAM® X & Z Typical	WAM® X & Z Typical
Ultimate Tensile Strength (MPa)	320 - 330	350 - 360
0.2% Proof stress (MPa)	185 - 212	285 - 290
Reduction in area (%)	15 - 20	13
Elongation (%)	10 - 20	7
Condition	As built	PWHT ¹
Classification	-	-
Density (kg/m ³)	-	-

Note:

- **PWHT¹:** aged for 5 hours.

Discuss specifics on PWHT with AML3D.



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