AUBERT&DUVAL

made with ABD® by OxMet Technologies

Pearl®Micro ABD®-850AM

Powder for Additive Manufacturing

PEARL Micro

MATERIAL OVERVIEW

- An age-hardenable nickel-based superalloy designed specifically for use as feedstock in powder bed fusion with resistance to cracking during and after AM and heat treatment. ABD®-850AM is optimised for damage tolerance, thermal stability, and corrosion/oxidation resistance, with a working temperature range up to 850°C in its age-hardened state.
- The new alloy has excellent thermal stability and creep strength, surpassing alloy 718.

ABD®-850AM is designed to be free of solidification, liquidation and strain-age cracks and showcases exceptional printability for such a high temperature γ' strengthened alloy, making it suitable for complex components within the Aerospace, Power, Automotive and Space industries.

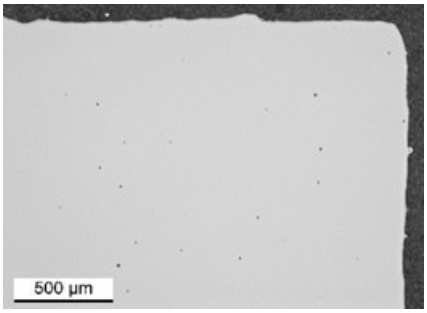
KEY PROPERTIES

Mechanical (800°C)	Yield strength (MPa)	607 ± 16
	Ultimate tensile strength (MPa)	749 ± 8
	Elongation at failure (%)	8.5 Z, 58 XY
	Hardness (HV30)	476 ± 6
Thermophysical (25-1200°C)	Thermal conductivity (W(m°C)$^{-1}$)	10.7–28.5
	CTE (Linear) (x10-6 °C-1)	11.5–18.7
Physical (25°C)	Density (g cm-3)	8.44

All measurements are for the fully heat treated alloy printed with a layer thickness of 30 µm.

PARTICLE SIZE DISTRIBUTIONS

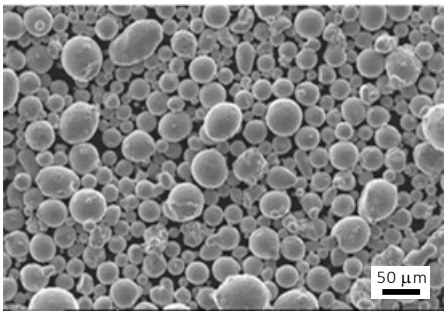
ABD®-850AM shows high part density and no cracking when printed with standard alloy 718 parameters.



POWDER CHARACTERISITICS

Particle size distributions:

Laser Beam Melting (powder bed): 15-53 µm
Electron Beam Melting (powder bed): 45-106 µm
Directed energy deposition (LMD): 45-106 µm
Custom size distributions available on request



ABD®-850AM is well suited for gas atomisation

ABD®-850AM is available in batch sizes suitable for R&T and full production.

Contact: powder@eramet.com

www.aubertduval.com

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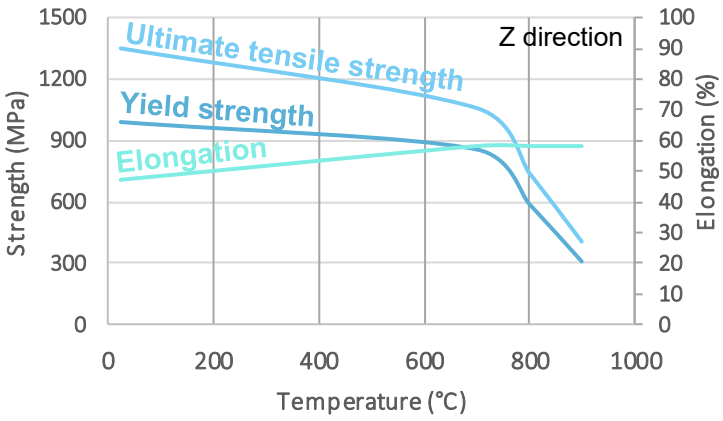
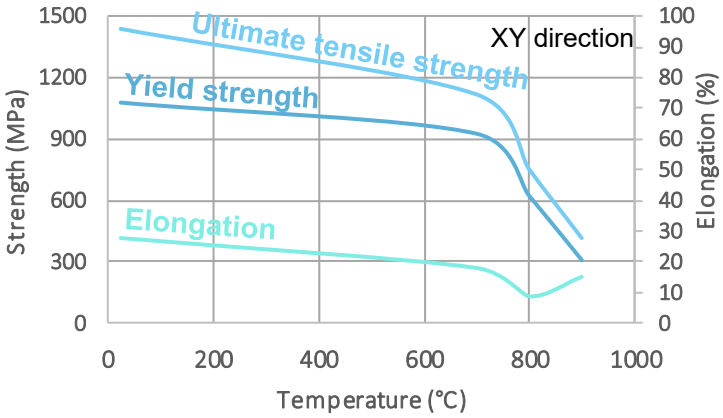
Pearl®Micro ABD®-900AM

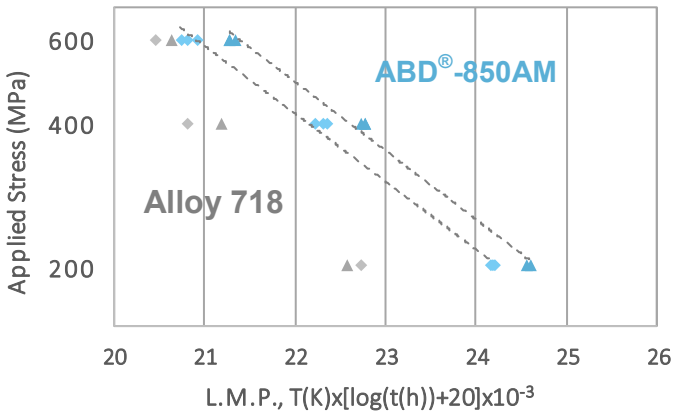
TENSILE PROPERTIES





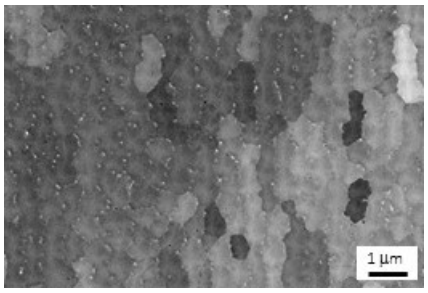
Tensile properties of ABD®-850AM after sub-solvus heat treatment.
Measured in accordance to ASTM E8/E8M-16a/E21.

CREEP LIFE

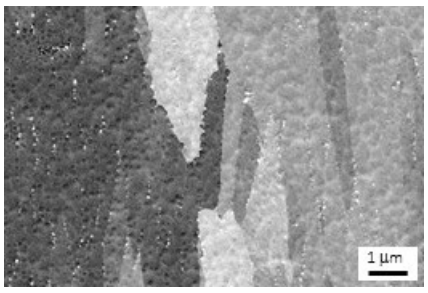


Stress rupture properties of ABD®-850AM after sub-solvus heat treatment.

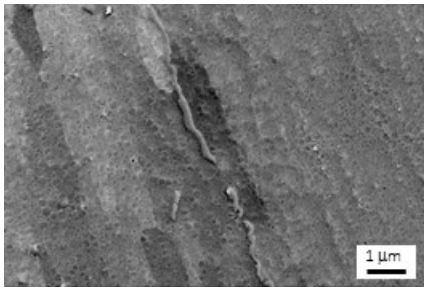
MICROSTRUCTURE



As-printed XY-plane microstructure after processing with 30 µm layer thickness and 2D energy density of 2.5 Jmm^{-2}.

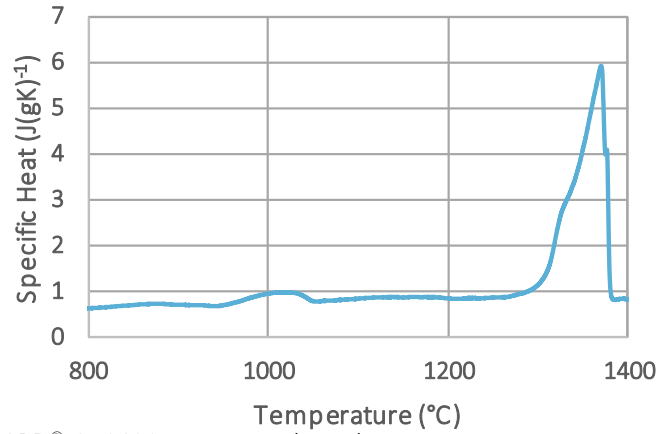


Microstructure after final heat treatment



Microstructure after thermal exposure at 760°C for 1,000 hours showing excellent microstructural stability

SPECIFIC HEAT



ABD®-850AM in as-printed condition.
C_p measured according to ASTM E1269.

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