

ABD[®]-900AM

Nickel-based superalloy for additive manufacturing

MATERIAL OVERVIEW

An age-hardenable nickel-based superalloy designed specifically for use as feedstock in powder bed fusion. ABD[®]-900AM is optimised for high creep and tensile strength, and corrosion/oxidation resistance, with a working temperature range up to 900°C in its age-hardened state.

The new alloy has excellent creep strength – similar to alloy 939 and alloy 738 – while having superior resistance to cracking during manufacture and heat treatment.

ABD[®]-900AM is designed to be free of solidification, liquidation and strain-age cracks and showcases exceptional printability for such a high temperature γ' strengthened alloy. It is suitable for complex components within the Aerospace, Power, Automotive and Space industries.

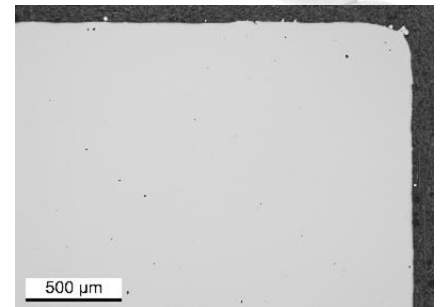
KEY PROPERTIES

Mechanical (800°C)	Yield strength (MPa)	782
	Ultimate tensile strength (MPa)	811
Thermophysical (25-1200°C)	Thermal conductivity (W(m°C) ⁻¹)	10.3- 25.9

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

PRINTABILITY

ABD[®]-900AM shows high part density and no cracking when printed with standard alloy 718 parameters.

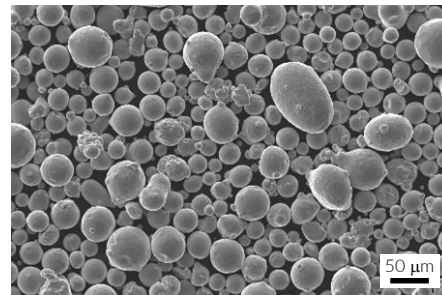


POWDER CHARACTERISTICS

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.



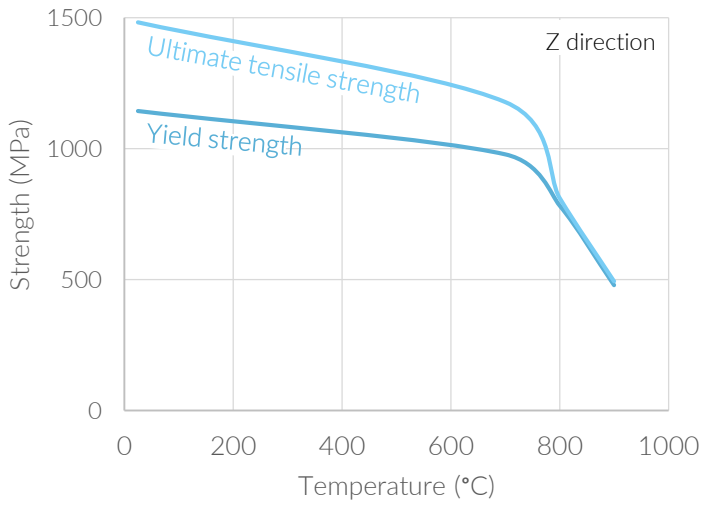
ABD[®]-900AM is well suited for gas atomisation

ABD[®]-900AM is available in batch sizes suitable for R&T and full production.

For more details or to make an enquiry please get in touch using the details below

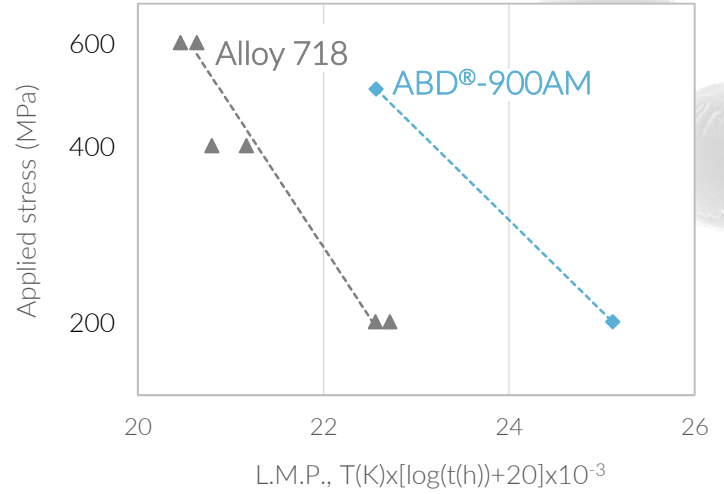


TENSILE PROPERTIES



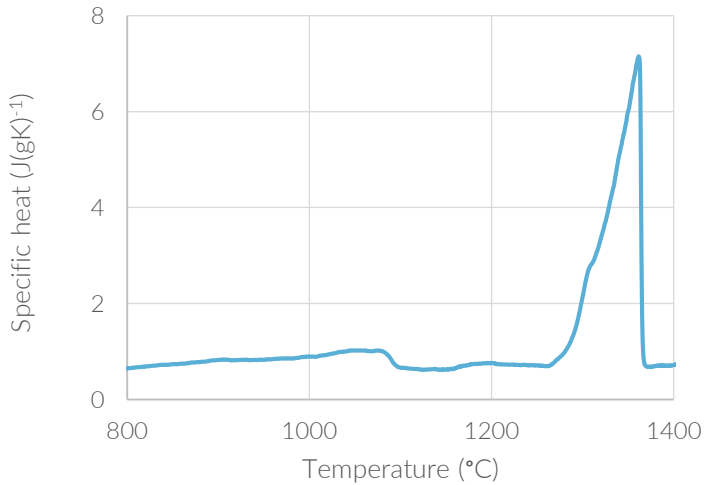
Tensile properties of ABD®-900AM after sub-solvus heat treatment.

CREEP LIFE



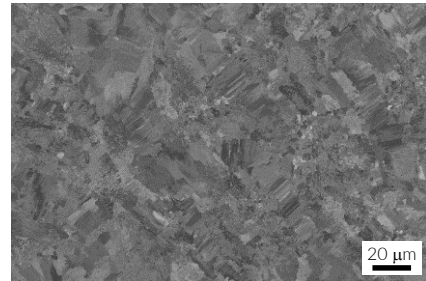
Stress rupture properties of ABD®-900AM after sub-solvus heat treatment in Z build direction.

SPECIFIC HEAT

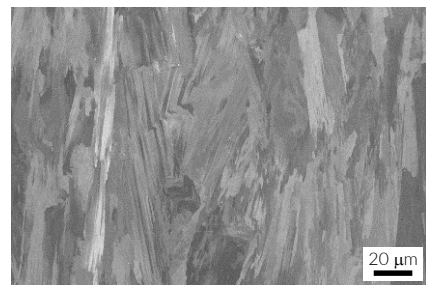


ABD®-900AM in as-printed condition. C_p measured according to ASTM E1269.

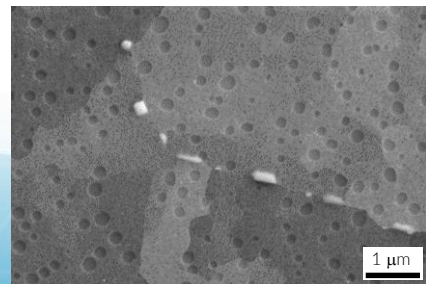
MICROSTRUCTURE



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



As-printed XZ-plane microstructure for the same conditions



Microstructure after final heat treatment