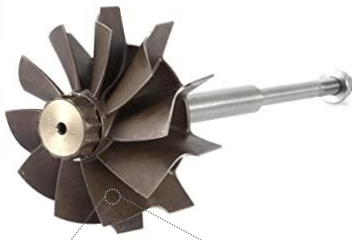


ABD[®]-1050CC

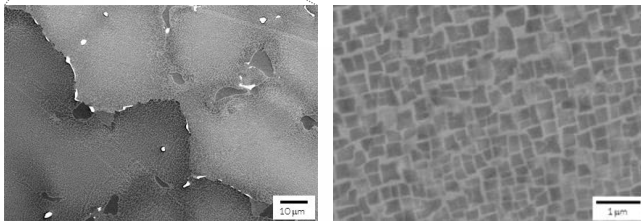
Nickel-based superalloy for investment casting

Material Overview

A highly creep and oxidation resistant nickel-based superalloy designed for equiaxed castings. ABD[®]-1050CC is optimized for low alloy cost, providing near equivalent operating temperature as alloys Alloy246/247, with a working temperature range up to 1050°C in the as-cast state. Particularly suited for high temperature applications where high temperature strength, creep- and oxidation-resistance are essential, but must be achieved at economical cost.



ABD[®]-1050CC is suitable for complex equiaxed castings within the Automotive, Power, Aerospace and Space industries (e.g., turbine wheel, left)



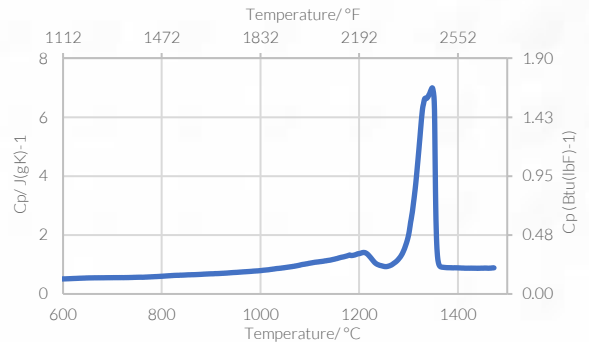
Microstructural assessment of grain boundary γ' morphology in as-cast condition

Key Material Properties

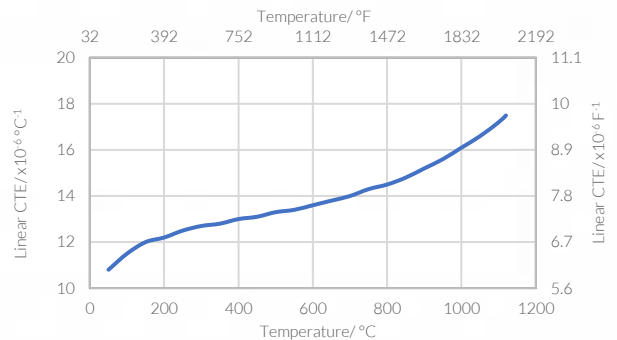
Mechanical (1000°C)	Yield strength / MPa	440
	Ultimate tensile strength / MPa	530
	Elongation at failure / %	11
	Area reduction at failure / %	18
Thermophysical (25-1200°C)	Thermal Conductivity / W(m°C) ⁻¹	9.2 – 30.2
Physical	Density / g cm ⁻³	8.2
	Melting range / °C	1260 – 1350

All measurements are for as cast alloy ABD[®]-1050CC.

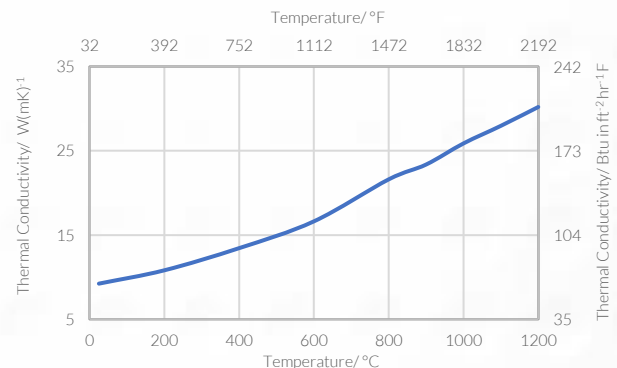
Thermophysical Properties



Specific heat (C_p) of ABD[®]-1050CC, measured according to ASTM E1269.



Linear coefficient of thermal expansion for ABD[®]-1050CC measured according to ASTM E228. Average of heating and cooling curves.

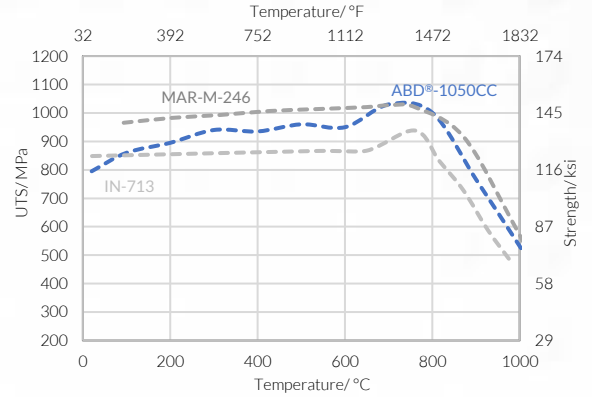
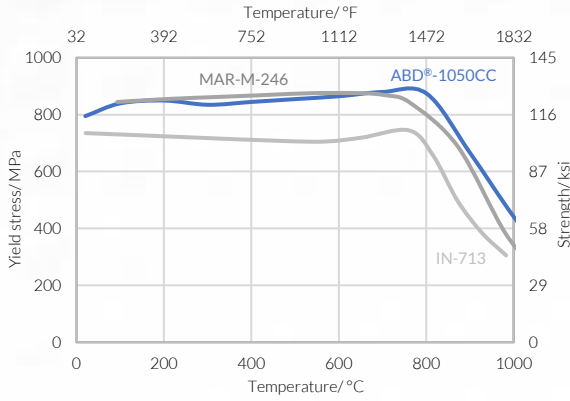


Thermal conductivity (λ) of ABD[®]-1050CC is calculated using ASTM standards from measured values of density (ρ), specific heat capacity (C_p), and thermal diffusivity (a): $\lambda = \rho C_p a$.

ABD[®]-1050CC

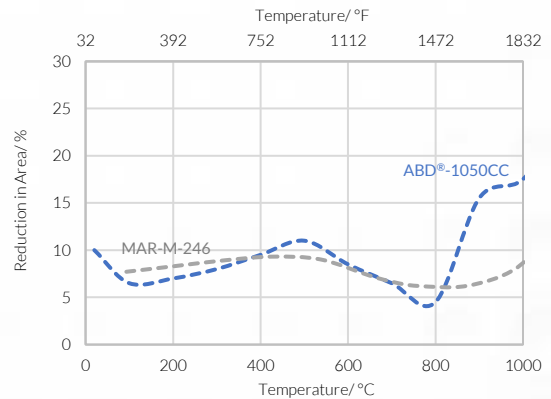
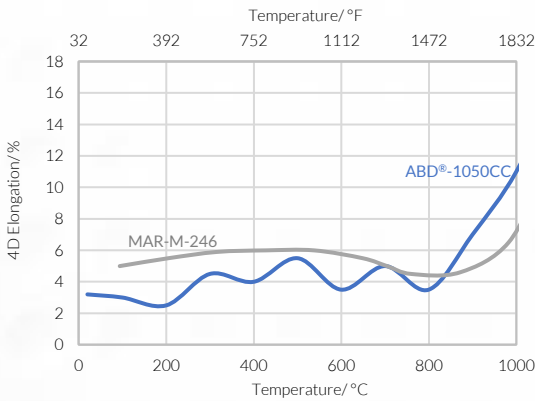
Nickel-based superalloy for investment casting

Yield Strength & Ultimate Tensile Strength



Tensile properties of as-cast ABD[®]-1050CC compared with MAR-M-246 and IN-713C, evaluated in accordance to ASTM E8/E8M-16a/E21. Yield Strength (YS) shown is R_{p0.2%} stress, Ultimate Tensile Strength (UTS) is stress at maximum force.

Tensile Ductility & Reduction Of Area

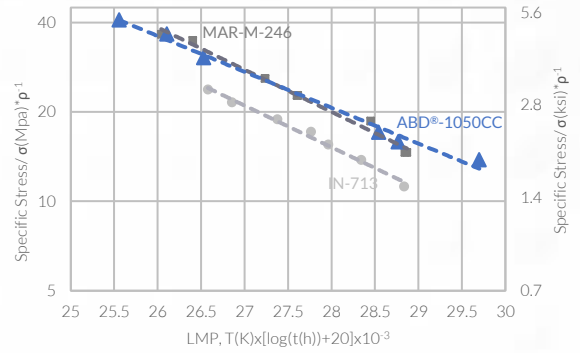
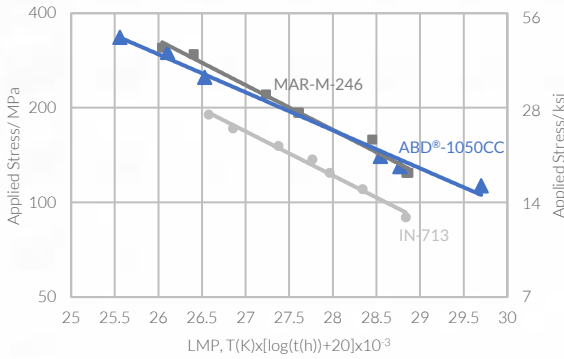


Tensile properties of as-cast ABD[®]-1050CC and MAR-M-246, evaluated in accordance to ASTM E8/E8M-16a/E21. Elongation and Area Reduction were measured after failure as per the standards.

ABD[®]-1050CC

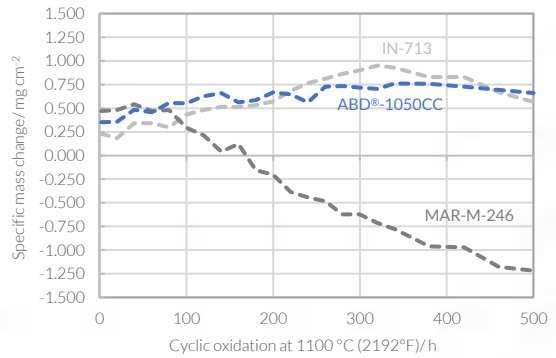
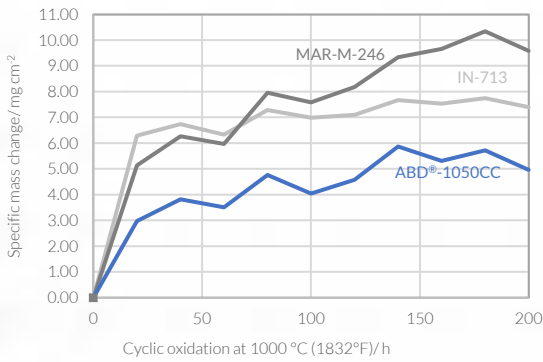
Nickel-based superalloy for investment casting

Stress Rupture Properties



Stress rupture properties of cast ABD[®]-1050CC, IN-713C, and Mar-M-246. Tested in accordance to ASTM E139. Larson-Miller Parameter evaluated with Temperature (T) in Kelvin and Time (t) in hours.

Oxidation Performance



Mass gain of cast ABD[®]-1050CC, IN-713C, and Mar-M-246 the course of cyclic oxidation in laboratory air at 1000 and 1100°C (1832 and 2192 °F).