Direct Metal Printing (DMP) - Summary Sheet

Maraging Steel 18Ni300 / 1.2709

Versatile steel with very good mechanical properties, which can be increased further with a simple age-hardening process. This steel exhibits low levels of residual stress and is the first choice for printing of particularly challenging geometry. Easy to machine, weld, polish and plate.

	As built	Age-hardened
Ultimate Tensile Strength	1100 MPa	2050 MPa
Yield Strength (Rp 0.2%)	1000 MPa	1990 MPa
Elongation at break	10%	4%
Hardness	35 HRc	54 HRc

Stainless Steel 316L / 1.4404

Highly corrosion resistant austenitic stainless steel. Suitable for a wide range of applications including medical, food processing and marine. Low magnetic permeability.

	As built
Ultimate Tensile Strength	630 MPa
Yield Strength (Rp 0.2%)	470 MPa
Elongation at break	40%
Hardness	95 HRb

Inconel 718 / 2.4668

Heat and corrosion resistance nickel alloy with good tensile and fatigue properties at temperatures up to 650^{o}C. Mechanical properties can be increased with age-hardening (AMS 5662 / 5664). Commonly used for applications in motorsport, aerospace, and Oil and Gas industries.

	As built	Age-hardened	Age-hardened, tested 649^{o}C
Ultimate Tensile Strength	970 MPa	1370 MPa	1120 MPa
Yield Strength (Rp 0.2%)	610 MPa	1120 MPa	920 MPa
Elongation at break	31%	12%	14%
Hardness	30 HRc	47 HRc	

Cobalt Chrome

Cobalt-chrome-molybdenum based super alloy, offering very high corrosion, temperature and wear resistance. Commonly used in bio-medical applications and for components requiring high strength at temperatures up to 1000^{o}C. Product can be stress relieved at high temperature (1150^{o}C) to reduce levels of residual stress.

	As built	Stress Relieved
Ultimate Tensile Strength	1200 MPa	1100 MPa
Yield Strength (Rp 0.2%)	800 MPa	600 MPa
Elongation at break	24%	20%
Hardness	40 HRc	40 HRc

All mechanical properties quoted are typical values achieved with components optimised for the process. Tensile testing according to ISO6892-1 at 20^{o}C and ISO6892-2 at 649^{o}C. Test pieces built vertically and machined to 5mm diameter neck.

For more information please contact our metal printing specialists on **08450 514 900** or crdm@3dsystems.com

CRDM LTD WYCOMBE SANDS, LANE END ROAD, HIGH WYCOMBE, BUCKS, HP12 4HH **www.crdm.co.uk**

CRDM ENGINEERING SUCCESS