

forAM[®] 420 20-53 GA

Martensitic Stainless Steel powder for Additive Manufacturing

forAM 420 GA is a nitrogen gas atomized, good flowable spherical powder for additive manufacturing. It is a general-purpose medium carbon-chromium hardenable martensitic steel with good strength and good corrosion resistance in mild environments. It is capable of being through hardened up to 50HRC by air-cooling in medium and small sections.

Typical applications are cutting utensils, surgical and dental instruments, molds and multi-purpose tools.

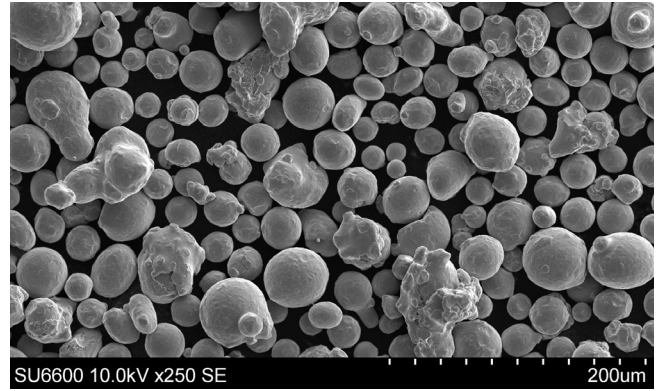
Equivalent materials:

- » 1.4021/1.4028
- » SAE 51420
- » AISI 420

For more information on forAM product line and other of Höganäs products, please contact your local sales representative.

Powder properties

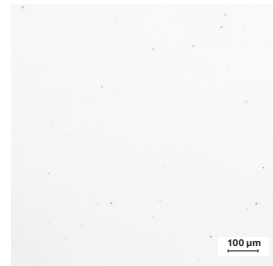
Chemical composition, (typical values)	
Element	Content, %
Cr	12.5
Mn	1.2
Si	0.5
C	0.23
O	0.06
Fe	Balance



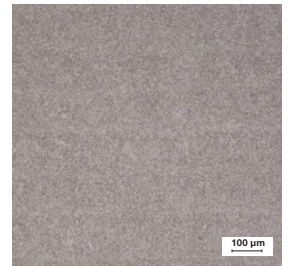
Typical powder properties		
Nominal particle range	20-53 µm (max 8% under-, max 5% oversize)	MPIF05, ASTM B214, ISO4497
Hall flow	15 s/50 g	MPIF03, ASTM B213, ISO4490
Apparent density	4.1 g/cm ³	MPIF04, ASTM B212, ISO3923/1

Mechanical properties

Surface condition is machined			
Heat treatment	SR200 ⁽¹⁾	SR650 ⁽²⁾	QT200 ⁽³⁾
Printed in Z-direction – Build direction			
UTS (MPa)	1,840	1,040	1,860
YS (MPa)	1,240	860	1,470
Elongation (%)	10	16	8
IE Notch in Y direction (J)	23		38

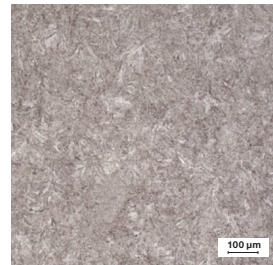


As polished

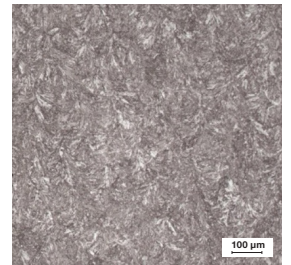


QT200 – Build direction

Heat treatment	SR200 ⁽¹⁾	SR650 ⁽²⁾	QT200 ⁽³⁾
Printed in X/Y-direction – Perpendicular			
UTS (MPa)	1,920	1,070	
YS (MPa)	1,330	870	
Elongation (%)	12	16	
IE Notch in Z direction (J)			
Hardness (HRC)	50	32	48



SR200 – Build direction



SR650 – Build direction

(1) Stress relieved at 200 °C in air

(2) Stress relieved at 650 °C in Ar

(3) Quenched and Tempered – Austenitized at 980 °C in Ar followed by oil quench, Tempered at 200 °C in air

Standard packaging:

20 kg (4x5 kg, 1 L PE bottles packed in cardboard box)

(Other tailored particle sizes, and packaging eg. 200 kg / 500 kg Flexbag, are available under conditions)