



## forAM Al-HS1 20-63 GA

Aluminium alloy powder for additive manufacturing

**forAM Al-HS1 GA** is a novel precipitation hardening Al alloy specifically developed for LPBF process. Gas atomized powder has good flowability and spreadability. It is a medium to high strength aluminium alloy that can be direct aged after printing to achieve high strength and hardness. The ageing treatment provides dimensional stability that also allows a high operating temperature.

### Equivalent materials:

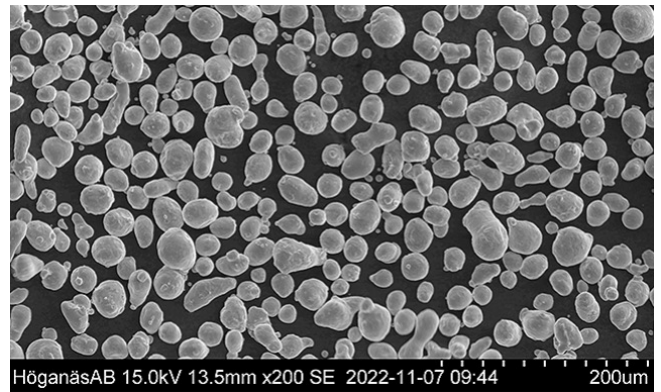
» No directly comparable materials

Scan the QR code for more information about the forAM product line and other Höganäs products.



## Powder properties

Chemical composition, (typical values)	
Element	Content, %
Al	Balance
Mn	4.8
Cr	0.8
Zr	0.8



Typical powder properties		
Nominal particle range	20-63 µm (max 5% over and under size)	MPIF05, ASTM B214, ISO4497
Carney flow	15 s/50 g	MPIF03, ASTM B964, ISO4490
Apparent density	1.40 g/cm <sup>3</sup>	MPIF04, ASTM B212, ISO3923/1
Tap density	1.76 g/cm <sup>3</sup>	ISO 3953

## Mechanical properties

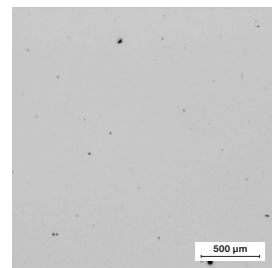
Surface condition is machined <sup>(1)</sup>		
Heat treatment	As-printed <sup>(2)</sup>	Direct aged <sup>(3)</sup>
Printed in Z-direction – Build direction		
UTS (MPa)	280	430
YS (MPa)	220	350
Elongation (%)	24	12

Heat treatment	As-printed <sup>(2)</sup>	Direct aged <sup>(3)</sup>
Printed in X/Y-direction – Perpendicular		
UTS (MPa)	290	440
YS (MPa)	220	360
Elongation (%)	24	12
Hardness (HV10)	98	147

(1) All tensile test bars are machined from cylindrical bars printed with 60 µm layer thickness

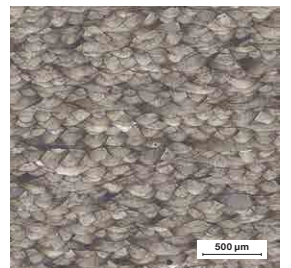
(2) As-printed condition

(3) Direct aged by ageing at: 375 °C for 6h in air



As-polished

↑  
Build direction



Etched – As-printed condition

**Etching in Flicks reagent**  
100 ml H<sub>2</sub>O + 1 ml HF

## Standard packaging:

10 kg, 10L PE drum filled with Ar protective gas

(Other tailored particle sizes and packaging are available under conditions)