A5083-RAM2

(High strength, no heat treatment required)

Product

Elementum 3D's A5083-RAM2 is a high strength aluminum alloy with excellent printability, good corrosion resistance, and no post build heat treatment requirement. The material also has exceptionally consistent properties with minimal property variation with print orientation or following stress relief. Printed A5083-RAM2 has significantly greater strength than even work hardened wrought 5083 aluminum.

Properties

Nominal composition: A5083 (Al-4.5Mg-0.15Cr-0.7Mn) with 2% RAM Additives
Theoretical maximum density: 2.69 g/cm³
Printed relative density: >99.5%
Hardness: 62.7 HRB
Elastic modulus: 74.7 GPa
Deposition rate: 7.2 mm3/s

Tensile properties for A5083-RAM2[1]

Condition	Ultimate Tensile Strength (ksi/MPa)	Yield Strength (ksi/MPa)	Elongation (%)	Elastic Modulus (Msi/GPa)[2]
As Built	61 ±3/421 ± 21	52 ±4/359 ±28	15 ±3	10.8/74.7

Surface roughness A5083-RAM2[3]

Angle	Upskin		Downskin	
Deg. °	Ra µm	Ra µin	Ra µm	Ra µin
0	7.6 ± 0.3	298 ± 11	-	-
40	8 ± 0.1	317 ± 2	14.5 ± 0.6	571 ± 23
45	8.1 ± 0.4	317 ± 15	13.3 ± 1.0	522 ± 39
50	7.4 ± 0.3	292 ± 14	12.4 ± 0.2	488 ± 8
90 (vertical)	10.1 ± 0.6	396 ± 26	9.4 ± 1.0	369 ± 39

All stated values are average values calculated from limited data sets.
[1]Tested according to ASTM E8, average values and standard deviations for 30 vertical and 6 horizontal tensile bars in the as-built condition and 6 horizontal bars in the as-built condition. [2]ASTM E494-15, [3]surface roughness determined by stylus profilometry for 40 μm layer thickness parameters developed on an EOS M290

All details given above are our current knowledge and experience, and are dependent on the equipment, parameters, and operating conditions. The data provided in this document is subject to change and only intended as general information on a material set that is continually improving and developing. The data does not provide a sufficient basis for engineering parts. All samples were produced on an EOS M290. All tensile tests were performed at third party certified test labs such as Westmoreland Mechanical Testing & Research and Product Evaluations Systems.

Please contact us at sales@elementum3d.com for additional information.