



CMG Technologies
Unit 11, Thompson Drive,
Base Business Park, Rendlesham,
Woodbridge, Suffolk, IP12 2TZ,
United Kingdom
Tel + 44 (0) 1394 445 100
Fax + 44 (0) 1394 445 109
Email sales@cmgtechnologies.co.uk
www www.cmgtechnologies.co.uk

Date: 23/03/2023

Version No. 1.1

Technical Data Sheet: CMG Tech-X 316L HMs metal filament for 3D printing

Description

316L is a stainless steel with high corrosion resistance. CMG Tech-X 316L HMs filament is a high flexibility metal-polymer composite containing more than 90 percent by weight fine metal powder, allowing printing of parts with high quality surface. Filaments are available in 1.75 mm and 2.85 mm diameters. Parts printed with CMG Tech-X 316L HMs filament have successfully been used in applications such as housed waterjet turbine propellers for a two-metre boat, threaded nuts for screwing jet units into boat, glider eyes for blinds operated electrically and assembled parts for use in electromagnetic shielding application.



Fig. 1: Sintered waterjet turbine propellers for a two-metre boat printed with CMG Tech-X 316L HMs filament.

Scaling factor

Typical values:

x-y: 118%

z: 117%

Range: 116-121% depending on printing parameters, build direction, part size, part geometry and sintering conditions



CMG Technologies
Unit 11, Thompson Drive,
Base Business Park, Rendlesham,
Woodbridge, Suffolk, IP12 2TZ,
United Kingdom
Tel + 44 (0) 1394 445 100
Fax + 44 (0) 1394 445 109
Email sales@cmgtechnologies.co.uk
www www.cmgtechnologies.co.uk

Shelf life

6-12 months if properly stored. Keep away from moisture. Store in a dry and clean place at room temperature.

Typical printing parameters:

Nozzle temperature: 120-160 °C, typical 140-160 °C (direct drive printers) & 150-160 °C (Bowden tube printers)
Print bed temperature: 20-30 °C

Debinding & Sintering

Debinding:

At CMG Technologies or with appropriate debinding station. Debinding is carried out in acetone at 42 °C with weight loss of 5-6 %. Typical debinding time is 24-72 hours depending on size of part, wall thickness and infill %.

Sintering:

At CMG Technologies or with appropriate sintering furnace. Sintering can be carried out at up to 1265 °C for 1-2 hours in H₂ atmosphere with backbone polymer removal at 600 °C. Backbone polymer removal should be carried out under overpressure or vacuum for bright sintered parts.

Typical properties:

All measurements were carried out by external analytical labs. Mechanical property, hardness and density measurements are in accordance with ASTM A370, ASTM E18, and RP146, respectively. All test specimens were printed flat in x-y printing direction.

Property	As-sintered
Yield strength, 0.2% offset (MPa)	160-300
Tensile strength (MPa)	350-550
Elongation (%)	25-32
Hardness, HRB	55-80
Density (g/cm ³)	7.2-7.6

Any information supplied above are general recommendations and shall be used for informational and guidance purposes only. No information shall be used for other purposes without agreement with customer.