BAKER INDUSTRIES

Stainless Steel CX

MATERIAL DATA SHEET

Stainless Steel CX is a corrosion resistant iron based powder used in the DMLS process. Stainless Steel CX is a tooling grade steel characterized having a good corrosion resistance combined with high strength and hardness.

This material is intended for:

- Injection molding tools and tool parts
- other industrial applications where high strength and hardness are required

Parts built from Stainless Steel CX can be machined, shot-peened and polished in as-built or heat treated status.

General process data

Layer thickness	30 µm
Volume rate [1]	3.2 mm³/s (11.5 cm³/h)

Physical & chemical properties of parts

Material composition	Fe (Balance)	Mo (1.10 - 1.70%)	Si (≤ 0.40%)
	Cr (11 - 13%)	Al (1.2 - 2%)	C (≤ 0.05%)
	Ni (8.4 - 10%)	Mn (≤0.40%)	
Part density	7.7 g/cm³		
Surface roughness, - *after shot peening* [2]	Ra (5) µm Rz (26) µm		

Mechanical properties of parts at room temp. [3]

	as built	*heat treated* [5]
Ultimate tensile strength [4]	1080 MPa	1760 MPa
Yield strength (Rp 0.2 %) [5]	840 MPa	1670 MPa
Elongation at break [5]	14 %	7 %
Hardness [6]		51 HRC

[1] The volume rate is a measure of build speed during laser exposure of the skin area. The total build speed depends on this volume rate and many other factors such as exposure parameters of contours, supports, up and down skin, re-coating time, Home-In or LPM settings

[2] The numbers were measured at the horizontal (up-facing) and all vertical surfaces of test cubes using a perthometer. Due to the layer-wise building the roughness strongly depends on the orientation of the surface, for example sloping and curved surfaces exhibit a stair-step effect.

[3] The numbers are average values and are determined from samples with horizontal and vertical orientation.

[4] Tensile testing according to ISO 6892-1:2009 (B) Annex D, proportional test pieces, diameter of the neck area 5 mm (0.2 inch), original gauge length 25 mm (1 inch).

[5] Heat treatment procedure:
1. Solution Anneal 1h @ 900°C, Rapid Air Cool (RAC) to Room Temperature
2. Aging 3h @ 530°C

[6] Rockwell hardness [HRC] measurement according to EN ISO 6508-1.