

# ECOPARTS

ADDITIVE METAL SOLUTIONS

EOS StainlessSteel CX  
**Material Data Sheet**

# EOS StainlessSteel CX

## Combines Corrosion Resistance with High Strength and Hardness

EOS StainlessSteel CX is a tooling grade steel characterized by having a good corrosion resistance combined with high strength and hardness. Parts built from EOS StainlessSteel CX can be machined, shot-peened and polished in as manufactured or heat treated state.

### Main Characteristics:

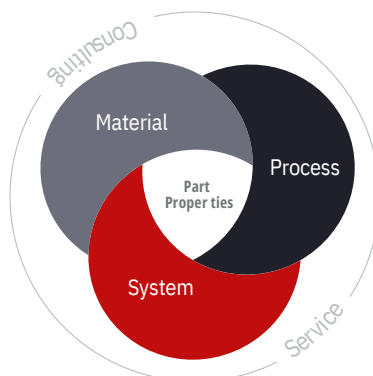
- Stainless steel with excellent corrosion resistance combined with high strength and hardness
- The parts are easily machinable and offer excellent polishability
- The parts offer excellent wear and fatigue resistance

### Typical Applications:

- Plastic injection molding tools and tool parts for demanding applications
- Rubber molding tools and tool parts
- Molding tools and tool parts for corrosive plastics
- Other industrial applications where high strength and hardness are required

### The EOS Quality Triangle

EOS uses an approach that is unique in the AM industry, taking each of the three central technical elements of the production process into account: the system, the material and the process – together simply described as the Quality Triangle. EOS focuses on delivering reproducible part properties for the customer.



All of the data stated in this material data sheet is produced according to EOS Quality Management System and international standards.

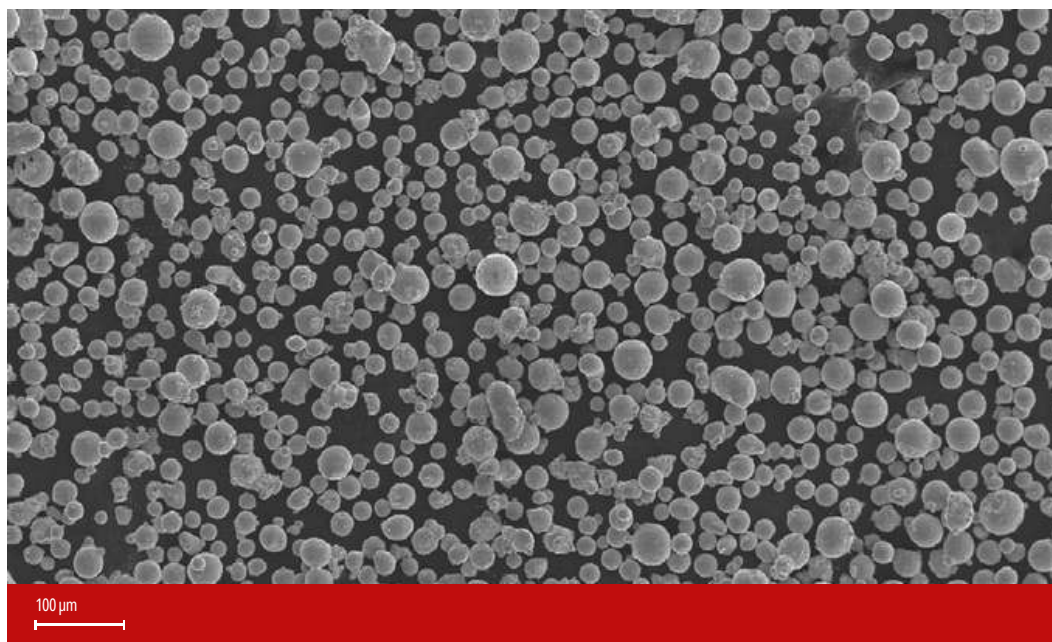


## Powder Properties

Powder chemical composition (wt.-%)		
Element	Min.	Max.
Fe	Balance	
Cr	11.00	13.00
Ni	8.40	10.00
Mo	1.10	1.70
Al	1.20 –	2.00
Mn	--	0.40
Si		0.40
C		0.05

Powder particle size	
Generic particle size distribution	20 – 65 µm

SEM image of EOS StainlessSteel CX powder.



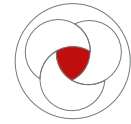


## Process Information

System set-up	EOS M 290
EOS ParameterSet	M 290 CX 030 V1 C X _ 0 30 _
EOSPAR name	HiPerM291_10 0
Software requirements	EOSPRINT 2.3 or newer EOSYSTEM 2.8 or newer
Powder part no.	9 011-0 0 37
Recoater blade	EOS ceramic blade
Nozzle	EOS grid nozzle
Inert gas	Argon
Sieve	63 $\mu\text{m}$

### Additional information

Layer thickness	30 $\mu\text{m}$
Volume rate	3.2 $\text{mm}^3/\text{s}$
Min. wall thickness	Approx. 0.4 mm
Typical dimensional change after HT (for parts $\varnothing$ 50 mm)	0.1 %



## Heat Treatment

EOS StainlessSteel CX can be heat treated to match various needs of different applications. The two step heat treatment can be performed under vacuum or inert gas atmosphere. First step is solution annealing to minimize amount of austenite in the martensitic matrix. The needed hardness and strength is achieved through aging treatment where precipitation hardening takes place.

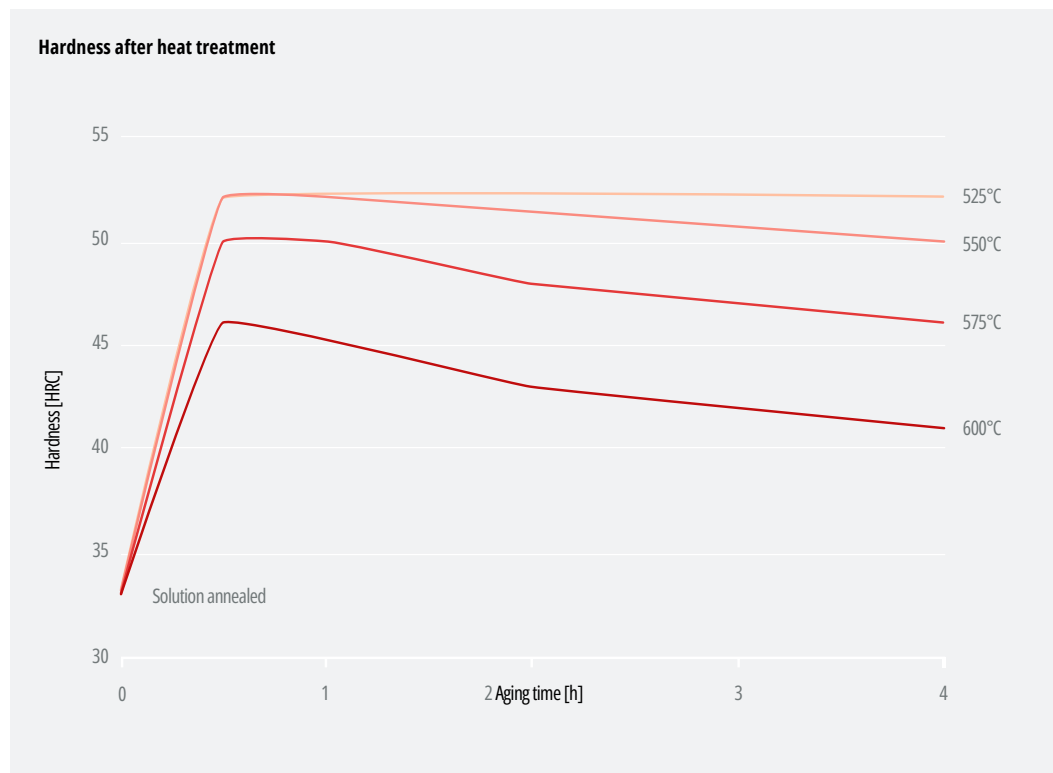
### Solution Annealing:

30 minutes at 850 °C ( $\pm 10$  °C) measured from the part followed by rapid air cooling to room temperature (below 32 °C). Cooling rate 20-60 °C/min. Reaching room temperature before starting aging treatment is required to achieve desired microstructure.

### Aging:

For peak hardness and strength 2 h at 525 °C ( $\pm 10$  °C) measured from the part followed by air cooling. Mechanical properties presented in this document achieved through this aging procedure.

If lower hardness and improved toughness is required aging temperature can be increased according to figure below.



# IHR INDUSTRIEPARTNER FÜR ADDITIV GEFERTIGTE BAUTEILE

Wir «drucken» (3D Druck von Metall) Ihre Bauteile und liefern Ihnen diese inklusive der kompletten mechanischen Nacharbeit. Unser Fertigungsprozess garantiert eine hohe Qualität und Reproduzierbarkeit. Mit unserer Erfahrung unterstützen und beraten wir Sie gerne in der Konstruktion für den additiven Fertigungsprozess.



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