PROCESS DATA SHEET

EOS Steel 42CrMo4 for EOS M 290 I 40/80 µm

EOS M 290 - 40/80 µm - TRL 3

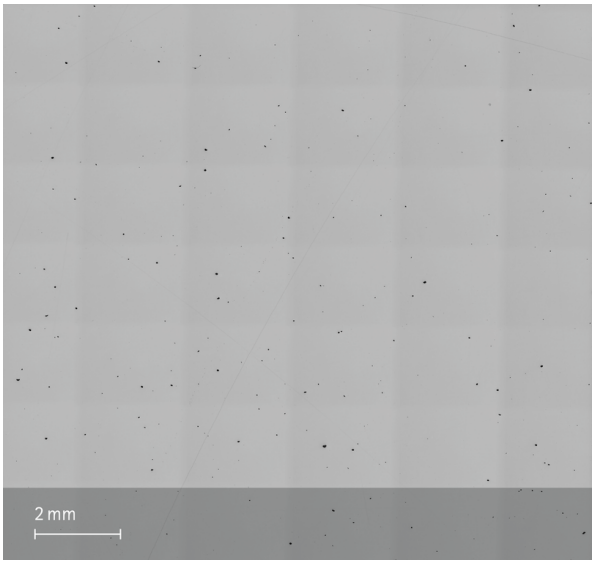
Process Information Metal

This process product is optimized for flexible and fast production of 42CrMo4 parts with EOS M 290. The parameter set has three different layer thickness options that can all be utilized within the same build: 40µm, 80 µm and 40/80 µm SkinCore. Both can be used separately for different parts or combined by using 40/80 µm Skin with faster 80 µm for the core of the part and higher quality 40 µm building for the surface of the part with defined thickness. Sectionioning parts in vertical direction for different parameters is also possible.

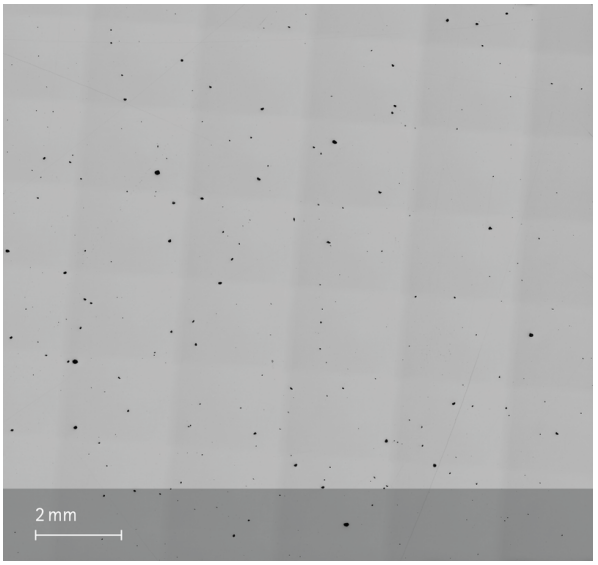
System Setup	**EOS M 290**
EOS Material set	42CrMo4_040_080_CoreM291
Powder Product No.	9030-0026
Required Software Plan	EOS BUILD
Software Requirements	EOSPRINT 2.13 or newer EOSYSTEM 2.17 or newer
Recoater Blade	Ceramic
Nozzle	EOS Grid Nozzle
Inert gas	Nitrogen
Sieve	90 µm

Additional Information	
Layer Thickness	40 µm, 80 µm, 40/80 µm
Volume Rate	4.2 - 7.68 mm³/s
Typical Dimensional Change after HT [%]	+ 0.2 % %

Chemical and Physical Properties of Parts



Micrograph of polished surface, 40 µm as manufactured



Micrograph of polished surface, 80 µm as manufactured

Microstructure of the Produced Parts

Defects	Thickness	Result	Number of Samples
Average Defect Percentage	40 µm	< 0.1 % %	-
Average Defect Percentage	80 µm	< 0.2 % %	-

Defect% varies with platform position.

Mechanical Properties

Mechanical Properties Heat Treated

EN ISO 6892-1 Room Temperature | 40 µm	Yield Strength [MPa]	Tensile Strength [MPa]	Elongation at Break A [%]	Reduction of Area Z [%]	Modulus of elasticity [GPa]	Number of Samples
Vertical	1185	1245	12	-	-	-
Horizontal	1180	1240	12	-	-	-

Tempered at 550 °C

Mechanical Properties Heat Treated

EN ISO 6892-1 Room Temperature | 80 µm	Yield Strength [MPa]	Tensile Strength [MPa]	Elongation at Break A [%]	Reduction of Area Z [%]	Modulus of elasticity [GPa]	Number of Samples
Vertical	1170	1230	11	-	-	-
Horizontal	1170	1230	11	-	-	-

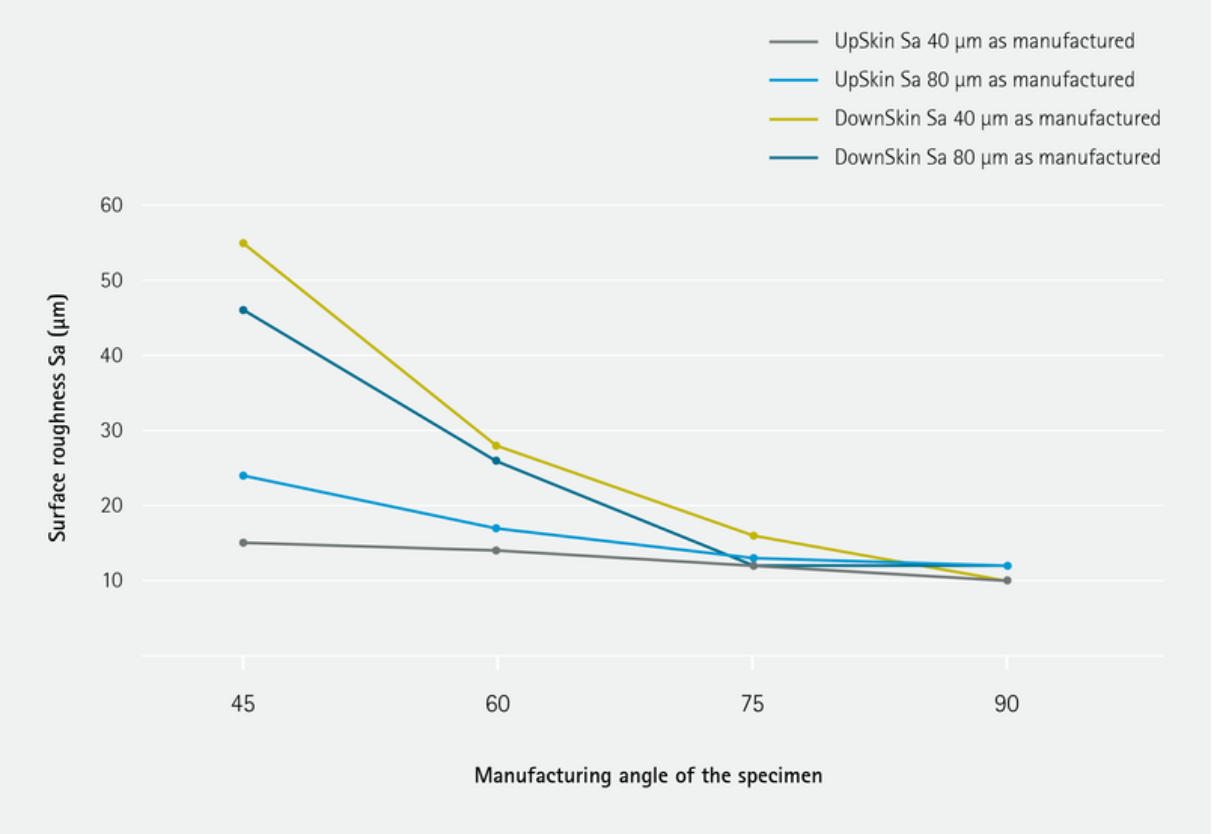
Tempered at 550 °C

Impact Toughness

EN ISO 148-1, Charpy-V Heat Treated	
Typical Impact Toughness [J]	Vertical: 56 Horizontal: 48
Layer Thickness	40 µm

EN ISO 148-1, Charpy-V Heat Treated	
Typical Impact Toughness [J]	Vertical: 47 Horizontal: 58
Layer Thickness	80 µm

Surface Roughness



HEADQUARTERS

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