

Comparison of 3D Printed Steel and Traditional Moulding Steel

Steel Properties	Traditional Molding Steel					3D Printed Steel	
	1.2344	1.2343 (H13)	8407 (SKD61)	1.2083 (420)	STAVAX ESR (S136)	1.2709 (MS1)	Stain-less Die Steel CX
Yield Strength <Rp0.2%><Mpa>	1400	1400	1520	1450	1360	1930	1600
Tensile Strength<Mpa>	1600	1600	1820	1780	1780	2000	1750
Elastic Modulus<Gpa>	210	215	210	210	190	200	200
Hardness<HRC>	52 -54	52-54	52 -54	48 -52	52 -54	48 -52	48-51
Density<g/cm ³ >	7.8	7.8	7.8	7.74	7.8	8	8
Thermal Expansion Coefficient<m/mk>	12.6x10 ⁻⁶	11.3x10 ⁻⁶	12.6x10 ⁻⁶	11x10 ⁻⁶	11x10 ⁻⁶	10.3x10 ⁻⁶	11.7x10 ⁻⁶
Thermal Conductivity <W/m°C>	25	25	25	20	20	20	20
Corrosion Resistance	Regular	NO	NO	YES	YES	Regular	YES
Anti-rust Performance	Regular	Regular	Regular	YES	YES	Regular	YES

Materials Benchmarking Selection 1.2709:
 1.2343/ 1.2344/ H13/ SKD61/ 8407
 CX mold steel: 1.2803/ 420/ STAVAX ESR (S136)