

Materials	CNC MACHINED MATERIALS STARTING FROM STOCK													3D PRINTING			3D PRINTING			3D PRINTING			3D PRINTING			3D PRINTING						
	Non-ferrous alloys						Carbide grades				Plastics			HP S210 MJF technology			HP S210 MJF technology			HP S210 MJF technology			LED MSLA + 4K/8K/16K technology			Fused Deposition Modeling technology						
	Aluminum 7075 T6 Ergal	Aluminum 6082 Anodicodur	Aluminum 5083 Permalum	OT58 Brass (Cu80, Ni, Cu, Zn39Pb3, UNS J103)	C101 Copper (UNS, C11000, CW504A)	CuSn12 Bronze	C45 Steel (EN, A3, 1045)	Steel 39 (DIN/SAE/EN 10083-3)	Steel 18NiCrMo5	Stainless Steel 316L	Stainless Steel 304	Nylon 6 + MoS2 (Polyamide 6, Teflon TM)	Delrin PCM-C, acetal resin)	Nylon PA12 classic	Nylon PA12 performance	Nylon PA12 top mechanical	Nylon PA11 classic	Nylon PA11 performance	Nylon PA11 top mechanical	Polypropylene PP classic	Polypropylene PP performance	Polypropylene PP top mechanical	Resin ABS like classic	Resin ABS like performance	Resin ABS like top mechanical	Nylon PA12 + Carbon Fibers Classic	Nylon PA12 + Carbon Fibers Performance	Nylon PA12 + Carbon Fibers Top mechanical				
Natural color	light grey	light grey	light grey	yellow	reddish yellow	dark yellow	light grey	light grey	light grey	light grey	black	white	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey				
Available finishes	Anodizing, Lances® shot peening	Anodizing, Lances® shot peening	Anodizing, Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Lances® shot peening	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.	Black, blue, red, green, white. In RAL paint and dye colors.					
Density	2.88 g/cm³	2.70 g/cm³	2.66 g/cm³	8.40 g/cm³	8.91 g/cm³	8.60 g/cm³	7.87 g/cm³	7.85 g/cm³	7.85 g/cm³	8.00 g/cm³	1.15 g/cm³	1.41 g/cm³	1.01 g/cm³	1.01 g/cm³	1.05 g/cm³	1.05 g/cm³	1.05 g/cm³	0.89 g/cm³	0.89 g/cm³	0.89 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³	1.20 g/cm³				
Max workable size	496x496x400 mm (19.5x19.5x15.7 in)	496x496x400 mm (19.5x19.5x15.7 in)	496x496x400 mm (19.5x19.5x15.7 in)	300x300x300 mm (11.8x11.8x11.8 in)	300x300x300 mm (11.8x11.8x11.8 in)	300x300x300 mm (11.8x11.8x11.8 in)	260x260x200 mm (10x10x7.8 in)	260x260x200 mm (10x10x7.8 in)	260x260x200 mm (10x10x7.8 in)	110x110x300 mm (4.3x4.3x11.8 in)	110x110x300 mm (4.3x4.3x11.8 in)	150x150x150 (5.9x5.9x5.9 in)	150x150x150 (5.9x5.9x5.9 in)	380x294x380 mm (15x11.2x15 in)	380x294x380 mm (15x11.2x15 in)	380x294x380 mm (15x11.2x15 in)	380x294x380 mm (15x11.2x15 in)	380x294x380 mm (15x11.2x15 in)	250x250x250 mm (7.87x7.87x7.87 in)	250x250x250 mm (7.87x7.87x7.87 in)	250x250x250 mm (7.87x7.87x7.87 in)	250x150x90mm (9.84x5.9x3.5 in)	250x150x90mm (9.84x5.9x3.5 in)	250x150x90mm (9.84x5.9x3.5 in)	300x300x600mm (11.8x11.8x23.6 in)	300x300x600mm (11.8x11.8x23.6 in)	300x300x600mm (11.8x11.8x23.6 in)					
Applications	High strength aerospace alloy: gears, shafts, microblade and blades frames, spurs, aerospace applications, naval engines, moulds.	Light alloy with excellent mechanical properties, and very good corrosion resistance: industrial components, load bearing elements.	Very good resistance to corrosion and oxidation, toughness. For parts which require a good mechanical strength, and improved fatigue resistance.	Good corrosion and mechanical resistance: shafts, transmission parts, propellers, condenser plates, valves, pins and decorative elements.	Oxygen free copper, high electric and thermal conductivities. Moderate resistance to corrosion: bus bars, automotive components, home appliances.	Good corrosion resistance: pumps, bodies, valves, friction wearing and high pressure bearing parts.	Resistance and toughness. It is suitable for the construction of hard and tough mechanical organs such as shafts, pins, gears, mold holders and under-molds.	Tenacity and hardness, resistance to fatigue. For heavily stressed parts, crankshafts, axle shafts, surge gears.	For parts with high mechanical and chemical properties and high surface hardness conferred by cementing + hardening: gears, shafts, bushings, plastic molds with high surface hardness.	Very good corrosion resistance: materials for external construction in coastal areas. Marine and food industry equipment.	Household and industrial applications such as food handling and processing equipment, screws, machinery parts, utensils and car headsets. It is also used in the architectural field by exterior accents.	The addition of the solid lubricant Molybdenum Sulphide makes it an excellent choice for the manufacturing of bearings, pulleys, rolls, wheels, gears, valve seats, seals.	Excellent mechanical properties, low moisture absorption, chemical inertness, and dimensional stability. Can be used in a wide range of temperatures.	Strong thermoplastic for functional prototyping and final parts. Excellent chemical resistance to oils, greases and hydrocarbons. Optimal for post finishing processes. USP Class I/II and US FDA guidance for impact. (See Surface Devices, RoHS II REACH, PAHs, UL 94, UL 746A, Statement of Composition for Toy Applications).	For functional prototypes and final parts in the automotive and consumer electronics sectors. Excellent impact and fatigue resistance for parts that require hundreds of opening and closing cycles. It can replace injection parts. Resistant to hydrocarbons and oils. UL 94HB.	Lightweight material for prototypes, automotive interiors, fuel tubes and tanks, machine parts, medical equipment and cosmetics.	It offers a great level of detail, extremely smooth surfaces and due to its technical characteristics it replaces ABS in many applications. Excellent for prototypes or functional parts in the automotive and mechanical fields.	Great for functional prototypes and final components. Good chemical resistance with outstanding rigidity thanks to the addition of the chopped carbon fibers.														
Best tolerance	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.10	± 0.10	± 0.30mm under 100mm ±0.3% above 100mm	± 0.50mm under 100mm ±0.5% above 100mm	± 0.50mm under 100mm ±0.5% above 100mm	± 0.50mm under 100mm ±0.5% above 100mm	± 0.50mm under 100mm ±0.5% above 100mm	± 0.60mm under 100mm ±0.6% above 100mm	± 0.60mm under 100mm ±0.6% above 100mm	± 0.60mm under 100mm ±0.6% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm	± 0.20mm under 100mm ±0.25% above 100mm					
Yield strength (MPa)	434-503	230-360	110-130	340-550	180-320	140-150	280-370	540-785	635-980	290-320	280-290	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Tensile strength (MPa)	510-572	310-385	275-350	360-600	220-410	140-280	480-700	780-1080	900-1200	570-620	520-540	55-80	65-70	42-46	46-50	50-64	44-46	49-52	52-56	30-32	34-36	37-39	44-48	48-52	52-54	55-58	59-61	64-65				
Young modulus (GPa)	72	69	72	97	120	118	220	205	190	200	190	3	3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Elongation at break (%)	5-11	10-11	10-16	6-20	6-50	5-12	20-22	11-13	13-16	50-55	65-70	50-100	25	12	15	19	31	35	39	20	22	24	14	16	17	1.8	1.9	1.8				
Brinell hardness	150	100	75	90-160	90	80	175-230	250-285	200-225	215-225	120-130	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Melting point [°C]	635	645	570	875	1083	1000	1550	1580	1643	1435	1400	255	164	187	187	202	202	202	140	140	140	230	230	230	230	230	230	230	230	230	230	
Electrical conductivity (% IACS)	33	46	29	28	100	10	3	3	4	15	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Rockwell M hardness											M86	M94																				
HDT @ 0.45 MPa [°C]													Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	Shore D 80	
HDT @ 1.8 MPa [°C]													175	185	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Maximum operating temperature (short term) [°C]											180	145	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Maximum operating temperature (long term, 20,000 hours) [°C]											75	85	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Water absorption (50% Rh, saturation) (%)											3	0.9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

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