

Materials	CNC MACHINED MATERIALS STARTING FROM STOCK											3D PRINTING			3D PRINTING		
	Non-ferrous alloys						Carbide grades			Plastics		Plastics (with HP 5210 MJF technology)			Plastics (with 3D Systems SLS 6100 technology)		
	Aluminum 7075 T6 Ergal	Aluminum 6082 Anticorodal	Aluminum 5083 Peraluman	OT58 Brass (CW614N, Cu Zn39Pb3, UNI5705)	C101 Copper (UNS_C11000, CW004A)	CuSn12 Bronze	C45 Steel (EN8, AISI 1045)	Steel 39 (39NiCrMo3 EN10083-3)	Steel 18NiCrMo5	Nylon 6 + MoS2 (Polyamide 6, Tecast TM)	Delrin (POM-C, acetal resin)	Nylon PA12 classic	Nylon PA12 performance	Nylon PA12 top mechanical	Nylon PA11 classic	Nylon PA11 performance	Nylon PA11 top mechanical
V3.2 Weerg 11/03/2020																	
Color	light grey	light grey	light grey	yellow	reddish yellow	dark yellow	light grey	light grey	light grey	black	white	grey, black			white and other 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	1,15 g/cm³	1,41 g/cm³	1,01 g/cm³			1,02 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)	150x150x150 mm (5.9x5.9x5.9 in)	150x150x150 mm (5.9x5.9x5.9 in)	380x284x380 mm (15x11.2x15 in)			335x285x457 mm (13.2x11.2x18 in)		
Applications	High strenght aeronautic alloy: gears, shafts, motorcycle and bikes 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 strenght, and improved fatigue resistance.	Good corrosion and mechanical resistance: shafts, transmission parts, impellers, 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 hardenability, resistance to fatigue, vibrations and twists. For heavily stressed parts, crankshafts, axle shafts, large gears.	For parts with high mechanical properties and high surface hardness conferred by cementing – hardening: gears, pins, bushings, plastic molds with high surface hardness.	The addition of the solid lubricant Molybdenum Sulphide makes it an excellent choice for the manufacturing of bushings, 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-VI and US FDA guidance for Intact Skin Surface Devices, RoHS,11 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.		
Best tolerance	± 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			± 0,30mm under 100mm ±0,3% above 100mm		
Yield strenght [MPa]	434-503	230-360	110-130	340-550	180-320	140-150	280-370	540-785	635-980	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Tensile strenght [MPa]	510-572	310-385	275-350	360-500	220-410	140-280	480-700	780-1080	900-1200	55-80	65-70	44	48	53	40	45	51
Young modulus [GPa]	72	69	72	97	120	118	220	205	190	3	3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Elongation at break [%]	5-11	10-11	12-16	6-20	6-50	5-12	20-22	11-13	13-16	50-100	25	12	15	19	48	56	64
Brinell hardness	150	100	75	90-160	90	80	175-230	250-285	200-225	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	255	164	187	187	187	N.D.	N.D.	N.D.
Electrical conductivity (% IACS)	33	46	29	28	100	10	3	3	4	0	0	0	0	0	0	0	0
Rockwell M hardness										M86	M94	N.D.	N.D.	N.D.	Shore D 76		
HDT @ 0.45 MPa [°C]										160	165	175	175	175	193		
HDT @ 1.8 MPa [°C]										55	125	95	95	95	57		
Maximum operating temperature (short term) [°C]										180	145	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.
Water absorption (50% Rh, saturation) [%]										3	0,9	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.