Material

	CNC MACHINED MATERIALS STARTING FROM STOCK														
	Non-ferrous alloys						Iron alloys					Plastics			
	Aluminum 7075 T6 Ergal	**Aluminum 6082** Anticorodal	**Aluminum 5083** Peraluman	**Brass OT58** (CW614N, Cu Zn39Pb3, UNI5705)	**Copper C101** (UNS_C11000, CW004A)	**Bronze CuSn12**	**C45 Steel** (EN8, AISI 1045)	**CarbonSteel** (39NiCrMo3 EN10083-3)	**Steel 18NiCrMo5**	**Stainless steel 316L** (inox A4)	**Stainless steel 304**	**Nylon 6 + MoS2** (Polyammide 6, Tecast TM)	**Delrin** (POM-C, acetal resin)	**PEEK** (Polyetheretherketone)	**PTFE** (Teflon)
Natural color	grey	grey	grey	yellow	reddish yellow	dark yellow	grey	grey	grey	grey	grey	black	white	nocciola	bianco
Available finishes	Anodizing, Lancet® shot peening	Anodizing, Lancet® shot peening	Anodizing, Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	Lancet® shot peening	-	-	-	-
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	7.85 g/cm³	8.00 g/cm³	1,15 g/cm³	1,41 g/cm³	1,31 g/cm³	2,22 g/cm³
Max workable size	496x496x400 mm	496x496x400 mm	496x496x400 mm	300x300x300 mm	300x300x300 mm	300x300x300 mm	260x260x200 mm	260x260x200 mm	260x260x200 mm	110x110x300 mm	110x110x300 mm	150x150x150 mm	150x150x150 mm		
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.	Very good corrosion and chemical resistance. Heat exchangers, pipes, 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 headers. It is also used in the architectural field for exterior accents.	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.	Great for prototypes and final components alike. Amazing specific resistance, better than some non-ferrous alloys. Its chemical and thermal resistance enable use of this material in very harsh working environments. Good for mechanical components, supports, brackets carters and covers. Certified UL94 V0	It is the polymer with the lowest friction coefficient. Great chemical and thermal resistances but with low mechanical properties. Cannot be glued and it is fire resistant UL94 V0. Food contact compatible
Minimum tolerance	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,10	± 0,10	± 0,10	± 0,10
Yield strenght [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.	15
Tensile strenght [MPa]	510-572	310-385	275-350	360-500	220-410	140-280	480-700	780-1080	900-1200	570-620	520-540	55-80	65-70	108	28
Young modulus [GPa]	72	69	72	97	120	118	220	205	190	200	190	3	3	3,34	0,57
Elongation at break [%]	5-11	10-11	12-16	6-20	6-50	5-12	20-22	11-13	13-16	50-55	65-70	50-100	25	6	332
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.
Melting point [°C]	635	645	570	875	1083	1000	1550	1580	1643	1435	1400	255	164	255	N.D.
Electrical conductivity (% IACS)	33	46	29	28	100	10	3	3	4	15	13	0	0	0	0
Rockwell M hardness												M86	M94	Rockwell M105	Shore 51 D
HDT @ 0.45 MPa [°C]												160	165	160	135
HDT @ 1.8 MPa [°C]												55	125	N.D.	55
Maximum operating temperature (short term) [°C]												180	145	310	N.D.
Maximum operating temperature (long term) [°C]												75	85	250	260
Water absorption (50% Rh, saturation) [%]												3	0,9	0,45	0

Material

	3D PRINTING														
	Tecnologia HP 5210 Multi Jet Fusion (MJF)			Tecnologia HP 5420W Multi Jet Fusion (MJF)			Tecnologia HP 5210 Multi Jet Fusion (MJF)			Tecnologia HP 5210 Multi Jet Fusion (MJF)			Tecnologia HP 5210 Multi Jet Fusion (MJF)		
	Nylon PA12 classic	**Nylon PA12** performance	**Nylon PA12** top mechanical	**Nylon PA12 white** classic	**Nylon PA12 white** performance	**Nylon PA12 white** top mechanical	**Nylon PA12 - Glass filled** classic	**Nylon PA12 - Glass filled** performance	**Nylon PA12 - Glass filled** top mechanical	**Nylon PA11** classic	**Nylon PA11** performance	**Nylon PA11** top mechanical	**Polypropylene PP** classic	**Polypropylene PP** performance	**Polypropylene PP** top mechanical
Natural color	grey			White			grey			grey			grey		
Available finishes	RAL Matt or Glossy spray painting in: Black, Red, Blue, Green, White, Gold, Silver, Black Soft Touch; Dye colored Extrablack Classic (matt) or Semigloss			white			RAL Matt or Glossy spray painting in: Black, Red, Blue, Green, White, Gold, Silver, Black Soft Touch; Dye colored Extrablack Classic (matt) or Semigloss			RAL Matt or Glossy spray painting in: Black, Red, Blue, Green, White, Gold, Silver, Black Soft Touch; Dye colored Extrablack Classic (matt) or Semigloss			RAL Matt or Glossy spray painting in: Black, Red, Blue, Green, White, Gold, Silver, Black Soft Touch		
Density	1,01 g/cm^3			1,01 g/cm^3			1,3 g/cm^3			1,05 g/cm^3			0,87 g/cm^3		
Max workable size	380x284x380 mm (15x11.2x15 in)			380x284x380 mm (15x11.2x15 in)			330x234x330 mm (13x9,2x13 in)			380x284x340 mm (15x11.2x7.8 in)			250x250x250 mm (7.87x7.87x7.87in)		
Applications	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 746A , Statement of Composition for Toy Applications. Certified UL94 HB75 0,75<spessore<3mm - HB40 spessore≥3mm			Strong thermoplastic for functional prototyping and final parts. Excellent chemical resistance to oils, greases and hydrocarbons. Optimal for post finishing processes. The white base color enables new and unprecedented applications. USP Class I-VI and US FDA guidance for Intact Skin Surface Devices, RoHS,11 REACH, PAHs, UL 746A , Statement of Composition for Toy Applications. Certified UL94 HB75 0,75<spessore<3mm - HB40 spessore≥3mm			For both functional prototypes and final products. Suitable for components where rigidity and dimensional stability are key parameters. Good chemical resistance to oil, grease and fuels. UL746A. Certified UL94 HB75 0,75 <spessore<3mm - HB40 spessore≥3mm			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. Certified UL94 HB75 0,75<spessore<3mm - HB40 spessore≥3mm			Lightweight material for prototypes, automotive interiors, fluid tubes and tanks, machine parts, medical equipment and cosmetics. Certified UL94 HB75 0,75 <spessore<3mm - HB40 spessore≥3mm		
Minimum tolerance	± 0,30mm below 100mm ± 0,3% above 100mm			± 0,50mm below 100mm ± 0,5% above 100mm			± 0,40mm below 100mm ± 0,4% above 100mm			± 0,50mm below 100mm ± 0,5% above 100mm			± 0,60mm below 100mm ±0,6% above 100mm		
Tensile strenght [MPa]	42-46	46-50	50-54	42-46	46-50	50-54	28	30	32	44-46	49-52	52-56	30-32	34-36	37-39
Young modulus [GPa]	1900	1900	1900	1600	1600	1600	2600	2600	2600	1700-1800	1700-1800	1700-1800	1600	1600	1600
Elongation at break [%]	12	15	19	12	15	19	5-9	5-9	5-9	31	35	39	20	22	24
Impact resistance (Izod) [KJ/m2]	3,8	4,0	4,2	-	-	-	3	3	3	4,5-7,0	4,5-7,0	4,5-7,0	3,0-3,5	3,0-3,5	3,0-3,5
Melting temperature [°C]	187			-			-			202			140		
Rockwell M Hardness	Shore D 80			-			-			Shore D 80			-		
HDT @ 0.45 MPa [°C]	175			-			171			185			100		
HDT @ 1.8 MPa [°C]	95			-			114			54			60		

Material

	3D PRINTING											
	Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)		
	ABS Food classic	**ABS Food** performance	**ABS Food** top mechanical	**ABS Medical** classic	**ABS Medical** performance	**ABS Medical** top mechanical	**ABS ESD** classic	**ABS ESD** performance	**ABS ESD** top mechanical	**Extreme™ Fibra di carbonio + PA6** classic	**Extreme™ Fibra di carbonio + PA6** performance	**Extreme™ Fibra di carbonio + PA6** top mechanical
Natural color	white			white			black			black		
Available finishes	-			-			-			-		
Density	1,20 g/cm^3			1,20 g/cm^3			1,10 g/cm^3			1,20 g/cm^3		
Max workable size	300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)		
Applications	ABS is used extensively in multiple sectors such as automotive and consumer goods, thanks to a good mix of mechanical properties, ductility and temperature resistance. This material has been developed, tested and certified by our R&D department to guarantee food compatibility in the most diverse applications to empower customers with certified material that make use of additive manufacturing design freedom.			ABS is used extensively in multiple sectors such as automotive and consumer goods, thanks to a good mix of mechanical properties, ductility and temperature resistance. This material has been developed, tested and certified by our R&D department to guarantee skin contact compatibility and its use as a medical device in the most diverse applications.			Material suitable for contact and use with electronic equipment, sensitive to electrostatic discharge. This material as a matter of fact is static dissipative: this allows charges to flow in a controlled manner so that they don't accumulate on a component.			Great for prototypes and functional parts. Good ductility and impact resistance. Subject to moisture absorpiton. Suitable for mechanical parts, jigs and fixtures.		
Minimum tolerance	± 0,50mm below 100mm ± 0,6% above 100mm			± 0,50mm below 100mm ± 0,6% above 100mm			± 0,50mm below 100mm ± 0,6% above 100mm			± 0,60mm below 100mm ± 0,75% above 100mm		
Tensile strenght [MPa]	43	44	45,6	47,8	50	52	29	30	30	61	63	63
Young modulus [GPa]	1450	1450	1450	1375	1375	1375	2840	2840	2840	2356	2367	2370
Elongation at break [%]	5	5,5	6	5	5,5	6	18	20,5	22	8	8	8
Rockwell M Hardness	N.D.			N.D.			N.D.			N.D.		
HDT @ 0.45 MPa [°C]	N.D.			N.D.			N.D.			128		
HDT @ 1.8 MPa [°C]	N.D.			N.D.			88			91		
Maximum operating temperature (short term) [°C]	99			100			N.D.			120		
Maximum operating temperature (long term) [°C]	89			89			N.D.			90		
Water absorption (50% Rh, saturation) [%]	N.D.			N.D.			N.D.			N.D.		

Material	3D PRINTING											
	Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)			Fused Deposition Modeling technology (FDM)		
	Extreme™ Carbon fiber + PA12 classic	**Extreme™ Carbon fiber + PA12** performance	**Extreme™ Carbon fiber + PA12** top mechanical	**PEEK morphous** classic	**PEEK amorphous** performance	**PEEK amorphous** top mechanical	**PEEK nicrystalline** classic	**PEEK semicrystalline** performance	**PEEK semicrystalline** top mechanical	**PEEK CF semicrystalline** classic	**PEEK CF semicrystalline** performance	**PEEK CF semicrystalline** top mechanical
Natural color	black			amber			beige			dark grey		
Available finishes	-			-			-			-		
Density	1,20 g/cm^3			1,30 g/cm^3			1,30 g/cm^3			1,34 g/cm^3		
Max workable size	300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)			300x300x400mm (11.8x11.8x15.7 in)		
Applications	Great for prototypes and functional parts. Good chemical resistance and excellent rigidity, thanks to the carbon fiber addition. Suitable for mechanical parts, jigs and fixtures.			Great for prototypes and final components alike. Amazing specific resistance, better than some non-ferrous alloys. Its chemical and thermal resistance enable use of this material in very harsh working environments. Good for mechanical components, supports, brackets carters and covers.			Great for prototypes and final components alike. Amazing specific resistance, better than some non-ferrous alloys. Its chemical and thermal resistance enable use of this material in very harsh working environments. Good for mechanical components, supports, brackets carters and covers. Certified UL94 V0.			Great for prototypes and final components alike. Amazing specific resistance, better than some non-ferrous alloys. Outstanding thermal properties enable use of this material in environment where no other polymer may be used. Good for mechanical components, supports, brackets carters and covers.		
Minimum tolerance	± 0,60mm below 100mm ± 0,75% above 100mm			± 0,60mm below 100mm ± 0,75% above 100mm			± 0,60mm below 100mm ± 0,75% above 100mm			± 0,60mm below 100mm ± 0,75% above 100mm		
Tensile strenght [MPa]	54,5	56	58	68	70	72-73	98	100	101,1	85	87	88,4
Young modulus [GPa]	8300	8300	8300	3738	3738	3738	3738	3738	3738	8650	8655	8655
Elongation at break [%]	1,8	1,9	1,8	4	4	4	2,9	3	3,3	2,1	2,5	2,7
Rockwell M Hardness	N.D.			N.D.			N.D.			N.D.		
HDT @ 0.45 MPa [°C]	128			>=145			180			315		
HDT @ 1.8 MPa [°C]	91			145			152			180		
Maximum operating temperature (short term) [°C]	120			145			-			-		
Maximum operating temperature (long term) [°C]	90			145			-			-		
Water absorption (50% Rh, saturation) [%]	-	-	-	0,7			0,7			0,4		

Material	3D PRINTING											
	LED MSLA + 4KSPER™ technology			LED MSLA + 4KSPER™ technology			LED MSLA + 4KSPER™ technology			LED MSLA + 4KSPER™ technology		
	ABS like resin classic	**ABS like resin** performance	**ABS like resin** top mechanical	**High Temp Resin** classic	**High Temp Resin** performance	**Temp Resin** top mechanical	**Clear Translucent resin** classic	**Clear Translucent resin** performance	**Clear Translucent resin** top mechanical	**Tough resin** classic	**Tough resin** performance	**Tough resin** top mechanical
Natural color	grey			grey			traslucid			dark grey		
Available finishes	With or Without printing Supports			With or Without printing Supports			With printing Supports			With or Without printing Supports		
Density	1,18 g/cm^3			1,17 g/cm^3			1,08 g/cm^3			1,08 g/cm^3		
Max workable size	250x152x390mm (9.84x5,98x15.35 in)			250x152x390mm (9.84x5,98x15.35 in)			250x152x390mm (9.84x5,98x15.35 in)			250x152x390mm (9.84x5,98x15.35 in)		
Applications	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.			It offers great level of detail, extremely smooth surfaces and can bear thermal loads. Good for aestetic and functional prototypes in high temperature environment where is required a good surface finish. Suitable for mould creation.			This material is the first semitransparent available in our portfolio. Great for producing parts in the prototyping phase to have a physical feedback of your design. Can be polished manually to achieve better transparency			Material with elastic and ductile mechanical properties, similar to polyamides (Nylons). Great for functional obkects that also need the smooth and uniform surface finish characteristic of resin 3D printing. Very resilient and it does not fragment whenever subjected to impacts.		
Minimum tolerance	± 0,20mm below 100mm ± 0,25% above 100mm			± 0,30mm below 100mm ± 0,35% above 100mm			± 0,30mm below 100mm ± 0,35% above 100mm			± 0,30mm below 100mm ± 0,35% above 100mm		
Tensile strenght [MPa]	29	29,5	31	34	34	36	14	15	16,5	30	33	34
Young modulus [GPa]	800	800	800	1850	1850	1850	619	619	619	997	1001	1000
Elongation at break [%]	5,1	6	6,7	2	2,2	2,1	16	17	17	17	18	18
Rockwell M Hardness	Shore 72 D			Shore 80 D			Shore 70 D			Shore 78 D		
HDT @ 0.45 MPa [°C]	68°C			190°C			-			-		
HDT @ 1.8 MPa [°C]	-			-			-			-		
Maximum operating temperature (short term) [°C]	-	-	-	-	-	-	-	-	-	-	-	-
Maximum operating temperature (long term) [°C]	-	-	-	-	-	-	-	-	-	-	-	-
Water absorption (50% Rh, saturation) [%]	-	-	-	-	-	-	-	-	-	-	-	-