



| Material                                      | 3D PRINTING  |                        |                           |  |                                       |  |   |                        |                           |  |                              |                                 |
|---|--|------------------------|---------------------------|--|---------------------------------------|--|---|------------------------|---------------------------|--|------------------------------|---------------------------------|
|   | Technology HP 5210 Multi Jet Fusion (MJF)  |                        |                           |  |                                       |  |   |                        |                           |  |                              |                                 |
|   | Nylon PA12 classic   | Nylon PA12 performance | Nylon PA12 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   |                        |                           | 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   |                        |                           | 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 <sup>3</sup>   |                        |                           | 1,3 g/cm <sup>3</sup>  |                                       |  | 1,05 g/cm <sup>3</sup>  |                        |                           | 0,87 g/cm <sup>3</sup>   |                              |                                 |
| Max workable size                             | 380x284x380 mm (15x11.2x15 in)   |                        |                           | 380x284x380 mm (15x11.2x15 in)   |                                       |  | 380x284x200 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 94, UL 746A , Statement of Composition for Toy Applications. |                        |                           | Per prototipi funzionali e prodotti finali. Adatto alla produzione di componenti dove la rigidità e la stabilità dimensionali sono parametri chiave. Buona resistenza chimica a olio, grassi e idrocarburi. UL 94, UL746A. |                                       |  | 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, fluid tubes and tanks, machine parts, medical equipment and cosmetics |                              |                                 |
| Minimum tolerance                             | ± 0,30mm below 100mm ± 0,3% 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                     | 28   | 30                                    | 32                                       | 44-46   | 49-52                  | 52-56                     | 30-32  | 34-36                        | 37-39                           |
| Young modulus [GPa]                           | 1900   | 1900                   | 1900                      | 2600   | 2600                                  | 2600                                     | 1700-1800   | 1700-1800              | 1700-1800                 | 1600   | 1600                         | 1600                            |
| Elongation at break [%]                       | 12   | 15                     | 19                        | 5-9  | 5-9                                   | 5-9                                      | 31  | 35                     | 39                        | 20   | 22                           | 24                              |
| Impact resistance (Izod) [KJ/m <sup>2</sup> ] | 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   |                              |                                 |

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|---|---|----------------------|-------------------------|--|----------------------|-------------------------|--|--|---|---|----------------------------|-------------------------------|---|----------------------------------|-------------------------------------|
|   | Technology LED MSLA + 4KSPER™   |                      |                         | Tecnologia Fused Deposition Modeling (FDM)   |                      |                         | Technology Fused Deposition Modeling (FDM)   |  |   | Tecnologia Fused Deposition Modeling (FDM)  |                            |                               | Tecnologia Fused Deposition Modeling (FDM)  |                                  |                                     |
|   | ABS like classic  | ABS like performance | ABS like top mechanical | ABS Food classic   | ABS Food performance | ABS Food top mechanical | Extreme™ Carbon fiber + PA12 classic   | Extreme™ Carbon fiber + PA12 performance | Extreme™ Carbon fiber + PA12 top mechanical | PEEK amorphous classic  | PEEK amorphous performance | PEEK amorphous top mechanical | PEEK semicristallino classic  | PEEK semicristallino performance | PEEK semicristallino top mechanical |
| Natural color                                   | grigio  |                      |                         | white  |                      |                         | black  |  |   | amber   |                            |                               | beige   |                                  |                                     |
| Available finishes                              | With or Without printing Supports   |                      |                         | -  |                      |                         | -  |  |   | -   |                            |                               | -   |                                  |                                     |
| Density   | 1,18 g/cm³  |                      |                         | 1,20 g/cm³   |                      |                         | 1,20 g/cm³   |  |   | 1,30 g/cm³  |                            |                               | 1,30 g/cm³  |                                  |                                     |
| Max workable size                               | 250x152x390mm (9.84x5,98x15.35 in)  |                      |                         | 300x300x600mm (11.8x11.8x23.6 in)  |                      |                         | 300x300x600mm (11.8x11.8x23.6 in)  |  |   | 300x300x400mm (11.8x11.8x11.8 in)   |                            |                               | 300x300x400mm (11.8x11.8x11.8 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. |                      |                         | 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. |                      |                         | 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. |                            |                               | Ottimo sia per prototipi che componenti definitivi. Fantastica resistenza specifica, superiore ad alcune leghe non ferrose. Resistenza chimica e termica che permettono impieghi in ambienti di utilizzo gravosi. Adatto a componenti meccanici, supporti, staffe, carter e covers. |                                  |                                     |
| Minimum tolerance                               | ± 0,20mm below 100mm ± 0,25% above 100mm  |                      |                         | ± 0,50mm below 100mm ± 0,6% above 100mm  |                      |                         | ± 0,60mm below 100mm ± 0,75% above 100mm   |  |   | ± 0,60mm below 100mm ± 0,75% above 100mm  |                            |                               | ± 0,60mm sotto 100mm ± 0,75% oltre 100mm  |                                  |                                     |
| Tensile strenght [MPa]                          | 30-31   | 32                   | 33                      | 43   | 44                   | 45,6                    | 54,5   | 56                                       | 58  | 68  | 70                         | 72-73                         | 98  | 100                              | 101,1                               |
| Young modulus [GPa]                             | 800   | 800                  | 800                     | 1450   | 1450                 | 1450                    | 8300   | 8300                                     | 8300  | 3738  | 3738                       | 3738                          | 3738  | 3738                             | 3738                                |
| Elongation at break [%]                         | 5,1   | 6                    | 6,7                     | 5  | 5,5                  | 6                       | 1,8  | 1,9                                      | 1,8   | 4   | 4                          | 4                             | 2,9   | 3                                | 3,3                                 |
| Rockwell M Hardness                             | Shore 72 D  |                      |                         | N.D.   |                      |                         | N.D.   |  |   | N.D.  |                            |                               | N.D.  |                                  |                                     |
| HDT @ 0.45 MPa [°C]                             | -   |                      |                         | -  |                      |                         | 128  |  |   | >=145   |                            |                               | 152   |                                  |                                     |
| HDT @ 1.8 MPa [°C]                              | 68  |                      |                         | -  |                      |                         | 91   |  |   | 145   |                            |                               | 180   |                                  |                                     |
| Maximum operating temperature (short term) [°C] | -   | -                    | -                       | 99   |                      |                         | 120  |  |   | 145   |                            |                               | 250   |                                  |                                     |
| Maximum operating temperature (long term) [°C]  | -   | -                    | -                       | 89   |                      |                         | 90   |  |   | 145   |                            |                               | 200   |                                  |                                     |
| Water absorption (50% Rh, saturation) [%]       | -   | -                    | -                       | -  | -                    | -                       | -  | -  | -   | 0,7   |                            |                               | 0,7   |                                  |                                     |