

MATERIALS COMPARISON - DESIGN GUIDELINES



Metals

| | LAYER THICKNESS | MINIMUM WALL THICKNESS | MAX SIZE & MIN SIZE (MM) | MIN SIZE OF TEXT | MAGNETIC PROPERTIES | MINIMUM VISIBLE DETAIL | ENGRAVING | EMBOSSING | ENLARGEMENT RATIO | INTERLOCKING & ENCLOSED PARTS | ASSEMBLY | HOLLOWING |
|-------------------------------|------------------|---|---|--|---|---|---|--|--|--|--|---|
| | Print resolution | Minimum recommended wall size to ensure there are no errors during printing | Maximum dimensions possible to respect an item | Minimum text size to ensure visibility.. | Possibility of exerting attractive or repulsive forces on other materials | Minimum dimension to ensure detail visibility | Graphic elements hollowed out on the surface of the model | Graphic elements raised above the surface of the model | Minimum ratio to be observed between the diameter of a hole and the thickness of the wall of the model | Possibility of printing parts that will articulate between each other & Possibility of printing a model with volume inclusions | Possibility of assembling parts while leaving a minimum space between them | Optimization of the weight and price of a model by removing its internal material |
| | | | | | | | | | | | | |
| MATERIAL | | | | | | | | | | | | |
| FDM | | | | | | | | | | | | |
| Ultrafuse® 316L | 150 µm | 1mm | MAX SIZE 80 x 80 x 80 mm or MIN SIZE 115x115x40 mm | - | Yes | - | 0.40mm - 1mm | 0.60mm - 1mm | - | Not recommended & Not recommended | No | - |
| Ultrafuse® 17-4 PH | 150 µm | 1mm | MAX SIZE Raw : 80 x 80 x 80 or 115x115x40 MIN SIZE - | - | Yes | - | 0.40mm - 1mm | 0.60mm - 1mm | - | Not recommended & Not recommended | No | - |
| DMLS / SLM | | | | | | | | | | | | |
| Aluminum AlSi10Mg0,6 | 150 µm | 1mm | MAX SIZE 220 x 220 x 250 MIN SIZE - | 1mm | - | 1mm | 0.5mm | 0.5mm | 1/1 | No & No | No | No |
| Titanium 6Al-4V | 60 µm | 1mm | MAX SIZE 220 x 220 x 250 MIN SIZE - | 1mm | - | 1mm | 0.5mm | 0.5mm | 1/1 | Not recommended & Not recommended | No | No |
| Sterling Steel 316L | 40 µm | 1mm | MAX SIZE 220 x 220 x 250 MIN SIZE - | 1mm | - | 1mm | 0.5mm | 0.5mm | 1/1 | Not recommended & Not recommended | No | No |
| Binder Jetting | | | | | | | | | | | | |
| Steel/ Bronze 420SS/BR | 100 µm | 1.1 to 3.2 mm | MAX SIZE Unpolished : 400 x 250 x 250 Polished: 152.4 x 152.4 x 152.4 MIN SIZE Unpolished : 0.3 x 1.27 x 0.8 Polished: 15 x 15 x 15 mm | 0.76mm | - | 0.8mm | 0.76mm | 0.76mm | 1/1 | No & No | No | Yes (for raw parts) No (for plated parts) |
| Sterling Steel 316 | 100 µm | 1.1 to 3.2 mm | MAX SIZE 120 x 120 x 70 mm MIN SIZE Polished: 15 x 15 x 15 mm | - | - | 0.8mm | 0.76mm | 0.76mm | 1/1 | No & No | No | Yes (for raw parts) No (for plated parts) |
| Wax Casting | | | | | | | | | | | | |
| Bronze | 25 µm | 0.8mm | MAX SIZE 125 x 125 x 40 MIN SIZE - | Width: 0.5mm Height: 1.5mm | - | 0.4mm | 0.5mm | 0.4mm | 1/1 | No & No | No | No |
| Brass | 25 µm | 0.8mm | MAX SIZE 125 x 125 x 40 mm MIN SIZE 0.6 x 2.4 x 2.4 mm | Width: 0.5mm Height: 1.5mm | - | 0.4mm | 0.4mm | 0.5mm | 1/1 | No & No | No | No |
| Sterling Silver | 25 µm | 0.8mm | MAX SIZE 125 x 125 x 40 mm MIN SIZE 2.4 x 2.4 x 0.8 mm | Width: 0.5mm Height: 1.5mm | - | 0.4mm | 0.4mm | 0.5mm | 1/1 | No & No | No | No |