

DESIGN GUIDE LASER CUTTING

KEY FACTS AT A GLANCE

DESIGN GUIDELINES

AVAILABLE MATERIALS

SURFACE FINISH



KEY FACTS AT A GLANCE

Using the configurator on mipart.com, you can order **two-dimensional sheet metal parts** produced by laser cutting. Laser cutting means cutting contours from sheet metal at high speed and with high precision using various laser nozzles.

- **Accepted file format:** DXF
- **Part appearance:** in scale of 1:1 in the metric unit system
- **Component sizes:** 20 x 20 mm to 3000 x 1500 mm
- **Sheet thickness:** 1 mm to 10 mm

We also undertake the following operations, but currently you cannot order them via the configurator. For one of the manufacturing processes listed below, please send us your requirements including the DXF file to info@mipart.com

- Engraving, bending, folding, welding
- Chamfering, countersinking, blind holes, threading
- Sheet thickness greater than 10 mm

Please note:

- The smallest width of a contour (e.g. diameter of a hole) depends on the selected sheet thickness. It may be less than this by a maximum factor of 0.7.
Example: Sheet thickness 10 mm x 0.7 = 7 mm minimum hole diameter
- mipart takes the general tolerances according to DIN EN ISO 9013:2017 for laser cutting as a basis. These tolerances are broken down by sheet thickness in the download area.

DESIGN GUIDELINES

In order for your file to be processed optimally and without errors, the following requirements must be met:

<p style="text-align: right; color: green; font-size: 2em;">✓</p>	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">One component per drawing and no floating contours</p>	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">No engravings</p>
<p style="text-align: right; color: green; font-size: 2em;">✓</p>	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">Only use solid lines: no dashed lines, no bending lines</p>	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">Only closed contours and no protruding contours</p>
	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">Only use 2D top view. The configurator cannot process three-dimensional representations.</p>	<p style="text-align: right; color: red; font-size: 2em;">✗</p> <p style="text-align: center;">Only display component contours: no frames, dimension lines, title blocks or labels</p>



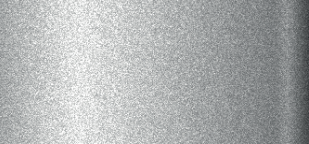

AVAILABLE MATERIALS

After uploading, you can further configure your component. We offer different materials, sheet thicknesses and surface treatments.

	Material name	Characteristics	Tensile strength	Yield strength $R_e / R_{p0,2}$	Elongation at break	Sheet thickness in mm	Surface finish
Aluminium	3.3535 AlMg3 EN AW-5754 H22 quarterhard bare EN 485-2	<ul style="list-style-type: none"> For lightweight construction applications Anodizable Decorative appearance 	220 - 270 MPa	$R_{p0,2}$: Min. 130 MPa	A50: min. 7 %	1 / 1,5 / 2 / 2,5 / 3 / 4 / 5 / 6 / 8 / 10	<ul style="list-style-type: none"> Natural anodized Black anodized Surface finish with 240 grit
Stainless Steel	1.4301 X5CrNi18-10 bare EN 10088-2	<ul style="list-style-type: none"> Corrosion resistant stainless steel Decorative appearance 	520 - 750 MPa	$R_{p0,2}$: Min. 210 MPa	A/A80: min. 45 %	1 / 1,5 / 2 / 2,5 / 3 / 4 / 5 / 6 / 8 / 10	Surface finish with 240 grit
Steel	1.0330 DC01 cold-rolled, oiled EN 10130	<ul style="list-style-type: none"> Thin sheet with cold-rolled surface Available up to 2.99 mm 	270 - 410 MPa	R_e : 140 - 280 MPa	A80: min. 28 %	1 / 1,5 / 2 / 2,99	
Steel	1.0038 S235JR hot-rolled, stained, oiled EN 10025-2	<ul style="list-style-type: none"> Hot-rolled strip sheet Thicknesses from 4 mm On request up to 25mm thickness available 	360 - 510 MPa	R_{eH} : min. 235 MPa	A: Min. 26 %	4 / 5 / 6 / 8 / 10	

You can find the technical properties of the materials in the respective material data sheets.

SURFACE FINISH

	<p>Our claim is for the highest quality. Therefore the following mipart services are included in the price:</p> <ul style="list-style-type: none"> • We deburr your component one-sided on the back side with 120 grit. It removes sharp cut edges and burrs or visible and disturbing splashes, caused during the normal manufacturing process. • We only use nitrogen for the cutting process. Therefore, all our manufactured components have oxide-free cut edges. In addition to their improved appearance, these components are more suitable for further processing.
	<p>Surface finish</p> <p>The surface is mechanically grinded with 240 grit, giving it a uniformly high-quality look. Despite careful handling, the surface may still show fine machining marks after grinding, which is normal in the industry standard. For very high surface quality requirements, please contact us before processing.</p>
	<p>Anodizing natural/black</p> <p>A corrosion-resistant oxide layer is created using an electrochemical process. It ensures good durability due to the sealing and gives the surface a high-quality look. The changed surface structure also gives your part a very even color result.</p>
	

Configure and order your components on www.mipart.com!