

How to deburr stainless steel



Rust-free, hygienic and with an elegant appearance, there are good reasons to use stainless steel for certain applications.

However, the material has its own requirements when it comes to processing. Whether sinks in the kitchen, storage containers for the chemical and food industry, fittings on furniture or medical technology in hospitals, stainless steel is encountered in many applications. The term "stainless steel" covers both alloyed and unalloyed steels that have a certain degree of purity. Nickel, cobalt, molybdenum, manganese, tungsten, vanadium, chromium and titanium are used as alloying elements. This also makes it clear that stainless steel can have many different properties depending on the grade.



What advantages does stainless steel offer?

As a material, stainless steel has a number of positive properties that make it the first choice for certain applications:

Corrosion resistance

The alloying elements, above all chromium, ensure that a thin passive layer forms on the surface in combination with oxygen. This protects the stainless steel from further corrosion.

Temperature resistance

Like other metallic materials, stainless steel can withstand higher temperatures well. These vary depending on the alloy and the intended use.

Chemical resistance

Stainless steel can withstand not only water but also weak acids.

Conductivity

Similar to steel and other metals, stainless steel is a good conductor of both heat and electricity.

Easy processing

Depending on the alloy, stainless steel is easy to weld, forge, deep-draw or machine.

Hygiene

Stainless steel objects are easy to clean because the material is resistant to water and mild acids while having a smooth surface. This makes the material ideal for hygiene-critical applications.

Aesthetics

The corrosion resistance ensures that stainless steel retains its appearance. This



makes it possible to create beautiful-looking objects in the long term.

Which cutting processes are used for stainless steel?

There are various processes for stainless steel in the metal fabrication industry. However, they do not differ significantly from the processes for other metals. When cutting stainless steel parts, the most important processes are laser cutting, punching and plasma cutting. Flame cutting, on the other hand, is not suitable for stainless steel.

Burrs often occur when cutting stainless steel. In addition, the sheet edges are often very sharp after the cutting process. How pronounced the burrs are depends on the alloy. The cutting process and the thickness of the stainless steel parts also play an important role. Sheet metal workers have to remove these burrs for several reasons:

- Burrs on stainless steel sheets and parts can disrupt further processing, such as bending and welding.
- As the burrs are sharp and pointy, employees and end users can injure themselves on the burrs. This also applies to the edges of the stainless steel sheets and parts, which need to be rounded.
- With stainless steel in hygiene applications, dirt and material residues can accumulate on the remaining burrs. Burrs also interfere with cleaning. Deburring is therefore particularly important for some stainless steel products.



How to deburr stainless steel?

Several processes are available for deburring stainless steel sheets and cut parts. The most important mechanical processes are vibratory tumbling, for very small parts, deburring via block tools or grinding belts is ideal for parts larger than a business card. Which deburring machine is best for stainless steel depends on several factors, for example:



- Thickness of the stainless steel sheet or part.
- Dimensions, width and length
- Number of parts.
- Condition and size of the burrs.

So, there is no such thing as the best deburring machine for stainless steel, only the optimal machine depending on your specific requirements.

What is important when choosing a deburring machine for stainless steel?

An important point when choosing a deburring machine for processing stainless steel parts or sheets is the easy of cleaning. The reason: stainless steel and other materials such as aluminum or steel must remain strictly separated. However, material cross contamination can only be ruled out if the deburring machine is cleaned out thoroughly.

A good wet dust extraction system also helps to avoid cross contamination. It also increases the safety of the deburring process.

Another criterion is quick-change system for the deburring tools. This is because a separate tool set must be kept for different materials to avoid cross contamination. A deburring machine with a quick-change system for the tools saves on setup times and therefore costs.

The quantity of parts, the position of the burrs and the dimensions of the materials must also be taken into account. This criteria can be used to decide whether a single-sided or double-sided deburring machine

would be suitable. Apart from the material separation, deburring stainless steel is not significantly more complex than deburring steel. The right combination of machine, material and tools can be determined during a comprehensive deburring test at the suppliers location.

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