

The Solutions Forum



Solutions in metalworking

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SURFACE FINISHING: Where to begin?

The Need:

A great deal of time and effort are devoted to surface finishing of specific materials. As with most processes, doing it the right way can enhance quality, save a great deal of time and eliminate the need for costly rework. Frequently, an attractive surface finish is synonymous with a "superior quality product".

Many stainless steel fabricated pieces require a polished finish because surface roughness can have a direct effect on ease of cleaning and disinfecting, drainage and corrosion resistance. Esthetics can also be a factor when it comes to architectural or ornamental pieces. The surface finish can be specified by the fabricator or by the customer depending on the type of product.

When metal fabricators refer to surface finishing of stainless steel, the common way of specifying a finish is based on the industry standard for sheet finishes such as a No.4 or No.8 mirror finish (see chart at right).

BUT... WHERE TO BEGIN?

Polished stainless steel sheet finishes

Finish	Description	Typical application
No.3	Intermediate polished finish	Brewery & kitchen equipment
No.4	General purpose polished finish	Dairy & hospital equipment
No.7	High luster finish	Architectural pieces
No.8	Mirror finish	Architectural pieces, reflectors

The Finishing Systems

There are two types of finishing systems for use on portable power tools that can be used to produce or match a polished finish.

- 1) When a circular finish is required then the use of abrasive discs is recommended.
- 2) When a line finish is required then the use of abrasive drums or belts is recommended.

In either case, to assure quality, uniform finishes and reduced finishing times, the power tool used should be equipped with a variable speed feature to accommodate the different steps of the finishing process.

The Finishing Process

The first step of surface finishing will usually determine how much work needs to be done to bring the finish up to specification. The trade-off is to use an abrasive product that is aggressive enough to remove the deepest surface imperfections without making the surface rougher than it needs to be. Remember the rougher the surface is rendered, the more grinding or finishing steps that will be required to bring the surface to spec. The secret is

to remove the deepest imperfection while bringing the surface to the same roughness everywhere.

You are now ready for the "surface finishing" stage. This involves a simple series of steps that can be followed to bring the surface to a progressively finer finish. It's as easy as 1-2-3.

Step 1:

If blending-in light welds is required, the ideal abrasive product to use is one that is aggressive enough to remove the weld in a short amount of time but with a finish much smoother than that left by a grinding wheel. Such products include flexible grinding wheels, flap discs, sanding discs or belts.

Tech tip:

By using a flap disc, you can remove welds and finish the surface in just one step. This replaces the two step process of a grinding wheel followed by a sanding disc.



Step 2:

To match or reproduce a No. 3, No.4 or No. 7 finish, non-woven abrasives are best suited for the application. Non-woven products are available in a range of grits from coarse to fine; they allow the operator to uniformly finish the surface or remove slight surface imperfections. A key feature of non-woven products either in disc format or drum is that they will conform to the workpiece to refine its surface without gouging.



Step 3:

Producing a highly refined and reflective finish on stainless steel, brass & aluminum is achieved by buffing the surface with felt discs or buffing drums used in conjunction with polishing pastes. Again, different pastes are available to accomplish this and the end result is a perfect mirror finish.



In summary

If improper materials were used or the worker did not follow all of the necessary processes, the work piece will still have areas with rough or scratched surfaces. In these cases, your mirror finish will quickly show you where!

So give your customers a great first impression and professionally surface finish your work. Doing it right will help you meet specs, save time, eliminate rework, and... make your product that much more desirable.

Got a tip to share? Have a question?

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