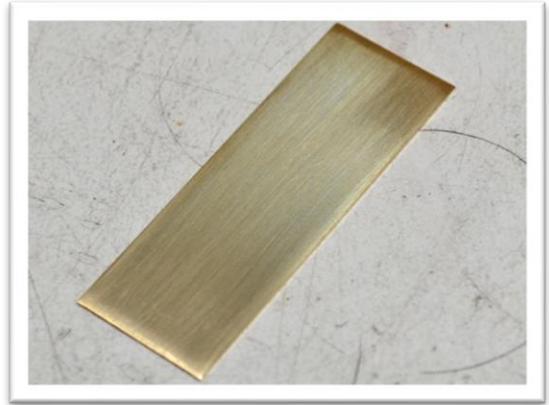


Jewelry Fabrication 1 Lesson 4

Sanding, Polishing, and Buffing

By John Sartin

Whether high polished, satin, or oxidized, the finish of a piece can make or break a design. This tutorial will introduce you to the high polish finish, along with the tools and materials needed for the process. Since this is a beginner's course, we will only cover finishes that can be accomplished with the flex shaft tool.



Safety Tips to Follow

Always wear safety glasses

Always be mentally present and know where your hands and fingers are at all times

Always secure loose hair and clothing

Wear breathing protection

Materials List

- 1/2" x 1 1/2" piece of 22 gauge brass sheet

Tool List – Don't forget Safety Glasses!

- Flexshaft
- Small buffs and mandrel for the flex shaft
- Buffing and polishing compounds
- Dust mask
- Rubber gloves
- Safety glasses
- 320, 400, 600, 1000, 1200, and 2000 grit wet-or-dry sandpaper
- Flex shaft handpiece holder
- Bench vise (should be in every studio)
- Spray bottle with a 3:1 mixture of ammonia, 3 parts water to 1 part ammonia

A Little Vocabulary

Sanding prepares the metal for polishing and buffing by removing the large imperfections in the surface of the piece.

Polishing is the process that prepares the surface for buffing by the removal of small amounts of metal, and smoothing the surface to a uniform finish.

Buffing further removes small imperfections in the polished surface and brings out the true color of the metal.

Bufs are any soft fiber wheels that are used on a polishing motor or flex shaft. Depending on the use, the layers are either sewn together or left unstitched. Bufs are used in both the polishing and buffing processes.

Buffing Compounds are ground and graded abrasives that are mixed with a lubricating matrix. They are usually found in a solid bar form.

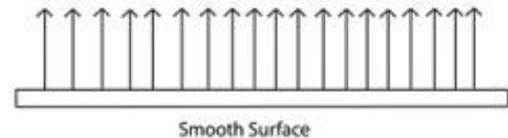
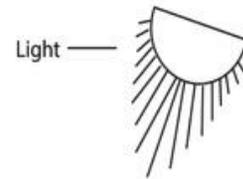
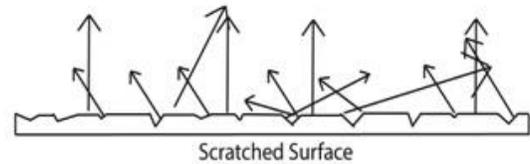
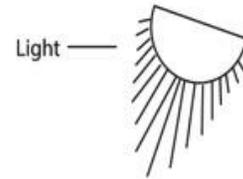
Anatomy of the High Polish

Wait! Don't hit the exit button after reading this title. This is not going to get technical. To understand how to achieve a high polish you need to know how one is created.

How "high" a polish is depends on how smooth the surface of the metal is. A scratched, irregular surface distorts and reflects light rays in random directions—this creates a dull, lifeless finish.

A smooth, uniform surface reflects light rays straight back to the viewer with very little distortion. This does two things: it makes the metal shine, and it shows the true color of the metal.

There, I told you it wasn't going to get to technical! Now let's finish some metal. The finishing process begins with first sanding the surface.



Sanding

Although each piece of jewelry will require its own unique way of sanding depending on its shape, the following process shows the fundamentals common to a properly sanded surface.

There are many types of sandpaper on the market but I'm partial to a type called "wet-or-dry." It is composed of graded abrasives attached to a sheet of paper with a waterproof adhesive. This allows the jewelry artist to use water while sanding, which provides a lubricant for the abrasive just like Bur-life or beeswax does when drilling or sawing. Water prolongs and enhances the effectiveness of the abrasive, which gives a better finish.

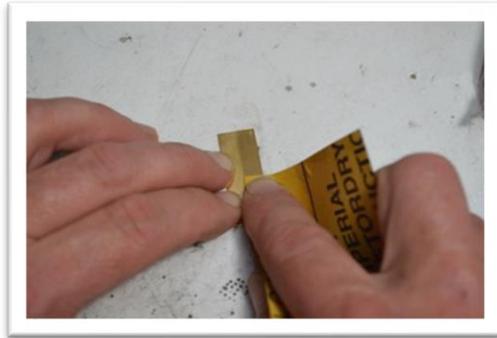
Sandpaper comes in a variety of **grits**. This refers to the coarseness of the abrasive. ***The higher the grit, the finer the abrasive.***

Most mill products (sheet, tubing and wire) from quality suppliers come in a near ready-to-polish state. If you are very careful during the fabrication process and do not scar the surface then a polish and buff is all you will need to finish your design. Things do happen, however, that will require the piece to be sanded prior to polishing and buffing.

Step 1. Whether the ½" x 1 ½" x 22 gauge piece of metal is scratched or not, let's assume that it needs sanding. Place the metal on a sturdy surface and wet the metal with plain water. Start with 400 grit sandpaper and begin sanding—in only one direction—until there is a uniform scratch finish. If the metal has rather deep scratches, start with 320 grit sandpaper.



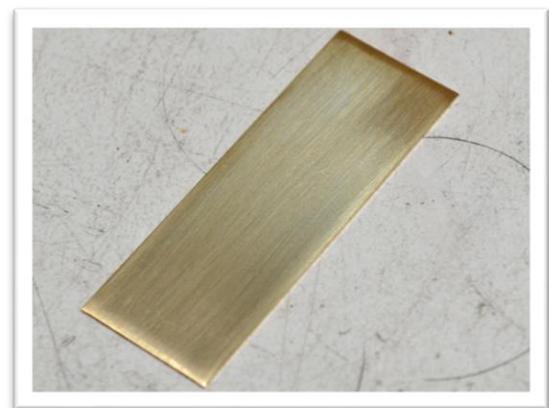
The grit of sandpaper that you start with will depend on the severity of the scratches on the surface of the metal. With experience you will know what to start with. Rinse the metal often to check progress, and always rinse the piece well. Wipe off any excess moisture before progressing to the next step. The second photo shows the uniform 400 grit scratch surface.



Step 2. Using the next finer grit sandpaper—600 grit—turn the piece of metal 90° and begin sanding against the grain. The previous scratches begin to disappear, and a finer set of scratches take their place. Continue this until there is a uniform 600-grit scratch surface.



Step 3. Repeat steps 3 and 4 with finer and finer grit sandpapers. When using a polishing lathe or a flex shaft with buffs and compound, it's not usually necessary to go finer than 1200 grit.



Polishing with the Flex Shaft

For most beginners, the cost of a polishing lathe is out of reach. However, investing in a good flex shaft and a few accessories is a very wise decision because of the many things it can be used for.

However, polishing and buffing with the flex shaft does have its limitations, the main one being the size of the pieces that can be finished. But the polishing principles and steps are the same as those

used with a polishing lathe. The only difference is using a polishing lathe requires much greater care.

More information on the polishing lathe and its use can be found in my book *The Complete Photo Guide to Making Metal Jewelry*.

Equipment and Materials Needed

Besides a flex shaft, small pinhole buffs are needed. These are just miniature buffs designed for the flex shaft.

A yellow-treated buff will be used for the pre-polish, a tight-weave sewn muslin buff is used in the cut and polish process, and balloon cloth buffs will be used in the final buffing process. Mandrels attach the buffs to the flex shaft.

As for buffing compounds, brown Tripoli, white diamond, and red rouge polishing compounds are needed.

A spray bottle with a 3-1 mixture of water and ammonia works great to remove the compound residue, and a lint-free soft clean cloth is used to dry the piece off.

A flex shaft handpiece holder is also helpful. It frees the hands to easily manipulate the piece during polishing.



Step 1. Secure the flex shaft handpiece in the handpiece holder, ensuring the rotation is down and away from you. Attach a mandrel with a yellow-treated buff to the handpiece.

A fresh buff will shed fibers on its first use—especially the balloon buffs—so don't be alarmed.



Step 2. Put on safety glasses and a particle respirator. Start the flex shaft and run the edge of a piece of metal across the face of the buff. This is called “dressing the wheel.”

This is very important, especially with used buffs. This cleans the buff by removing the old compound and loose fibers so that it can accept new compound. Now using the brown tripoli compound with the wheel spinning, lightly draw the compound across the face of the wheel letting the wheel pick up the compound. This is called “charging the buff.” The wheel should have some compound on it, but not like icing on a cake. Too much compound will have a negative effect.

TIP: The use of tight fitting rubber gloves will help keep the fingers clean.

Step 3. Hold the metal tightly with a pinch grip. Push the face of the metal against the spinning buff with slight pressure, and begin moving the piece back and forth across the face of the wheel.

Inspect the surface frequently to see the progress. A cross-hatching process—turning the metal slightly in one direction then the next—will help in removing scratches more efficiently.

Charge the buff with compound only when it is needed...experience will be the best teacher. Continue polishing until there is a smooth uniform surface. There will still be fine scratches, which will be removed in the cut and polish process. Any scratches left in the cut and polish process will be removed in the buffing process.

Polishing and buffing are similar to sanding...moving to progressively finer grits of abrasives and replacing scratches with finer scratches until the scratches are no longer visible to the naked eye. This video shows you the complete process.

Remember to clean the piece thoroughly with the diluted ammonia mixture, rinse with clean water, and dry with a soft cloth every time that buffs and compounds are changed. If the buffs get cross-contaminated there will be issues with the finishing.

Refer to the video for a demonstration. <https://vimeo.com/80761402>