

For your bench. At your side.

Russian Filigree Powdered Solder Instructions & Tips

Russian Filigree Powdered Solder is made with the same traditional recipe from antiquity that Victoria Lansford demonstrates in the video *Metal Techniques of Bronze Age Masters: Russian Filigree*, however this pre-made solder already has flux mixed in it. Because Russian Filigree Powdered Solder is a finer powder than can be filed from the traditionally alloyed ingot, much less is needed to accomplish the same job.

Russian Filigree Powdered Solder works on Russian filigree with sterling frames and fine silver filler wires, 18K gold frames and fine silver filler wires, and Argentium® Silver frames and filler wires. It is made specifically for Russian filigree, also known as filigrana or open back filigree. It can be used for other types of projects where small tack joints with powdered solder would be appropriate.

This solder flows like an easy solder, but, because much of the zinc burns off once it has flowed, in subsequent rounds of soldering it behaves like a medium solder. This feature allows the same solder to be used in multiple rounds of soldering on tiny wires without the risk of collapse in previously soldered areas.

Instructions:

1. Turn on your ventilation system.
2. Place filigree face down on a compressed charcoal block.
3. Carefully open the jar. (Do not shake.)
4. Scoop a small amount of the powdered solder into the jar lid.
5. Use an eye dropper or small tipped squeeze bottle to drop several drops of distilled water in the lid with the powder. Distilled water is a must! (Bottled or tap water may cause problems due to chemicals or minerals in the water.) Stir the distilled water together with the powder. The ideal consistency is more like icing for a cupcake and less like glaze for a doughnut. Water turns the powdered solder a slightly darker color, which is normal. (See **Common Questions and Troubleshooting** for more information on mixing.)
6. Gently paint the solder onto the filigree at each point to be soldered. Cheap synthetic brushes work best. Better brushes may cause the solder to stick to the brush and not adhere to the filigree.
7. Let the piece dry for 5 minutes to prevent the moisture from causing the solder to boil or make the wires shift.
8. Solder by heating the whole piece first with a “corona” type flame, then concentrate the heat on the joints. Always use adequate ventilation!
9. Pickle.
10. Return unused powdered solder in the jar lid to the container. To reconstitute, add more distilled water. Dried solder may be remixed indefinitely.
11. If for any reason you need to re-flow a section of filigree where the solder has already flowed and the piece has been pickled, then you will need to flux that area with paste flux to help the solder re-flow.

Warning: This product contains silver, bronze, copper, zinc, and borax. Harmful if swallowed or inhaled. Let contents settle before opening to prevent metal dust becoming airborne. May cause skin irritation. SDS available upon request.

Common Questions and Troubleshooting

Can't you give exact water and powder measurements for mixing?

Mixing the solder and water shouldn't feel like a frustrating chemistry experiment. You really can't mess up the solder or mix it "wrong." The sole purpose of the water is to make the powder stick to your filigree. This measurement must be visual rather than mathematical. By the time your piece comes out of the pickle, your solder will have dried slightly and likely require another drop or so of water, making an exact ratio of water to powder impossible to determine. The rate it dries out will vary in different climates. Every time you apply more solder, you will likely need to add another drop or so of water first to get it "spreadable" again.

Too much water, and there won't be enough solder deposited on your piece. Too little water, and the solder will blob and stay on the brush. To get the hang of the proportions, mix a small amount on one side of the lid and then practice spreading it on an empty area of the lid. If the mixture pools like gray/green tea, then there is too much water. If it clumps like wet sand or won't come off the brush, add more water. With a little practice, you will get the hang of mixing!

The solder doesn't work! What happened?

If nothing is soldering together or your filigree filler pieces are coming out in the pickle, the likely problem is that the solder did not fully flow. This can happen even if your piece got red hot. Even if there was too much water (and therefore too little solder) in your mix, if the piece was heated correctly for long enough, some of the connections will have soldered together.

The best kind of flame for soldering Russian filigree is a corona. This flame can be achieved by backing off the pressure regulator slightly and turning up the torch just a little bit. Place the flame down on a charcoal block (away from your piece for now). If there is a corona, you will see a "soft pillow of flame" or a "doughnut" as some people call it. This rounded flame on the block will be mostly bluish in color with a little bit of orange. If there is mostly orange, turn the torch knob up until the flame has more blue. Note: on video and in photos a corona flame can appear greenish instead of blue.

This corona on a charcoal block is a kiln-like, oxygen reducing atmosphere that can help solder tiny wires together. Besides helping solder to flow by reducing oxygen, it creates a small space of very even heat, which helps prevent melting the wires. Getting a corona with an air/acetylene torch requires no special tip. For a Little Torch, any type of oxy/propane or oxy/acetylene torch, a rosebud tip will diffuse the flame enough to create a corona.

But I don't want to melt my wires!

This is a very common and understandable fear! People often take the torch away too soon for fear of melting things. The problem is, if the solder doesn't fully flow, the wires aren't going to be soldered together.

Begin by getting a corona flame on your charcoal block. Slide the corona over to your filigree so that it covers as much of the metal as possible. Keep the corona moving slightly in a tight circle to heat your piece evenly all over. When the piece is hot enough, concentrate the heat at the joints. You might need to angle the torch slightly toward the frame wire, which is thicker, so that the solder will flow to it and not just sink into the filigree filler wire.

The solder will first look dry and grainy. This means all the moisture has evaporated. Next you will see the solder seep into and between the wires. Don't stop! The solder has probably not flowed yet! Russian Filigree Powdered Solder will mirror or become shiny just like any other kind of silver solder. The challenge is that the powder is so fine, you may not be able to see when this is happening. Look at areas that have larger concentrations of solder, such as where a number of filler wires come together in the corner of a frame. That will be the easiest place to see when the solder flows.

Because silver is a good conductor of heat, it's quite possible to get one area red-hot (or even to melt it) without getting the solder to flow. All over, even heat for long enough is the key! See the images for what to look for in fully flowed solder.

Why does the solder have grainy white crystals?

If the jar is left open for long periods of time, humidity can make the borax within the powder clump or crystalize. While it might look odd, it will not effect the quality of the solder. Once the powder is mixed with water, the borax will dissolve. Note: I hardly ever close the jar of Russian Filigree Powdered Solder on my workbench. In my humid climate the borax does crystalize but never effects my filigree.

The solder sticks to the brush or is difficult to make adhere to the filigree when applying.

Make sure you're using a cheap synthetic brush such as a flux brush. Artists' brushes such as sable or other fine pointed brushes intended for painting may cause the solder to stick to the fibers instead of sticking to the filigree.

—or—

Mix more water into the powder in the lid.

The solder puffs up or does weird things when I heat it.

Use Distilled water not tap or bottled water! Water in certain areas may have high calcium, iron, or other contents that can create soldering problems by neutralizing the flux. Some bottled waters have minerals in them that can neutralize the flux as well.

Make sure you're heating the frame enough for the solder to flow onto it and not just into the filler wires.

—or—

Let the solder thoroughly dry before heating the filigree with the torch.

The solder does not flow when heated.

Make sure that the piece is evenly heated and for long enough to allow the solder to flow fully. It will mirror when it flows just like wire or sheet solder. If there is a grainy appearance after heating, the solder has not fully flowed.

Be sure to pickle in between rounds of soldering. See the images for what to look for in fully flowed solder.

The filler wire won't solder to the frame.

When heating the connection points of the filigree, you might need to angle torch slightly toward the frame wire, which is thicker and sucks up more of the heat. The filler wires require less concentrated heat and will get hot by conduction. Remember, any solder can only flow to what is hottest. By concentrating the heat on the frame wires the solder will flow to it and not just sink into the twists of the filigree filler wire.

Some of my solder joints worked but not all of them.

Why is that?

Because the twisted and milled filler wire can suck up the solder into its twist, it is very common for only some of the connection points to fully solder at one time. Heat expansion can also shift the filler wires away from the frame, which can prevent the solder from joining the connection points. This is not a function of the Russian Filigree Powdered Solder but is a normal occurrence with the technique of Russian filigree. Continue placing filler wires in the frame, and when you solder the next time, add more solder to the area that didn't fully join previously.

Russian Filigree Powdered Solder Instructions & Tips



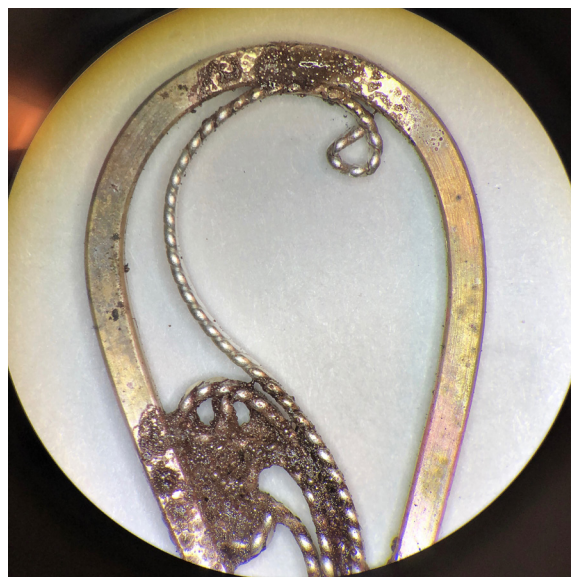
Mixing the distilled water with the powder



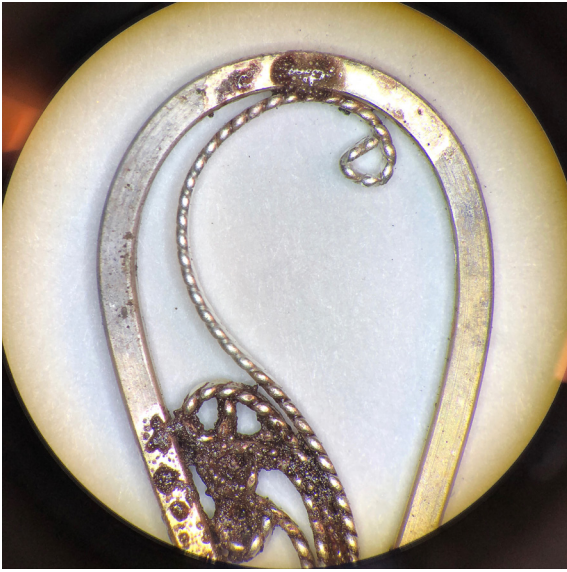
The solder applied to the filigree in the top petal



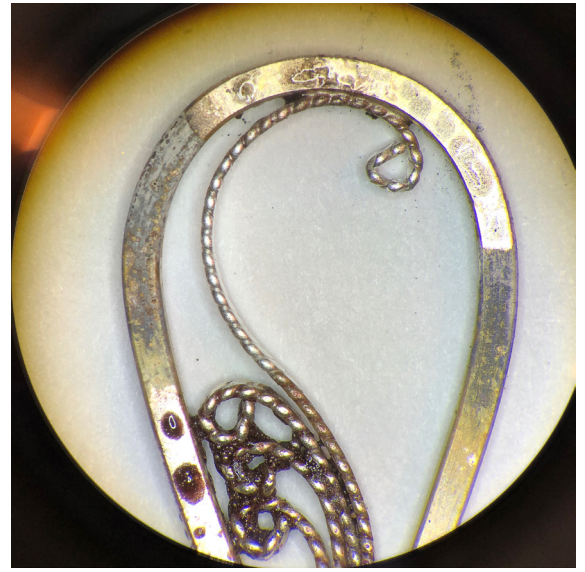
An example of a corona flame



The heat has begun to make the flux look glassy, and the solder is grainy and has not yet flowed.



Further heating causes the solder to begin seeping into the connection points, but the solder is still grainy and has not yet flowed.



The solder has flowed where the top filler wire meets the frame but is still somewhat grainy around the lower three wires.



The solder has fully flowed and joined the filler wires to each other and to the frame wire.