

Solder **TECHNIQUE** Studio

SOLDERING IRON FUNDAMENTALS FOR
THE MIXED MEDIA ARTIST

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**NORTH
LIGHT
BOOKS**

CREATEMIXEDMEDIA.COM
CINCINNATI, OHIO



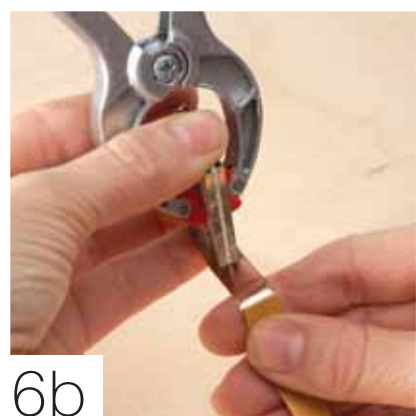
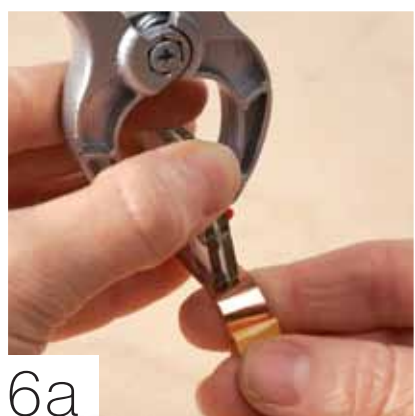
Materials

- Basic soldering tool kit
- Solder, Silvergleem
- Copper foil tape, cut to size
- 2 panes for the pendant (size is up to you) and 1 piece for the toggle (size $\frac{5}{16}$ " \times $1\frac{1}{4}$ " [8mm \times 32mm])
- Collage, embroidered fabric or ephemera
- Scrapbook paper
- Glue stick
- White copy paper
- Scissors
- Sharpie
- 18-gauge sterling silver wire
- $\frac{3}{16}$ " (5mm) store-bought sterling silver jump rings
- Two $\frac{1}{4}$ " (6mm) store-bought sterling silver jump rings
- Sterling silver linked chain
- Pair of chain-nose pliers
- Wire cutters
- Rubber gloves
- Polishing compound
- Cotton swabs

Optional: Third hand

Toggle-Clasp Pendant

The bonus of the toggle pendant is that it allows you to have a second, more subtle message that complements your primary piece. The toggle is a decorative fastener that is also functional. In creating your toggle, use a clever turn of phrase, a snippet of scrap paper or a tiny textile to expand your message. I have made plenty of these as baby gifts; in the main frame I put a photo of the child, in the back I put their name and birthdate, and in the toggle I put their nickname.



1 Use a piece of precut glass as your composition guide. Trim your image with a craft knife. If you are not comfortable using a craft knife, hold the image to glass and use scissors to trim off excess paper. Even when using a craft knife, I still hold the paper to the glass and trim off any paper sticking out beyond the edge of the glass.

2 Apply glue over the back of an embroidered piece of your choice. This will help to keep the stitches in place. Put a piece of white copy paper on top of the glue to reinforce the textile and stitches.

3 Place a piece of precut glass over the embroidered textile and cut down to size.

4 You will need two pieces of clean glass, two images cut down to size and copper foil tape cut down to size.

5 Sandwich the embroidered piece and image between two panes of glass. Now, determine the width of the copper foil tape by clamping the embroidered piece, image and two panes of glass. Place the clamped piece in the middle of different widths of copper foil tape, and choose a width that will overlap the front and back approximately a couple millimeters. Measure around the perimeter of the glass with the copper foil tape. Leave enough to overlap approximately 1/4" (6mm) at the end. Trim down as necessary.

6 Keeping the piece squared up, move the clamp so it faces away from you. Start the copper foil tape along the bottom center of the piece (do not start on a corner). I prefer to start wrapping my copper foil tape on the opposite end of where I am going to attach my jump ring. If you are going to attach jump rings to the top and bottom, start on the side. If you are attaching four jump rings to one piece, it doesn't matter where you start as long as it's not a corner.

6a The piece now sits in the middle of the copper foil tape.

6b Once you have the tape started on the bottom center of the piece and the glass is aligned

TIP *If you have copper foil tape that is too thin and the next size up is too thick, trim down the larger size.*

in the middle of the tape, place your thumb on top of the piece and your fingers on the bottom, preparing to rotate the piece clockwise as you affix the tape around the edges of the glass. Remember: do not hold the clamp. Always have the paper backing and adhesive of the copper foil tape facing you, and always position your hands with a thumb on the top and fingers on the bottom.

7 Peel away more backing. Gently pull the copper foil tape taut and place the corner of the piece in the middle of the copper tape. Peel away more of the backing. Reposition your hands (thumb on top, fingers on the bottom) and move the clamp so it is facing away from you and rotate the corner into the middle of the copper tape. Again, gently pull the tape taut and place the next corner in the middle of the copper tape. Repeat until you have two and a half sides wrapped. Always reposition your hands with your thumb on top, fingers on the bottom, and the clamp facing away from you. After two and a half sides have been wrapped, you can take the clamp off.

8 Once you get to the end, even out the edges and overlap about $\frac{1}{4}$ " (6mm) and trim off the excess. If you always have the adhesive side of the tape facing you, you will always see what you are doing. Move at a strategic pace and you will get a more centered wrap, with even amounts of tape on each side.

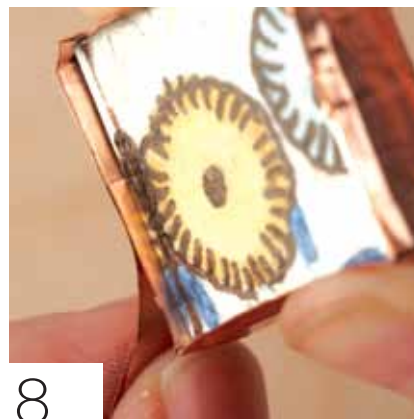
9 With both fingers, push the sides of the copper foil tape down and tuck under at the corner, then overlap what you just tucked under. Continue to work your way around the piece tucking and pinching.

10 Repeat step 9 on the other side.

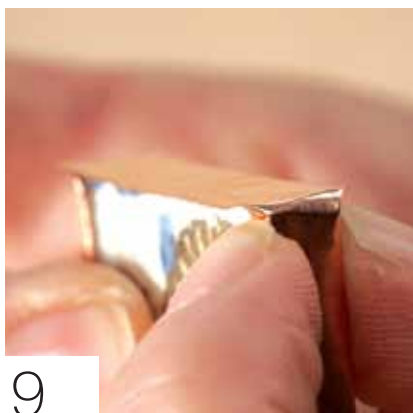
11 Burnish with a bone folder until you get a smooth seal. Push the corners down; don't worry if they look smooshed, they will be covered with solder. Don't forget to burnish the sides and where



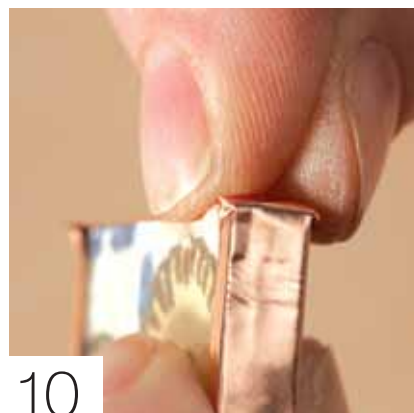
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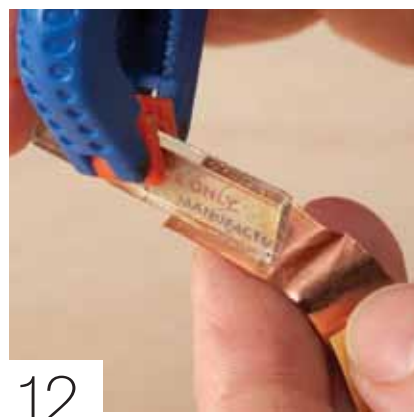
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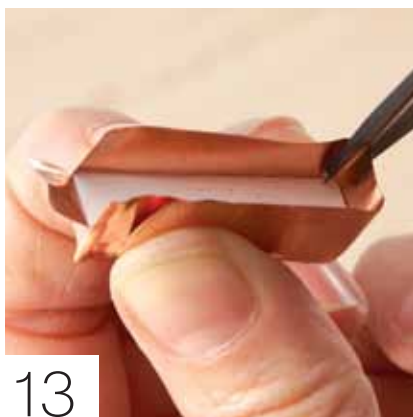
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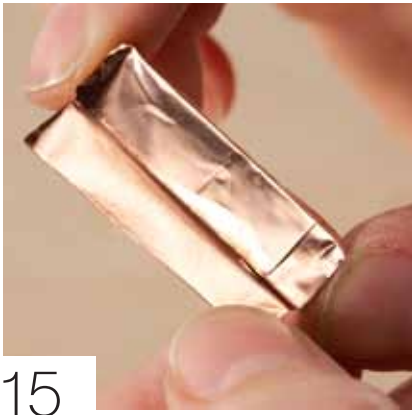
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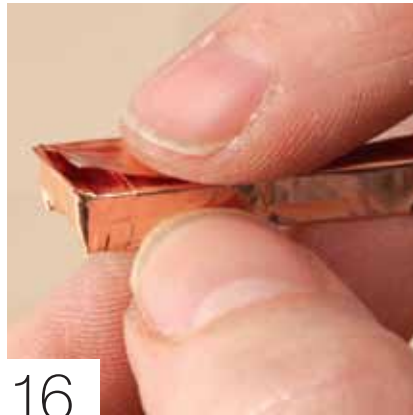
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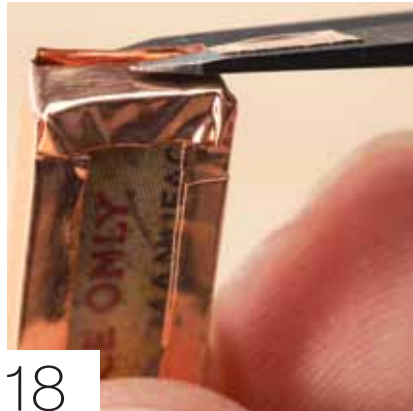
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the copper foil tape overlaps. You are building the foundation of your piece, and it is important to get a good even wrap and a smooth tight seal on your burnishing.

12 The measurement for the piece of the toggle is $\frac{5}{16}$ " \times $1\frac{1}{4}$ " (8mm \times 32mm). Cut a piece of decorative paper accordingly. Use a small clamp to hold the paper to the glass. Using $\frac{1}{2}$ " (12mm) wide copper foil tape, place the glass approximately $\frac{1}{16}$ " (2mm) down from the top edge of the copper foil tape. Place the end of the tape at the center of the long edge of the glass. Wrap the copper foil tape around the glass and overlap approximately $\frac{1}{4}$ " (6mm) at the end.

13 Use fine-tip scissors to notch the four corners. You will have four flaps on the back.

14 Fold down the two shorter notched pieces.

15 Fold down a long side of the copper foil tape with the overlap.

16 Fold over the last long piece.

17 Pinch, tuck and overlap the copper foil tape on the front. Burnish.

18 Trim excess copper foil tape.

19 Wrap a piece of 18-gauge sterling silver wire around a Sharpie marker. Make a single coil. Use wire cutters to nip off one jump ring.

20 The photo shows the jump ring layout. You are now ready to solder. Clean up your workspace and plug in your iron. The $\frac{1}{4}$ " (6mm) and large-diameter jump rings will go on the pendant and a $\frac{3}{16}$ " (5mm) on the back of the toggle.

21 Using a cotton swab apply a thin layer of gel flux to the front, back and sides.

22 Note: use the length of the Silvergleem solder coming off the roll to hold the piece in place while soldering and start by tinning the front and back of the piece. Once your iron is heated to the right temperature, pick up a bead of solder with your iron tip. Position the bead on the top edge of the copper foil tape. Once it starts to melt onto the copper foil tape, pull the solder along the edge of the tape in one fell swoop. Do not use your iron like a paintbrush. If you don't have enough solder to finish one edge, get another bead. Start where you left off and melt the solder together, then pull the bead along the edge of the tape.



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22a

22a Fight the urge to fix any drips. Use cross-locking, self-clamping tweezers or a gloved hand to turn the piece over and tin. Work in a systematic way and continue tinning the other side.



22b



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22b If your piece looks like this, you are on the right track. Trust me. Fight the urge! You can do it.



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23 Use cross-locking, self-clamping tweezers and get ahold of your piece. Place it on its edge parallel to your soldering surface. Apply a layer of flux over your solder. Start off by tapping out the existing solder. Melt all the way through from the front to the back (see iron placement in photo). Do not drag the solder along the top. Use a tapping motion, melting all the way through the drips of solder. Once you get to the end of an edge, pick up your iron. Do not push a bead of solder onto the next edge. Hold still until the solder dries all the way through. Once dry, open the cross-locking, self-clamping tweezers and repeat on the next edge. Make small, slow taps right next to each other in order to melt all of the solder together.



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TIP
If you want a more rounded edge, apply flux, pick up a bead of solder, melt it to the solder that's already on your piece and tap it out.



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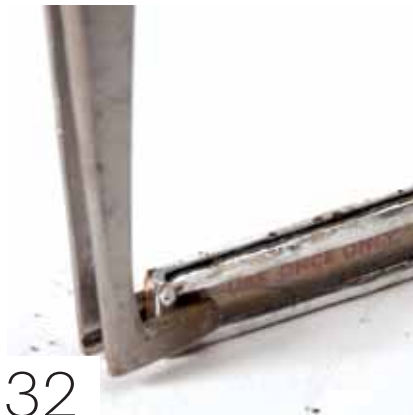
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TIP
 If you find yourself getting frustrated, step away. You can always go back and work on it later. I can't stress enough that you shouldn't fret; know when it's time to stop and move on to the next piece. With each piece you can only get better!

24 Steps 24 through 30 are how to fix mishaps. If you add too much solder on your edge, you are going to melt and drag the solder off. Yes, I said drag it off, as there are instances where you have to drag. Be careful of any drips that fall off—they are very hot!

25 If you get a lump from pushing solder from the other side, add a little bit of flux and melt it into the next edge, keeping in mind to melt the solder all the way through. Tap out the extra solder.

26 If you did drag your iron and you don't have a nice rounded bead, apply a layer of flux and add more beads of solder. Again, don't forget to tap from the front to the back and melt it all the way through.

27 Notice the iron hovering above the solder and the whole area melted all the way through.

28 If you move your piece before the solder has dried all the way through, you will end up with a ripple effect or all your solder will roll down to one side. Gravity will come into play: liquid travels downhill.

29 Add flux and tap it out.

30 Notice that it's not perfect, but you have to learn how to step away.

31 Now it is time to make the toggle. Begin by tinning the copper foil tape that is burnished the front of the glass toggle. Apply flux before you begin soldering and throughout the soldering process. Using cross-locking, self-clamping tweezers, turn the piece over, apply flux to the back and add multiple beads of solder to the back to create a domed edge.

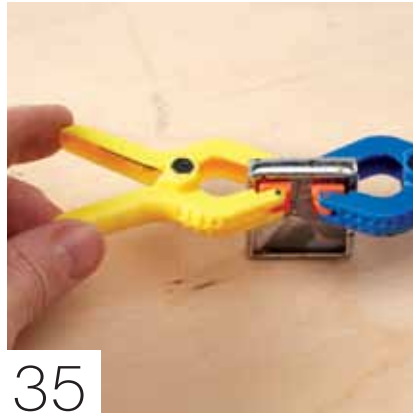
32 Apply flux and tap out the edges of the sides. Notice how to position the cross-locking, self-clamping tweezers. Remember to let the solder dry all the way through before moving your piece.

33 Next, we will add the $\frac{3}{16}$ " (5mm) jump ring to the back center of the toggle. Take the jump ring and grasp it with your cross-locking, self-clamping tweezers, open-end down. Apply flux to the open end of the jump ring and a bit to the area where you want to add the jump ring.



34 Use your iron to melt the solder where you want to affix the jump ring. Push the jump ring into the heated solder while holding it still. Apply the iron to either side of the jump ring to melt the solder all the way down so the jump ring sinks as low as it can go. Tap out the edges on either side of the jump ring. Hold the piece still until it cools.

35 Steps 35 through 41 show to set-up your workspace when affixing multiple jump rings and how to fix common jump ring mishaps. Using two clamps, secure the piece at the top.



36 Push the clamp arms down towards the table to make a stable work station so the clamp arms serve as angled braces. It's important to have a stable piece; if your piece moves, it's hard to add your jump ring.

37 As an option when adding your jump rings, you can use a third hand. This is very helpful if you tend to be shaky or have an unsteady grip.



38 Using the cross-locking, self-clamping tweezers, grasp the jump ring open-end down, apply flux to the open end and a bit where you want to attach the jump ring. Place the jump ring open-end down on the piece where it will be soldered. Steady your hand while holding the jump ring in place.

39 Get a small bead of solder, go in on the side and melt the existing solder to the new bead, keeping the jump ring steady. Repeat on the opposite side of the jump ring. If needed, tap out the top on either side. Keep your hand still until the solder cools. When the

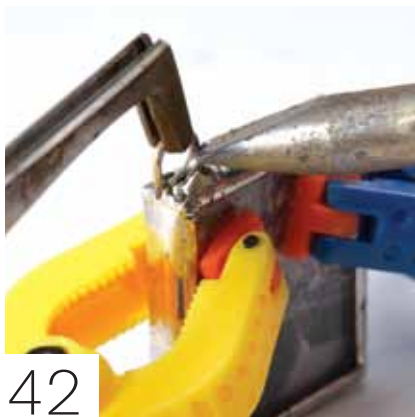




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solder has cooled, release the jump ring from the tweezers.

40 If you try to affix the jump ring without holding it with the tweezers, heating the solder next to it will cause the jump ring to fall over. Don't panic—this can be fixed.

41 To remove a fallen jump ring, grasp the jump ring with the tweezers, heat up the solder around the jump ring and pull up the jump ring out of the solder. Add flux and tap the top out again.

42 We will now add jump rings to create the toggle necklace. Apply a 1/4" (6mm) jump ring to one end of the piece.

43 Affix the larger Sharpie jump ring on the opposite end.

44 Clean the piece with flux cleaner or alcohol, using paper towels. Do not spray the piece—spray the cleaner onto the towel. After cleaning and removing flux, use a polishing compound to give the piece a pleasing shine. For an even polish, place your towel on the table and hold it in position, rubbing the piece across the surface of the towel. To polish the area around the jump ring, move your towel to the 90-degree edge of the table and rub your piece back and forth around the jump ring.

45–45a Use chain-nose pliers to attach a flat drawn sterling silver cable chain to the piece and the toggle.

46 Thread the toggle piece through the jump ring made with the Sharpie.