

Tiffany Stained Glass Workshop

MuMa

Questions? Message me (Hannah)
or post on the stained glass channel on Slack!

What is Tiffany Stained Glass?

- Stained glass where each piece is wrapped with copper foil tape, then soldered together
- This is different from traditional stained glass which is held together by metal channels (traditionally lead) that are soldered together
- Pros of Tiffany stained glass compared to traditional (came) stained glass:
 - Can make more complex designs with smaller pieces/more curves
 - The final pieces are lighter and easier to hang
- Cons of Tiffany stained glass:
 - Needs extra reinforcement for larger pieces
 - Very time consuming to prepare each piece of glass



Wikipedia: Tiffany lamp



What this workshop will teach you

- How to cut glass pieces to fit a pattern
- How to grind the glass pieces
- How to apply copper foil to the glass pieces
- How to solder the art together
- How to add the finishing touches

Not covered by the workshop:

- Designing your own piece
- Reinforcing large pieces
- Using came to finish the edges
- Making 3d stained glass

!!!Safety!!!

- Safety glasses
 - Cutting glass
 - Grinding glass
- Grinding glass safely
 - Always put water in the grinder!
 - Optional: mask
 - Tie back long hair
- Soldering and patina
 - Wear gloves (flux can be toxic)
 - Use fume extractor
 - Safety glasses if solder is splattering
- **The stained glass pieces contain lead! Do not use for food or to wear as jewelry! Not for children!**
- **Die Glaskunst enthält Blei! Nicht für Lebensmittel oder Schmuck verwenden. Nicht für Kinder geeignet!**
- Always vacuum up work area after cutting glass!



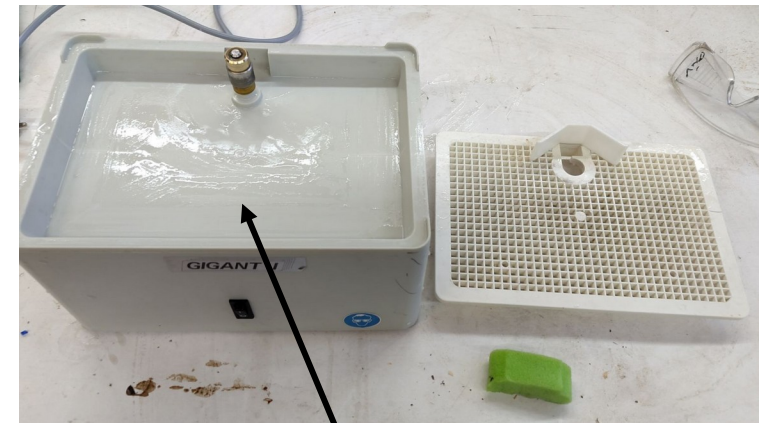
Required!



Optional



Do NOT use gloves with glass grinder!
DO use gloves for soldering/patina



Always fill reservoir with water!

Process overview

1. Apply pattern pieces to glass
2. Cut the pieces out
3. Grind the edges of the pieces and clean them
4. Apply copper foil tape
5. Solder pieces together
6. Thoroughly wash the piece
7. Apply patina and optionally wax

Cutting the glass

- Wear safety glasses!
- Edges are sharp!
- Either glue pattern pieces to glass or trace with marker
 - A lot of glass is not symmetric! Make sure you know which side you want to be the front.
 - It is easier to cut on the smoother side. Put your pattern pieces on that side, and flip them over if the smooth side is the back side
 - Arrange the pieces so that they don't break into each other
- The glass will break all the way across the sheet in a relatively straight line.
 - Score must go all the way from one edge to the other
 - Sharp corners need to be cut in 2 passes, not one
 - Gentle curves are easier to cut than sharper curves
 - Thin and small pieces are harder to cut than wide and large pieces
- Use glass cutter to score glass around pieces
 - Do NOT score the same line more than one time! This dulls the blade quickly
 - Use lubricating oil
 - It really doesn't take very much pressure to score the glass
 - Cutting accurately makes the grinding step easier
 - Cutting the pieces slightly smaller than the pattern pieces is better than slightly larger
- Break pieces along score with glass pliers (running pliers or grozier pliers)



Glass cutting tools

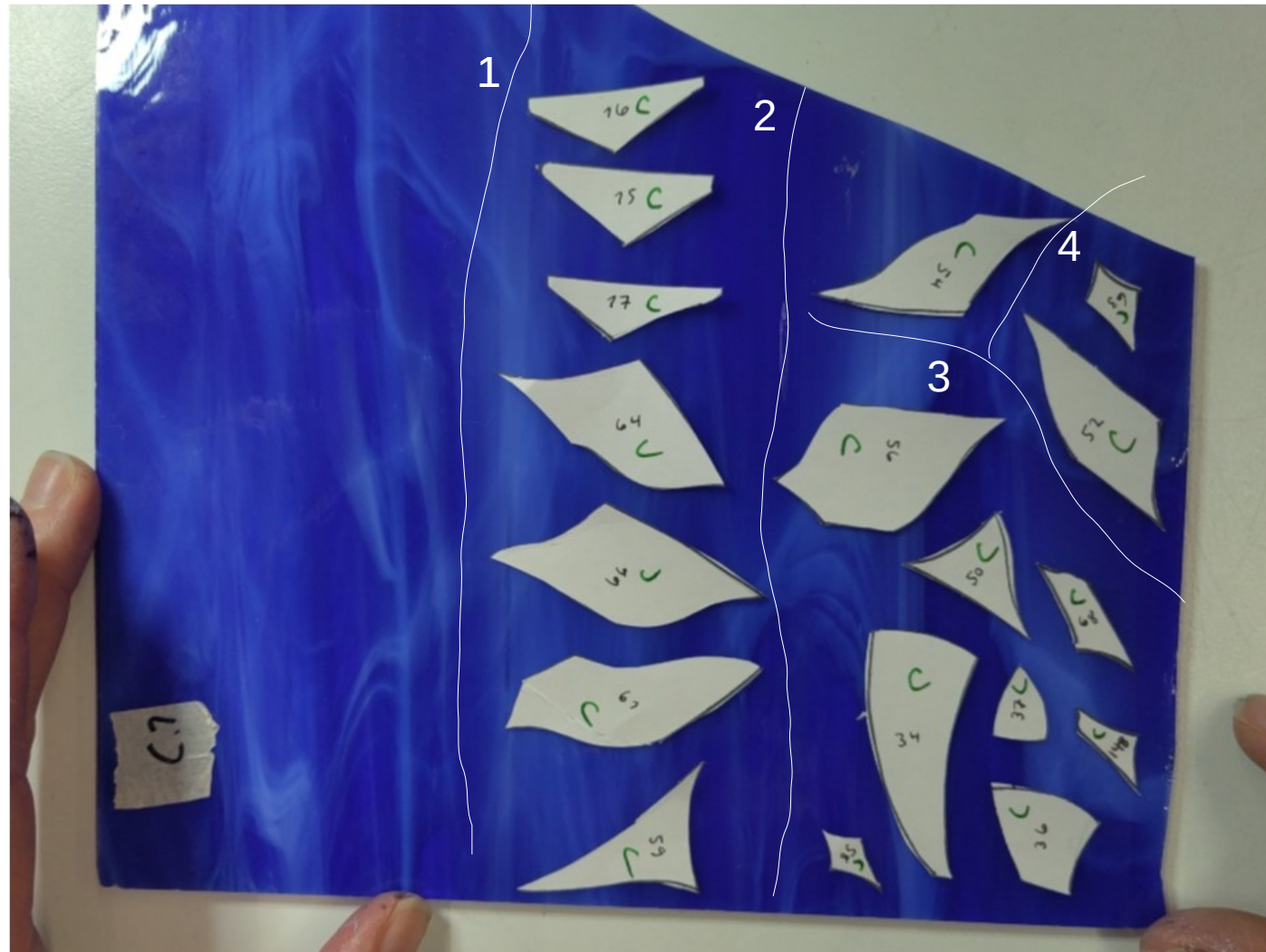


Grozier pliers



Running pliers

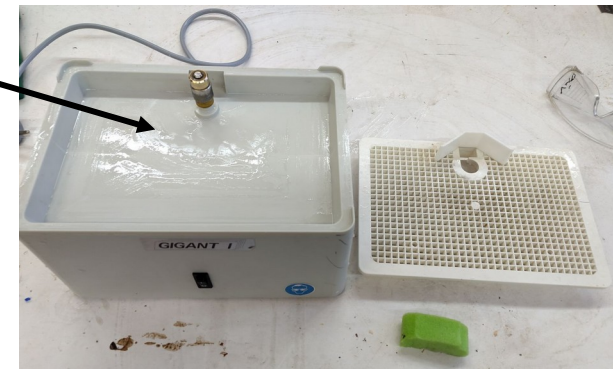
Example of laying out template pieces



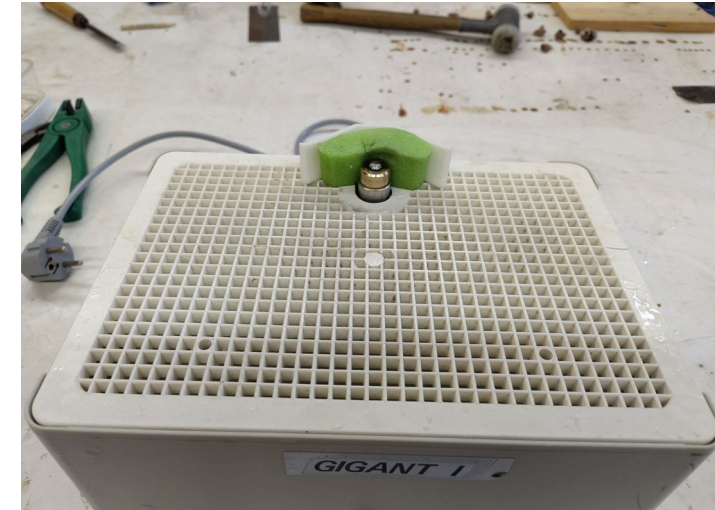
Grinding the glass

- Wear safety glasses!
- Tie back long hair!
- **Always fill the reservoir with water! This prevents glass dust from entering your lungs!**
- Don't wear gloves- they can get caught in the grinding bit!
- Grind the edges smooth
 - Hold glass and press against bit
- Always completely clean grinder when done!
 - Dump water
 - Wipe out wet glass powder goop
 - Dry completely (towels and air gun)

Fill completely
with water!

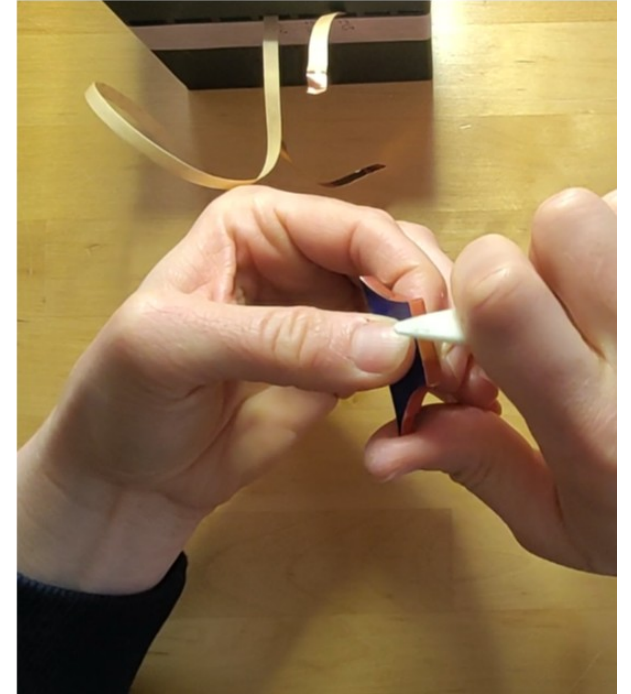
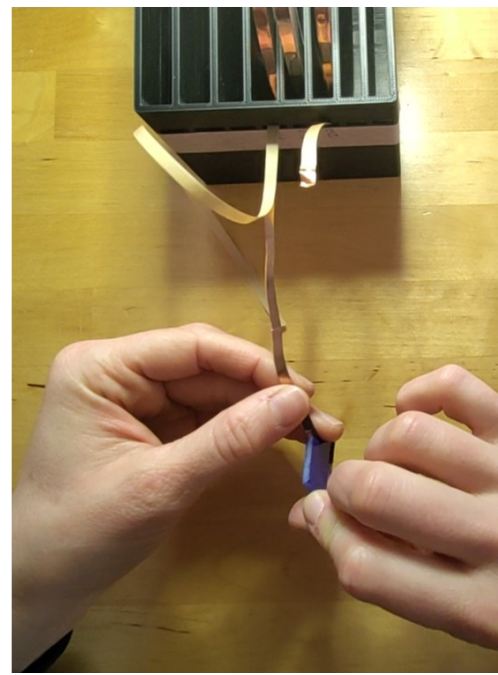


Assemble grinder with
platform and sponge



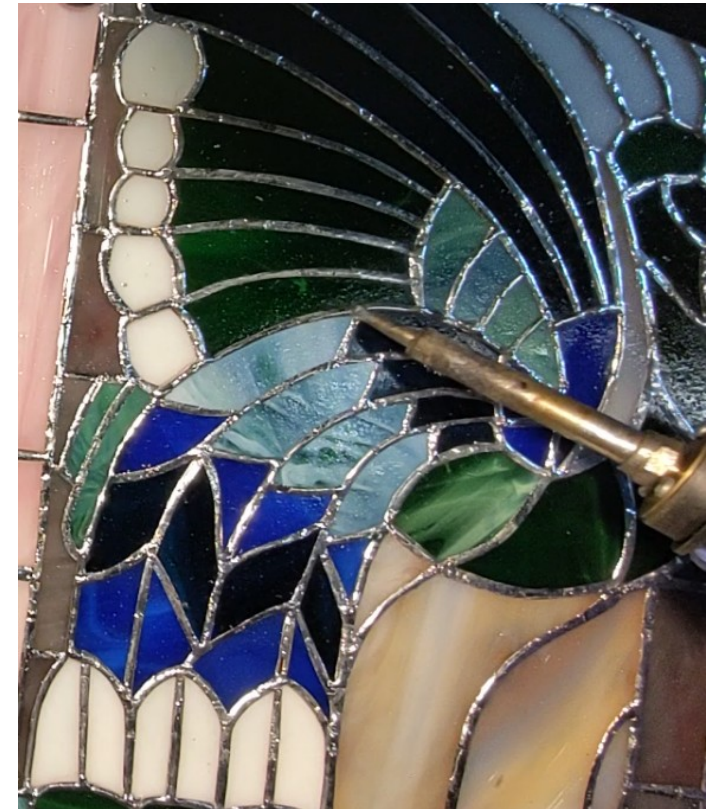
Foiling the glass

- Clean and dry all pieces of glass to remove dust, marker, etc.
- Apply copper foil around the edges.
 - Center the foil
 - Have at least ~5 mm of overlap
- Fold the edges of the tape onto the glass and burnish it
- If there are really large gaps between pieces, you can use copper wire in addition to solder to fill them



Soldering the pieces together

- Place all pieces together and secure in place (a jig, tacks and corkboard, etc.)
- How to solder pieces
 - Use wide chisel tip
 - Start with front side because there can be solder splatter on the second side
 - Apply very thin layer of flux
 - Tack pieces together, then tin, then bead
 - Repeat on reverse side without tacking
- Avoid holding soldering iron in one place!
 - This makes the solder bead less smooth
 - This can overheat the glass and cause it to crack
- Solder lines can be cleaned up after beading solderAvoid holding soldering iron in one place! This makes the bead less smooth.
- Bead the edges
 - Try to keep the surface you are soldering parallel with the ground. Gravity can cause the solder to drip

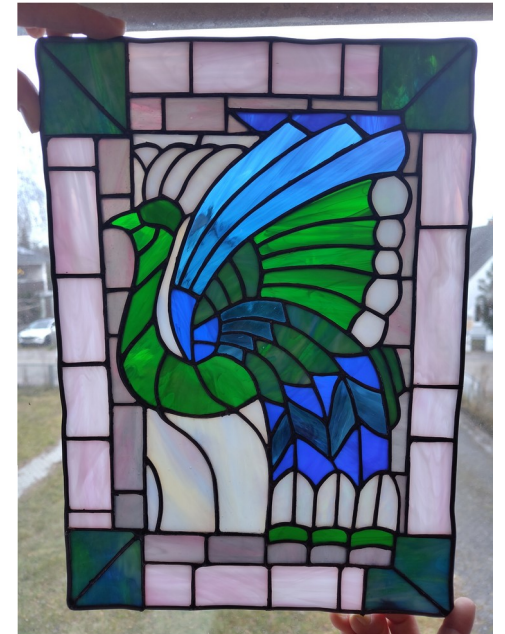


Final touches (patina and waxing)

- Thoroughly clean the glass and the solder. The gritty green soap works the best
 - Be sure to clean all flux off
 - Scrub the solder to remove any oxidation. If the solder isn't completely clean, the patina will be splotchy (especially copper colored patina)
 - Dry the piece completely
- Apply patina
 - Use cotton swabs to apply patina. It can be black or copper colored.
 - If you don't apply patina, the solder will look moldy as it oxidizes
 - Let patina sit for at least 10 min (15 if copper patina)
- Rinse the piece
 - Rinse to remove excess patina
 - Do not scrub, or the patina color will rub off
- Apply wax (optional)



Copper patina



Black patina

List of materials and equipment

Materials that are not provided by MuMa

- Glass (typically ~3mm thick)
- Copper foil tape (I typically use 5.2 mm wide tape)
 - <https://www.hobbyland.eu/eng/shop/edco-copper-foil-copper-back/p-F005521/>
- Solder (60/40 tin lead solder, 3 mm diameter)
 - <https://www.hobbyland.eu/eng/shop/6040-tin-lead-solder-3-mm-wire/p-F005966/>
- Liquid flux and flux brush (alternatively you could use flux gel or paste, but I don't have experience with these)
 - <https://www.hobbyland.eu/eng/shop/flux-brush-5-pcs/p-1678/>
 - <https://www.hobbyland.eu/eng/shop/fructic-soldering-flux-100-ml/p-52739/>
- Patina for Tiffany stained glass
 - <https://www.hobbyland.eu/eng/shop/super-black-patina-100ml/p-3710/>
 - <https://www.hobbyland.eu/eng/shop/copper-patina-glossy-100-ml/p-52744/>
- Polishing wax
 - <https://www.hobbyland.eu/eng/shop/renaissance-wax-microcrystalline-polish-65-ml/p-38927/>
- Other optional accessories (burnishing tools, U-shaped came for edges, copper wire, chain, reinforcement for large pieces, fid or bone folder, etc.)
 - <https://www.hobbyland.eu/eng/shop/stained-glass-burnisher-lathekin/p-1675/>
 - <https://www.hobbyland.eu/eng/shop/bone-folder-and-burnisher/p-52637/>
 - <https://www.hobbyland.eu/eng/shop/lead-came-u-round-35-x-int-4-x-2000-mm-3-pcs/p-53780/>

Equipment provided by MuMa

- Glass cutter
 - <https://www.hobbyland.eu/eng/shop/glass-cutter-toyo-tc17p/p-2311/>
- Glass breaking pliers
- Glass grinder
- Burnishing tool (can use pretty much anything, like a pen)
- Blade for trimming copper foil
- Soldering iron and fume extractor

Where to get materials

- Glass
 - Amazon (cheap, but not super high quality)
 - GLS Glas und mehr in Fürstenfeldbruck (I haven't been there, but it looks promising)
<https://www.glsgmbh.de/>
 - VS glass products <https://www.colored-glass.eu>
 - Hobbyland.eu
- Solder, tools, flux, copper foil tape, usw.
 - Amazon (I wouldn't trust solder from Amazon)
 - Hobbyland.eu
- Misc. things (chains for hanging, copper wire for jump rings, etc.)
 - AliExpress
 - Amazon
 - BauHaus

Some extra resources that I have found useful

- YouTube videos
 - Very comprehensive tiffany stained glass overview: <https://www.youtube.com/watch?v=NIz0yHAjBwQ&t=1145s>
 - How to make hinges for a box: <https://www.youtube.com/watch?v=6ekt-OyEIX0>
 - Stained glass soldering: <https://www.youtube.com/watch?v=Uf0qn3Q4oH8&t=523s>
 - Self promotion □ (my own stained glass video): <https://www.youtube.com/watch?v=j-L0hHZXPd0>
 - Making a stained glass box: <https://www.youtube.com/watch?v=VlwKIE9a5V8>
 - Making a stained glass lamp: <https://www.youtube.com/watch?v=ERLYk38ZoHs>
 - Another stained glass lamp: <https://www.youtube.com/watch?v=xujKoP3-FrE&t=4s>
- Designing your own patterns and “impossible” shapes (at least with the tools that we have)
 - <https://www.instructables.com/How-to-Design-for-Stained-Glass/>
- Free file to 3d print your own copper foil tape dispenser
 - <https://www.printables.com/model/514111-stained-glass-copper-foil-tape-organizer>
- Still have questions? Message me (Hannah) on Slack!
- Enjoy the workshop? Feel free to leave a donation for MuMa in the red box near the entrance :D