

## Arc-Melter steps:

1. Before each use make sure the chamber is clean, so open the argon gas valve and open the valve to evacuate the pressure, then you can open the chamber.
2. Clean the welding chamber and the trap and make sure there is no dirt there.



3. Put the zirconium (absorb any residual oxygen in the chamber and work as a warning, if it gets dark means there is something wrong) in one of the circular gaps and the materials on one of the finger gaps (mostly the middle one).
4. Put your powder layer by layer, starting from the lighter one in the bottom of the finger gap (Carbon, Boron, Titanium, Iron, Neodymium)



5. Close the chamber and make sure everything is fixed.
6. Screw the bolts on top of the chamber door but not tighten it.



7. Turn on the pump (turning counterclockwise and the pressure gage should go down, means the system is working) then for accelerating the process do the 5-6 pump and flush cycles (replacing the atmosphere with Argon gas). During pumping and flushing check the pressure on the pressure gage. It must become under 100 Mtorr.



8. Close the pumping path and open the pressure vale. Somewhere before the black line.
9. Make sure the water source is working.



10. Turn on the welding motor. Switch the power on and the current should be on 180 A. Tighten the bolts.



11. Put the shield glasses. Put the electrode tip in the middle on the copper and start pressing the pedal slowly to see the lights.
12. Start melting the Zirconium. After melting wait for sec and then check if it is shiny.
13. If the melted and cooled zirconium was shiny means everything is ok and you can start arc-welding of the sample.



14. Move the electrode on edges of the sample ( around the outside then go in) while pressing the pedal for more power. Do not focus on a point. Keep moving the electrode continuously.
15. Be careful not to touch the copper or your sample with the electrode tip. Avoid lollipop. :)



16. After finishing the melting process, turn off the welding power. Open the pressure valve. The chamber door will pop up. Get out your sample and clean the chamber.
17. Whenever you are done put the chamber on vacuumed, close the argon gas pump.
18. Turn off the water source.