

## Soldering Tools

1. Vise
2. Safety Glasses
3. Solder Sucker
4. Solder foil
5. Diagonal Cutters
6. Needle Nose pliers
7. Solder
8. Solder Wick
9. Pump Sponge
10. Soldering Iron

## Soldering Iron

Typically 25-30 Watts

Tip temperature  $\sim 780^{\circ}\text{C}$  ( $400^{\circ}\text{C}$ )

## Solder

Solder is an alloy of tin and lead

An example of solder used with electronics is 60/40 solder because it is made up of 63% tin and 37% lead, it melts at  $361^{\circ}\text{F}$

Follow any application laws about the use of leaded or lead-free solder

## Soldering Iron Care and Maintenance

### Tinning

The process of adding solder to a soldering iron tip, it must be periodically cleaned with a thin coat of solder to allow heat to transfer to the work piece

When heated, the tip should look shiny with a layer of solder.

## Solder Process

1. Heat both items at the same time by applying the solder iron to the copper pad and the component leads
2. Allow the soldering iron heat while gradually applying solder to make a puddle then remove the iron.
3. Let the joint naturally cool naturally (few seconds) and confirm the joint appears shiny.

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## Good Solder Joint Characteristics

- Smooth
- Bright
- Shiny
- Clean
- Concave fillet

## Bad Solder Connections

- Browning
- Unclean
- Copper visible
- PCB warping
- Bridged

## De-solder Process With a Solder Sucker

1. Apply heat to the connection to melt the solder and trigger the solder sucker
2. Repeat de-soldering as needed until all solder is removed
3. Remove component Lead

## De-solder Process With a Solder Wick

1. Notice that solder wick is finely braided copper to wick away excess solder from a de-soldered connection
2. Lay solder wick and soldering iron on the desoldered connection to heat and draw excess solder from PCB pad.
3. Ensure the de-soldered PCB pad is solder-free.

## Soldering Safety

- Wear Safety Glasses when soldering including all instances in the vicinity of a soldering operation
- Place the soldering iron in an approved holder when not in use because an iron is very hot and can cause burns
- Orient the soldering iron so that the cord does not get caught up in your hands/crums or on others.
- Ensure access to proper ventilation
- Verify that the type of solder is safe for use in your working environment
- Secure the components to be soldered before beginning the soldering process
- Provide plenty of space to work
- Use an appropriate soldering iron tip for the soldering job to be completed
- Verify that the soldering iron tip is not damaged
- Inspect the soldering iron tip power cord for burned or melted sections then show bare wires.
- Report any <sup>damaged</sup> soldering irons to your instructor
- Do Not TOUCH MOLTEN SOLDER

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