

Splicing Wires and Waterproofing Connections

Components: 2 wires, 2 pieces of heat shrink

Equipment and tools: Safety Glasses, soldering iron, solder, hot glue gun and glue, heat gun

Bag: 3

All exercises require safety glasses, all the time! Wear closed toed shoes too.

1. Take/Cut a 20 cm length of wire.
2. Use a wire stripper to strip 1.5 cm from each end of the wire.
3. Bring and twist the ends together and make a good solid connection.



Photo #1: Two wires stripped and twisted together

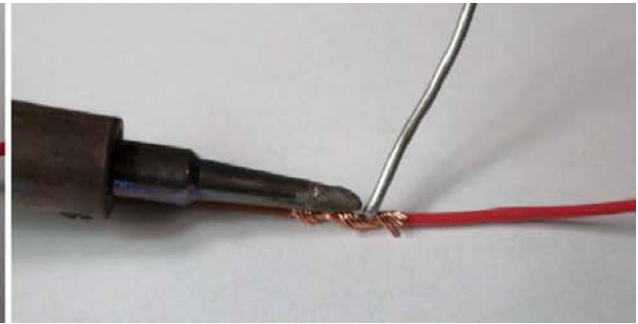


Photo #2: Soldering two wires together

4. Tin the tip of your soldering iron.
5. Touch the hot tip of the soldering iron to the bare copper wire for 4 to 5 seconds.
6. Touch the tip of the solder to the bare copper wire as close to the soldering iron tip as possible.
7. Push as much solder into the connection as needed. The joint should be covered with shiny, silver solder, but ideally you should see the structure of the wires underneath the solder covering.



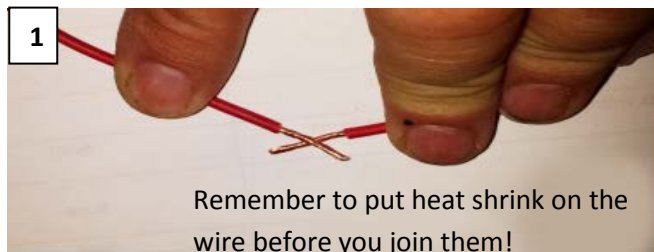
Photo #3: Two wires soldered together. Note the outline of the individual wires is still visible under the solder.

8. Remove the solder. Wait 1-2 seconds. Then remove the tip of the soldering iron.
9. Tin the tip of the soldering iron.
10. Replace the soldering iron into its holder.
11. Repeat this process a second time to practice your soldering skills.
If necessary, practice as much as possible.

Waterproofing a solder joint:

See the MATE soldering presentation for more information.

1. Take/Cut a 20 cm length of wire.
2. Use a wire stripper to strip 1.5 cm from each end of the wire. [Photo 1]
3. Cut a 3 cm to 4 cm length of appropriately sized shrink wrap.
4. Slide the shrink wrap over the wire. Keep it as far away from the solder joint as possible.
5. Bring and twist the ends together creating a solid connection. [Photo 2]



6. Plug in the glue gun and let it heat up.
7. Solder the two wires together.
8. When the solder joint has cooled, apply a thin layer of hot glue over the joint. [Photo 3]
9. Once the glue has cooled, slide the shrink wrap completely over the solder joint and solid glue.
10. Completely heat the joint with the heat gun. You will see the tubing shrink over the rough, dried glue. The dried glue will melt and reform the glue nicely around the wire. The final splice should be completely smooth and waterproof. [Photo 4]