



Guidelines on soldering

Soldering is defined as “the joining of metals by a fusion of alloys which have relatively low melting points”. In other words, you use a metal that has a low melting point to adhere the surfaces to be soldered together.

Soldering requires two main things: a soldering iron and a solder. Soldering irons are the heat source used to melt solder. Irons of the 15W to 30W range are good for most electronics/printed circuit board work. Anything higher in wattage risks damaging either the component or the board. The choice of solder is also important. One of the things to remember is to never use acid core solder. Acid core solder will corrode component leads, board traces, and form conductive paths between components. Remember that when soldering, the rosin¹ in the solder releases fumes which are harmful to your eyes and lungs. Therefore, always work in a well ventilated area. Hot solder is also dangerous. Be sure not to let it splash around because it will burn you almost instantly. Eye protection is also advised.

A clean surface is very important if you want a strong, low resistance joint. All surfaces to be soldered should be cleaned with steel wool and some sort of solvent. After the component and board have been cleaned, you are ready to place the component on the board. Bend the leads as necessary and insert the component through the proper holes on the board. To hold the part in place while you are soldering, you may want to bend the leads on the bottom of the board at a 45 degree angle.

Apply a very small amount of solder to the tip of the iron. This helps conduct the heat to the component and board, but it is not the solder that will make up the joint. Now you are ready to actually heat the component and board. Lay the iron tip so that it rests against both the component lead and the board. Once the component lead and solder pad has heated up, you are ready to apply solder. Touch the tip of the strand of solder to the component lead and solder pad, but not the tip of the iron. If everything is hot enough, the solder should flow freely around the lead and pad. Once the surface of the pad is completely coated, you can stop adding solder and remove the soldering iron.

GLOSSARY

1 a translucent resin derived from the stumps or sap of various pine trees and used to increase sliding friction, and to manufacture a wide variety of products including varnishes, and soldering compounds.



ACTIVITIES

1 Describe the various steps in the soldering process.