Basic Soldering Workshop

PTH and large pitch SMT

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Introduction

Hazard - Burns

A soldering iron reaches temperatures easily capable of burning the skin on contact. Burns can also occur through secondary means:

- Conduction of heat through working materials
- Contact with molten soldering constituents
- Ignition of secondary materials

Hazard - Lead Exposure

Lead is a known neurotoxin and is contained in many types of solder. Soldering temperatures are not capable of producing lead fumes and skin contact is mostly harmless. Ingestion of lead contaminants on the skin or under the fingernails still presents a major hazard. Lead is a cumulative poison that is not normally excreted from the body.

Washing the hands with soap and water after soldering is sufficient protection from the effects of lead.

Hazard - Fumes

Hazardous fumes can be produced by both soldering components and surface contaminants of the solder joint. Fumes can cause irritation of the eyes, mucous membranes and respiratory tract. To avoid exposure:

- Work in a well ventilated area
- Keep your head to the side of the work area to avoid breathing fumes
- Use a fume extractor if necessary

Individually investigate the hazard of any chemicals used. Ask a lab monitor if unsure.

Hazard - Skin Irritation

Some chemicals, such as activated fluxes, can cause skin irritation. Washing any areas of contact after soldering is usually sufficient to prevent irritation from chemicals stocked in the lab.
You may wear gloves and/or long sleeves if you have sensitive skin.
Do not use any other products with prior approval.

Hazard - Electrocution

The soldering iron can provide a path for electrical current capable of electrocuting the user. Never attempt to solder a circuit that is energized. Circuits with large capacitors can remain energized for several minutes.

Soldering irons with a ground plug offer increased safety.

Personal Protective Equipment

Safety glasses must be worn at all times while soldering. Solder or other components used while soldering can 'spit' and damage the eyes. Cutting wire can also cause fragments to fly and damage the eyes.

Safety Procedures

- Always wash your hands after soldering and before breaks.
- Always replace the soldering iron in the stand. **Do not lay it on the work surface.**
- Do not attempt to catch a falling iron.
- Only work over a stable work surface. Falling solder can cause burns.

Tip/Temperature Selection

Joint Preparation

Tip Preparation

Soldering

Troubleshooting

Wire to Pin

Wire to Wire

Plated Through Hole