

 SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING	Standard Operating Procedure (SOP)	
	SOP Title: Soldering	
SOP Number: SEEE_003		
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Reviewed by:	Job Title:	
Approved by: Michael Conlon	Job Title: Head of School	
Date effective:		

Version	Date	Author
1.0	18 May 2015	Mark Davis
1.1	09 May 2016	Tom Fallon

1.0 PURPOSE

This document sets out the standard operating procedure for soldering and desoldering equipment, used in the fabrication, and maintenance of, electrical and electronic equipment for use in laboratory and project work.

2.0 SCOPE

This procedure provides general instructions on how to solder or desolder components in the lab environment, in a safe manner, using a soldering iron and desoldering pump. It does not cover the use of more specialised soldering tools or equipment.

3.0 DEFINITIONS

PPE: Personal Protective Equipment.

4.0 RESPONSIBILITIES

Basic soldering training is conducted by the individual lab instructors.

5.0 HEALTH & SAFETY PRECAUTIONS

- Students are to be given clear and specific instructions in the proper safe handling and use of soldering equipment.
- Constant vigilance is required on the part of staff supervising laboratories where soldering takes place.
- Soldering equipment operates at a high temperature (300-350°C), and burns may result from contact with the skin.
- Potential hazards of soldering include: thermal burns to the skin, inhalation of toxic fumes from solder and flux, absorption of lead residue if hands not washed after contact with solder.

- Staff and Students must wear safety glasses at all times when soldering, as molten solder can splash and cause major eye injuries if splashed into eyes. Never shake molten solder off the tip of a soldering iron.
- Always return soldering iron to its stand when not in use. Never put it down on work surface.
- Keep all electric cables away from hot soldering iron tips, as there is a risk of electrocution if tip makes contact with live wires.
- Do not leave hot soldering irons unattended, switch off or unplug when not in use.
- Allow soldering irons to cool before storing away.
- Keep flammable liquids and materials away from the soldering area.
- Work in a well ventilated area, as fumes from the flux can be irritating if inhaled. Use a fume extractor in more confined spaces.
- Long hair and loose clothing/jewellery must be secured/removed before soldering, as contact with soldering tip will cause singeing or result in burns.
- Always use lead-free, rosin-free solder when soldering, as this poses the least long-term health risk.
- Consumption of food is prohibited in laboratories and workshops.

6.0 MATERIALS

- Soldering iron with stand, and tip cleaning sponge.
- Desoldering pump or desoldering braid/wick.
- Lead-free solder with rosin-free flux core.
- Safety glasses with side protection.

7.0 PROCEDURE

- Before each use, visually inspect the condition of equipment for obvious damage. Defective equipment must be reported and taken out of use.
- Ensure soldering iron is secure in stand and all mains cables are out of reach of soldering tips before switching on equipment.
- Wear suitable PPE while soldering, safety glasses with side protection are mandatory, but consider other forms of PPE which may prevent molten solder coming in contact with the skin.
- Wet tip-cleaning sponge and rinse to remove excess water.
- Allow soldering iron to reach correct temperature before attempting to solder. This is normally around 300°C.
- Clean soldering tip with wet sponge from soldering stand, and tin iron tip with solder before soldering.
- Apply tip to component leads to be soldered and when its temperature has reached the melting point of the solder, apply solder to joint.
- Allow joint to cool while preventing movement of the connection.
- Ensure soldering iron has cooled before storage.

8.0 REPORTING

Seek immediate medical attention first-aid treatment for burns or other injuries resulting from soldering and report incident to relevant authority using DIT's incident report form. The occupational first aiders in the School are the initial point of contact for first aid but minor burns can be treated initially by cooling skin under running water for at least 15 minutes.

9.0 DOCUMENTATION

The Technical staff member in charge of the laboratory /workshop should maintain a Tool Log to record defective tools, their repair or disposal and their replacement.

10.0 REFERENCES

Health & Safety Authority of Ireland <http://www.hsa.ie/eng/>

11.0 REVIEW

Following the first year of application, the Senior Technical Officers of the School of Electrical and Electronic Engineering will review the Hand Tool SOP.

Thereafter the Senior Technical Officers of the School of Electrical and Electronic will review the Hand Tool SOP every two years.