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***Norwich Technical High School - Electronics Technology***

***Date Updated: 12/12/23***

***7 Mahan Drive***

***Norwich, CT 06360***

**TITLE:**

**Soldering Iron SOP**

**APPROVALS:**

**Author:**

**Rayce Rinaldi and Christopher Tourangeau**

**Date:**

**1/3/2024**

**Review:**

**Nathan Willbanks**

**Date:**

**1/3/2024**

1. **Revision History:**

| **INITIALS** | **REV** | **DATE** | **SUMMARY OF CHANGES** |
| --- | --- | --- | --- |
| **MM** | **A** | **12/15/2023** | **Initial Release** |
| **RR & CT** | **B** | **1/3/2024-1/4/2024** | **Basically remade everything**     * **Capitalized Title** * **Replaced purpose, and safety with a shorter and less wordy structure as well as deleting bad wording and improper gramatical errors** * **Added a list of safety materials** * **Completley remade the materials list** * **Replaced many mispelt words, mostly the word “soldering” being “suturing”** * **Completely remade the procedure & pictures for procedure** * **Rayce RInaldi on writing** * **Christopher Tourangeau on pictures** |

1. **Purpose:**

**The purpose of this SOP is to summarize how to do BASIC soldering for students. This includes standard through hole soldering with a standard soldering iron & soldering iron tip.**

1. **Safety:**

**Some of these may or may not be optional.**

* **When soldering be carful to not burn, melt, or warp anything. This includes cords, hands, chasis parts, etc.**
* **List of safety equipment:**
* **Safety glasses**
* **Anti-Static Silicone Mat**
* **Anti-burn gloves**
* **Anti-Static Bracelet**
* **Fume extractor**

1. **Materials:**

**Some of these may or may not be optional.**

* **Soldering iron**
* **Solder**
* **Flux**
* **Method of solder removal**
* **Flux**
* **Soldering iron stand**
* **Steel wool/sponge**
* **Method of holding circuit still (for example, a handy-man/clips of some sort)**
* **Magnification (Optional)**
* **Other tools based on what job/fix you’re doing (such as shorting wire, heat-shrink, different types of soldering irons/methods, etc.**

1. **5. Procedure:**

| **Step** | **Procedure** | **Picture** |
| --- | --- | --- |
| 1. Gather resources | **Gather solder, solder sucker/solder wick, flux, and your method of holding the circuit down.** Also, decide what soldering tip is right for the job. |  |
| 1. PPE safety | **Equip safety equipment such as safety glasses, and gloves.** |  |
| 1. Warming the iron | Heat the soldering iron. This may or may not take a few minutes. The temperature depends on the alloy the solder is (lead-free solder or 10% lead).  Usually around 600-700 degrees F (315-370 degrees C). |  |
| 1. Tinning | Once at a temperature that can melt the solder, you’re working with, scrape the tin off of the soldering iron from the last use in the steel wool or sponge if there’s a big blob. If you took all of the solder off and not just the blop (which usually happens), re-tin the soldering iron tip. |  |
| 1. Apply flux | Apply flux to the surface of what you’ll be soldering to remove oxides, promote wetness, and enhance the flow of solder. |  |
| 1. Soldering | Put the soldering iron on one side of the piece and the solder on the other side of the piece (for example, opposite sides of a pad on each side of a resistor lead). |  |
| 1. Increase surface area | If the joint isn’t melting and you can’t get the solder to stick, try increasing the surface tension between the soldering iron and the piece. You can apply some solder to bridge the gap of air between the soldering iron and the piece. DO NOT apply solder to the soldering iron then try to put solder on the piece. This WILL NOT WORK. |  |
| 1. Cleaning | Clean your soldering iron between each joint that you solder or after every action. Do this with steel wool or a sponge. |  |
| 1. Inspection | After soldering, check the soldering joint for cold solder joint characteristics. Characteristics of cold solder joints include a rough surface area, rigidity, and a generally uneven appearance. This defect presents a high chance for the solder joint to crack and eventually fail. For through-hole components, the ideal solder joint should have a shiny and concave or cone-shaped appearance. |  |
| 1. Soldering iron preservation | To keep your soldering iron in shape for longer try tinning the tip after you’re done. Then let the soldering iron cool down. This will give you a protective layer between your soldering iron tip and the environment. |  |
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