

**COURSE:** General Fabrication Methods

**UNIT:** 5 – Material Joinery

**TOPIC:** Sweat Soldering

**TIME:** 3 hours

## **OBJECTIVES:**

At the completion of this lesson, students will be able to:

- Identify materials to be used.
- Identify equipment to be used for project.
- Develop a procedure for completing the project.
- Utilize a pipe cutter to cut pipe to length.
- Demonstrate correct procedure for preparing pipe to be soldered.
- Demonstrate correct operation of a propane torch.
- Demonstrate how to apply solder to a copper pipe.
- Evaluate the quality of the joints.

## **RESOURCES:**

- Internet access
- Lesson Activity: Sweat Soldering Activity (MOODLE)
- Worksheet: Sweat Soldering Activity Worksheet
- Tools, Materials, and Equipment:
  1. 1” Brass Craft Pipe Cutter
  2. C-Clamp
  3. Tape Measure
  4. Propane Torch Nozzle
  5. Propane Canister 14 oz
  6. Propane Sparker
  7. 24” x 1/2” Copper Pipe (One per student)
  8. Emery Cloth
  9. Flux
  10. Plumbing Solder
  11. 1/2” 90° Copper Elbow (Four per student)

12. Flux Brush

13. Safety Glasses

## STANDARDS:

Science:

Math: 4B

Technology: 2E, 2H, 11B, 12A, 19B, 19C, 19E

ABET: C, K

## OUTLINE:

1. <Set Induction>
2. Worksheet
3. Activity

## LEARNING EXPERIENCES:

1. **<Set Induction>** Have the tools, materials, and equipment out for students to look at and touch. Ask students what each of the tools and pieces of equipment are and what uses they serve. If available, show the final product to the students. Inform students of the objectives for the lesson.
2. Worksheet: Sweat Soldering Activity Worksheet is available online. The worksheet works as a study guide for the quiz. It evaluates whether or not the student accessed the lesson activity online.
3. The online lesson activity entitled “Sweat Soldering Activity” walks students through the process of making the project. It is important for students to preview the content before working on the project as computer access may be limited when the project is being worked on. **Encourage students to use their engineering notebooks to write the directions of the activity down in their own words.**

## EVALUATION:

- Class participation
- Worksheet Completion
- Online Test
- Project Completion