

## Brazing & Soldering Syllabus

**Time:** 8 hours

**Maximum Class Size:** 8

**Prerequisites:** None

**Course Description:** Soldering and Brazing of copper piping is a valuable skill that is needed by many contractors who install piping in water treatment plants. This course will introduce the participant to the health hazard associated with soldering and brazing, the required Personal Protective Equipment required as well as the actual techniques of brazing and soldering. Participants will be given ample time to practice the techniques presented. This introductory course is the prerequisite path to earning a certification.

### Goals/Objectives/Student Learning Outcomes:

- Identify the correct Personal Protective Equipment (PPE) for brazing and soldering practices.
- Demonstrate the safe use of all equipment associated with the brazing and soldering scopes of work.
- Describe the health effects of fumes when brazing and soldering.
- Identify all tools required for brazing and soldering.
- Demonstrate accurate measuring and cutting of material.
- Demonstrate the proper method of reaming.
- Demonstrate the proper method of cleaning.
- Demonstrate the proper method of fluxing.
- Demonstrate the proper method of heating.
- Demonstrate assembly and support of equipment associated with this scope of work.
- Correctly apply the filler material.
- Demonstrate the proper method of cooling and cleaning the material and equipment.
- Complete a Hands-on Performance Evaluation with a score of 80% or above.
- Complete a Brazing and Soldering Exit Exam with a score of 80% or above.

### Standards

- 29CFR 1910.252 Welding, Cutting & Brazing
- 29CFR 1926.702 Requirements for Equipment & Tools
- 29CFR 1926.350 Fire Prevention
- 29CFR 1926.351 Ventilation & Protection in Welding, Cutting & Heating
- 29CFR 1926.352 Fire Prevention for Gas Welding & Cutting

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### Classroom Rules and Procedures

- All classes begin at 6:30 am and end at 3:00 pm
- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

### Textbooks/Readings/Materials

- LIUNA Subpart J: Welding & Cutting PG & IG and associated Instructor Materials
- LIUNA Subpart E: Personal Protective Equipment IG & PG
- Soldering and Brazing PowerPoint
- *The Copper Tube Handbook* by Copper Development Assn
- *Copper in the USA: Bright Future Glorious Past* packet
- MSDS Packet
- *A Guide to Brazing & Soldering* by The Harris Products Group
- *Equipment Operation Safety Guidelines* by Harris
- *Deburring Tool P/N 9228* Product Specification
- *Operating Instructions Uitorch RP3T2, RP3T3*

### Tools/Equipment/Other Materials

- Deburring Tool P/N 9228
- Uitorch RP3T2, RP3T3
- Copper Piping

### Personal Protective Equipment

- 12 pairs of gloves
- 12 pairs of Safety Glasses
- 20 pairs of Ear plugs
- 12 hard hats
- 12 Welding PPE

### Course Requirements

## **Brazing & Soldering Syllabus**

To receive credit for the course, participants must:

- Be present for full eight hours
- Participate in all classroom exercises
- Pass a written exam
- Pass a hands-on exam

### **Course Policies**

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

### **Assessment and Grading**

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

### **Safety**

Failure to maintain and use PPE may result in dismissal from the course.