ATPF-1070: SOLDERING, BRAZING, AND PIPEFITTING TOOLS

Cuyahoga Community College

Viewing: ATPF-1070 : Soldering, Brazing, and Pipefitting Tools

Board of Trustees:
2012-06-28

Academic Term:
Spring 2019

Subject Code
ATPF - Applied Ind Tech - Pipefitters

Course Number:
1070

Title:
Soldering, Brazing, and Pipefitting Tools

Catalog Description:
Covers the care and use of hand and power tools that are used in the pipefitting industry. In addition, safe soldering practices, alloys, joint preparation and soldering and brazing operations are included. Emphasis will be placed on the application process where the tools and equipment will be used.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Pipefitter's apprenticeship program.

Outcomes

Course Outcome(s):
1. Review safety and work process as described in the Occupational Safety and Health Administration standards.(OSHA)

Objective(s):
1. 1. Demonstrate safe gas cylinder handling techniques.
2. 2. Identify confined space hazards that are found in performing pipefitting work.
3. 3. Explain the need for personal protective equipment.
4. 4. Apply fire safety procedures with respect to soldering and brazing operations.

Course Outcome(s):
2. Discuss the various types of tubing and alloys that are used for making tubing connections using either soldering or brazing applications.

Objective(s):
1. 1. Identify the different types of tubing and alloys that are used for connections made by either soldering or brazing.
2. 2. Differentiate between the different flux used.
3. 3. Define alloys and their respective uses.
4. 4. Select the proper heat requirements needed for different alloys.

Course Outcome(s):
3. Identify the special tools and equipment that are required for joint preparation when either soldering or brazing.

Objective(s):

1. 2. Explain how the different types of heating equipment and fuel gas systems operate and how they are used.
2. 3. Prepare tubing connections using sand paper and emery cloth and fitting brushes.
3. 4. Demonstrate the ability to join tubing using soldering and brazing operations.
4. 5. Demonstrate the ability to operate power equipment for cutting and threading pipe and tubing.
5. 1. List the different kinds of tubing cutters, reamers and brushes that used.

Course Outcome(s):

4. Demonstrate the ability to solder, braze, cut and thread tubing and pipe.

Objective(s):

1. 1. Set up and operate the soldering and brazing equipment for field operations.
2. 2. Apply correct material preparation techniques for tube connections.
3. 3. Use power pipe cutting equipment to cut pipe lengths to specified dimensions.
4. 4. Operate pipe threading machinery to make connections using threaded joinery.

Methods of Evaluation:

1. Quizzes
2. Test
3. Field application
4. Class participation

Course Content Outline:

1. OSHA Subpart “J”
    a. Gas cylinder handling
        i. Fuel gas
        ii. Oxygen
        iii. Transport
        iv. Storage
    b. Confined space
        i. Definition
        ii. Boilers, tanks and excavations
        iii. Entry permits
    c. Personal protective equipment
        i. Eye protection
        ii. Gloves
        iii. Ventilation
    d. Safety procedures
        i. Burn permit
        ii. Extinguishers
        iii. Fire watch
2. Tubing and alloys
    a. Tubing
        i. Hard
        ii. Soft rolled
        iii. Wall thickness
    b. Alloys
        i. Solder types
        ii. Brazing filler materials
    c. Flux
        i. Types
        ii. Uses and applications
        iii. Corrosive
        iv. Non-corrosive
    d. Heat requirements
        i. Temperature
        ii. Gases
        iii. Controls

3. Special tools and equipment
    a. Cutters
        i. Roll
        ii. Wheel
        iii. Power
    b. Reamers and brushes
    c. Heating equipment
        i. Air and acetylene
        ii. Oxygen-acetylene
    d. Tube joinery
        i. Soldering
        ii. Brazing
    e. Tubing preparation
        i. Emery cloth
        ii. Sand papers
        iii. Fitting brushes
    f. Power equipment
        i. Cutting machines
        ii. Roll groovers
        iii. Threading machines
4. Shop exercises
    a. Soldering techniques
    b. Material preparation
    c. Pipe cutting exercises
    d. Pipe threading
    e. Brazing exercises

Resources

United Association Training Department. *Soldering and Brazing Manual.* current. 1. United Association Training Department, 2011.

Handy Harman (Author). *The Brazing Book.* current. Handy Harman Co, 2004.

Jones, Bernard E. *Soldering, Brazing.* (Classic). New York: Pratt, 1918.

Resources Other

1. http://wiki.openwrt.org/doc/hardware/soldering (http://wiki.openwrt.org/doc/hardware/soldering/)
2. www.ic-on-line.cn/search.php?part= (http://www.ic-on-line.cn/search.php?part=soldering&stype=fts)**soldering**&stype=fts
3. www.ifixit.com/.../What+ (http://www.ifixit.com/.../What+soldering+tip+shall+I+use+for+soldering+the+display/)**soldering**+tip+shall+I+use+for+**soldering**+the+display
4. http://www.fpga-faq.org/sb-metal_hold/CD_08/TheBrazingBook.pdf

Top of page

Key: 563