

ATIN-1030: FUNDAMENTAL INSULATION II - FIBERGLASS INSULATION

Cuyahoga Community College

Viewing: ATIN-1030 : Fundamental Insulation II - Fiberglass Insulation

Board of Trustees:

October 2024

Academic Term:

Spring 2025

Subject Code

ATIN - Applied Industrial Technology - Insulators

Course Number:

1030

Title:

Fundamental Insulation II - Fiberglass Insulation

Catalog Description:

Identify an HVAC Duct system and distinguish the various ducts and functions. Develop the skills to measure, cut, and apply fiberglass insulation to ductwork. Identify a Plumbing System and distinguish the various pipes and functions. Develop the basic skills to measure, cut, and apply fiberglass insulation to plumbing pipes. Also, covers Firestop material application.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Heat and Frost Insulator's apprenticeship program.

Outcomes

Course Outcome(s):

Identify, describe functions, and design insulation system for various types of HVAC Ductwork.

Objective(s):

1. Distinguish each of the 4 main types of HVAC Ducts.
2. Analyze the primary and secondary functions of each duct type.
3. Design an appropriate insulation system depending on temperature, exposure, etc.
4. Select materials for design of insulation system.
5. Discuss potential designs for various insulation systems.

Course Outcome(s):

Apply insulation to specified Ductwork system.

Objective(s):

1. Develop the skills to properly measure and cut duct insulation.
2. Practice material estimation skills.
3. Demonstrate best practices of application for a functioning insulation system.
4. Troubleshoot insulation effectiveness in poorly accessible areas.

Course Outcome(s):

Applying fire barriers for ductwork and piping.

Objective(s):

1. Identify various firestop materials.
2. Demonstrate selection of appropriate Underwriters Laboratories (UL) system.
3. Determine best practices for the functional application of materials.
4. Analyze results of destructive testing.

Course Outcome(s):

Identify, describe functions, and design for various types of Plumbing Systems.

Objective(s):

1. Distinguish each of the main pipes of a plumbing system.
2. Analyze the functions of each pipe.
3. Determine appropriate insulation system depending on temperature, exposure, etc.
4. Select materials for design of insulation system.
5. Recognize the various pipe insulation sizes for proper application.

Course Outcome(s):

Apply insulation to specified Plumbing System.

Objective(s):

1. Develop the skills to properly measure and cut pipe insulation.
2. Practice material estimation skills.
3. Demonstrate best practices of application for a functioning insulation system.
4. Troubleshoot insulation effectiveness in poorly accessible areas.
5. Develop abstract reasoning for awkward cuts.

Methods of Evaluation:

1. Quizzes from International
2. Tests from International
3. Final exam from International
4. Graded Projects
5. Hands On evaluations
6. Estimation exercises
7. Homework worksheets
8. Active Mock-up Functional tests

Course Content Outline:

1. Functions of Ducts and Identification
 - a. Supply
 - b. Return
 - c. Outside Air
 - d. Exhaust
2. Components of ducts
 - a. Dampers
 - b. VAVs
 - c. Supports
 - d. Branch Lines
 - e. Mains/Trunks

- f. Diffusers
- g. Flex

3. Factors of Building an Insulation Systems
 - a. Interior/ Exterior
 - b. Exposed/Concealed
 - c. Duct Type
 - d. Operating temperatures
 - e. Estimation of needed materials
4. Fiberglass Insulation for Duct
 - a. Safety Data Sheet
 - b. Proper Personal Protective Equipment
 - c. Tool Safety
 - d. Good practices of cutting material
 - e. Effective Applications
 - f. Clean-up
5. Firestop Materials
 - a. Differentiate materials
 - b. Estimation of materials
 - c. Pre-job prep
 - d. Material Application best practices
 - e. Labeling and recordkeeping
 - f. Clean-up
6. Functions of Plumbing Pipe and Identification
 - a. Hot
 - b. Cold
 - c. Hot Recirculate
 - d. Drains
7. Components of pipes
 - a. Tees
 - b. Elbows
 - c. Supports
 - d. Branch Lines
 - e. Mains
 - f. Hot Water Tanks
 - g. Valves
8. Factors of Building an Insulation Systems
 - a. Interior/ Exterior
 - b. Pipe Type
 - c. Operating temperatures
9. Fiberglass Insulation for Duct
 - a. Safety Data Sheet
 - b. Proper Personal Protective Equipment
 - c. Tool Safety
 - d. Good practices of cutting material
 - e. Effective Applications
 - f. Clean-up

Resources

International Association of Heat and Frost Insulators and Asbestos Workers. *Fundamental Insulation I Piping Manual - Version 2*. International Association of Heat and Frost Insulators and Asbestos Workers,

Heat and Frost Insulators - Local 3. *Piping Textbook*. Cleveland, OH: Heat and Frost Insulators - Local 3, 2023.

Heat and Frost Insulators - Local 3. *Duct Textbook*. Cleveland, OH: Heat and Frost Insulators - Local 3, 2024.

Resources Other

www.jatctraining.com (<http://www.jatctraining.com>) 2024.

www.owenscorning.com. 2024

www.knaufnorthamerica.com (<http://catalog.tri-c.eduwww.knaufnorthamerica.com>). 2024.

www.jm.com. (<http://catalog.tri-c.eduwww.jm.com>) 2024.

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