ATIN-2230: FUNDAMENTAL INSULATION VI- POLYISOCYANURATE INSULATION

Cuyahoga Community College

Viewing: ATIN-2230 : Fundamental Insulation VI- Polyisocyanurate Insulation

Board of Trustees:
October 2024

Academic Term:
Spring 2025

Subject Code
ATIN - Applied Industrial Technology - Insulators

Course Number:
2230

Title:
Fundamental Insulation VI- Polyisocyanurate Insulation

Catalog Description:
Covers the various uses and advantages of Polyiso and similar types of insulation. Includes hazards, application techniques, strengths, and limitations of various polyiso and similar insulation materials.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

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

Outcomes

Course Outcome(s):
Classify polyiso and similar materials.

Objective(s):
1. Differentiate the various polyiso materials.
2. Describe the strengths and limitations for each material.
3. Recognize the hazards of working with polyiso materials.
4. Identify the systems best suited for each polyiso application.
5. List the supporting materials necessary for polyiso applications.

Course Outcome(s):
Execute application of polyiso material.

Objective(s):
1. Illustrate the necessary preparatory procedures prior to application.
2. Demonstrate proper Personal Protective Equipment (PPE) to be worn.
3. Practice situational pre-fabrication techniques.
4. Execute single layer application techniques.
5. Execute double layer application techniques.

6. Perform specialty cuts for Tees, Lateral Wyes, etc.
7. Analyze and assess effectiveness of polyiso application.

Methods of Evaluation:

1. Quizzes from International
2. Tests from International
3. Final exam from International
4. Graded Projects
5. Estimation exercises
6. Homework worksheets
7. Geometric construction projects

Course Content Outline:

1. Similar Materials
   a. Polyurethane
   b. Polystyrene
   c. Styrofoam
2. Characteristics
   a. Hot systems
   b. Refractory systems
   c. Cold systems
   d. Cryogenic systems
   e. UV characteristics
   f. Compressive strengths
3. Hazards
   a. Safety Data Sheets (SDS)
   b. PPE selection
4. Supporting materials
   a. Adhesives
      i. Contact Adhesives
      ii. Wheat paste
      iii. Mastics
   b. Tapes
      i. Strapping tape
      ii. Armaflex tape
      iii. Gorilla tape
   c. Jackets/ finishing
      i. Polyvinyl Chloride (PVC)
      ii. Aluminum
      iii. Stainless Steel
      iv. Armacell paint
      v. All Service Jacketing (ASJ)
5. Applications
   a. Tools needed
      i. Knives
      ii. Saws
      iii. Reamers
      iv. Trowels
      v. Glue applicators
      vi. Measuring devises
   b. Layouts
      i. Tees
      ii. Lateral Wyes
      iii. 3-piece 90s
      iv. 2-piece 90s
      v. Miters

c. Cut techniques
    i. Cut angles
    ii. Dig outs
d. Single layer applications
    i. Joint sealing
e. Multi-layer applications
    i. Staggering

6. Analysis
    a. Inspection
    b. Functional results

Resources

Fundamental Insulation I Piping Manual. Version 2. International Association of Heat and Frost Insulators and Asbestos Workers., 2014.

Fundamental Insulation II Equipment Manual . Version 2. nternational Association of Heat and Frost Insulators and Asbestos Workers, 2015.

Piping Textbook. Heat and Frost Insulators. Local 3 Cleveland, Ohio, 2023.

Armaflex North American Application Guide. Armacell, 2015.

Johns Manville Full Installation Guidebook. Johns Manville, Berkshire-Hathway Co., 2022.

Resources Other

www.owenscorning.com. 2024
www.jm.com 2024.
www.polyiso.org 2024.

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