



FINISHING CONSTRUCTION WORK Level-II

Learning Guide-65

Unit of Competence: Handle water proofing materials

Module Title: Handling water proofing materials

LG Code: EIS FCW2 M15 LO2-LG65

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LO 2: manually handle waterproofing Materials

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Instruction Sheet	Learning Guide # 65
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This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying and checking Materials and components
- Identifying waterproofing materials
- Sorting Waterproofing materials and components
- Protecting Waterproofing materials

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Identify and check Materials and components are for conformity to material schedule, plans and specifications.
- Identify and apply handling characteristics of waterproofing materials components are and safe and effective handling techniques.
- Sort, store/stack and locate waterproofing materials and components are for support of the job in accordance with supervisor's instructions and manufacturer specifications.
- Protect Waterproofing materials and components are against physical damage and store clear of traffic ways.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheet.
4. Accomplish the “Self-check.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet.
6. Do the “LAP test”



1.1 Identifying Materials and components

- Cement-based waterproofing

Waterproofing concrete structures is essential to ensure a long and effective working.

Cementations waterproofing is a waterproofing method for concrete that uses cement-based polymer coatings to create a barrier to water and moisture.

- Systems polymer modified (PM) Structural Repair is a multi-use product that can be used to fix damage to concrete and masonry surfaces. It is a pre-blended cement and sand mixture that also has the addition of a polymer as a bonding and application agent.
- Hydrophobic Cement is most suitable for basements and for making water tight concrete

Types of Waterproofing Methods for Building

1. Cementations waterproofing.
2. Cementations waterproofing is a waterproofing method for concrete that uses cement-based polymer coatings to create a barrier to water and moisture
3. Liquid Waterproofing membrane

Liquid waterproofing membrane is available in the form of liquid and is sprayed or applied by brush or roller to the concrete surface which forms a thick joint free membrane.

4. Bituminous Membrane is bituminous waterproofing systems are designed to protect residential and commercial buildings.

5. Bituminous Coating.

Bituminous coating is a type of coating used for waterproofing and flexible protective coat in accordance with its formulation and polymerization grade

6. Polyurethane Liquid Membrane: Polyurethane liquid roofing membranes are the professional, durable, waterproofing solution used together; this system creates a seamless



polyurethane liquid roof membrane across flat roofs, terraces, or decks – reliably protecting building structures over the long term, even under the most demanding of conditions.

- Hot mix bituminous felt material membranes

Bituminous felt is waterproof sheeting used for surfacing roofs or as an underlay beneath tiles or slates. The felt may be finished with a coating of sand or fine gravel to give a decorative finish. Bituminous felt is a cost-effective and convenient way of providing waterproof covering to roofs.

Injection Molding Materials

Material	Description
Polypropylene Polio	Thermoplastic polymer used for a wide number of applications.
Methylene Friction.	Dimensionally stable thermoplastic with high stiffness.
Polycarbonate Impact strength.	Thermoplastic material with good temperature resistance.

Table1. Injection Molding Materials



Self-Check -1	Written Test
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Directions: Multiple Choice Items

Instruction 1 Choose and write the letter of the best answer on the given answer sheet?

1. _____ is waterproof sheeting used for surfacing roofs or as an underlay beneath tiles or slates. (3 points)

- A. Bituminous felt
- B. Bituminous Coating.
- C. Cementations waterproofing
- D. Cement-based waterproofing

2. _____ is a waterproofing method for concrete that uses cement-based polymer coatings to create a barrier to water and moisture.

- A. Cement-based waterproofing
- B. Cementations waterproofing
- C. Hydrophobic Cement
- D. Bituminous Coating

Note: Satisfactory rating - 3 points

Unsatisfactory - below 3 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

- 1. -----
- 2. -----

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions



Information Sheet-2	Identifying waterproofing materials
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1.2 Identifying waterproofing materials

The following materials used for waterproofing are as follows.

- Drainage cells

Drainage Cells is made from recycled Polypropylene and is inert to soil borne chemicals and bacteria. Nero cells shallow and effective drainage profile helps landscapers to make use of mature plants on roof garden which needs soil depth and water retention properties.

- Geodetic fabric

Geotextiles are commonly used to improve soils over which roads, embankments, pipelines, and earth retaining structures are built. There are several types of geotextile material, including open-mesh, warp-knitted, and closed fabric or non-woven textiles.

- liquid application

Acrylic Liquid White is formulated for oil paints and will not give the same effect when working with acrylic paint. However, there are a number of slow drying acrylic mediums that you can use to mimic Liquid White.

- Injection

Bone cement is injected into back bones that have cracked or broken, often because of osteoporosis. The cement hardens, stabilizing the fractures and supporting your spine.

- polyurethane

Polyurethane is a polymer composed of organic units joined by carbonate links. While most polyurethanes are thermosetting polymers that do not melt when heated, thermoplastic polyurethanes are also available

- Primer, also called adhesion promoter or chemical bridges, function as a bonding layer between the substrate and the adhesive, and improve the adhesion. They are



used mainly on surfaces which are difficult to bond or in applications with very high demands regarding resistance against moisture and heat protection boards.

- betonies composites

Polymer clay composites is consists of clay particles dispersed in a polymer matrix have been prepared for different applications. Clay fillers are widely used in polymers to produce cost effective, strong and energy efficient materials. Betonies clay has montmorillonite (MMT) as its main component.

- *Butane*

Betonies clay contains natural minerals such as calcium, magnesium, and iron, which may provide additional benefits. Betonies clay forms from volcanic ash

- ethylene cop bitumen (ECB)

Ethylene Copolymer Bitumen (ECB) is a black colored mixture based on high quality polyethylene copolymers with different proportions of various special and amorphous bitumen grades.

- Ethylene propylene Diane monomer rubber (EPDM): a synthetic rubber used in a range of applications.
- Polyvinyl chloride (PVC) is used in a variety of applications in the building and construction, health care, electronics, automobile and other sectors, in products ranging from piping and siding, blood bags and tubing, to wire and cable insulation, windshield system components.



1.3 sorting Waterproofing materials

Sorting is the process of identifying materials based on their color, size.name and etc.

The following are used for material sorting in waterproofing.

- Barricading

Banding is the presence or formation of stripes of contrasting color. Barricade, from the French baroque (barrel), is any object or structure that creates a barrier or obstacle to control, block passage or force the flow of traffic in the desired direction. Adopted as a military term, a barricade denotes any improvised field fortification, such as on city streets during urban warfare.

- Covering is an outer protective covering such as the skin of an animal or a cuticle or Seed coat or rind or shell blanket mantle. A hard outer layer that covers something secured (hazardous materials)

- Signage

Signage refers to the conveyance of the message icons, words, arrows whereas sign refers to the display itself. In certain contexts, signage and sign can be interchangeable, but they have their own distinct meanings. Supply and installation of all types of warning signage for heights and associated.



Fig 2.1 warning signage

- Tying

Tying, commonly spelled as tying which is defined as forming a knot or a connection between two or more people. An example of tying is to form a bow in a scarf.



fig 2.1 Tying



Information Sheet-4	Protecting Waterproofing materials
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1.4 Waterproofing materials

The following materials are used for protecting waterproofing purposes

- Acrylic Based Polymer Coatings In such situations a membrane forming waterproofing materials are ideal. The membrane should be tough, water resistant, solar reflective, elastics, elastomeric and durable. They allow the movement of the concrete members, but keep the qualities of the membrane intact. Commonly used materials for waterproofing in building is cementations material, bituminous material, liquid waterproofing membrane and polyurethane liquid membrane etc.

Many types of waterproof membrane systems are available, including felt paper or tar paper with asphalt or tar to make a built-up roof, other bituminous waterproofing, ethylene propylene Diane monomer EPDM rubber, hyperon, polyvinyl chloride, liquid roofing, and more commonly used materials for waterproofing in building is cementations material, bituminous material, liquid waterproofing membrane and polyurethane liquid membrane etc.

- Acrylic Based Polymer Coatings In such situations a membrane forming waterproofing materials are ideal. The membrane should be tough, water resistant, solar reflective, elastics, elastomeric and durable. They allow the movement of the concrete members, but keep the qualities of the membrane intact.
- Liquid Waterproofing Membrane

Method Liquid membrane is a thin coating which consists of usually a primer coat and two coats of top coats which are applied by spray, roller, or trowel. It offers more flexibility than the cementations' types of waterproofing. The liquid cures into a rubbery coating on the wall. Many types of waterproof membrane systems are available, including felt paper or tar paper with asphalt or tar to make a built-up roof, other bituminous waterproofing, ethylene propylene Diane monomer EPDM rubber, hyaline, polyvinyl chloride, liquid roofing, and more. Many types of waterproof membrane systems are available, including felt paper or tar paper with asphalt or tar to make a built-up roof, other bituminous waterproofing, ethylene propylene dyne monomer EPDM rubber, hyperon, polyvinyl chloride, liquid roofing, and more.



Self-Check -4	Written Test
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Directions: Give the short answer for the following question.

1. List the protecting waterproofing materials?(**10 points**)

Note: Satisfactory rating – 5 points

Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

1. A _____
B. _____
C. _____

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions



Operation Sheet- 1	Protecting Waterproofing materials
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Steps 1- follow safety regulations?

Step 2- Understand materials for protection of water proofing?

Step 3- Determine whether the protecting materials are correctly protective?

LAP Test	Practical Demonstration
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Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 1- hour.

Task 1. Use the protective materials safely?

Task 2. Report the result of water proof protective?

Reference

[Https, // www. You tube. Com](https://www.You tube. Com)

Answer key

lo2. Information sheet one, self-check answer 1. A 2. B

lo2. Information sheets two, self-check answer 1. A 2.C

Lo2. Information sheets three, self-check answer 1. D 2. B

Lo2. Information sheets four self-check answer 1. Acrylic based polymer
2. Liquid waterproofing



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