Finishing Construction Work Level II

Learning Guide-101

Unit of Competence: Prepare & apply grout, Adhesive and sealant

Module Title: Preparing & applying grouting, Adhesive and sealant

LG Code: EIS FCW2 M22 LO2-LG-101

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LO 2: Mix grout and sealant on site

Instruction Sheet		Learning Guide 101

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Mixing Grout and sealant
- Applying Safety procedures

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:

- mix Grout and sealant in accordance with specifications.
- Observe Safety procedures specified for type of grout and sealant.

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”.

Information Sheet-1	Mix grout and sealant on site

2.1. Mix grout and sealant on site

2.1.1. Preparation of the mix

Mix the powdered adhesive with the recommended amount of water or latex, long enough to form a smooth, lump-free mix.

• Leave the adhesive mix to stand for 5 minutes and then mix again briefly before spreading.

• Use the adhesive within its pot life

Sealant to apply to the surface of grout lines after the grout cures (which can be done to either dry grout that is later mixed or pre-mixed grout)

You should know about **mixing grout** if you're planning to remodel your home with a new type of flooring. Grout is one of the most commonly used materials for repairing and finishing flooring surfaces. It's essentially a special type of quick-setting mortar, used to fill in gaps between ceramic tiles. Though grout application is easy to handle, preparing the appropriate grout mix can be a bit tedious. Use the following information to learn about the correct way of mixing grout.

Step 1: Getting Started

Mixing grout involves repeated use of water, and the dried grout powder is often scattered during the mixing process. Thus, you should cover the entire floor with old newspaper sheets. It's better to use a large plastic bucket for the mixing process. A two-gallon bucket is recommended for this purpose. Ensure that you buy the right kind of grout powder. Sanded grout is ideally suited for mosaic tile application—the space between the tiles is less than 1/8-inches wide. However, sanded grout is better suited for wall-tiling repairs. Flooring grout is used for repairing or finishing flooring surfaces only, like ceramic tiles.

Step 2: Identifying Useful Grouting Compounds

You can also add a grout color if you want to render a particular shade to the repaired or finished joints. This is often needed when handling designer ceramic tiles. If you're worried that excess grout may spoil the surrounding tiled surfaces, add a non-stick grout stabilizer.

This additive ensures that any scattered grout mix doesn't readily stick to the surrounding surface.

Step 3: Mixing Grout

Its better that you start with mixing a small amount of grout This ensures that the consistency of the grout mix can be easily manipulated. Many branded versions of grout powder carry packaged instructions, but a simple approximation is equally useful. An easy calculation for household use grout mix involves filling a two-gallon bucket with about 3-1/2 inches of grout powder. Sprinkle the grouting compounds according to packaged instructions. Pour some water into the bucket. You can use a long stick for mixing the grout and water. Ensure that you stir continuously. Not doing so can create lumps in the grout mix.

Step 4: Checking Grout Consistency

Mixing grout is about achieving the right consistency. The idea is to make the grout mix workable without compromising its drying qualities. Approximating the correct amount of water assumes critical importance. Ideally, the mixed grout should be easily spreadable with a rubber float or a cement spatula. The grout shouldn't contain so much water that it develops a cake-icing like consistency. The mix should be moist, with a firm appearance. This type of consistency is recommended for both flooring and sanded wall grout.

Among ceramic flooring, grout application often includes filling in small joints between the flooring tiles and walls. The prepared grout mix should be stable enough to be hand-held like a piece of soft dough, without any water dripping from it when squeezed slightly. When you check the grout mix, it should be workable enough to be inserted like a thick paste. This ensures that the grout is able to enter small crevices between the flooring tiles. This also helps in easily shaving off the excess grout. Once you achieve this kind of consistency, allow the grout mix to settle down for about five minutes. Your grout mix is now ready for application.

When mixing the grout & sealant use the following materials & tools

Plastic bucket, Newspaper sheets, Water hose, (Mixing equipment, like a rubber float or an industrial stirrer), Retail grout powder, Water, Grout stabilizer, Grout color etc

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1) write the materials & tools when mixing the grout & sealant? *(5points)*

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet 1	mixing grout

Procedures for achieving the right consistency material

Step 1- Getting Started

Step 2- Identifying Useful Grouting Compounds

Step 3- Mixing Grout

Step 4- Checking Grout Consistency

Information Sheet-2	Applying Safety procedures

2.2 Applying Safety procedures

2.2.1 Use of tools and equipment

The importance of using the right tool for the job ... Each tool is precisely designed for a specific purpose, so choosing the correct tool will also decrease the amount of effort required to get a job done right without causing damage to either the equipment or the surface being worked on

2.2.3. Workplace environment and safety,

A healthy work environment is about more than being safe. A Healthy workplace is one where employees in addition to feeling secure and enjoying a safe physical work environment; feel recognized for the work they do. Enjoy a positive social environment that encourages respect, fosters a sense of belonging and purpose.

2.2.4. Handling of materials,

Cornice should be carried and handled ‘on edge’ to avoid cracking the core or wrinkling the paper liner.

• Where possible, use full lengths of cornice and miter all joints.

• Ensure accurate and level placement by marking ceilings and walls with a line at the cornice edge.

• Measure and precut cornice to length before mixing the Cornice Adhesive.

• Install shorter lengths of cornice first then fit longer lengths by bowing out to spring miters into place.

Storage

-Compounds should be stored in a dry place above ground and protected from the elements and temperature extremes. Storage in an unsuitable environment or once container or bag is opened can shorten the life of the product.

Manufacturer’s Warranty

The use of non-specified additives or jointing compounds will void Boral Plasterboard’s warranty on the total jointing system

2.2.5. Use of firefighting equipment,

Firefighting equipment is equipment designed to extinguish fires or protect the user from fire. Firefighting equipment includes not only fire hoses and fire extinguishers but also fire-resistant protective clothing, fire-resistant gloves, respirators, and communication equipment.

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light, and various reaction products. The flame is the visible portion of the fire. If hot enough, the gases may become ionized to produce plasma. Depending on the substances alight, and any impurities outside, the colour of the flame and the fire's intensity will be different.

2.2.6. Organizational first aid,

First aid is medical attention that is typically administered immediately after an injury or illness occurs. It usually consists of one-time, short-term treatment, such as cleaning minor cuts, treating minor burns, applying bandages, and using non-prescription medicine.

Hazard control and hazardous materials and substances

- ✓ Immediately notify Ethiopian Police and/or Facilities Management of the situation.
- ✓ Evacuate the area.
- ✓ If possible, control access to the affected area by closing doors as you leave.
- ✓ Individuals who were in the area or involved in the incident should remain in a safe location at the scene until responding police officers arrive.
- ✓ Consult University Health Services, local EMS, or your own doctor to be checked for adverse medical symptoms (shortness of breath, fainting, etc.).
- ✓ If you notice anyone with adverse medical symptoms, call or refer them to Health Services.
- ✓ If you know what chemicals were involved, please advise Ethiopian Police, Facilities Management, or other responders. Obtain Material Safety Data Sheets (MSDS) if appropriate.

Working platforms and scaffolding

- **Safe operating procedures, including the conduct of operational risk assessment and treatments associated with:**

Safe operation of machinery and equipment necessitates that all foreseeable hazards are controlled. Effective control is achieved through a risk assessment process.

General Safe Operating Rules

Regardless of the particular risk reduction measures selected for a particular machine, there are some general safe operating rules that must be observed.

- ✓ Restrict access to shops and individual pieces of equipment/machines to authorized operators.
- ✓ Avoid working alone in the area so that someone is available to provide or summon assistance in the event of an emergency.
- ✓ Read and adhere to the manufacturer's operating instructions and warnings. Receive training in proper operation and demonstrate competency to an experienced and authorized operator for each type of task to be conducted before operating independently.
- ✓ Know the emergency stop/shut-down procedures for the specific machine operated.
- ✓ Inspect machines/equipment prior to each operating shift to ensure that:
  - ➢ Points of operation and surrounding areas are clean of debris and other hazards.
  - ➢ Shields and guards are in place and controls and interlocks or other safety devices are accessible and operating properly (pay attention to the point of operation, as well as the area behind, to the side, and above the machine).
  - ➢ Machine components are in good working condition (do not use damaged equipment).
  - ➢ Labels and warnings are present and legible.

Risk: The likelihood, or possibility, that harms (injury, illness, death, damage etc) may occur from exposure to a hazard.

Risk Assessment: Is defined as the process of assessing the risks associated with each of the hazards identified so the nature of the risk can be understood. This includes the nature of the harm that may result from the hazard, the severity of that harm and the likelihood of this occurring.

Risk Control: Taking actions to eliminate health and safety risks so far as is reasonably practicable. Where risks cannot be eliminated, then implementation of control measures is required, to minimize risks as far as is reasonably practicable. A hierarchy of controls has been developed and is described below to assist in selection of the most appropriate risk control measure/s.

Risk Assessment Procedure

The risk assessment procedure can best be illustrated in the following way.

Step 1: Identify Hazards

WHS legislation in New South Wales requires that PCBUs, in consultation with workers identify all potentially hazardous things or situations that may cause harm. In general, hazards are likely to be found in the following;

- ✓ Physical work environment,
- ✓ Equipment, materials or substances used,
- ✓ Work tasks and how they are performed,
- ✓ Work design and management

In order to identify hazards the following are recommended:

I. Past incidents/accidents are examined to see what happened and whether the incident/accident could occur again.

II. Employees be consulted to find out what they consider are safety issues, I.e. ask workers about hazards near misses they have encountered as part of their work. Sometimes a survey or questionnaire can assist workers to provide information about workplace hazards.

III. Work areas or work sites be inspected or examined to find out what is happening now. Identified hazards should be documented to allow further action. The work environment, tool and equipment as well as tasks and procedures should be examined for risks to WHS.

IV. Information about equipment (e.g. plant, operating instructions) and Material Safety Data Sheets be reviewed to determine relevant safety precautions.

V. Welcome creative thinking about what could go wrong takes place, i.e. what hazardous event could take place here?

At the University, any hazard which is identified by this process should be recorded on the **Risk Assessment and Control Sheet** (see Attachment 1 to this document) and further action taken to assess and then control the risks from this hazard.

Step 2: Assess Risks

Risk assessment involves considering the possible results of someone being exposed to a hazard and the likelihood of this occurring. A risk assessment assists in determining:
- How severe a risk is

- Whether existing control measures are effective

- What action should be taken to control a risk

- How urgently action needs to be taken.

A risk assessment should include:

I. Identify factors that may be contributing to the risk,

II. Review health and safety information that is reasonably available from an authoritative source and is relevant to the particular hazard,

III. **Evaluation of how severe the harm could be**. This includes looking at the types of injuries/illnesses/harm/damage that can result from the hazard, the number of people exposed, possible chain effects from exposure to this hazard.

IV. **Evaluation of how a hazard may cause harm**. This includes examining how work is completed, whether existing control measures are in place and whether they control the harm, looking at infrequent/abnormal situations as well as standard operating situations. A chain of events related to a risk may need to be considered.

V. **Determining the likelihood of harm occurring**. The level of risk will increase as the likelihood of harm and its severity increases. The likelihood of harm occurring may be affected by how often the task is completed, in what conditions, how many people are exposed to the hazard and for what duration.

VI. Identify the actions necessary to eliminate or control the risk; and

VII. Identify records that it is necessary to keep to ensure that the risks are eliminated or controlled. Other risk factors should also be identified as they may contribute to the risk: including

VIII. The work premises and the working environment, including their layout and condition,

IX. The capability, skill, experience and age of people ordinarily undertaking work,

X. The systems of work being used; and

XI. The range of reasonably foreseeable conditions.

Step 3: Controlling Risks

Once a risk rating is determined, each hazard must have its existing risk control measures evaluated using the Evaluation of Control Effectiveness Table. This allows for determination of any additional requirement necessary.

Step 4: Implement additional risk controls

Having identified the hazards in your workplace, assessed their risks and reviewed the existing controls, all hazards must be managed before people are hurt, become ill or there is damage to plant, property or the environment.

The management of risks in the workplace requires eliminating risks so far as reasonably practicable in the first instance. Where elimination is not possible, then risks should be minimized, so far as reasonably practicable.

All hazards that have been assessed should be dealt with in order of priority. The most effective control option/s should be selected to eliminate or minimize risks. The Hierarchy of Controls (see diagram below) ranks control options from highest level of protection and reliability to lowest. This should be used to determine the most effective control/s.

Step 5: Monitor and Review

Hazard identification, risk assessment and control is an on-going process. Therefore, regularly review the effectiveness of your hazard assessment and control measures at least every 3 years. Make sure that you undertake a hazard and risk assessment when there is a change to the workplace including when work systems, tools, machinery or equipment change. Provide additional supervision when new employees with reduced skill levels or knowledge are introduced to the workplace. The effectiveness of control measures can be checked through regular reviews as well as consultation with workers.

Maintaining records of the risk management process assists when undertaking subsequent reviews or risk assessments as it demonstrates decision making processes and informs how controls were intended to be implemented.

Risks

- When you know the ingredients in grout, you can understand the steps you need to take to protect yourself. Not all grout has the same ingredients. Some are mostly concrete and water, others have epoxy and/or sand added to be used in various amounts. Some have pigments to give them a certain color. Understanding the risks with each of these ingredients is a significant step in safely using grout.

Concrete can harm you in two ways -- breathing its dust and contacting your skin. You can limit your breathing concrete dust by wearing a dust mask and mixing it outside. Concrete is highly alkaline and can irritate the skin. Sand, another ingredient in grout, can scar the lungs if it is inhaled. Continual working with grout is known to cause dermatitis. Epoxy exposure can cause serious physical problems. Contact with skin can cause an allergic reaction with a rash that resembles poison oak. Inhaling epoxy fumes can damage your diaphragm and lungs. When working with epoxy, avoid scratching the tip of your nose, rubbing your eyes or wiping your forehead with the gloved hand with epoxy.

Protection

- Protecting yourself from concrete, sand, epoxy and pigments is easily achieved by using a few items. PVC, latex or rubber gloves will protect your hands and wrists. These are available at many grocery stores. Safety goggles keep splatters from reaching your eyes or your glasses. A breathing mask filters out the fine particles that might damage your airways. Consider the size of the project and the amount of exposure you anticipate. If it is a large project, you can purchase a disposable or recyclable Tyvek coverall, with or without a hood and protective footwear. These are available on eBay or check a local paint store. These four objects will protect you from the various ways grout contact might damage you.

Planning and Implementation

- The other essential safety procedures are to make sure you use the correct tools, and have all the things you need before you start your project. Plan enough time, so you are not rushed. It really helps to add 25 percent more time than you think you need, so you are not rushed and allow for contingencies. Grout can be used only a short while after its mixed before it becomes too hard to use, so mix it in reasonable batches for your project. Plan how to dispose of excess grout if you have any left over. Make sure you are not too tired or impaired by stress to do your job carefully and thoroughly. Using your understanding of the risks and taking easy precautions will make sure you stay healthy as you complete your project.

Applying grout

1. As some terracotta floor tiles are porous, grout may be difficult to remove and could discolor and stain them. Check tile and grout compatibility when ordering.
2. for glazed or vitrified tiles, grout as with wall tiles.
3. After the grout has dried, fill joint around edge of room with appropriate silicone. Silicones matching grout colors are available.
4. Seal grout with silicone sealer.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the difference between risk control and risk assessment? (5 points)

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3**

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet 2	Risk Assessment

Procedures for identify the nature of the risk

Step 1- Identify Hazards

Step 2- Assess Risks

Step 3- Controlling Risks

Step 4- Implement additional risk controls

Step 4- Monitor and Review

LAP TEST

List references

Answer keys for learning guide -101

Self check 1

- ✓ Plastic bucket
- ✓ Newspaper sheets
- ✓ Water hose
- ✓ Mixing equipment, like a rubber float or an industrial stirrer)
- ✓ Retail grout powder
- ✓ Water
- ✓ Grout stabilizer
- ✓ Grout color etc

Self check 2

1. **Risk Assessment: -**Is defined as the process of assessing the risks associated with each of the hazards identified so the nature of the risk can be understood

2. **Risk Control:** Taking actions to eliminate health and safety risks so far as is reasonably practicable.