

State professional educational institution  
«Vorkuta Arctic Mining and Polytechnical School»

## **PREPARE RESOURCES FOR BUILDING BRICK WALLING**



preparation	подготовка
brick	кирпич
bricklayer	каменщик
skills	умение, навыки
construction	строительство
building site	строительная площадка
workshop	мастерская
hazard	опасность
brickwork	кирпичная кладка
working drawing	рабочий чертеж
tools	инструменты
equipment	оборудование
the task in hand	непосредственная задача

With most activities in life, the key to success is preparation. Laying bricks is no different: success depends on good preparation. That's why becoming a good bricklayer depends on more than learning just the trade skills. You also need to develop skills in planning and organising as well as learning to work efficiently with others.

Most importantly, good preparation means getting the right mind-set about health and safety. There are materials used in construction that must be treated with care. Make it a habit to consult there levant Control of Substances Hazardous to Health (COSHH) statements. This is a protection to you and those around you.

Building sites and construction workshops can be dangerous places with many potential hazards. When preparing for your brickwork tasks in the workshop or the workplace, the first step is to get familiar with exactly what it is that you are building. To ensure you know all the relevant details of the job, you will need to refer to a working drawing and a specification.

The drawing and specification will tell you what types of materials are to be used and may tell you something about the methods ofwork to be

used. They will also help you to select the right tools and equipment for the task in hand.

### **1. Answer the questions.**

1. What does success depend on?
2. What does good preparation mean?
3. Are there materials used in construction that must be treated with care?
4. Can construction workshops be dangerous places?
5. What is the first step when preparing for your brickwork tasks in the workshop or the workplace?
6. Where you can find types of materials are to be used?

### **2. True/false**

1. Success does not depend on good preparation.
2. You only need to develop skills in planning and organising.
3. Good preparation means getting the right mind-set about health and safety.
4. Building sites and construction workshops can't be dangerous places.
5. You won't need to refer to a working drawing and a specification.

## **TOOLS**

Let's look at the range of tools needed for basic bricklaying. We can split the tools into three main groups. Tools for:

Laying and finishing. To build any wall you will need a trowel to lay the bricks, a pointing trowel and a jointer to provide a finish to the joints.

Checking. A spirit level is needed to make sure the work is level and plumb, a set of line and pins to align the bricks accurately and a tape measure to set out and check dimensions.

Cutting. To cut the bricks you will need a club (or lump) hammer and a brick bolster. There are additional tools to cut bricks for different purposes such as a brick hammer and a scotch hammer (sometimes called a comb hammer).



Club hammer



Brick bolster



Brick hammer



Scotch hammer

**1.Match the words and their definitions.**

spirit level	a small handheld tool with a flat, pointed blade, used to apply and spread mortar or plaster
jointer	a device consisting of a sealed glass tube partially filled with alcohol or other liquid, containing an air bubble whose position reveals whether a surface is perfectly level.
trowel	a tool used for pointing masonry and

	brickwork.
brick bolster	a length of tape or thin flexible metal, marked at graded intervals for measuring.
tape measure	a heavy chisel used for cutting bricks.
brick	a point at which parts of an artificial structure are joined.
joint	a small rectangular block typically made of fired or sun-dried clay, used in building.

### **MATERIALS BRICKS**

are manufactured	производится
in a vast range	в широком диапазоне
hardness	твёрдость
compressive strength	прочность на сжатие
resistance	сопротивление, устойчивость
moisture penetration	проникновение влаги
manufacture	производство
adverse weather	неблагоприятная погода
wet	влажный
efflorescence	высол, солевые пятна
sustainability	устойчивость

Bricks are manufactured in a vast range of colours and textures. They also vary in hardness or compressive strength and resistance to moisture penetration according to the materials used in manufacture. Choosing the right brick for a particular location or type of structure is therefore very important. The architect and his or her design team are responsible for specifying the right brick.

It's good to develop the habit of checking that the bricks and other materials you intend to use are actually the ones specified. If you find that the materials are the wrong type, size or colour, never just 'carry on regardless'. Always check the specification with your supervisor or line manager and talk to them about any problems.



Bricks protected by polythene sheeting

It's also good to develop the habit of thinking ahead about protecting the bricks and other materials. Having polythene sheeting or other protection to hand is

good practice at the preparation stage. The materials should be protected from adverse weather at all times. Bricks are difficult to lay accurately and neatly when wet. Laying wet bricks can contribute to a problem known as efflorescence, which disfigures the appearance of brickwork by leaving a white powder deposited on the surface of the wall. Although this can be removed by brushing with a stiff brush, it's better to avoid the problem by maintaining good practice in the first place.



Efflorescence

Once work is completed, it will still need to be protected from adverse

weather and other construction operations.

Everyone in the workplace must contribute to safety and efficiency by:

- taking care to minimise damage to work
- keeping the work area clean and tidy
- disposing of waste properly.

Waste is often segregated to support recycling and contribute to sustainability.



Segregated waste skips on a site for paper and cardboard and wood

Since bricks can be a heavy building material, it is very important to give careful consideration to health and safety matters when moving them. Always use proper handling techniques and wear suitable PPE. A basic set of PPE items for a bricklayer handling materials would include: safety boots, safety glasses or goggles and gloves. When preparing and placing materials prior to building brickwork, remember that bricks are heavy and often sharp.

### **1. Answer the questions.**

1. Who is responsible for specifying the right brick?
2. Should you check that the bricks and other materials you intend to use are actually the ones specified?
3. What kind of protection for the bricks and other materials should you have to hand at the preparation stage?
4. Is it easy to lay bricks accurately and neatly when wet?
5. What kind of problem can you face laying wet bricks?
6. can efflorescence be removed?
7. Is it necessary to protect work when it is completed?
8. How must everyone in the workplace contribute to safety and efficiency?

9. Why is it very important to give careful consideration to health and safety matters when moving bricks?

10. What does a basic set of PPE items for a bricklayer handling materials include?

## **2. True/ false statements.**

1. Bricks are not manufactured in a vast range of colours and textures.

2. Bricks vary in compressive strength and resistance to moisture penetration.

3. If you find that the materials are the wrong type, size or colour, you should ‘carry on regardless’.

4. It is not necessary to protect bricks from adverse weather.

5. Bricks are not difficult to lay accurately and neatly when wet.

6. Everyone in the workplace must contribute to safety and efficiency.

7. Bricks are heavy and often sharp.

## **3. Finish the following sentences.**

1. Choosing the right brick for a particular location or type of structure is...

2. The architect and his or her design team are responsible for...

3. If you find that the materials are the wrong type, size or colour...

4. Always check the specification with...

5. It’s also good to develop the habit of...

6. Laying wet bricks can contribute to a problem known as...

7. Once work is completed, it will still need...

8. Since bricks can be a heavy building material...

9. A basic set of PPE items for a bricklayer handling materials would include: ...

10. When preparing and placing materials prior to building brickwork, remember...

### CUTTING BRICKS

hammer	МОЛОТОК
cutting gauge	разметочное приспособление с режущим лезвием
measurements	измерения
brittle	хрупкий
shatter	разрушаться
face uppermost	лицом кверху
edge	край



A club hammer and brick bolster are used to cut bricks

**INDUSTRY TIP**

It's a good idea to gently press the edge of the palm of your hand against the surface you're cutting. This will 'damp' the vibrations going through the brick and help to prevent it shattering.



Sharp edges are also produced when we need to cut bricks. We may need to cut bricks for a number of reasons. Let's look at the tools needed and the methods we should use to cut bricks by hand (cutting by machine is often preferred on site but requires extensive training in safe practices). Cutting bricks is an operation that can only be mastered with experience, so be prepared to have disappointments at first! The main cutting tools have been listed previously. The primary tools are a club (or lump) hammer and a brick bolster. Another useful tool not

mentioned above, which aids in producing accurate and consistent cuts, is a brick gauge. This is made from timber and can be easily made on site. The different parts of the cutting gauge allow you to easily and accurately mark the measurements for a half-bat, three-quarter bat and a Queen Closer.

Whether we use a brick gauge or a tape measure and pencil to mark the brick, always aim for accuracy. This will make producing a quality piece of brickwork a much easier task. Many bricks have good compressive strength but are brittle and shatter easily. To improve the chances of success in cutting, therefore, it's good practice to place the brick to be cut on a small mound of sand which will act as a cushion. Alternatives such as sacking or old carpet could also be used. Make sure the whole surface area of whichever face is on the cushion is supported. Let's look at the process.

STEP 1 Make sure you are using the right PPE (safety glasses or goggles etc) and workers nearby are aware that you are cutting bricks.

STEP 2 Mark the position of the cut on the face, the opposite side and the bed of the brick with a pencil.

STEP 3 Place the brick with the face uppermost. Placing the blade of the bolster slightly on the waste side of the pencil mark, strike it lightly but firmly with the club hammer.

STEP 4 Now do the same on the opposite side of the brick.

STEP 5 Turn the brick so that the face is uppermost again and strike the last blow. If the strength of the blow is adjusted correctly, this should complete the operation (remember – experience counts).

STEP 6 If the brick doesn't break as desired, repeat from Step 3 until a clean break is achieved.

#### INDUSTRY TIP

Since different types of brick can vary in hardness, it's sometimes better to make the final cutting stroke on the bed of the brick. With experience you will learn the best approach.



The aim is to produce clean sharp edges especially on the face side of the cut brick. This will ensure a good appearance in the finished wall. If there are rough projections or edges, then a scutch hammer can be used to trim the cut brick and to make precise adjustments. The other cutting tool mentioned in our previous list is a brick hammer. This can also be used for trimming bricks but it is less precise and is usually used to quickly produce rougher cuts where appearance is not

so important. High standards in selecting, moving, cutting or laying bricks depends on skill, care and attention and the use of the correct tools and techniques. This is no less true with the other important material used by the bricklayer: mortar.

## MORTAR

mortar	раствор
mix	смешивать
pit sand	горный песок
ratio	Отношение, пропорция
cement	цемент
workability	обрабатываемость
hydrated lime	гашеная известь
additive	добавка, дополнение
irritate	раздражать
aggregate	наполнитель

Whilst it is usually the case that mortar is mixed and brought to the bricklayer by semi-skilled operatives, it is the bricklayer's

responsibility to make sure that the material is fit for purpose and is used in accordance with the specification.

Mortar is the material we use to bed and joint the bricks together. It is mainly composed of well graded sand (either 'pit sand' or 'sea-dredged sand') and Ordinary Portland Cement (often referred to as OPC) mixed to a specified ratio. There are other types of cement which you will learn about later in your studies. Mixing these two component materials together with water will produce a mix that is difficult to use, so a plasticiser is added to improve workability. This usually comes in the form of a chemical additive that traps tiny bubbles of air in the mix, which allows the grains of sand to move over each other more freely.

Traditionally, hydrated lime in powder form was added as a plasticiser. As there are some safety hazards to consider in using lime and it is not used so often since the introduction of safer, easier to use chemical additives.

On site, mortar can be mixed as required in a drum mixer. A more modern approach is to use a dry silo mixer. Both these methods minimise waste since they produce mortar as it is needed. The silo mixer has the advantage of producing mortar of dependable quality and consistency which is particularly important if coloured mortar is specified. An alternative is to have mortar delivered to site in a ready-mixed form. This method of production requires a chemical additive to slow down the setting time so that the material remains workable throughout a working day.



Dry silo mixer



Drum mixer



An operative mixing by hand

There will still be occasions when there will be a need to mix mortar by hand for smaller jobs. For example, a small garden wall may be difficult to access with machinery such as a

mixer, so mixing by hand will be the only option. Whatever method is used to mix mortar, always keep in mind the hazards associated with the materials used. But when preparing and placing mixing materials prior to building brickwork, remember that cement and lime powders can irritate your skin and aggregates are heavy to move especially when wet.

## BRICKLAYING TOOLS

### 1. Learn the words.

tools	инструменты
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trowel	шпатель
spirit level	спиртовой уровень
gauge rod	замерная рейка
to gauge	измерять
joint	шов
tape measure	рулетка
broom	метла
brush	щетка

**2. Read the text “How to use bricklaying tools” and fill in the gaps.**

gauge rod, tools, trowel, mortar, bricks,  
joints, tape measure length, brush, mortar

Hi, my name's Mark. I'm a lecturer from South Times College and today I'm going to give you some information and helpful tips in route lab. In this video I'm going to explain the basic \_\_\_\_\_ to use in Bricklin. We start off with the brick \_\_\_\_\_. This is used to spread roll \_\_\_\_\_ spread it on your wall, key the bed joint and to butter your \_\_\_\_\_. And then we have a \_\_\_\_\_. This would be used to level your bricks and to also plumb your wall to make sure that it's going straight up and there's no bending in either way. We would use a \_\_\_\_\_ which is a piece of timber marked out of 75 millimeter gaps. This is to gauge a brickwork to regulate your bed \_\_\_\_\_ to make sure that your wall is going up at a nice like nice rate and your bed joints are regulated. We would also use a joint in bar. This is to create a nice joint finish on the finished product and to give it a nice look and to make sure your joints are full. And we would also use a \_\_\_\_\_. This could be used instead of a gauge rod or can just be used to measure out the \_\_\_\_\_ of your wall or Hamley bricks you would be using. And finally we'd be using a soft broom or \_\_\_\_\_. This is to brush your brickwork after joint in two just to get rid of any rough edges or any bits of \_\_\_\_\_ still lying on your wall. And these are the basic brick line tools used in the trade.