



# CONSTRUCTION

## Helper Shuttering Carpenter

(Participant's Guide)

REFERENCE ID: CON / Q 0301

EINFOLINGUA SERVICES



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- Basic Equipment used for Handling Materials
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- Cutting and Filling of Earth
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- How to Prevent Collapse of Trench on a Construction Site?



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- Working at Depth and Below the Ground Level
- Causes of Hazards when Working at or below Ground Level
- Specific Hazards of Excavations
- Procedure for Electrical Grounding
- Workplace Electrical Safety Tips

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- Safety
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- Dust Suppression



**Unit 3 – Identify, Shift and Stack Tools, Materials and Equipment Relevant to Shuttering Carpentry and Scaffolding**



## Unit 3 - Identify, Shift and Stack Tools, Materials and Equipment Relevant to Shuttering Carpentry and Scaffolding



### Learning Objectives:

- Understand and learn about sizes of Carpentry Materials
- Understand and learn about handling, stacking and use of building construction materials at construction site:
  - Bricks
  - Cement
  - Sand and Aggregates
  - Steel
  - Glass
- Understand and learn about safety and environmental considerations in use of various building materials
- Understand and learn about use of scaffolding at construction site
- Understand and learn about use of fixings and adhesives for carpentry work
- Understand and learn about finishes and solvents for carpentry work
- Understand and learn about organising materials at construction site
- Understand and learn about quality requirements of materials
- Understand and learn about basic equipment used for handling materials at construction site
- Understand and learn about methods of stacking materials at construction site
- Understand and learn about storage of materials at construction site
- Understand and learn about types of mechanical lifting equipment
- Understand and learn about meaning of various hand signals

### Sizes of Carpentry Materials

Carpentry materials are available in many different lengths, shapes and sizes, which you'll need to take into consideration when you're handling, sorting, stacking or storing them.





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### Stock Size/Length - Timber

The term 'stock length' or 'stock size' refers to standard lengths and sizes for timber that can be bought 'off the shelf' from suppliers.

Timber comes in 'stock' sizes. This means a size that's usually available 'off the shelf' from a timber merchant. Timber lengths can be bought in increments of 300 mm and in stock lengths of between 0.9-6 m.

**Note: 300 mm is equal to 1 foot (12 inches)**

Timber is also available in many different section sizes. The following table shows you some of the more common softwood section sizes used in the construction industry today.

35 mm thick	45 × 35	70 × 35	90 × 35	120 × 35	140 × 35
	190 × 35		240 × 35		290 × 35
45 mm thick	45 × 45	70 × 45	90 × 45	120 × 45	140 × 45
	190 × 45		240 × 45		290 × 45
70 mm thick	70 × 70		90 × 70	120 × 70	140 × 70
	190 × 70		240 × 70		290 × 70
	90 × 90 for timber stumps				

### Stock Size/Length - Sheet Materials

Sheet materials such as plywood, chipboard and MDF are available in a number of sizes. They're generally metric but some imported plywood is still in imperial sizes.

- Lengths are usually 2440 mm (8 foot), 2135 mm (7 foot) or 1830 mm (6 foot).
- The metric equivalents would be 2400 mm, 2100 mm or 1800 mm.







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- Widths are 1220 mm (4 foot) or 915 mm (3 foot) [imperial] and 1200 mm or 900 mm (metric).

## Bricks

Bricks and concrete blocks are widely used in the building industry to construct walls. They're generally delivered to site in packs or on pallets that can be mechanically handled with forklifts or pallet trucks.



Smaller amounts of bricks often have to be moved manually - usually by wheelbarrow - to their final position. Careless handling of bricks and blocks can damage their faces and corners, making them useless for decorative face work.

### Safety and Environmental Considerations:

You must take care when you're stacking bricks and blocks to prevent them from becoming unstable and falling on you and/or other workers.

When you're using a wheelbarrow to transport bricks, make sure you stack the bricks evenly so that they don't topple out. Remember that a load of bricks is heavy, so never overload the wheelbarrow.

You should also wear gloves when you're handling bricks to prevent your hands from being injured by their rough surface.



Recycling bricks minimises the need for mining and/or quarrying raw materials to produce new bricks and diverts large quantities of waste materials from landfill sites.

Recycling bricks can also save money by avoiding landfill fees and transport costs, and through the reuse of bricks in other construction projects such as paving and landscaping.

## Cement

Cement is used in all forms of in-situ and precast concrete products, cement mortar, screeds and rendering. It used to be sold in bags weighing 40 kg, but it's now sold in 20 kg bags to help reduce manual handling injuries.



Loads of cement bags can be delivered on pallets and mechanically handled either by forklift or pallet truck.



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You can handle individual bags of cement manually by placing them on your shoulder (one at a time).

### **Storage:**

Because cement can 'set' if the bags become damp, it should be stored off the ground in a waterproof area if possible.

To reduce storage time, the cement should be used in the same order in which it's delivered; that is, use the oldest bags first. This is known as 'first in, first out' and prevents the cement from going 'stale'.

### **Safety and Environmental Considerations**

You should always wear personal protective equipment (PPE) such as goggles, gloves and a dust mask when you're working with cement. It's also good practice to wear it when you're handling sand and aggregate materials.

You must take care when you're using cement as it can be extremely hazardous if you breathe it in. It can also cause burns to the skin and/or eyes.

The paper bags used to package cement and cement blend products have thin plastic liners inside them which can be dangerous for small children or animals. These liners also make the bags unsuitable for burning or recycling. You must take care when you're disposing of them.



### **Sand and Aggregates**

Sand and coarse aggregate (blue metal) are used in the production of concrete and mortar, and can be delivered in bulk (loose) or in bags (20 kg or 1000 kg).

Loose sand and coarse aggregate should be stored separately and as close to the cement mixer (or mixing area) as possible.

You can handle sand and coarse aggregate manually using shovels and buckets but they're generally moved in small amounts by wheelbarrows, and in large amounts by loading machinery such as a 'skid loader' (bobcat).



### **Safety and Environmental Considerations:**

Wear PPE such as goggles, gloves and a dust mask when you're handling sand and aggregate materials to avoid any potential injury.



## Steel

Most houses will have some form of steel component incorporated into their design. From steel structural beams left exposed as internal design features, or steel beams and reinforcing bars set in concrete for internal and external walls through to wall frames, roof trusses and sheet metal used for fencing and roofing, steel is becoming widely used in residential home design and building.



Steel components are also widely used in commercial and high-rise construction projects. Steel enables multi-story buildings to be built more quickly and economically than conventional building techniques.

### Safety and Environmental Considerations:

Steel components can be extremely heavy so you must think carefully about how to handle and transport them. Always wear gloves when handling steel components to avoid injury due to sharp edges, especially with sheet metal.

Although there is a heavy manufacturing process for steel, the end product is 100% recyclable and can be recycled an unlimited amount of times.

This minimises the need for the mining or quarrying of raw materials each time it's re-processed. Most steel contains around 20% recycled content.



## Glass

Glass should be stored off the ground, in an upright position in dry, wind-free conditions to avoid any accidental damage. Timber or foam protectors should be used to prevent the glass from coming into contact with coarse surfaces that could scratch or damage it.

Large sections of glass can be very heavy and must be either manually carried by two people, or mechanically handled by a glass-carrying devices. Small pieces can be carried using special leather gloves.



### Safety and Environmental Considerations:

- Always handle glass carefully and wear gloves to protect yourself.
- Dispose of any unused or broken glass of considerately.
- Most types of glass can be reused and/or recycled.



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- Handle broken glass carefully with gloves and wrap it in multiple layers of newspaper to avoid injury.

## Scaffolding

Scaffolding is a temporary structure used to support workers and materials in the construction or repair of buildings and other large structures. It's usually a modular system of metal pipes or tubes, although it can be made from other materials.

As a carpenter, you may be required to handle and/or erect scaffolding from time to time during the construction of a building.



### Safety and Environmental Considerations:

Some scaffolding components can be extremely heavy. You should always think carefully about how you're going to handle and transport these components safely around the construction site.

Always wear gloves when you're handling scaffolding components to avoid injury. You can reuse scaffolding lots of times. This makes it reasonably environmentally friendly as it's hardly ever discarded.



### Handling Non-Timber Building Materials

A few of the most common types of non-timber materials you'll come across are listed here, along with what you need to consider when handling them. Note two or three key points for each type, then compare your notes with others in your class. The first one has been done for you as an example.

#### Materials

Bricks/masonry

#### Considerations for Handling

- They're heavy. I can only carry around six bricks at a time.
- Rough surface - I need to wear gloves if handling for long periods.
- Handle carefully so bricks don't get chipped or damaged.



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Glass

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Steel

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- \_\_\_\_\_
- \_\_\_\_\_

Scaffolding

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- \_\_\_\_\_
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Plasterboard, MDF, LVL, etc

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Fixings

Most of the materials used in building and construction need to be joined together in some way, e. g. bricks need mortar for a wall to be built. As a carpenter working with timber and timber-based materials, you'll work with a variety of fixings, the most common of which we'll look at here.

- Adhesives are glue-like materials that join things together.
- Fixings are non-adhesive materials such as nails and screws that join things together.



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### Nails

A nail is the simplest way of fixing two pieces of timber together. Their fixing power comes from the way the wood fibres grip the shaft of the nail as it's hammered through the timber.

Nails have evolved from the simple, wooden pins used in ancient Egyptian times into relatively cheap, mass-produced fixings that are available in a variety of types.



Nails vary by:

- length
- diameter
- head type
- the metal they're made from
- what they're coated with.

As with all other materials you'll be using, it's important to know what type of nail goes with which type of carpentry task.



### Nail Types

Look at the types of nails shown here. With the help of your trainer and classmates, fill in the spaces with information on features and applications. You can also do research online. The first type of nail has been done for you as an example.



Flathead

#### Features:

- Good basic nail
- Plain shank and diamond point
- Made from hardened nail wire
- Available in bright, galvanized or stainless steel

#### Applications:

- Use when a neat, flat finish is required
- Framing, boxing, fencing and general timber-to-timber fixing



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- Easy to use; only needs a hammer
- Flat, rounded head prevents pull through



Flathead

#### Features:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### Applications:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Clout

#### Features:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### Applications:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



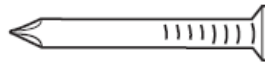
Panel pin/hardboard nail

#### Features:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### Applications:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Soft sheet nail

**Features:**

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- \_\_\_\_\_
- \_\_\_\_\_

**Applications:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



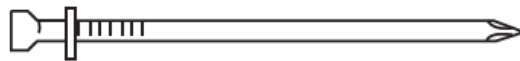
TimberLok nail

**Features:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Applications:**

- \_\_\_\_\_
- \_\_\_\_\_
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Duplex nail

**Features:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Applications:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Look at the types of nails shown here. With the help of your trainer and classmates, fill in the spaces with information on features and applications. You can also do research online. The first type of nail has been done for you as an example.





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### Screws

Like nails, screws vary in length, diameter, head type, the metal they're made from and what they're coated with.

Screws have some advantages over nails. They:

- have better holding power
- can be withdrawn and re-driven
- can be inserted without vibration or damage.



However, screws also have some disadvantages compared to nails, because they:

- usually require a hole to be drilled before they're inserted, so they take more time
- are more expensive, size for size, than nails.

Screws have two parts - a head and a shank. When selecting the right screw, the type of shank you choose will depend on the carpentry task you're doing.



### Screw Types

Look at the types of screws shown here. With the help of your trainer and classmates, write two dot points about each screw type and what you would use it for.

The first one has been done for you as an example.



Countersunk head

- Good to use when the head of the screw needs to be recessed below the surface, e.g. decking and shelving
- Used with a countersink bit to form the recess



Ribbed countersunk head self-embedding head (SEH)



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- \_\_\_\_\_
- \_\_\_\_\_



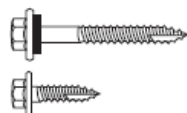
Wafer head

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Bugle head

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Hexagon (hex) head

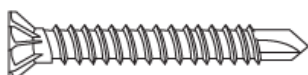
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### Screw Thread Types

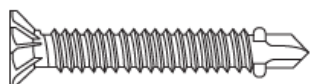
As you worked through the last activity, you may have noticed that the shanks are different on some of the screws. As you can see below, certain thread types suit particular carpentry tasks.



- For fixing into timber
- Coarse thread
- Sharp point



- For fixing into metal
- Full-length, finer thread
- Self-drilling
- Blunter point



- A variation of the screw thread above is the WingTek
- Tighter thread for fixing timber to steel
- Wings drill a clearance hole through the timber and snap off when the steel is encountered

### Remembering the right screw for the job

Because of the wide range of types and sizes of screws for both hand and power tools, it can be hard to remember all the different types and which job they go with.



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Manufacturers provide charts and booklets to help you choose the correct screw, and you can find a lot of useful information on the internet.

### Bolts

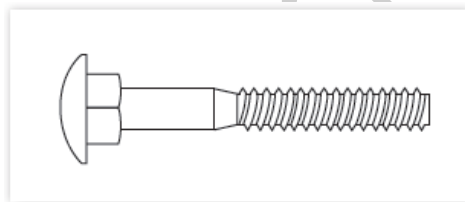
Because bolts have higher load-bearing abilities than nails and screws, they're the right fixing to choose for jobs where large and/or structural loads are involved.



Bolts are identified by the type of head they have - and as with nails and screws, different bolts go with different jobs.

Most bolts are made of steel, with the usual coatings available, e.g. galvanized, cadmium-plated. Stainless steel bolts are used in areas where greater corrosion resistance is required.

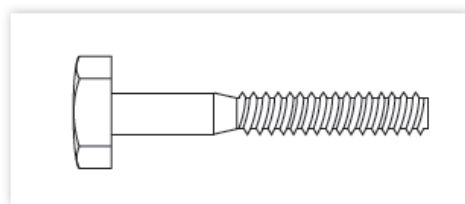
The bolt most commonly used in the construction industry is the cup head type shown below, which is used mostly for fixing timber to timber.



It has a dome-shaped head with a square section just beneath it. The purpose of the square section is to prevent the nut from turning while it's being tightened.

Once installed, the cup head protrudes only slightly above the surface of the timber, giving a neat finish.

The other type used is the hexagon (hex) head shown below.



Because of its shape, the hex head can be gripped easily. This prevents the nut from turning when it's being tightened. Hex head bolts are often used when fixing steel fittings to timber structures, e.g. in decking or fencing. They're also used in conjunction with masonry fixings to bolt timbers to brickwork and concrete.



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### Washers

Washers are flat metal discs that are placed under the head of a screw or bolt. They're used because they help to distribute load and strengthen the connection between the fixing and the surface.

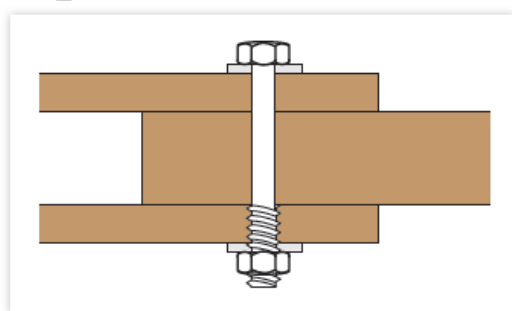
Together they help make the fixing stronger, and the screw or bolt is less likely to pull through.



### Nuts

The final piece that completes the bolt fixing is the nut. This goes onto the thread of the bolt, all the way up to the underside of the material being fixed.

In the following picture, you can see that a hex head bolt has been used to create what's called a bolted joint. Note the use of two washers - one under the head of the bolt and another at the base of its shank (above the nut).



### Other Types of Fixings

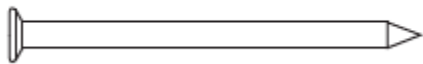
In carpentry, you'll be working mostly with timber which will require a fairly limited range of nails, screws and bolts. However, there will be other jobs where you'll need to use specialist types of fixings.



# Activity

## Other Fixings

Look at the types of fixings shown here. With the help of your trainer and classmates, work out what types of fixings are shown then come up with two or three points about their features and how they're used. The first type has been done for you as an example.



High tensile steel nail

### Features and Applications

- Strong
- Used with normal hammer
- Goes through timber into brickwork



Expanding sleeve anchor

### Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Nail plate

### Features and Applications

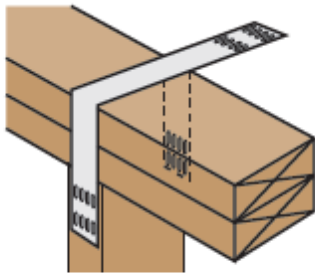
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Spring toggle

Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Wall plate tie-down strap

Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



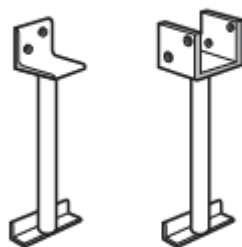
Wall plug – also known as raw plug or star plug

Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
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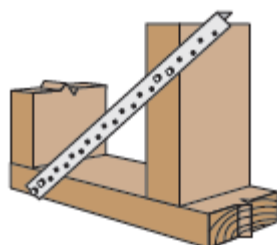
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Post stirrup

### Features and Applications

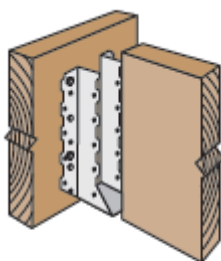
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Metal wall bracing

### Features and Applications

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- \_\_\_\_\_
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Truss boot/joist hanger

### Features and Applications

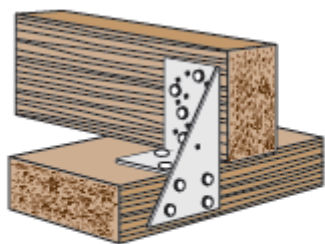
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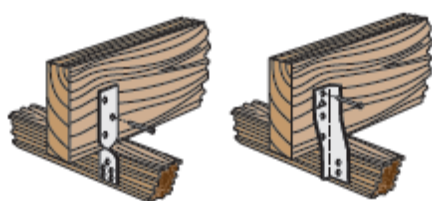
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Multigrip connector

### Features and Applications

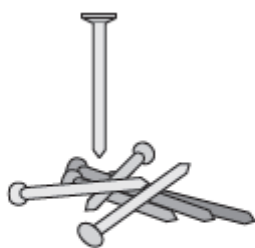
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Hanger straps

### Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



Reinforced head galvanised connector nail

### Features and Applications

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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### Adhesives

A lot of jobs don't require nails or bolts. Sometimes, an adhesive is the perfect material for the job. As with other fixings, particular adhesives are made for certain applications and it's important that you select the correct one and know how to handle it. No one type of adhesive is suitable for all applications.



#### Types of Adhesives and their Uses

The most common types of adhesives are shown here. With the help of your trainer and classmates, come up with two or three points about the features and uses for each adhesive.

You can also do research online. The first adhesive has been done for you as an example.

#### Polyvinyl acetate (PVA)

##### Features and Uses:

- Water-based, non-toxic
- Cheap, easy to use and easy to clean up
- Good for general purpose timber-to-timber and gap filling; must be waterproof PVA for external use
- Dries clear

#### Urea formaldehyde (UF)

##### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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### Resorcinol formaldehyde

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Polyurethane-based contact adhesive

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Epoxy

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Contact adhesives

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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### Tips for Use

As with any other material, there are some things you should be aware of when you're handling adhesives.

- The surfaces being joined must be clean, dry and dust-free before you apply the adhesive.
- Because adhesives will 'go off' if exposed for long periods, get everything else ready for the job before you open the container.
- Use just enough adhesive to cover the surfaces. If any adhesive squeezes out of the joint when it's clamped, you've used too much.
- Clean up any excess and/or spilt glue immediately. The longer you leave it, the harder it is to clean up.
- In external situations, don't rely on paint to weatherproof the joint. Always use a waterproof adhesive.



### Safety and Environmental Considerations

Always read the label and check directions for use before you start using an adhesive. If an SDS is available, read it. Never remove the label from adhesive containers, because they often contain important warnings and directions for use.

Some adhesives have toxic or flammable fumes that can be very dangerous if you breathe them in.

You should always:

- wear PPE such as a mask and glasses
- make sure your work area is well ventilated
- check that containers are closed and sealed properly after use then stored safely.

Many adhesives contain harmful chemicals. Avoid contact with your skin, eyes and mouth.

Always dispose of old or empty adhesive containers thoughtfully. Never burn them because not only could the fumes be toxic, they're often highly flammable and a fire could easily get out of control.

Never smoke near adhesives or other flammable materials.



**Reading Warning Labels**

What do the symbols mean on the can shown here?



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**Finishes and Solvents**

A carpentry project often requires that the timber be finished a certain way and that may involve working with solvents. There's a range of these materials that are used on timber, and it's important for you to be familiar with them and how they're handled.



**Types of finishes and solvents and their uses**

The most common types of solvents are shown here. With the help of your lecturer and classmates, come up with two or three points about the features and uses for each type. You can also do research online. The first one has been done for you as an example.



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### Stain

#### Features and Uses:

- Used to darken or add colour, and/or enhance the grain
- Available in a range of colours, textures and finishes, eg matt, satin, silk
- Always sand and clean timber before you apply finish or solvent

### Oil

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Wax

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Paint

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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### Varnish

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Shellac

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Thinner

#### Features and Uses:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Safety Considerations

Some finishing materials can be hazardous to both you and the environment, particularly if they contain toxic chemicals.

By following a few simple precautions, you can reduce the risks.

- Always read the label and check directions for use before you start using an adhesive. Read the SDS if there is one.
- Most finishes and solvents contain harmful chemicals. Avoid contact with your skin, eyes and mouth.





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- Always wear PPE - gloves, mask and glasses, and wash your hands thoroughly after you've used these materials.
- Always work in a well-ventilated area when you're using finishes and solvents of any kind, as toxic fumes can be harmful.
- Never remove the label from containers, because they often contain important warnings and directions for use.
- Rags used to mop up spills of hazardous liquids should never be left around on site or bundles in bins - especially in hot weather - because rolled-up rags can start to generate heat and have been known to burst into flames.

## Environmental Considerations

As with the other hazardous and/or potentially dangerous materials you've seen so far, finishes and solvents can have a harmful impact on the environment if they're not handled properly.

- Use a water-based product where possible to avoid the chemicals in some finishing materials.
- Keep all containers sealed for disposal and leave their labels intact.
- Never dispose of finishing materials or solvents by pouring them down a drain, into a waterway or onto the ground.
- Never throw containers into a fire, as the smoke they produce when burning can be highly toxic.



Most building sites have a procedure for the disposal of containers that hold toxic or flammable materials such as adhesives, finishes and solvents. Always check with a supervisor if you're unsure.

## Organising Materials

Determining what materials are needed for a task and making sure they're located where they're needed are vital aspects of all construction tasks.

Information about the materials needed, details of preferred type or brand, required characteristics,

eg size, quality, fire resistance, colour and quantity needed, is generally found in the plans and specifications for the building project.

The project manager or builder will usually organise for materials to be delivered in phases, as and when they're needed at different stages of construction. However, when a building project is taking place, there will often be a large amount of materials







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on site at any given time. There are also materials that need to be stored in between jobs - in a storeroom or workshop.

Materials have to be available where you need them, on hand when you need them, and stored in a way that enables easy handling and transportation. It's also very important to ensure that materials aren't in the way of other tradespeople or that they don't get stolen or damaged.

Carpentry materials, and timber in particular, require careful consideration in relation to storage, as they're susceptible to environmental factors such as moisture and heat.



## Quality Requirements

Consideration has to be given to the quality and quantity of materials required for a construction project. Buildings are designed with specific materials in mind and failure to comply with these specifications can have severe implications.

The materials used in construction projects must meet certain standards, particularly in relation to safety and application; that is, how and where materials can be used. These are called quality requirements, and you'll find them in:

- legislation and codes of practice
- company policies and procedures
- project specifications
- building codes
- manufacturers' specifications.

## Basic Equipment used for Handling Materials

A lot of the materials you've been looking at so far will be delivered on site then handled in various ways to get them to the right location for the work required.

For example, thousands of bricks may be delivered to one corner at the front of the site, but will be needed by the bricklayers at all points south, east, west and north.

Although you may not be delivering materials to site, you'll be involved in unpacking them or getting them to the correct location on site or into storage, so you'll need to know what you're dealing with and what tools and equipment to use.



### Pallet

Generally made from pine, pallets are a flat timber structure used to stack construction materials in a way that's very stable and compact.

They're designed for lifting by forklift, pallet jack and even cranes, and can be easily transported to and/or around the site.





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### Timber Bearer or Glut

These are long pieces of timber that are placed under the materials to provide a space for the arms of forklifts/pallet jacks to fit into. This enables materials to be moved around the construction site.

Some pallets have a bearer built in - like the pallet shown above - which enables the forklift or jack to lift them easily.



### Banding or Strapping Tool

These tools are used to apply a plastic or metal strap or band to an item to combine, hold, reinforce or fasten it.

Banding tools are most commonly used in the construction industry to fasten pallets of bricks or packs of timber together.



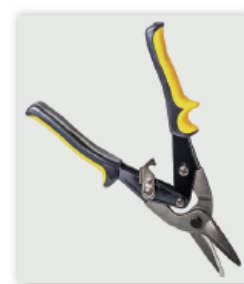
### Pinch Bar

Pinch bars have a flat, chisel-like end for levering, and a straight shank with a hooked end claw that can be used as a lever for prising packing crates apart.



### Tin Snip

This handy tool can be used for cutting through the banding on packs of timber or bricks. You must be careful when you're cutting the band because they can spring back into your face and cause serious eye injury.



### Stacking

When timber is delivered to a construction site, it will quite often be packed in stacks already. It must be handled correctly and will often need to be moved and restacked elsewhere.

Here are some important points to remember.

- Stack timber as close as possible to where it will be used.
- Stack timber on gluts/bearers so that it's clear of the ground. Gluts should be in line (preferably level) so that the timber remains straight.



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- Prevent the timber from being covered with sand or dirt - this will make cutting tools blunt more quickly.
- Stack longest lengths on the bottom and shortest lengths on the top.
- Always 'stack to type'; that is, keep types of timber together.
- If the bundles are strapped, leave the straps on until the timber is needed. This will help to keep it straight.
- Take care when cutting straps - the bundle may fall on your feet.
- Stack dressed or seasoned timber under cover if possible, and always handle it carefully so that corners aren't damaged or faces scratched.
- If packers (or stickers) are placed between layers, they should be directly above each other.
- Building materials stored in stacks can be a safety hazard if the stacks are unstable or too high.
- Don't stack or lean timber (especially hardwoods) where they could stain the building if they get wet, eg jarrah resting against a face brick wall.



These are examples of poorly stacked timber. The timber isn't stacked in even rows and it's all different thicknesses.

These stacks are not stable which makes them a safety risk. There are also no gaps left for air to circulate, which could result in the timber becoming damp.



These are great examples of timber stacks.

Notice that the timber is lined up evenly in rows and the bearers between each layer mean that air can circulate.

In the second stack, you can see that the timber has been stacked to type.

Stacking timber directly on the ground could mean that it becomes stained. This is an issue if the timber is to be varnished. Putting timber on the ground could also result in the timber:

- becoming saturated with water if the ground is damp
- being attacked by termites if it's left on the ground too long.

When you're stacking other materials, eg MDF or plasterboard, follow the same guidelines as you would for timber.

## Storage

Sometimes materials can't be used right away and will need to go into storage. As a carpenter, you'll probably be accessing a storeroom or workshop or even getting things out of the back of a vehicle - these are all storage places for materials.

The following basic guidelines will help you to make sure your timber will be stored safely:

- Store timber inside and flat on elevated racks where air can circulate around it, to avoid mould or fungus getting into the timber.
- If storing inside isn't possible, then store the timber flat on the ground in a sheltered (preferably undercover) spot. Make sure you use bearers to lift it off the ground so that it doesn't absorb moisture.
- As well as keeping materials off the ground, you should always keep them covered to protect them from elements such as:
  - moisture
  - frost
  - sun
  - rain





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- wind.

Even in summer when it's not raining, overnight temperatures can drop low enough to produce high levels of moisture in the air and, on really hot days with high humidity, the air is very moist. Tarpaulins or plastic sheeting are commonly used for this purpose.

If materials arrive in banded packs or wrapped in plastic, leave them like that until you need to use them.



### Non-timber Materials

The storage guidelines for timber also apply to materials such as cement and plaster, as well as sheet materials like particle board and plywood. Always keep them off the ground to stop them from becoming damp.

When storing non-timber materials such as cement, plaster, paint, adhesives, etc, a good general rule to follow is:

#### **First in, First out.**

This means that you should always put any new materials at the back of the storage area so that they get used last, and the older materials get used first.

Another important factor to consider when storing materials is how often you use certain items. Things like screws and nails that you use on a regular basis should be stored in an accessible place so that you can get to them quickly and easily.

### Being Organised

Whether you're working on site or in a workshop, you need to be able to find materials, tools and equipment quickly and easily. The key to this is being organised.

Keeping things tidy makes a big difference, particularly when it comes to smaller materials like nuts, screws and bolts. Look at the following pictures of two different storage methods. Which would you prefer to deal with if you needed to find a specific type of screw in a hurry?



or



Keeping materials organised and tidy doesn't take a lot of extra effort, but makes a huge difference to your overall efficiency when you're handling materials.

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