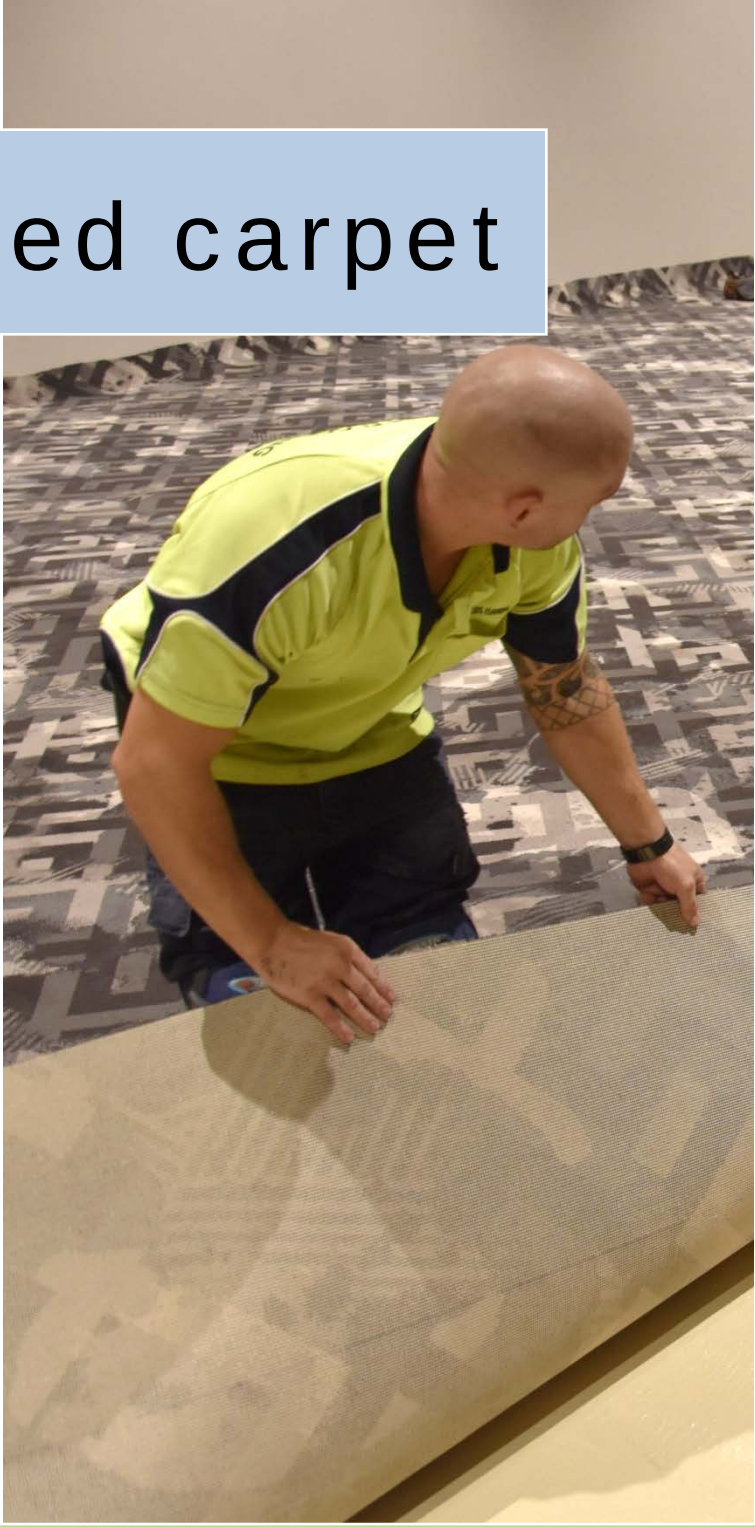
# Adhesive fixed carpet



**Supporting:**

***MSFFL3006 - Install adhesive fixed carpet floor coverings***

INTAR Flooring Technology Project 2018

# Learner guide

Version: August 2018

# Adhesive fixed carpet

## Learner guide


This Learner Guide is part of a suite of resources developed by Industry Network Training and Assessment Resources (INTAR) for learners undertaking the *Certificate III in Flooring Technology* (MSF30813).

Its purpose is to help apprentice floor layers, sales staff and other workers to acquire the background knowledge needed to satisfy the theoretical components of the competency covered by the resource.

It is not designed to replace the practical training necessary to develop the hands-on skills required.

This Learner Guide was developed for the National Flooring Trainers Network (NFTN), with funding provided by the Carpet Institute of Australia Limited (CIAL).

## Copyright



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In all cases, users should consult the original source documents before relying on any information presented in the resource.

These source documents include manufacturers' installation guides, Australian Standards, codes of practice and other materials produced by specialist industry bodies and government agencies.

## About the Flooring Technology project

The Flooring Technology project is an ongoing resource development venture coordinated by INTAR to assist apprentice flooring installers undertaking the *Certificate III in Flooring Technology.*

For more information about INTAR, and to see the full range of Flooring Technology units available under this project, go to the following website and follow the links:

www.intar.com.au

For more information on the background of the Flooring Technology project, and the funding bodies, organisations and individuals that have been involved in its development work over the years, go to the following website and follow the links:

www.workspacetraining.com.au

## Acknowledgements

All line drawn graphics were produced by Kath Ware (Workspace Training). Many of these graphics are based on drawings or photographs from installation manuals published by carpet manufacturers.

All on-site work photos were taken by David McElvenny (Workspace Training).

Photos showing completed carpet installations were supplied by the Carpet Institute of Australia Limited (CIAL) and display various broadloom carpet products manufactured by CIAL members.

Some of the photos used in Section 1 of this Learner guide come from other Learner guides in the Flooring Technology suite of resources and are more fully acknowledged in those guides. See the 'Introduction' chapter for the list of references to these background resources.

Thanks to Justin Julius, from Julius Flooring Pty Ltd, for allowing us to photograph him and his installation team at work.

### Technical advice and support

In addition to the people and organisations named above, many TAFE teachers, RTO trainers and industry experts were involved in the development of this training resource. Below are the members of this project group.

Craig Bennett – Hunter Institute of TAFE (NSW)

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Chris Shaw – TasTAFE (Tasmania)

Ian Ciesla – WA TAFE (Western Australia)

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Allan Firth – Carpet Institute of Australia Limited

Justin Julius – Julius Flooring Pty Ltd

# Table of contents

# Introduction

This unit covers the tools, materials and techniques used by flooring installers to lay adhesive-fixed carpets.

Before you commence this unit, you should have already completed the introductory unit called: *Carpet basics*.

That unit describes the basic principles of installing carpet using conventional 'stretched-in' techniques.

The same general principles of subfloor preparation, measuring, cutting, fitting and finishing also apply to adhesive-fixed carpet installations.

The big difference is that now we will be using adhesive to either 'direct stick' the carpet straight to the subfloor, or 'double bond' the carpet and underlay to the subfloor.

Adhesive-fixed carpets are more likely to be used in commercial applications, such as offices, clubs, schools and shops. Its advantage over conventionally installed 'stretched-in' carpet is that you can avoid the problem of wrinkles and buckles that tend to occur over time in high traffic areas when the carpet is only secured with gripper strips.

In this unit, we'll look specifically at the techniques used to carry out a direct-stick installation of PVC-backed carpet, as well the dual-bond techniques used to install woven carpet and tufted carpet over a cushion underlay.

## Pre-requisite units

There are no formal pre-requisite units specified for the unit of competency: *MSFFL3006 Install adhesive fixed carpet floor coverings*.

However, you will find it easier to undertake this unit if you have already acquired the skills and knowledge covered in the following units from the Flooring Technology series. If there are any of these that you haven't yet completed, speak to your trainer about the extra background information you'll need to help fill in the gaps.

| Learner guide title | Competencies covered |
|---|---|
| Safety at work | *MSAPMOHS200A: Work safely*<br>*MSFFL3002: Establish and maintain a safe flooring technology work environment* |
| Inspecting and testing subfloors | *MSFFL2004: Moisture test timber and concrete floors*<br>*MSFFL3003: Inspect sub-floors* |
| Subfloor coatings and toppings | *MSFFL2006: Prepare, select and apply smoothing and patching compounds*<br>*MSFFL2007: Select and apply appropriate compounds and additives*<br>*MSFFL2009: Select, prepare and apply moisture barriers and damp proof membranes to concrete sub-floors* |
| Preparing floor coverings | *MSFFL2002: Receive and prepare floor covering materials for installation* |
| Making measurements | *MSFGN2001: Make measurements and calculations* |
| Work documents | *MSFGN3001: Read and interpret work documents* |
| Hand and power tools | *MSFFL2001: Use flooring technology sector hand and power tools* |

## Working through this unit

There are five sections in this unit:

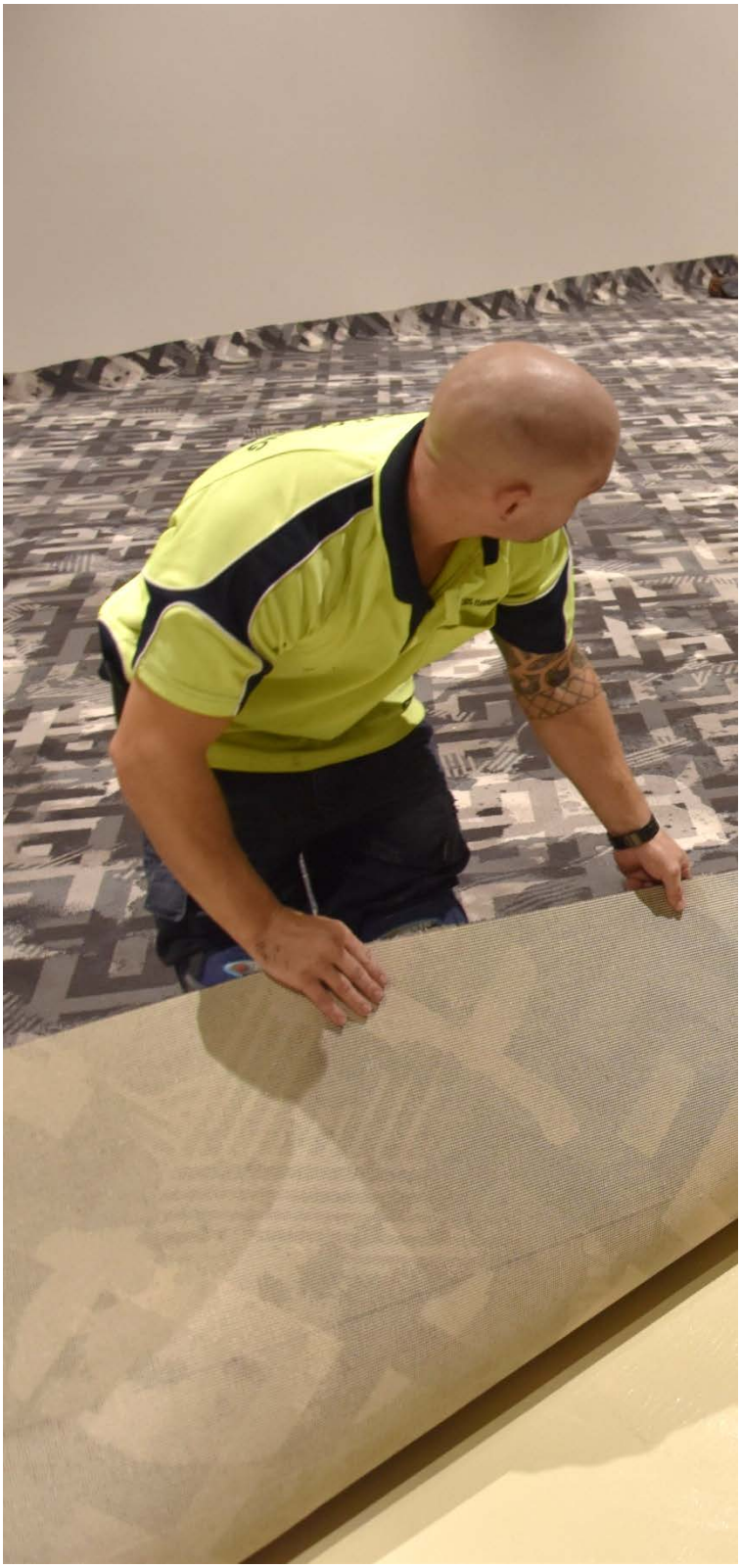
- *Preparing for installation*
- *Carpets, underlays and adhesives*
- *Basic carpet installation principles*
- *Installing direct stick carpet*
- *Installing dual bond carpet*

Each section contains a set of lessons, covering the background theory for that topic. At the end of each lesson is a ‘learning activity’. You should use the Workbook for this unit to write down your answers to these learning activities.

Your final assessment of competency in this unit will include various practical demonstrations. To help you get ready for these hands-on assessment activities, see the performance checklists shown in the *Practical demonstrations* section at the back of this Learner guide.

Section 1

# Preparing for installation



# Overview

*Proper Preparation Prevents Poor Performance*.

We introduced this little saying in another unit from the Flooring Technology qualification. But it's worth repeating it here, because it applies equally to every installation you do.

Fortunately, the preparations that apply to adhesive-fixed carpet installations are very similar to the preparations for other types of installations – so you will have already covered most of them in a range of other units from this qualification.

In this section, we'll revise these topics in the context of laying adhesive-fixed carpet.

## Completing this section

There are four lessons in this section:

- *Tools and equipment*
- *Health and safety*
- *Documentation*
- *Assessing the subfloor.*

You should use the separate Workbook to complete the 'learning activity' at the end of each lesson.

# Tools and equipment

The basic kit of tools needed to set out, cut and install adhesive-fixed carpet and cushion underlay are much the same as for conventional installations using gripper strips.

The main additional hand tool you'll need is a notched trowel to spread the adhesive.

Below is a summary of the basic tool kit needed for most adhesive-fixed carpet installations. Note that not all installers use all of these tools, and some installers may use other items that are not shown here.

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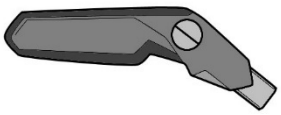
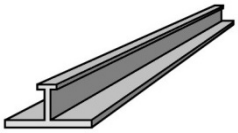
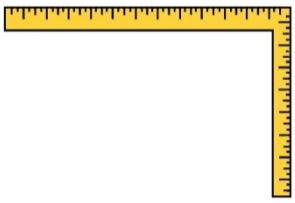
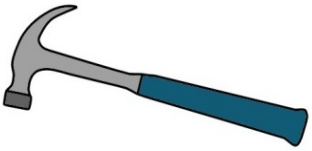
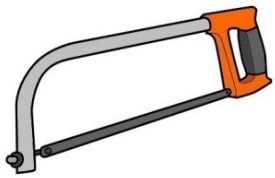
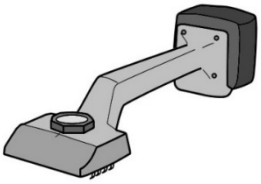
|  utility knife |  straight edge |  square |
|  hammer |  tape measure |  hacksaw |
|  stair tool |  knee kicker |  awl |

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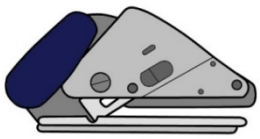
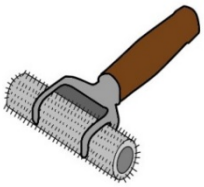
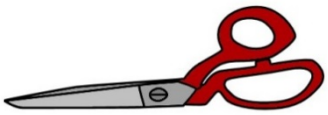
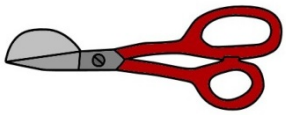
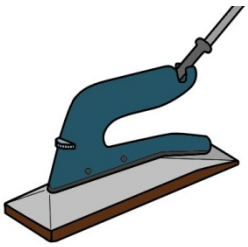
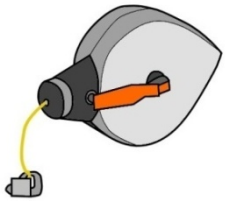
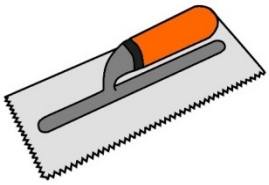
|  loop pile cutter |  flat seam roller |  porcupine roller |
|  carpet shears |  duckbill napping shears |  hot melt iron |
|  chalk line |  notched trowel |  induction seaming tool |

## *Learning activity*

Are there any tools above that you don't use in your own on-site installations? Which ones are they?

Are there any additional tools that you do use, that aren't shown here? What are they, and what do you use them for?

# Health and safety

At this stage of your apprenticeship training, you're probably used to carrying out an on-site risk assessment before you begin a new job, particularly if you do a lot of commercial work.

Even if you don't complete a formal risk assessment document, you're no doubt familiar with the process of signing onto a Safe Work Method Statement (SWMS) or Job Safety Analysis (JSA).

Some flooring installers think that the whole concept of doing a risk assessment only applies to big jobsites or commercial projects, and that on smaller domestic jobs everyone can relax and forget about it. But the fact is that every professional operator utilises the basic risk assessment process on every jobsite they go to, regardless of its size, and regardless of whether they're required to record the outcomes on a template document.

This is because the three basic steps are actually very simple to carry out, and compared to the effort that's required, the rewards are huge in terms of avoiding injuries and other problems that might cause you grief. This means that even on the smallest domestic job in someone's home, you should still take the time to:

1. **Identify the hazards** – that is, look around and note anything that might cause a problem.
2. **Assess the risks** – decide on how serious each hazard is that you've noticed, and whether you should remove it or manage the issue in another way.
3. **Control the risks** – take steps to minimise the chance of that hazard causing an incident that results in injuries, property damage or some other type of harm. If the potential outcomes are serious, put more thought into your control measures. If they're not so bad, don't spend as much time on the solution.

We've talked a lot about the various hazards that apply to particular tasks relating to working on-site, preparing subfloors and installing carpet in several other units from the Flooring Technology resource.

Below is a summary of the main safety issues relevant to the installation of adhesive-fixed carpet, together with the units they are discussed in. You should go back over these topics if you need to refresh your memory on them, because you will be assessed on all of these factors when you undertake the practical demonstration events for this unit.

- **Manual handling** – including how to lift and carry heavy rolls of flooring – see: *Safety at work*
- **Knee problems** – including injuries and chronic conditions caused by working on your knees – see: *Safety at work*
- **Dust and fumes** – including dust from subfloor preparations and fumes from primers and adhesives – see: *Subfloor coatings and toppings*
- **Skin contact** with hazardous substances – including cement-based products and solvents – see: *Subfloor coatings and toppings*
- **Personal protective equipment** – including eye protection, ear protection and other items of PPE needed on-site – see: *Safety at work*
- **Knife safety** – including the techniques for using a utility knife – see *Carpet basics*.

## *Learning activity*

Below are some of the hazards you're likely to face on a jobsite while carrying out a dual bond carpet installation.

For each hazard, state what 'risks' they might pose to people's health and safety, and what 'control measures' you would put in place to minimise the risks.

1. Other people on-site who might walk through your installation area without realising that you're working there.
2. Heavy carpet rolls that need to be moved from the truck into the work area.
3. Working in a room with poor ventilation.
4. Working on your knees on a hard floor surface.
5. Tools, offcuts and other building items scattered around the floor.

# Documentation

The last thing any flooring installer wants is to put a lot of time, effort and hard work into an installation job, only to be told that the client isn't happy because something wasn't done according to their original specifications.

Good quality documentation is crucial to getting the job done properly, and to being confident that you've correctly understood all of the requirements before you start the project.

Sometimes problems arise because certain details have been left out of the documents, and the installer has filled in the missing information with their own assumptions. Other times it's because the installer simply didn't read the documents properly, or misunderstood what they were saying.

That's why it's so important that you check the work documents carefully before you load your vehicle and go out to the jobsite. If anything doesn't look right, or there are details that you don't understand, you should always check with someone who is authorised to give you the right information.

We have discussed the functions and make-up of the following types of workplace documents in the following units from the Flooring Technology resource. You should go back to these units if you need to refresh your memory on any of the details:

- **Floor covering plans** – see *Planning* and *costing and Carpet basics*
- **Job sheets** – see *Carpet basics*
- **Warranties and maintenance advice** – see *Carpet basics*
- **Work documents in general** – including building plans, SWMSs, SDSs and Australian Standards – see *Work documents*.

## *Learning activity*

Let's say you are meeting with the client to discuss their dual bond broadloom carpet installation on a concrete subfloor, and they say: 'The carpet must be installed in accordance with the Australian Standards.'

Which Australian Standards would they be referring to?

# Assessing the subfloor

'*Beauty is only skin deep – but ugliness goes right to the core*'.

You might remember that we quoted this little saying in the unit: *Inspecting and testing subfloors.*

Any flooring installer who puts a new floor covering down on top of a poorly prepared subfloor will find out soon enough how this saying relates to them personally.

We've talked a lot about subfloor types and the different problems you might encounter when you're preparing the substrate for a new covering.

If you need to refresh your memory on particular subfloor assessment and preparation techniques, go to the following topics in these units from the Flooring Technology resource:

- **Priming, patching, levelling and preparing different subfloors** – see: *Subfloor coatings and toppings*
- **Grinding techniques and equipment** – see: *Concrete grinding*
- **Moisture testing, inspecting and descriptions of subfloor structures** – see: *Inspecting and testing subfloors.*

Below is a checklist of the questions you should ask yourself before commencing an adhesive-fixed carpet installation. This checklist is similar to the one shown in the *Carpet basics* unit, with a few extra points that relate specifically to the use of adhesives.

Always keep in mind that as the flooring installer, it's your responsibility to decide whether the subfloor is suitable and has been adequately prepared.

If you're worried that the substrate isn't suitable, or that there is an underlying problem that might cause trouble later on, don't ignore it. Check with your supervisor or manager before going ahead. Everyone will be thankful in the long run, even if it means that there'll be a delay while the problem is fixed.

## Questions to ask yourself

### General issues

- *Is the substrate smooth and flat?*

  AS/NZS 2455 has minimum standards for 'planeness' and smoothness'.

  The **planeness** standard says that when a 3 metre long straight edge is placed on the surface at any position, no part of the surface is allowed to be more than 5 mm below the straight edge.

  The **smoothness** standard says that when a 150 mm long straightedge is placed on the surface at any position, no part of the surface is allowed to be more than 1 mm below the straightedge.

  Indentations, ridges and dents can sometimes show through to the surface of carpet. Ridges also tend to create wear points in areas where there is regular foot traffic or movement of furniture.

- *Is the surface free from dirt, oil, adhesive residues and all other contaminants?*

  Dust and other substances on the surface will interfere with the strength of adhesive bonds in stick-down installations. Some contaminants will also degrade the carpet over time.

### Concrete subfloors

- *Are the relative humidity (RH) and alkalinity (pH) levels within the allowable limits?*

  Excessive moisture in the concrete subfloor can cause the carpet to change shape over time, and also allow fungal spores to develop.

  There are limits set for RH and pH, both in the Australian Standards and in the flooring manufacturers' own installation instructions.

  The only time you should over-ride these specifications is when an approved moisture barrier is being installed.

- *Is the substrate sound and free from loose, powdery or scaly material?*

  If the substrate is concrete and you are planning to use adhesives, the surface must be sound and sufficiently porous to allow the adhesive to bond properly. If you're using nails to secure grippers, the substrate needs to be able to hold the nails without crumbling or cracking.

  If it's not in good condition, the affected layer will need to be removed and resurfaced.

- *Are there expansion joints in the floor?*

  Expansion joints need to be in good condition and free from dirt or obstructions. You'll need to keep them clear and finish them off with approved cover strips.

  Don't get mixed up with relief cuts that have been put into the concrete to stop it from cracking during the curing process. These will be a 5 mm wide saw cut, and can be filled with a suitable compound.

- *Have heating elements been installed in the floor?*

  Floor covering manufacturers provide recommended limits for the temperature of the subfloor. Make sure the heating elements will not exceed this temperature, and follow the specific instructions relating to substrate preparation for heated floors.

**Wooden subfloors**

- *Is the existing floor properly supported and well secured?*

  Any structural problems or loose boards should be fixed before the installation begins, especially squeaky floorboards or springiness in the floor surface.

- *Are there gaps between boards, protruding nail heads or other surface defects?*

  Gaps, ridges, cupped boards, protruding nails, and other defects will 'telegraph' through to the surface of the floor covering.

  In general, structural floors made from plywood and strip flooring need to have a hard underlay placed on top to provide a flat smooth surface.

- *Is the subfloor ventilation adequate and in compliance with the relevant standards?*

  Check that the air vents provide sufficient ventilation and that the subfloor cavity meets the minimum requirements for clearance between the floor and the ground.

- *Has the moisture content (MC) been checked and is it within the allowable limits?*

  The moisture content of structural members and floor boards or sheets must all be within the allowable MC range. There must also be no evidence of plumbing or stormwater leaks that might have a long-term effect on the MC.

## Existing floor coverings

As a general rule, it's best not to direct-glue or double-glue over the top of an old resilient or rubber floor.

One reason is that you would be depending on the old adhesive under the original covering to remain sound and not separate from the subfloor.

Another reason is that the new adhesive may not stick well to the top of the resilient covering, especially if it has old polish or ingrained contaminants on the surface.

Having said that, it is possible to apply an 'embossing leveller' to some existing floor surfaces, including resilients and quarry tiles, as a preparation for the new adhesive. Different levelling compounds are used for different types of substrates, so you need to make sure you select the correct one for the materials you're working with.

## *Learning activity*

Why is subfloor moisture content an important consideration when you're laying dual bond carpet?

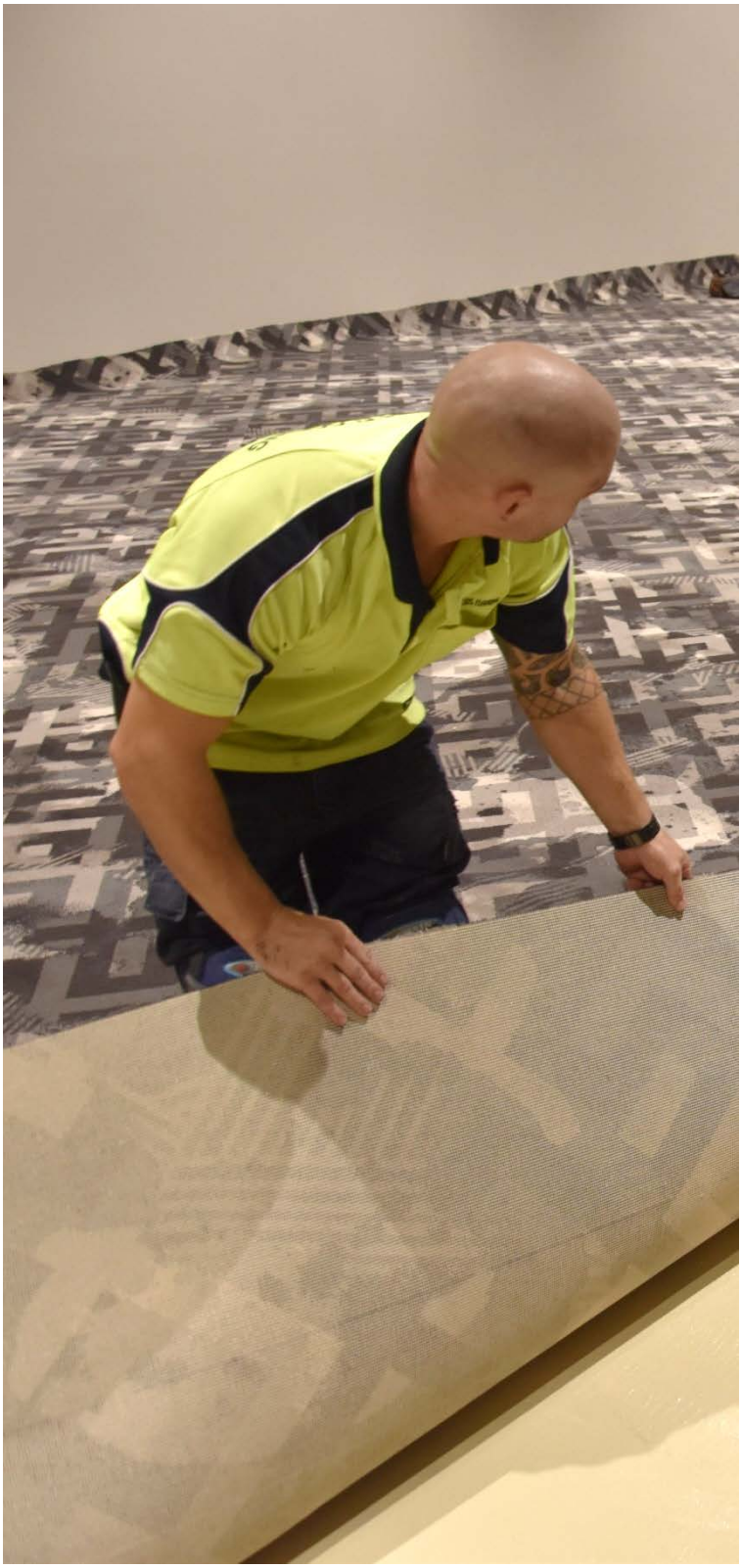
What are the main problems that might occur in an installation if the moisture content in the substrate was too high?

Let's say you have been asked to install dual bond carpet over a new concrete slab. What steps should you take to minimise the problem of rising moisture in the slab before you start the installation? Who takes final responsibility for deciding whether a subfloor is in a suitable condition for a floor covering installation?

Section 2

# Carpets, underlays and adhesives



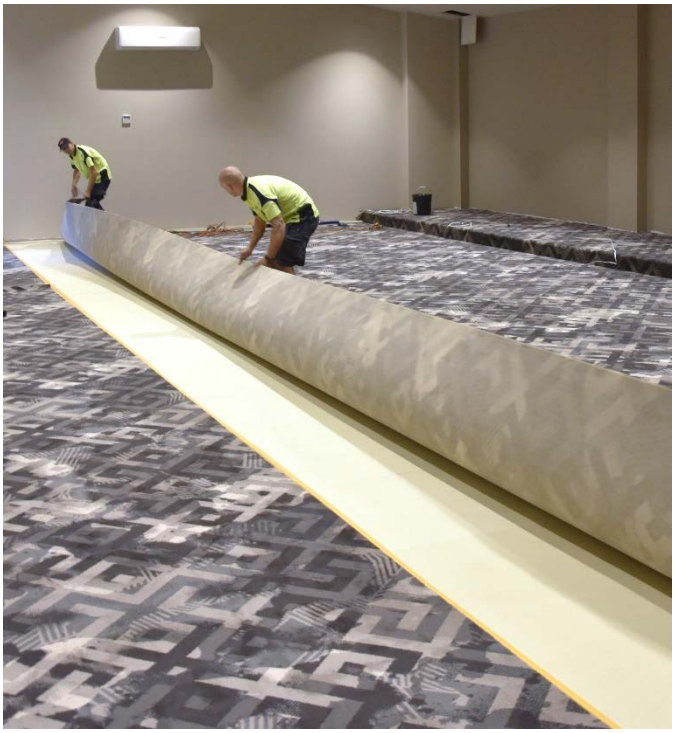
# Overview

In this section, we'll take a closer look at the materials used in dual bond and direct stick carpet installations.

We'll discuss the main types of carpet construction and their different applications.

We'll look at the broad range of underlays available and the materials they are made from.

And we'll outline the types of adhesives used in glue-down installations and the various properties you need to take into account when you're using them.



## Completing this section

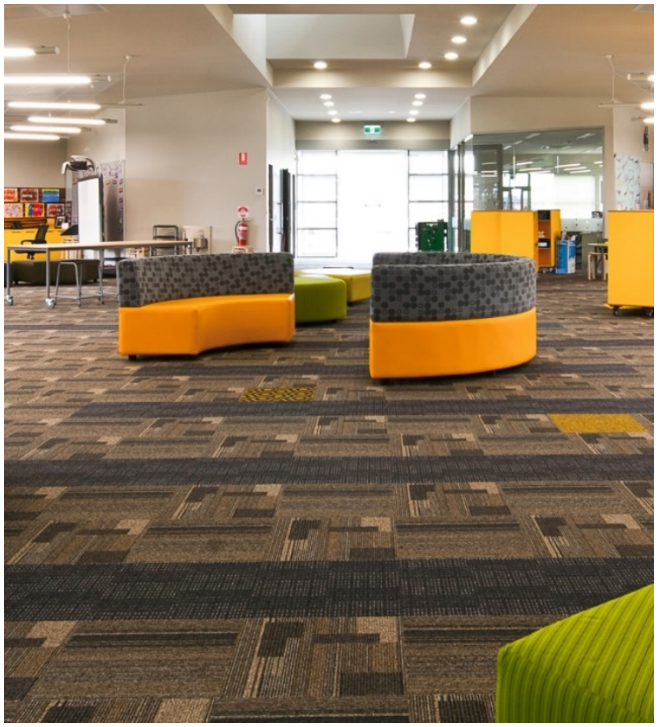
There are three lessons in this section:

- *Carpet*
- *Cushion underlay*
- *Adhesive.*

You should use the separate Workbook to complete the 'learning activity' at the end of each lesson.

# Carpet

There are three main types of carpet construction: tufted, fusion bonded and woven.



Tufted carpet accounts for about 95% of the total carpet market in Australia, since it is relatively economical to produce and very versatile.

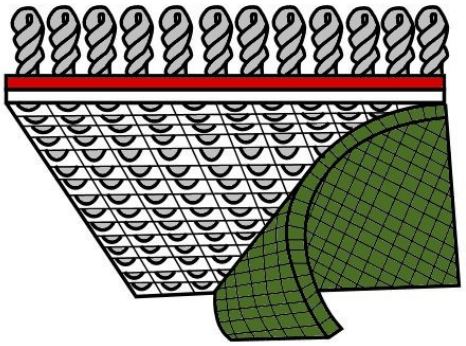
Fusion bonded carpet lends itself more to carpet tile production, especially for office environments.

Woven carpet tends to be more expensive than tufted or fusion-bonded carpets, but the range of patterns and designs available are virtually unlimited.

Below are the construction methods used in the manufacture of these different types of carpet.

## Tufted carpet

'Tufting' refers to the process of inserting tufts of yarn into a backing cloth with a needle.

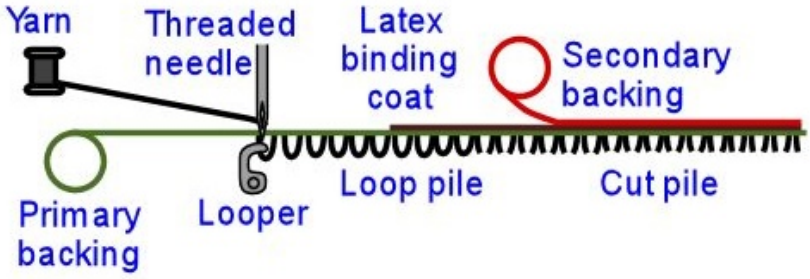


The tufting loom has hundreds of needles that work like a sewing machine.

After the tufts have been anchored into the primary backing with a latex adhesive, a secondary backing is added to give the carpet better dimensional stability.

This extra stability helps when the carpet is stretched into place during installation.

The diagram at right shows the main parts of a tufting loom.



Here are some more details on the terms used in the above diagram:

**Pile**: formed from the yarn, which can be either coloured before manufacture, or dyed or printed after manufacture

**Primary backing**: the cloth that holds the tufts in place until the secondary backing is applied

**Latex adhesive**: the adhesive that seals the fibres in position and bonds the secondary backing

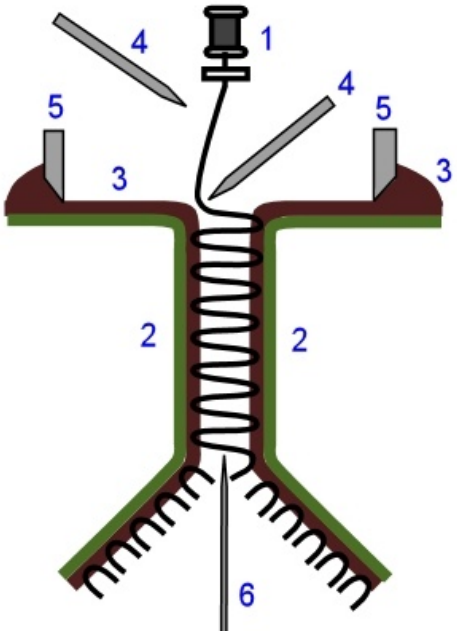
**Secondary backing**: an extra backing layer that stabilises the material and helps it to stretch but stay in shape.

A **loop pile** carpet leaves the loops intact on the surface of the carpet. A **cut pile** carpet has the loops cut off at the top.

By combining these two principles in various combinations, you can create a wide range of different textures.

## Fusion bonded carpet

The main difference between bonded carpet and tufted carpet is that fusion bonding relies entirely on the adhesive layer to hold the pile material in position – the yarn does not penetrate the backing fabric at all.




Bonded carpet is made by lapping the pile yarn (shown as 1 in the drawing at right) backwards and forwards between two backing materials (2) coated with adhesive (3).

The yarn is implanted into the adhesive with pleating blades (4), and the adhesive thickness is controlled by a glue scraper (5).

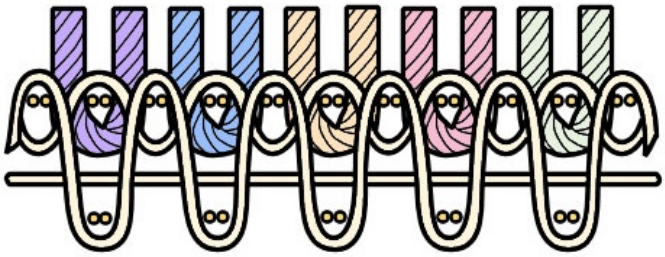
Once the adhesive has set, the ‘sandwich’ is then split down the centre with a knife (6) to form two separate carpets.

## Woven carpet

Woven carpet, as the name suggests, uses traditional weaving methods to make the fabric. Because there are more labour and manufacturing processes involved, the final product tends to cost more than other construction methods. However, many different colours can be used, and the weaving loom is able to produce intricate designs in a very durable finish.

The two best known woven carpets are Axminster and Wilton, which is a reference to the types of looms they are produced on.

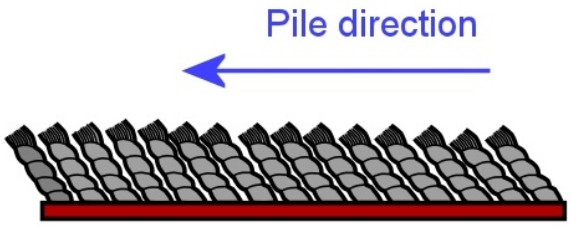


These carpets are often specified in prestige restoration projects and luxury homes.

The diagram above shows an Axminster weave construction.

## Pile direction

The pile of a carpet tends to lay in a particular direction.




If it's laying towards you, it will look darker because you're looking 'into' the pile.

If it lays away from you, it will look lighter because you're looking 'over' the pile.

Whenever you put two pieces of carpet side by side, you need to make sure that the pile direction is the same on both pieces. Manufacturers generally put a coloured thread on the backing on one side to indicate the pile direction.

The pile direction will influence the way you lay the carpet. A pile that faces towards the traffic flow will tend to wear better than one that faces crossways. It will also look darker – so you need to check with the customer on whether that is an important consideration.

## Backing materials

**Jute** is the traditional fibre used in tufted carpet backing materials. It has good dimensional stability and is able to stretch. However, if it gets wet it will shrink, and sometimes leave a brown or yellow stain on the pile surface. It is also an imported

material and not always reliable in terms of availability. These days, jute is not commonly used for primary backing, but is still the preferred material for secondary backing.

Synthetic materials, especially **polypropylene**, are becoming much more popular for primary backing. They are economical, waterproof and stretchable.

However, they are heat-sensitive, which can cause problems with some manufacturing techniques, as well as installations that involve hot-melt seams.

They also tend to fray when they're being cut or seamed during installation.

Fusion bonded carpets use layered vinyl or plastic backing materials, with a fiberglass scrim for dimensional stability.

## Carpet fibre

There are several types of fibre used in carpet. Each has its advantages and disadvantages as a raw material, but when the varying characteristics are taken into account during the manufacturing and installation processes, they all perform well on the floor.

In Australia, the three most commonly used fibres are: nylon, polypropylene (also called 'olefin') and wool. Some carpets are made of fibre blends, such as 80% wool and 20% nylon.

### *Learning activity*

Choose one carpet product you're familiar with that is suitable for dual bond or direct stick installation. Provide the following details:

- brand name and manufacturer of the carpet
- type of carpet (tufted, fusion bonded or woven)
- pile texture
- materials used in the carpet fibres
- backing materials used.

# Cushion underlay

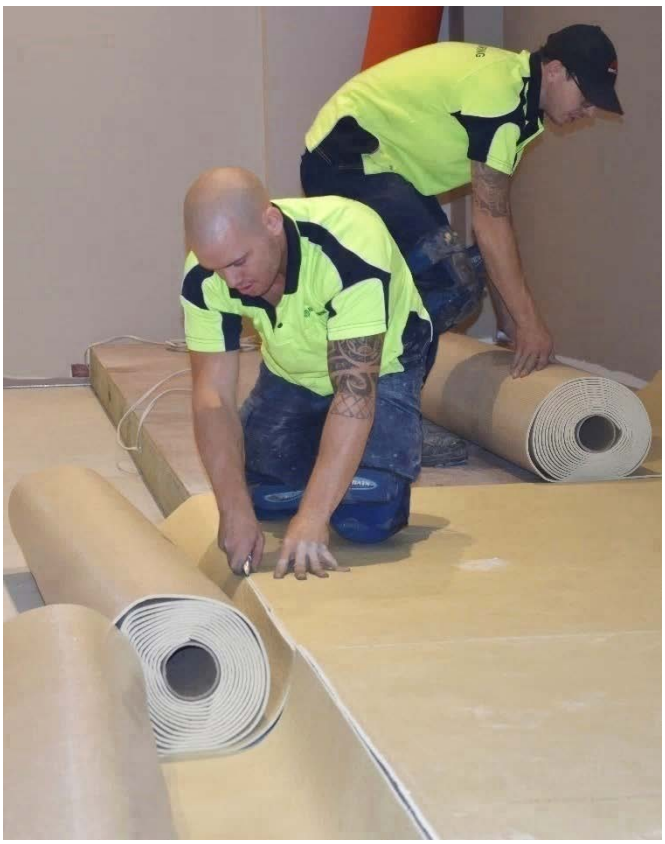
Carpet cushion underlay improves the performance of a carpet in several ways.

It provides better impact absorption, sound dampening and insulation against heat and cold.

And in the long term, it significantly increases the carpet's resistance to wear and tear, and protects the carpet pile from being crushed under furniture and heavy objects.

The underlay you select for a dual bond carpet installation will depend on its end use and the type of carpet the client has chosen as a covering.

It will also need to be compatible with the adhesive you're using for the job.



Note that cushion underlays used in conventional carpet installations are made in a variety of materials, generally fibre, rubber or foam. However, for dual bonded installations, particularly in commercial premises, the underlay material needs to be a high-density purpose-made slab foam.

## Classifications


There is an Australian Standard classification for different types of cushion underlay, categorised according to their intended use. This is set out in Table 1 of *AS 4288-2003 Soft underlays for textile floor coverings.*

The classification is based on the cushion's performance in compression and deflection after **dynamic loading**. A 'dynamic' load (also called 'live' load) is one that is not constant, and includes foot and wheeled traffic.

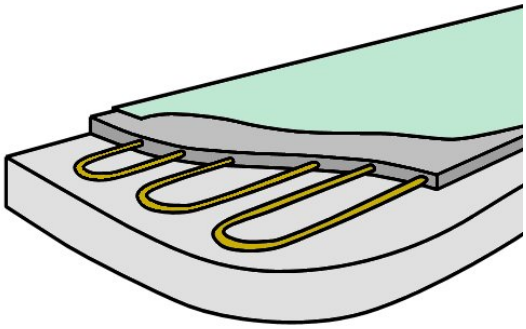
Below is a summary of Table 1 from *AS 4288-2003.*

| Designation | Description of intended use or application |
|---|---|
| LR | Light residential use, not suitable for stairs |
| GR | General residential use |
| L | Luxury use, domestic/commercial where high energy absorption is desirable |
| GC | General commercial use, suitable for normal foot and wheel traffic |
| HC | Heavy commercial use, suitable for heavy foot and wheel traffic and castor chairs |

Most dual bond carpet installations carried out in commercial premises specify HC underlay.

## Thermal insulation

All underlays provide some level of **thermal resistance** – that is, resistance to the transfer of heat and cold through the floor. This is measured as an 'R' value. The higher the R value, the better the material is as a thermal insulator. Normally, this is directly related to the density and thickness of the underlay.



Although higher R values are generally a desirable characteristic, it's not always the case. For example, if your customer has installed an **underfloor heating system** (also called 'radiant heating'), you will actually want to use an underlay that lets the heat through.

This will affect your choice of underlay material and its R value.

## *Learning activity*

Choose one underlay product you're familiar with that is suitable for use in a dual bond installation. Provide the following details:

- brand name and manufacturer of the underlay
- type of underlay and materials used in its construction
- Australian Standard classification
- 'R' value (thermal resistance).

# Adhesive

There are many different types of adhesive on the market.

In recent years, adhesive manufacturers have done a lot of research on new formulations that provide the bond strength required, but are less damaging to the environment and the health of installers who use them.

This has resulted in a wide range of water-based adhesives that have low 'volatile organic compound' (VOC) levels.

VOCs are chemicals that can evaporate into the air and cause environmental problems and chronic health conditions.

There are also adhesives that have specific features – such as 'pressure sensitive' products that remain tacky and allow the floor covering to be pulled up more easily at a later time. This feature is particularly useful in high traffic areas where certain sections of covering will need to be removed and replaced when they wear excessively.


Your final choice of adhesive will depend on a range of factors, including what type of material is being laid, what the substrate is made from and how much wear and tear the floor will be subjected to.

You should also follow the advice of the floor covering manufacturer, unless there are unusual site conditions that must be taken into account.

In cases where you think that an alternative product will do a better job than the floor manufacturer's recommendation, you should always double-check with the manufacturer first unless you know for sure that it will be appropriate.

Remember, any time that you don't follow the manufacturer's recommendations, you run the risk of voiding your warranty conditions if something plays up later on.

## ‘Open time’ and ‘working time’

Adhesive manufacturers use the terms ‘open time’ and ‘working time’ to describe the chemical changes that begin to occur in the product after you have spread it on the floor.

**Open time** is the time you need to wait before placing the floor covering in position. This is also called the **tack up time**, because the ridges in the adhesive start to ‘skin over’. But don’t wait until it becomes touch dry – for the adhesive to grab it needs to be able to stick to your fingers and pull back when you lift your hand off.

**Working time** is the time you have available to lay the material down and complete all cutting and fitting. If you place flooring into the adhesive after the working time has passed, the flooring won’t bond properly.

Note that the open time and working time of an adhesive will vary depending on the temperature, humidity and porosity of the surface.

High temperatures, low humidity and porous surfaces will all reduce these times.

Also remember that using a fan will reduce the tack-up and working times. A fan is an excellent way to improve cross ventilation, but you need to be careful that you keep the size of the area manageable when you spread the adhesive, so you don’t run out of working time while you’re still laying the floor covering.

For very porous surfaces, such as wood-based underlays, manufacturers generally specify that a primer be applied first with a brush. This helps to avoid the problem of **late placement**, where the adhesive has already set and will no longer bond to the flooring covering.

Manufacturers often combine the open time and working time and specify a **working open time** for their adhesives. The duration begins when the adhesive is spread and continues through to the time when you should no longer place the flooring into the adhesive. It particularly applies to adhesives that skin over almost immediately.

## Notched trowels

Carpet adhesives are designed to be spread on the floor with a notched trowel. These trowels have V shaped notches cut into the side of the blade. Their purpose is to control the amount of adhesive that's spread on the substrate.

Trowels are designed to be held at a 60° angle to the floor while you're spreading. If the angle is too flat, the ridges in the adhesive will be too low, so there won't be enough to ooze out and fill the spaces when the floor covering is pushed down on top.

Adhesive manufacturers generally specify the trowel notching sizes for certain products. It's important to follow these specifications, because if you don't, you'll end up applying either too much or too little adhesive.

Applying too much adhesive can result in the ridges showing through the floor covering surface, or 'bleeding' at the joints. Applying too little will mean that there is less adhesive available for a firm bond, as well as a reduced working time for placement.

Over time, the notches in the trowel will gradually wear down and reduce the depths, especially when you're working on cement-based substrates. So whenever the trowel starts to show signs of wear, it should be replaced. Alternatively, you can reshape the notches using a triangular file.

Below are the typical notch sizes used for carpets and underlays.

**Between subfloor and underlay:**

**V1** 1.6mm x 1.6mm x 1.6mm

**Between sub-floor and smooth back carpet:**

**V2** 2.4mm x 2.4mm x 2.4mm

**Between sub-floor and rough back carpet:**

**V3** 3.2mm x 1.6mm x 3.2mm

## Rollers

Once the floor covering has been placed in position and fitted, it needs to be pushed firmly into the adhesive.

You should do this with a heavy floor roller, running lengthwise and then across the floor.

In areas that can't be reached with a floor roller, use a hand roller.

Be sure to roll the edges and seams properly, because these are the areas where adhesive failures tend to start.

### *Learning activity*

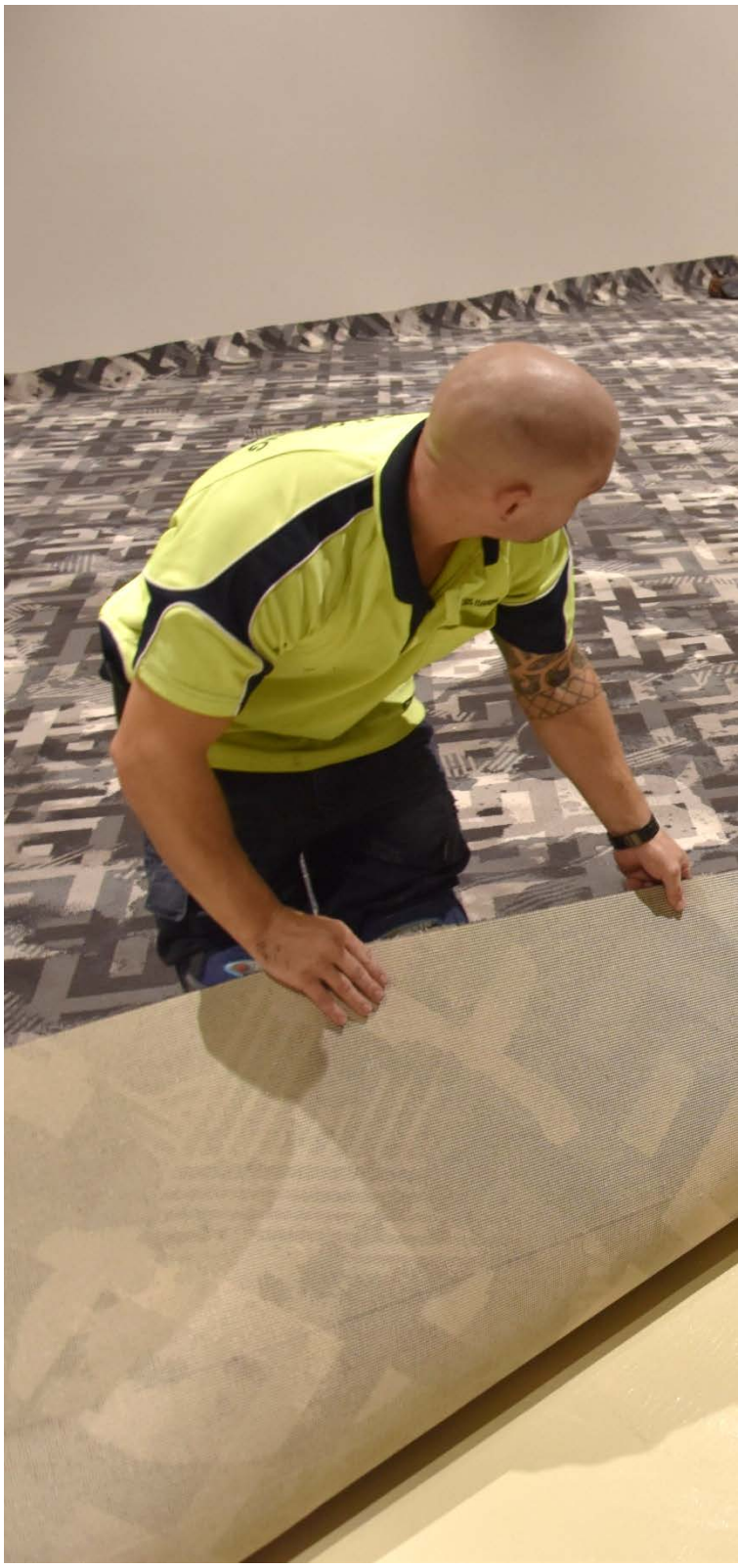
Select one adhesive product you're familiar with that is suitable for use in a dual bond or direct stick installation. Provide the following details:

- brand name and manufacturer of the adhesive
- type of adhesive (in terms of its chemical composition)
- tack-up time specified by the manufacturer
- working time specified by the manufacturer.

Section 3

# Basic carpet installation principles



# Overview

You should already be familiar with the techniques used to install conventional ‘stretched-in’ carpet.

The same basic principles apply to laying direct stick and dual bond carpet, with the obvious difference that you are now using adhesive to bond the carpet (and underlay, where used) to the subfloor.

There are also some differences relating to the way the carpet is trimmed, especially when it is installed without using gripper strips.

Note that commercial carpet layers use a range of installation techniques, depending on the nature of the job, the characteristics of the subfloor and the needs of the client. However, there are some general methods that are applicable to most job.

## Completing this section

There are five lessons in this section:

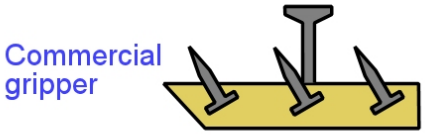
- *Installing carpet grippers*
- *Preparing the cushion underlay*
- *Preparing the carpet*
- *Seaming the carpet*
- *Trimming and finishing.*

You should use the separate Workbook to complete the ‘learning activity’ at the end of each lesson.

# Installing carpet grippers

Adhesive-fixed carpet installations often don't use gripper strips. However, grippers can be used to achieve a smooth-edge appearance around the walls.


They also tend to be used on woven wool carpets that need to be periodically steam cleaned, such as in clubs and hotels, in order to reduce shrinkage problems.




You may have already been laying carpet over a cushion underlay in domestic applications, using domestic gripper strips to secure the carpet around the perimeter of the rooms. The principles are the same when you're installing dual bond carpets, except now you're more likely to be working in commercial premises, rather than people's homes. This means that you should use commercial carpet gripper, with three rows of pins, rather than domestic gripper, which only has two rows.

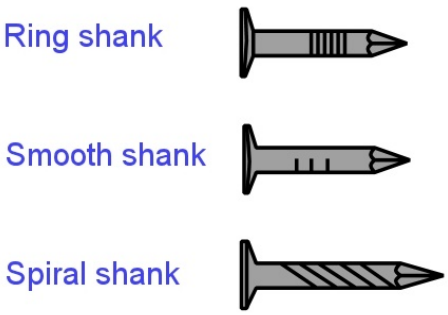
Below is a review of the installation procedures for grippers.

## Fixing to the subfloor

Most grippers have steel nails positioned at regular intervals along the length of the plywood. When you put the gripper in position on the floor, you can then simply hammer the nails in to secure the strip.

There are different types of nails used for different subfloor materials:

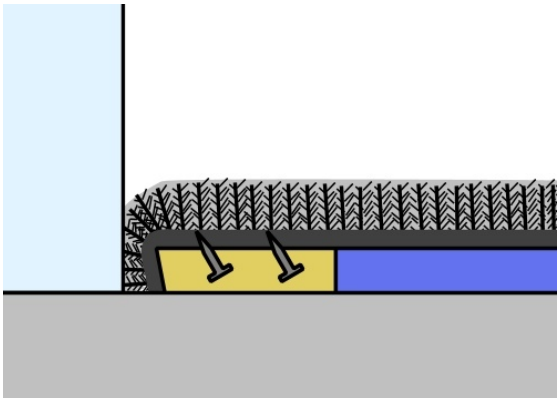
- **ring shank nails** are designed for timber or plywood subfloors
- **smooth shank nails** are designed for higher density (harder) concrete subfloors
- **spiral shank nails** are for lower density concrete, which tends to crumble more around the nail hole.




In areas where it is too difficult to use the pre-nailed gripper, '**no nail**' or '**standard**' carpet gripper is used. In this case, the gripper strip can be fixed to the floor surface using contact or construction adhesive. For surfaces such as ceramic tiles, it can be fixed using plugs and screws. If the subfloor is metal, you can use self-tapping screws.

## The gully

The gripper strip has an undercut bevel on one side which is placed facing the wall. This gives you a space, or **gully**, to tuck the edge of the carpet into.



The width of the gully should be about 60% of the thickness of the carpet.

Don't make the gully too wide, because that will cause the carpet to droop at the edge.

On the other hand, don't make the gully too narrow, because then you won't be able to tuck in the edge of the carpet. If you try to wedge or force the carpet into position, you might end up cracking the skirting board.

## Calculating quantities

The most obvious way to calculate the amount of gripper strip needed for an installation is to measure around the perimeter walls, not including doorways and other openings (unless the carpet is butting up against a different floor covering).

However, carpet layers sometimes use a simple rule of thumb to estimate the quantity needed:

**For commercial installations**: allow 0.65 lineal metres for every square metre of carpet.

### *Learning activity*

Do a measure up of the room you're in right now (or a nearby room) and estimate the quantity of gripper strip needed for the installation.

Use both techniques described above – measuring the perimeter of the area and using the rule of thumb for commercial installations.

Compare the two results.

Refer to the *Making measurements* Learner guide if you need more information on the calculation techniques.

# Preparing the cushion underlay

Before you apply adhesive to the subfloor to stick down the underlay, you'll need to plan the layout of the material and trim it to size.

You'll also need to give the underlay time to acclimatise to the humidity in the room, and 'relax' as its moisture content adjusts to the surrounding air.

Depending on the product and the manufacturer's recommendations, the acclimatisation period might be three hours or even overnight.

Every manufacturer publishes installation guides for their underlay products. You should always follow these recommendations, because they'll not only help you to do the job properly, they may also form part of the warranty conditions.

Below are some methods used to prepare an underlay for installation, prior to spreading the adhesive. We'll talk more about the procedure for laying it into the adhesive in *Section 6: Installing dual bond carpet*.

## Planning the layout

The first step in deciding which way to roll out the cushion is to figure out where the seams will fall in the carpet. Then lay the cushion so that the seams are at 90 degrees to the carpet seams. If that's not possible and the seams need to run in the same direction, try to keep them at least 300 mm away from the carpet seams.

Make allowance in the width and length of the cushion for trimming it flush with the gripper strip.

If you start by cutting it to the room size, you will have enough allowance for trimming.

Don't forget to include door drops in your measurements.

## Calculating quantities

In theory, the amount of underlay you'll need will be the same as the total carpet metreage. In practice, though, many carpet layers like to estimate the underlay quantity by taking the carpet metreage and subtracting 10%. This is because you are able to re-use waste pieces without them showing. However, using small pieces can cause its own problems, so you should still try to keep all pieces as large as possible.

### *Learning activity*

Do the following calculations to find out how much underlay you will need to cover the room you measured up in the previous learning exercise (where you calculated gripper strip quantities):

- Square metreage of underlay required
- Lineal metreage of underlay required, based on the width of the roll you have chosen to use.

If you need to revise the techniques used to work between square metreage and lineal metreage when calculating floor covering qualities, go back to the following two Learner guides:

- *Making measurements*
- *Planning and costing.*

# Preparing the carpet

Like the underlay, the carpet also needs to be prepared for laying before you start to spread the adhesive.

Again, always follow the recommendations set out by the manufacturer in their installation guide. It not only provides sound advice, it will also help to protect you if something goes wrong.

In addition to the manufacturer's instructions, you also need to comply with provisions set out in AS 2455 – particularly if the Standard is referenced in the contract with the client.

## Australian Standard 2455

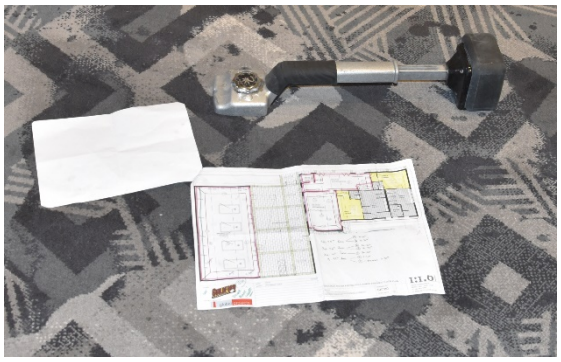
AS 2455 says that the preferred ambient temperature at the time of installation is between 10° C and 35° C. If the temperature is outside these limits, you should check the manufacturer's recommendations before proceeding.

Section 3.1 of the Standard lists some considerations that you should take into account when you're planning the layout and deciding where to start. These are summarised below.

Where possible:

1. Run seams the length of the area, with the traffic going in the direction of the seams, rather than across the seams
2. Run seams towards windows, so that the outside light doesn't strike across the seams
3. Face the pile direction away from the main source of light, and towards the main entry point to the area

4. On stairs, have the pile direction facing towards the leading stair edge
5. Put the full width of the roll on the door side and align the selvedge (side edge) seams accurately throughout the installation
6. If there is a different floor covering on the other side of the doorway, join the two coverings underneath the closed door
7. Put fill-outs (part widths) on the opposite side of the room from the door, and avoid having a fill-out in between full widths, unless the situation is unusual.



Note, however, that most of these decisions should already have been made and agreed on with the client.

The floor covering plan should show you the placements of seams and cross joins, direction of pile lay and other details, and it is likely that the client will have seen the plan and signed off against it.

## *Learning activity*

Select a specific carpet product and get a copy of the manufacturer's installation guidelines.

Answer the following questions, using the manufacturer's guide as your reference source:

- What is the minimum acclimatisation period in the room?
- What is the specified ambient temperature range and relative humidity in the room?
- What is the specified temperature range and maximum relative humidity in the floor at installation time?
- What other recommendations does the manufacturer provide in relation to the site conditions or preparation of the carpet?

# Seaming the carpet

Below is a description of the general principles that apply to seaming carpet.

You may have already been practising these techniques in conventional stretched-in installations.

The seaming process is much the same for direct stick and dual bond carpets, with some minor variations.

We'll look at the specific issues you need to keep in mind for adhesive-fix carpets in Section 4 (direct stick) and Section 5 (dual bond).

## Seam trimming

To prepare the carpet for seam trimming, bring the rolls into the room and lay them out in accordance with the floor covering plan.

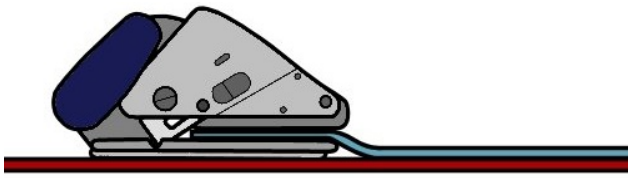
Try to achieve a turn up at the walls of about 50 mm, and an overlap at the seams of 50 to 75 mm.

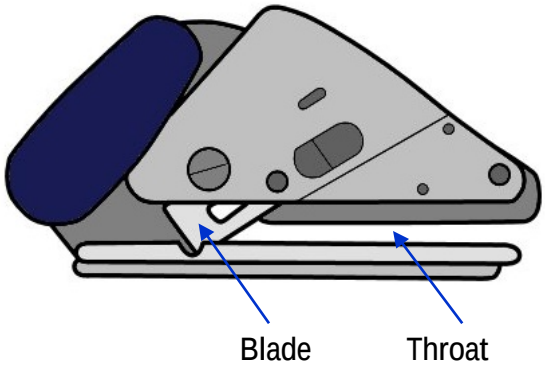
You can use a knee kicker to help position the carpet.

Adjust the teeth on the knee kicker so that they reach through to the secondary backing.

To **row cut** the seams, find the row you want to cut along by inserting a row finder between the tuft rows forming a line in the face pile. If you don't have a row finder, you can use a flat-head screwdriver or an awl with a dull point.

Then slide the throat of the **loop pile cutter** in between the separated pile rows and push the cutter along the line.






Make sure the **blade** in the loop pile cutter is set facing the drop of the carpet, to ensure you achieve a tight seam.

Also adjust the **throat** to match the thickness of the carpet.

Note that the seam edges of plush and twist pile carpets should be cut from the back of the carpet using a straight edge.

## Trimming the selvedge

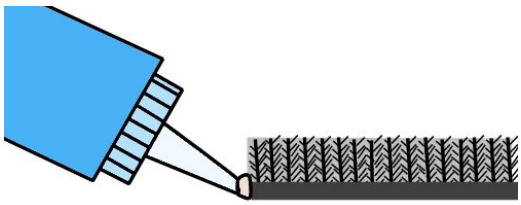
For most tufted carpets, it's best to trim off the selvedge (factory edge) if you are going to seam that edge. This will help to avoid any problems with distortion in the tuft rows or a poorly bonded secondary backing.

On cut pile carpets, it will also allow you to achieve a uniform pile height on both sides of the seam, since the face yarn has a tendency to lie towards the outside of the edge. Depending on the pile height, you should come in between 25 to 35 mm from the selvedge for your cut.

You can use a utility knife and straight edge to trim the selvedge.

## Applying seam sealer

Before the trimmed edges can be joined in a seam, the yarn must be sealed along the cut edge to stop it from unravelling.



If the installation is a dual bond using hot melt tape under the seam, you should apply a latex seam sealer to both edges before joining them.

If the installation is a direct stick, use a solvent-based seam sealer and run a 3 mm bead along the first edge after you place it into the adhesive. Then butt the edge of the second sheet into the bead to seal the join.

## Seaming with hot melt tape

Hot melt tape is a 'thermoplastic' tape impregnated with adhesive.

When it is heated with a seaming iron, the adhesive becomes sticky and bonds to the carpet backing.

The general process for using hot melt tape is as follows.

1. Set the heat regulator on the seaming iron to the lowest temperature that will achieve a full melt of the adhesive.
2. Stretch the carpet lengthwise to remove buckles and slackness, and re-straighten the edges with a knee kicker. Use ‘stay tacks’ (also called ‘temporary nailing’) to hold the join in place while the glue is setting, to keep the pattern aligned.
3. Position the tape under the centre of the two edges of the seam. Put the iron under the carpet and on the tape. Make sure the heat shield is in place.
4. Move the iron slowly in the direction of the pile lay. Feed the two sides of the carpet into the seam by hand behind the iron, before the adhesive cools.
5. Roll the seam with a spiky roller if the carpet is loose pile construction. If it is cut pile carpet, use a cut pile roller so that you don’t damage the yarn.
6. Place a board or weight over the seam to flatten the join.
7. Trim the loose yarns from the seam and remove the stay tacks. You can use a spiky roller (rather than your knees!) to find any stay tacks buried in the carpet.

## Using an induction heating system

A new method for heating seaming tape is to use an ‘induction’ heating tool. This system was pioneered by Kool Glide, which brought the first induction seaming tool onto the market in 2004.

The tool works by ‘inducing’ an electric current in the hot melt tape by passing a magnetic field through the carpet and into the electrically conductive tape.

This melts the adhesive embedded in the tape without needing to apply any external heat.

One of the main advantages of this system is that there is no smoke and minimal vapours given off by the process, since the induction tool never comes into contact with the adhesive. Another advantage is the ability to undo or repair a bond by re-heating the adhesive after it has already set.

## *Learning activity*

Select a seaming iron and answer the following questions in relation to its use. In preference, you should choose the seaming iron you plan to use for your practical demonstration in this unit.

- Who is the manufacturer, and what is the model name?
- What temperature settings does the iron have?
- Which temperature setting will you use for the hot melt tape you'll be installing for your practical demonstration?
- What is the recommended operating speed of the iron at the temperature setting you will be using?

# Trimming and finishing

If you have used carpet grippers around the perimeter of the room, the trimming in process is the same as for conventional stretched-in carpet.

If you have not used grippers, the carpet should be trimmed with a tight freehand cut, flush with the wall using a hook blade in a utility knife.

Once you've completed the installation, you should carefully check the finished floor to make sure everything looks right.

You should also clean up all scraps and vacuum the floor. This will make it easier for you to see any blemishes or problems that might need fixing before you leave the site. If you do find any problems, fix them straight away – don't wait for complaints or call backs from the client.

Another reason for making sure everything is left clean and tidy is that it will enhance your image as a professional operator.

Clients appreciate tidy tradespeople – especially if you're working in their home.

Be careful with hazardous products, such as adhesives and patching compounds. Make sure you clean up any left-over substances and put them in sealed bags for later disposal. Also check that any partly-used containers are resealed properly before you put them back in your vehicle.

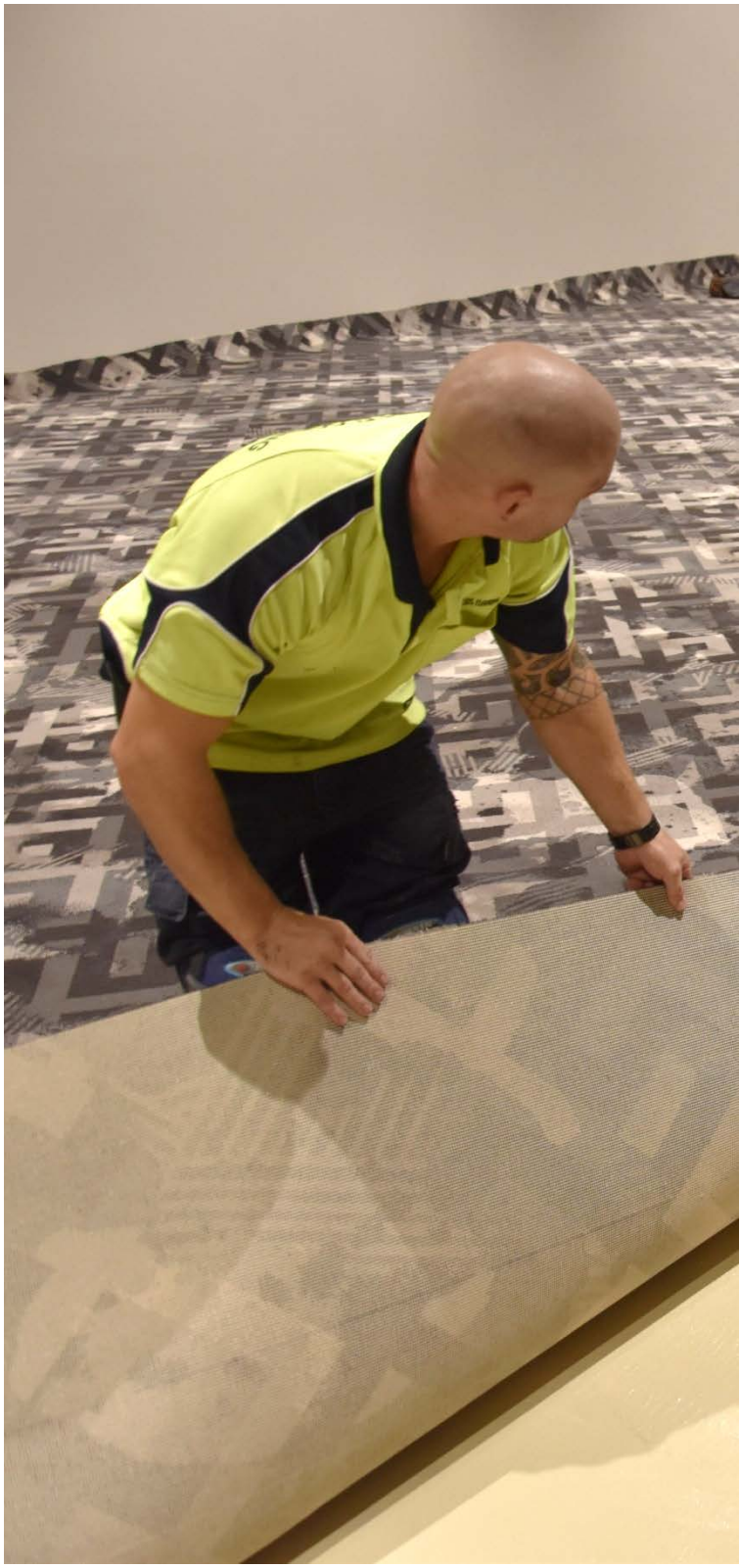
## *Learning activity*

What should you do with the following types of waste products that are left over on-site?

- Liquids – such as leftover primers
- Solids – such as leftover patching and levelling compounds
- Small carpet offcuts
- Large carpet offcuts

Section 4

# Installing direct -stick carpet



# Overview

Direct stick carpet is stuck straight to the subfloor, without an underlay in between. Some people call it ‘direct glue-down’.

This method of installation is commonly used in commercial premises, particularly where loads are moved around the floor on rollers.

However, there are pros and cons to using this technique, particularly in relation to the wear and tear that the carpet will suffer due to the lack of a cushion underlay.

So it’s important that if you’re offering the client a direct stick option, you should let them know what the potential disadvantages are before they make a decision on which way to go.

In this section, we’ll discuss the features and drawbacks of direct stick carpet. We’ll also look at the techniques used to carry out this type of installation.

## Completing this section

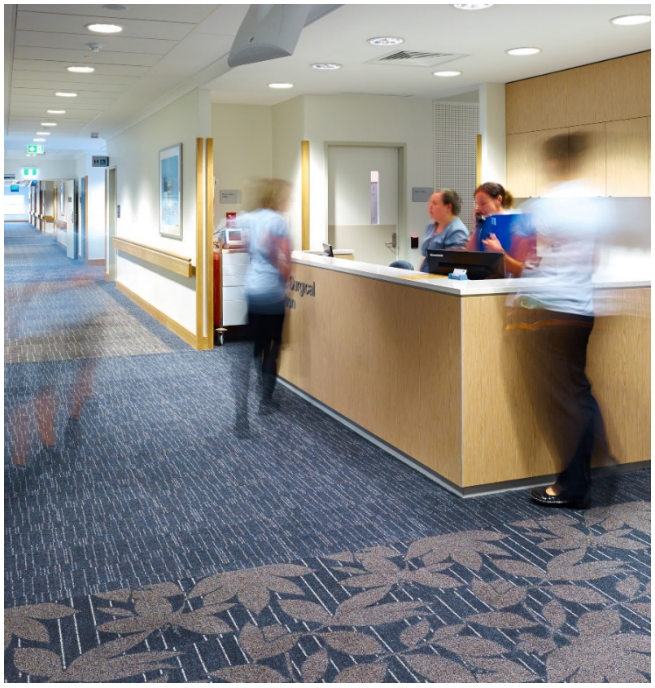
There are two lessons in this section:

- *Pros and cons of direct stick carpet*
- *Direct stick installation techniques*

You should use the separate Workbook to complete the ‘learning activity’ at the end of each lesson.

# Pros and cons of direct stick carpet

Direct stick carpet has several advantages over conventionally laid carpet and dual bond carpet. But for each plus, there is also a minus that has to be taken into account.



On the plus side, the carpet won't buckle or ripple in heavily used areas like 'stretched-in' carpet might. This includes areas where wheeled trolleys or furniture might be pushed along.

The seams also tend to be more durable and less prone to peaking than on carpets laid over a cushion underlay, because there is less movement from compression.

There is also generally less expense and labour involved in installing direct stick carpet, since there is no underlay and you only need to spread the adhesive once.

But the absence of an underlay introduces various problems for direct stick carpet. Tests have shown that wear and tear can be up to 40% greater when compared to carpet laid over a commercial underlay. Pile crush is also more severe. These factors significantly reduce the life span of direct stick carpet, and in the long run can make it more expensive when the early replacement cost is factored in.

Carpet without a cushion underlay also has less impact absorption. This may cause muscle fatigue for people who walk around on it all day long.

## *Learning activity*

Give two examples of buildings or facilities where direct stick carpet might be specified.

For each one, state why direct stick carpet is a suitable choice for that application, and why the client is likely to choose it in preference to a dual bond installation.

# Direct stick installation techniques

In Section 1 we talked about the subfloor preparations you need to make before commencing a carpet installation.

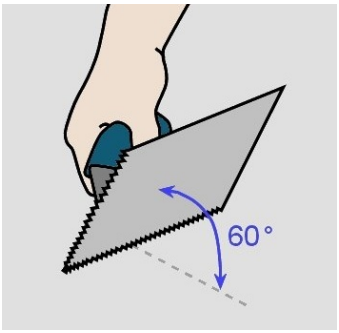
And in Section 3 we talked about the general procedures you should follow to acclimatise the carpet, cut it to size and join the seams, ready for installation.

On the subject of acclimatisation, you also need check that there is no underfloor heating system that has been left on.

## Spreading the adhesive

Fold one side of the carpet back over the other half to expose the subfloor underneath.

Pour a quantity of adhesive on the floor and spread it with a notched trowel.

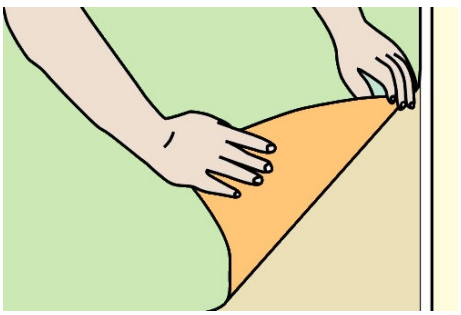



Make sure you use the correct trowel size, as specified by the adhesive manufacturer.

Remember to hold the trowel at 60 degrees to maintain the right consistency, and go right to the edges and into corners.

## Laying and rolling the carpet

When the adhesive ‘tacks up’, carefully lay the folded-back carpet into position on the adhesive.



Use a roller to apply an even pressure over the whole area.

Generally, a 25 kg to 35 kg roller is suitable, but it should be the lightest weight that will achieve a proper transfer of adhesive to the underlay.

Work from the centre towards the perimeter, and roll out any bubbles and wrinkles.

Keep the roller moving to avoid any unevenness in the surface flatness.

Once you have completed that side of the carpet, use the same procedure to lay out and roll the other side. Wait for 30 minutes, or whatever time is specified by the manufacturer, and then roll the whole floor, working from end to end and side to side.

Allow the adhesive to cure for 24 hours before it takes any concentrated loads or traffic.

## *Learning activity*

One of the practical demonstrations you will need to perform for this unit is a direct stick carpet installation in connecting rooms.

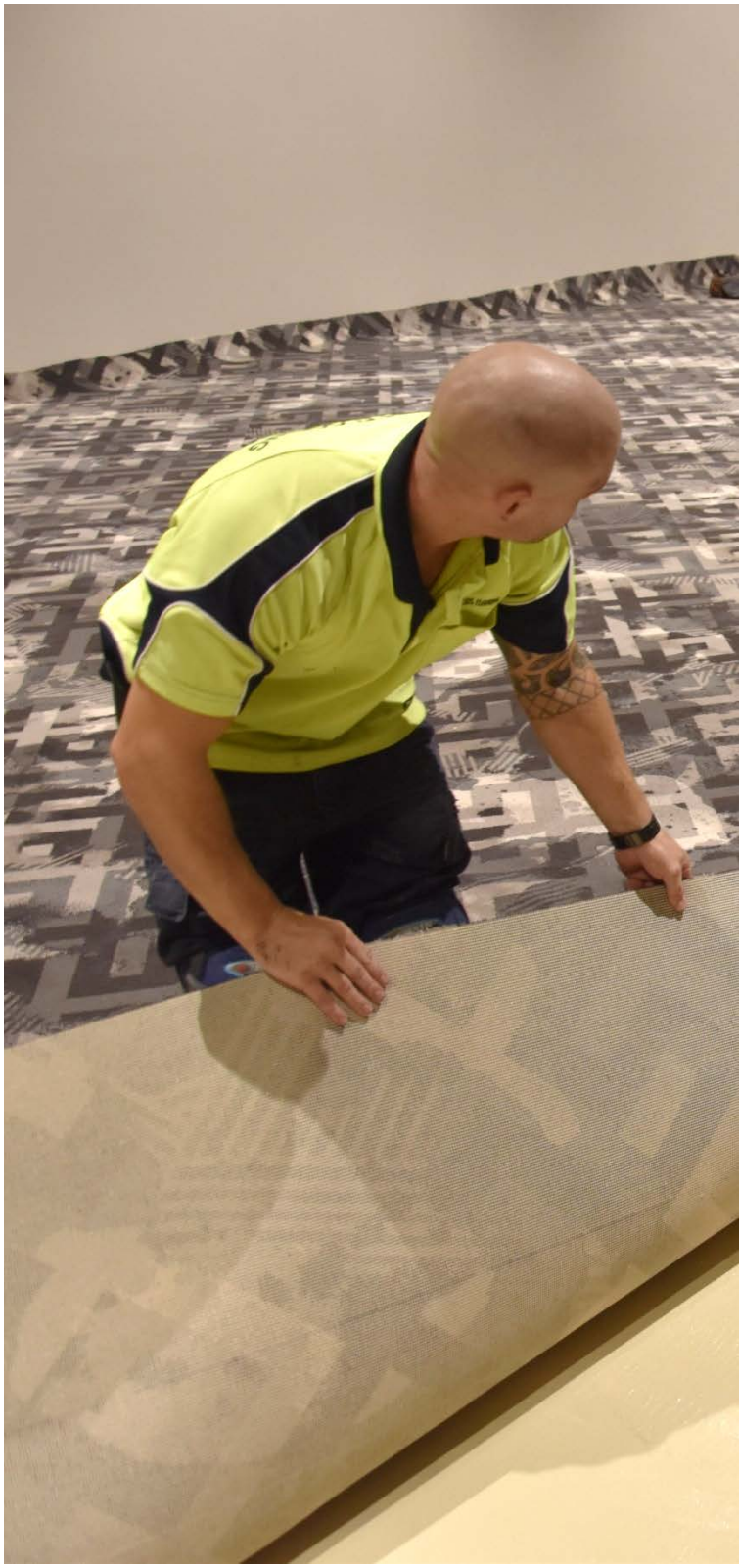
You should complete this learning activity as part of that practical demonstration.

Provide the following details in relation to the direct stick carpet installation.

1. Carpet – including product name, manufacturer and colour.
2. Adhesive – including product name and manufacturer.
3. Subfloor description – including structure, materials used and condition of the surface.
4. Subfloor preparation required – including brand names of any products used (such as levelling compounds, primers, etc).
5. Floor covering plan – showing adjoining rooms, all relevant dimensions and features, position of seams and joins, and direction of the carpet pile.

Section 5

# Installing dual bond carpet



# Overview

The term ‘dual bond’ carpet refers to the fact that both the underlay and the carpet are stuck down with adhesive.

This method of installation is also called ‘double bond’, ‘double stick’ or ‘double glue’.

In this section, we’ll discuss the features and drawbacks of dual bond carpet, and the techniques used to carry out this type of installation.

We’ll also look at an underlay product that is impregnated with adhesive on one side, enabling it to be stuck straight to the subfloor. Although this product is not the best choice for most commercial applications, it is still occasionally used when a ‘peelable’ adhesive is required.

## Completing this section

There are three lessons in this section:

- *Pros and cons of dual bond carpet*
- *Dual bond carpet installation techniques*
- *Pre-adhered cushion underlay systems.*

You should use the separate Workbook to complete the ‘learning activity’ at the end of each lesson.

# Pros and cons of dual bond carpet

Dual bond carpet is generally used in high traffic areas, particularly in commercial and public buildings such as offices, restaurants and schools.

The floor covering has the advantage of a cushion underlay for extra comfort and durability, without the potential problems of wrinkling or buckling that can occur in conventionally laid ‘stretched-in’ carpet.

When stretched-in carpet wrinkles over time due to heavy traffic or abuse, it needs to be re-stretched and re-secured. Dual-bonded carpet can’t move in relation to the underlay or the subfloor, because both layers are bonded.

This makes it suitable for wheeled traffic and other punishing end uses, such as areas where furniture is regularly moved or dragged over the floor covering.

Although direct stick carpet also has the advantage of being wrinkle-free, the performance of dual bond carpet is greatly improved by the use of a cushion underlay. As we discussed earlier, the underlay significantly increases the carpet’s resistance to wear and tear.

The main drawback to using dual bond carpet is the work and expense involved in applying the adhesive twice over. It also requires a lot of care during installation, because poorly applied adhesive can separate over time and causes ripples or buckles on the surface.

## *Learning activity*

Give two examples of buildings or facilities where dual bond carpet might be specified.

For each one, give some reasons why a dual bond installation is the most suitable choice for that application.

# Dual bond installation techniques

We have covered the preparations for subfloors in Section 1, and the preparations for underlay and carpet in Section 3, including acclimatising them to the room conditions.

Make sure that if an underfloor heating system has been installed, it has been turned off at least 48 hours before you're ready to spread the adhesive, and is left off until the adhesive has set.

We've talked about different types of adhesives available for dual bond installations, and the fact that some people prefer to use a 'pressure sensitive' product to stick down the underlay.

This is an excellent choice for floor coverings that will be subjected to heavy wear and may need to be removed and replaced in certain areas.

Whichever adhesives you select, check that they will be compatible with the materials you're laying, including the heat bond tape that will go under the carpet seams.

Let's now assume that you're ready to install the underlay.

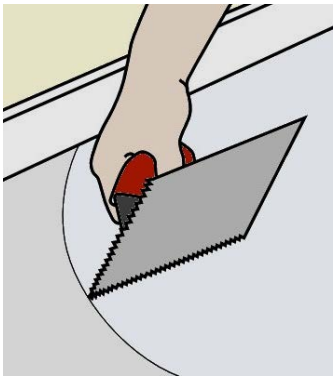
## Installing the underlay

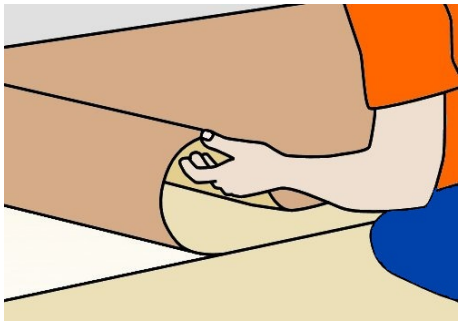
If you are not using carpet grippers in this installation, you should trim the underlay to fit tightly around the perimeter walls. If you are using grippers, see Section 3 on the general installation procedure.

Make sure all underlay seams are butted neatly without any compression.

Fold one half of the underlay back on itself to expose the subfloor underneath. Pour a quantity of adhesive on the floor and spread it with a notched trowel. Make sure you use the correct trowel size, as specified by the adhesive manufacturer.

Remember to hold the trowel at 60 degrees to maintain the right consistency, and go right to the edges and into corners.

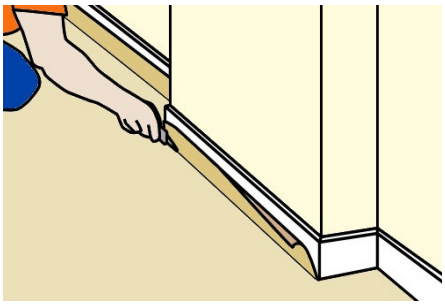




Wait for the adhesive to ‘tack up’, and then carefully lay the folded-back underlay into position on the adhesive.

Use the same procedure on the other half of the underlay.

Then trim in the underlay around the perimeter.



If you’re working right to the wall without grippers, leave a gap to allow for a tuck finish in the carpet.

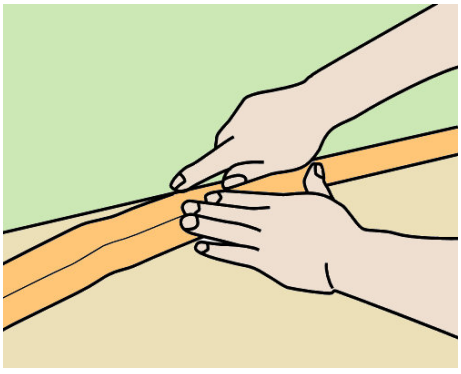
Use a roller to apply an even pressure over the whole area.

Generally, a 25 kg to 35 kg roller is suitable, but it should be the lightest weight that will achieve a proper transfer of adhesive to the underlay.

Work from the centre towards the perimeter, and roll out any bubbles and wrinkles.

Make sure the underlay seams are tight but not overlapping.

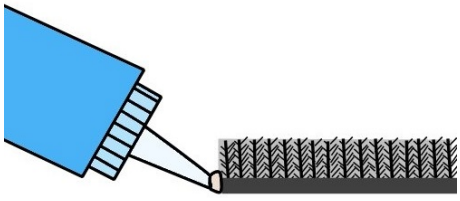
## Seaming the carpet



See Section 3 for the general techniques used to join carpet seams. The basic principles are the same as for conventionally laid stretched-in carpet.

If you’re using a single-sided heat tape, you should spread adhesive underneath so it sticks down onto the underlay.

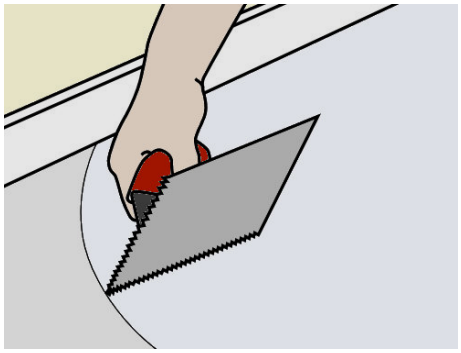
If you’re using double-bond tape, you should only trowel up to the edges of the tape.



Don’t forget to apply seam sealer to the join before bringing the two sides together.

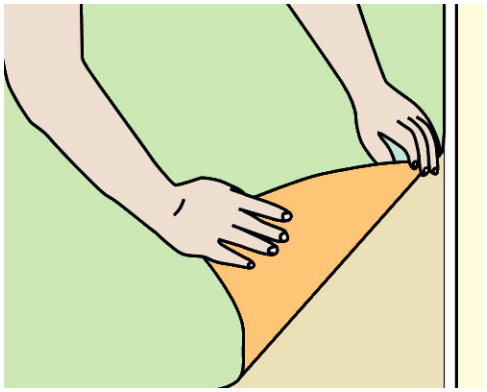
## Laying the carpet

Cut the carpet oversize, as described in Section 3, and position the seams either at right angles to the underlay seams or offset by at least 300 mm.



Fold back one side of the carpet and spread the adhesive onto the underlay.

Use the same techniques as you did for sticking the underlay to the subfloor.



Note that the trowel size will be different now, and will vary depending on the type of carpet you're installing and the backing it uses.

Wait for the adhesive to 'tack up', and then lay the carpet into position.

Check that the adhesive transfer is adequate by pulling up a small section of carpet and looking at the covering on the backing.

If there is not enough adhesive, increase the trowel notch size and check it again.

Use a roller to apply an even pressure to the whole surface area and roll out any wrinkles.

The carpet manufacturer will specify the most appropriate weight for the roller.

Eliminate bubbles by pressing straight down on the carpet before the adhesive sets. Don't roll bubbles to the edge.

Repeat the same process on the other side of the carpet. When both sides are done, roll the whole area from end to end and side to side.

Wait for the time specified by the manufacturer, and then roll the carpet a second time. This could be between 3 and 12 hours.

Allow the adhesive to cure before the floor takes any concentrated loads or traffic. This may be between 24 to 48 hours after installation.

## *Learning activity*

You will be asked to carry out a dual bond woven carpet installation as one of your practical demonstration events for this unit.

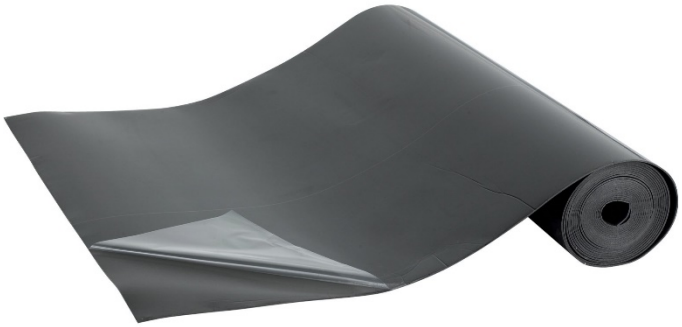
You should complete this learning activity as part of that demonstration.

Provide the following details in relation to the installation.

1. Carpet – including product name, manufacturer and colour.
2. Underlay – including product name and manufacturer.
3. Adhesive – including product name and manufacturer.
4. Subfloor description – including structure, materials used and condition of the surface.
5. Subfloor preparation required – including brand names of any products used (such as levelling compounds, primers, etc).
6. Floor covering plan – showing adjoining rooms, all relevant dimensions and features, position of seams and joins, and direction of the carpet pile.

# Pre-adhered cushion underlay systems

Pre-adhered cushion underlay is sometimes used when a ‘peelable’ underlay is needed.



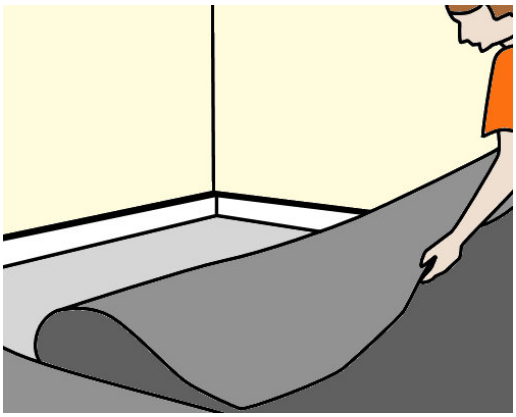
Its advantage is that you don’t need to manually spread a pressure sensitive adhesive to the subfloor, because it is already impregnated into the back of the underlay.

Once the underlay is bonded to the subfloor, a spreadable adhesive can then be trowelled over the top to take the dual bonded carpet.

## Installing the underlay

Prepare the subfloor and room conditions in the same way as you would for a standard installation. Check with the manufacturer’s guidelines on subfloor priming requirements. ‘Peel and stick’ products need a sound, properly-primed surface, especially when they are being applied to porous concrete.

Roll out the underlay and let it acclimatise, in accordance with the manufacturer’s recommendations.



You can cut-in the underlay at this stage if you wish, while the release film is still in place.

Leave a 5 mm gap to the skirtings.

Fold back one metre of the first run and remove the plastic release film.

Press this first metre down firmly, expelling all air bubbles, either with your foot or a soft broom.

Now pull out the release film from the underside of the underlay right through to the opposite end of the roll.

Flap the underlay up and down to float it into place.

Pull it slightly to align it and drop it into place. Push it down with the palm of your hand to secure it to the floor.

Sweep over the entire surface with the wide soft broom, applying a firm downward pressure, to remove air bubbles and achieve a good contact with the subfloor.

Re-trim the underlay around the perimeter if required.

Roll out the entire area with a 25 to 35 kg roller.

Complete the dual bonded installation in the same way as described in the previous chapter (‘Dual bond installation techniques’).

## *Learning activity*

The last practical demonstration you will be asked to carry out is a tufted carpet installation that incorporates the use of pre-applied adhesive underlay, gripper strips and heat bond tape.

You should complete this learning activity as part of that demonstration.

Provide the following details in relation to the installation.

1. Carpet – including product name, manufacturer and colour.
2. Spreadable adhesive – including product name and manufacturer.
3. Underlay – including product name and manufacturer.
4. Subfloor description – including structure, materials used and condition of the surface.
5. Subfloor preparation required – including brand names of any products used (such as levelling compounds, primers, etc).
6. Floor covering plan – showing adjoining rooms, all relevant dimensions and features, position of seams and joins, and direction of the carpet pile.

# Practical demonstrations

The checklists below set out the sorts of things your trainer will be looking for when you undertake the practical demonstrations and knowledge tests for the unit of competency:

- ***MSFFL3006: Install adhesive fixed carpet floor coverings***

Make sure you talk to your trainer or supervisor about any of the details that you don't understand, or aren't ready to demonstrate, before the assessment events are organised. This will give you time to get the hang of the tasks you will need to perform, so that you'll feel more confident when the time comes to be assessed.

When you are able to tick all of the YES boxes below you will be ready to complete the practical demonstrations and knowledge tests for this learning unit.

| **Specific demonstration criteria** | **YES** |
|---|---|
| Complete at least one of each of the following three installations: | |
| • **Installation 1: direct stick carpet** – using a suitable direct stick carpet in connecting rooms, including at least one cross join and one seam join | ❑ |
| • **Installation 2: dual bond carpet** – using a woven carpet in connecting rooms, including at least one cross join and one seam join | ❑ |
| • **Installation 3: dual bond carpet** – using tufted carpet and pre-applied adhesive underlay in connecting rooms, including at least one cross join and one seam join using gripper strips and heat bond tape | ❑ |

| **Specific knowledge evidence** | **YES** |
|---|---|
| Adhesive fixed carpets – including types, characteristics, uses and limitations | ❑ |
| Tools and equipment, including procedures for their safe use, operation and maintenance | ❑ |
| Cutting, laying, fixing, joining and finishing adhesive fixed carpet | ❑ |
| Characteristics and requirements of sub-floor preparation | ❑ |

| General performance evidence | YES |
|---|---|
| Comply with all relevant WHS policies and procedures | ❑ |
| Correctly understand instructions and work orders, and seek out all relevant information | ❑ |
| Select suitable trims, mouldings, cover strips and other materials for the job | ❑ |
| Select and prepare suitable primers and adhesives | ❑ |
| Acclimatise the carpet according to manufacturer's recommendations | ❑ |
| Carry out work in accordance with Australian Standards, manufacturer's recommendations, company procedures and client specifications | ❑ |
| Handle tools, materials and products safely, and wear all required PPE | ❑ |
| Use safe work practices to minimise the risks of injury to self and others | ❑ |
| Follow procedures to prevent damage to materials or equipment and minimise wastage | ❑ |
| Plan activities to avoid any backtracking, interruptions or wastage | ❑ |
| Work efficiently to optimise work flow and maintain production output and product quality | ❑ |
| Carry out pre-checks and inspections to anticipate problems and take corrective action | ❑ |
| Modify activities to cater for variations in workplace conditions | ❑ |
| Interpret basic plans and take accurate measurements | ❑ |
| Calculate area and estimate material requirements | ❑ |
| Communicate effectively, work cooperatively with others and ask for help when needed | ❑ |
| Clean up work area, and store or recycle unused items | ❑ |
| Dispose of rubbish appropriately, and follow environmental care procedures | ❑ |
| Report work outcomes and problems, and complete documentation accurately | ❑ |

| General knowledge evidence | YES |
|---|---|
| WHS legislation, regulations, standards and codes of practice relevant to the task | ❑ |
| Company and worksite policies and procedures relevant to the task | ❑ |
| Types of tools and equipment, and procedures for their safe use and maintenance | ❑ |
| Control measures and safety equipment used to manage risk | ❑ |
| Procedures for recording workplace information and reporting problems | ❑ |
| Methods for estimating and calculating quantities and measurements | ❑ |
| Strategies for working with others in a team | ❑ |
| Environmental protection requirements | ❑ |
| Lines of communication and procedures for resolving problems | ❑ |