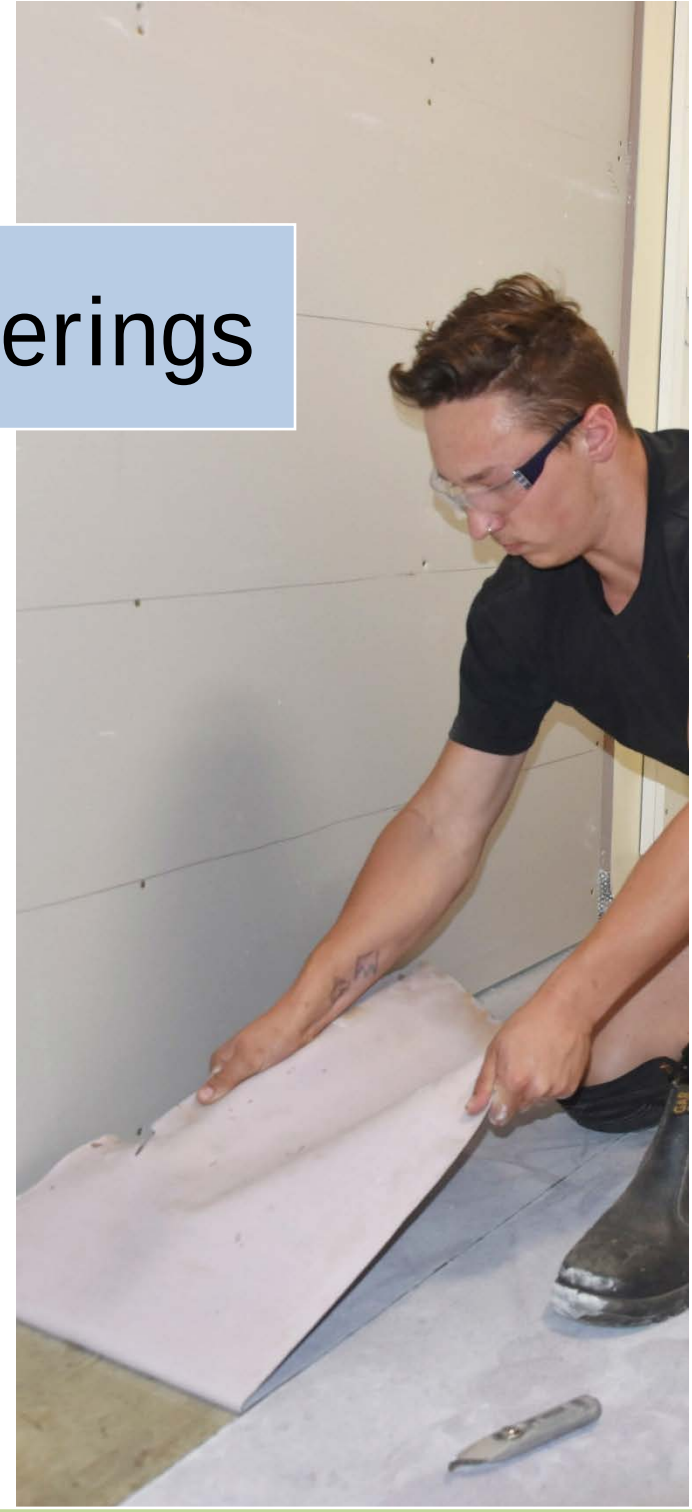
Remove floor coverings



Supporting:

MSFFL2031
Remove existing floor coverings

Learner guide

Version: February 2020

Remove floor coverings

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* (MSF30818).

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).

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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.

Acknowledgements

All line drawn graphics were produced by Kath Ware (Workspace Training). Some of these graphics are based on drawings from old ABC learner guides.

All photos were taken by David McElvenny (Workspace Training) unless otherwise referenced. Many of these feature Hunter TAFE flooring apprentices, under the direction of Craig Bennett, demonstrating various floor covering removal techniques.

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Many TAFE teachers, RTO trainers and industry experts were involved in the development of this training resource. Below are the members of the project group.

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Chris Belcher – TasTAFE (Tasmania)

Ian Ciesla – WA TAFE (Western Australia)

Colleen Carters – Holmesglen Institute of TAFE (Victoria)

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Geoffrey Robinson – Carpet Institute of Australia Limited

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Introduction

In older buildings, most new floor covering installations start with taking up the old one.

Although it's often a labour-intensive, grungy job, there are some tricks of the trade that make the task much less painful than it might otherwise be.

There are also various machines that can speed up the process of removing coverings, adhesives and other substances from the subfloor surface.

In this unit, we'll look at the equipment and techniques used to remove existing floor coverings, and discuss the hazards you need to be aware of and precautions you should take.

Working through this unit

There are two sections in this unit:

- *Preparations and safety*
- *Removal techniques.*

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 a written test and various practical demonstrations. To help you get ready for these assessment activities, see the performance checklists shown in the *Assessment criteria* section at the back of this Learner guide.

Section 1

Preparations and safety

Overview

In this section, we'll look at the preparations that apply to floor covering take-ups and some particular safety issues you need to consider.

By this stage of your training, you should have already completed the safety-specific competencies from the Flooring Technology qualification, so we won't cover the general safety procedures that apply to all on-site tasks.

Instead we'll look more closely at some of the specific issues you need to address when you're removing old coverings. However, if you need to revise any of the general safety topics that are relevant to on-site work, you should go back to the learner guide for the *Safety at work* unit.

In particular, you should refresh your memory on the following topics:

- *Good manual handling practices* – including back care, knee care, mechanical lifting aids, limbering-up exerises, and how to avoid chronic conditions
- *Personal protective equipment* – including eye protection, ear protection and other items of PPE needed on-site
- *On-site risk assessments* – including the procedures involved in identifying hazards, assessing risks and implementing control measures.

Completing this section

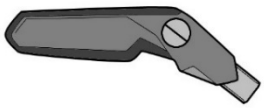
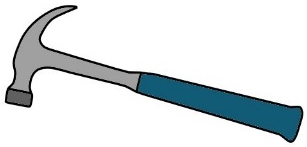
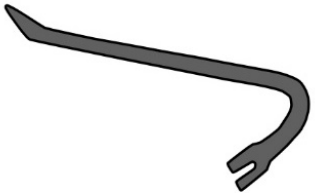
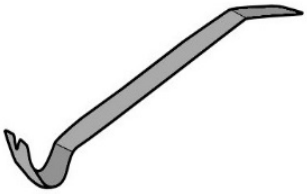
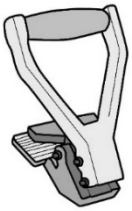
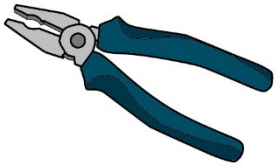
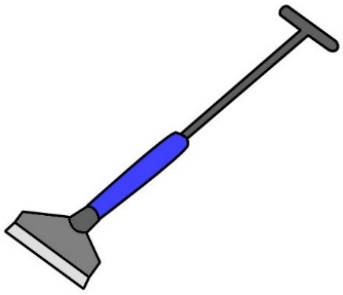
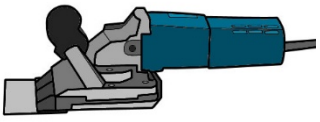
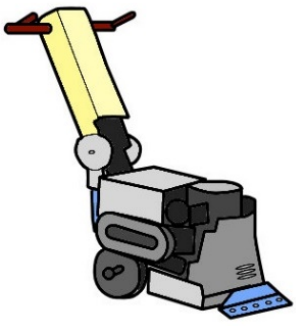
There are four lessons in this section:

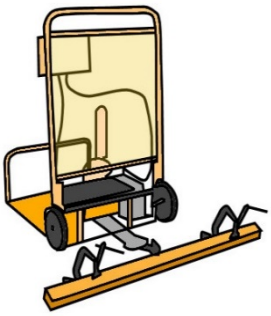
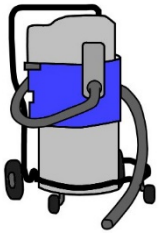
- *Tools and equipment*
- *Planning and documentation*
- *Preparing the work area*
- *Health and safety.*

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

Tools and equipment

The tools you use to pull up old floor coverings will depend on the materials involved and the original method of installation. Below is a summary of the main types of tools used for a range of different floor covering take-ups.

 **Utility knife** for cutting old coverings into strips, or trimming around existing features	 **Claw hammer** for levering up materials, and also for using with a chisel or stair tool	 **Pinch bar** for levering up materials, particularly products fixed with nails or screws
 **Flat pry bar** for levering up materials, with a similar action to a pinch bar	 **Carpet claw** for gripping and pulling up old floor coverings, particularly carpet	 **Pliers** for pulling out staples, nails, trims and other items fixed in position
 **Heavy duty scraper** for removing adhesives and other residues from the subfloor	 **Hand held floor stripper** for working on stairs, in confined spaces and in other difficult areas	 **Floor stripping machine** for removing glued-down coverings, including vinyl, carpet, linoleum, parquetry

 **Floor scraper** for removing tiles, adhesives and parquetry from concrete subfloors	 **Power carpet puller** for pulling up large areas of adhesive-fixed carpet and underlay	 **Hand pump sprayer** for applying water and detergent mix over floors that may contain asbestos
 **Brooms** for sweeping up dust and non-hazardous particles from the floor	 **Vacuum cleaner** preferable wet-and-dry type, for vacuuming up dust and particles	 **Dolley or trolley** for transporting heavy materials between the work area and vehicle

Learning activity

All tools have their own advantages and disadvantages, depending on the application and surrounding site conditions.

Choose one hand tool (that doesn't use an external power source) and one powered tool from the examples shown above. Answer the following questions for each tool.

- What is the name of the tool (or item of equipment)?
- What types of removal jobs is it best suited for? Include in your answer the types of floor coverings and other materials it is best with, and also the size of the job.
- What are its main disadvantages? Include in your answer issues that might relate to PPE, noise, power requirements, inconvenience to others in the building, etc.

Planning and documentation

All tasks need a plan. By thinking through the job in advance, you can decide on what tools you'll need, what precautions you must take, where you'll start, what you'll do with the rubbish, and whether there are any other factors that will affect your ability to get the job done.

Planning the job helps you to predict any obstacles or problems that might crop up while you're working, so you can take steps to deal with them before they give you grief.

Most companies give their flooring installers a work order (or job sheet) that sets out the details of the job.

If your only task is to take up the old floor coverings, you might not need much more information than the address, contact person and the type of flooring to be removed. On the other hand, if your work duties also include the installation of the new covering, you'll be given more documentation, such as a floor plan and specification for the project.

We've talked about the various documents used by flooring installers in other units from the Flooring Technology resource. If you need to refresh your memory on what these documents contain and how to read them, see the *Work documents* unit.

Here is a brief list of the sorts of questions you should ask yourself when you're planning to take up the floor coverings at a jobsite:

1. Are there furniture items or fittings that will have to be removed in advance? Whose job is it to remove them? Where will they go once they've been removed?
2. Is there good access to the work area, particularly if a trolley is needed to take old coverings or debris from the room it's in to the outside of the building?
3. Where will the old materials be placed? Is there a skip on-site, or will you need your own truck or trailer? Whose job is it to take the materials away and dispose of them?

4. What types of materials are being removed? Is there a chance they may contain asbestos dust, infectious substances or other hazardous elements in their make-up? What PPE or special arrangements will apply to the handling of these materials?

5. Which items of equipment will be needed? Are they all readily available, or will you have to hire or organise a particular machine for the job?

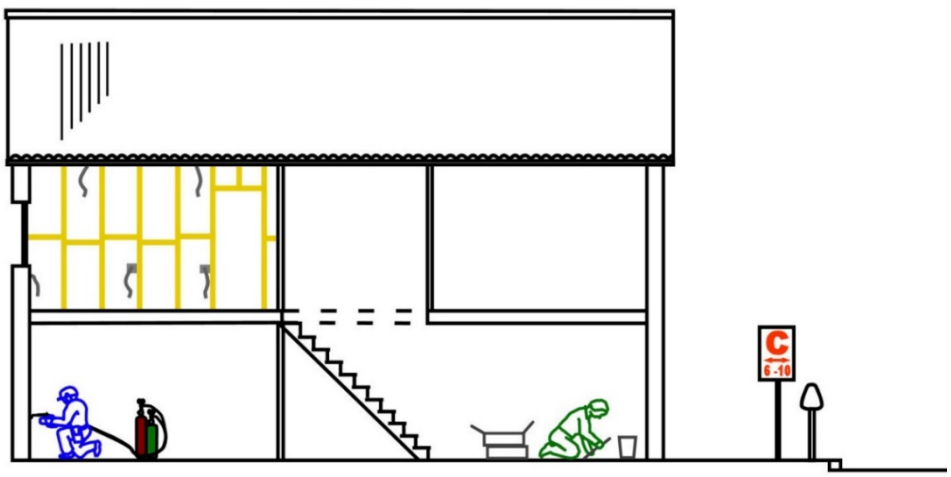
6. Is all the equipment in good working order? Have electrical items been tested and tagged within their due dates, and has the routine maintenance been carried out?

Learning activity

Let's say that you've been asked to take up an old vinyl tiled floor, laid on a concrete subfloor – similar to the job that's being done in the photo above. You drop in at the jobsite on your way home the day before to have a look, so you can plan the job in advance.

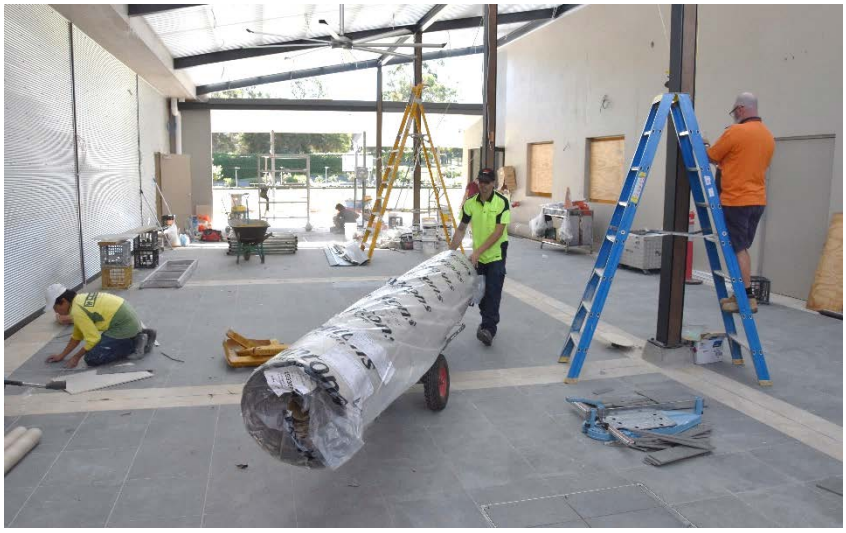
When you get there, you discover that the room is upstairs in the building shown below. There is a plumber working downstairs and a tiler laying slate near the front entrance door. An electrician has been working upstairs, and is due to return in the coming days. The roadsign outside says that it will be a clearway each weekday morning from 6-10 am.

What sorts of things will you need to check out and talk to the builder about when you plan this job? Write down the issues you should discuss. You may also include ways you could overcome the main logistical challenges involved in carrying out the job.



Preparing the work area

The way you prepare the work area and accessways for the take-up will depend on the size of the task and the worksite you're at.



On a small project, you might be responsible for the entire installation, including the floor prep and new floor coverings.

On a large project, however, you might be working as part of a team, with each person having their own designated tasks. This might mean that once an area is ready for the floor prep and installation work to begin, the other team members would go on with that stage of the job while you continue to work ahead of them.

Either way, it's best to commence the removal task at the furthest point away from the entrance you'll be using to take the old materials outside. This helps you avoid going back into areas that you've already cleaned out as you work your way towards the entrance door.

Trip hazards

When you're pulling up old floor coverings and fixings, it's easy to forget how much of a trip hazard you're creating around you – until someone trips, of course.

Remember, you've not only got to think about your own safety, there may also be other people walking through hallways or rooms that you're working in.

Make sure you keep thoroughfares clear of any trip hazards, including old floor coverings, debris, metal mouldings, power leads, tools, and any other items left on the floor.

Be particularly careful with items that have sharp edges or points, such as gripper strips, nails in battens or metal fittings.

Use a trolley or cart to move heavy items. If an item is too heavy for you to handle on your own, make sure you ask for assistance. It's much more efficient for everyone in the long run if you take a bit of extra time to do the job safely and sensibly, rather than suffer an injury that either slows you down or puts you out of action completely

Protecting existing floors

It you find that the room you're working in does not have direct access to the outside of the building, you may end up having to move materials through areas that already have finished floors in place.

This means that you'll need to protect those floors from damage and soiling as you go back and forth.

Plywood sheets can be used to cover carpeted floors, especially if you're going to be wheeling heavy trolleys over them. Plastic sheeting is suitable if you'll be carrying all items.

Learning activity

The worker in the photo at right is replacing the carpet in a set of ground floor apartments in an aged care facility.

As he takes up the old carpet, he carries the rolls out to his ute and puts them on the back.

At the end of each day, he takes a load back to the warehouse for disposal – although sometimes he has to leave rolls of old carpet and rubbish on the lawn if they won't all fit into his ute.

How would you improve the efficiency of this job? Let's say there were several apartments to take up and none of them are occupied. You can also assume that you have access to other workers, vehicles and equipment.

What would be a cost-effective method for taking up the old carpet, and what arrangements would you need to make?

Health and safety

There are several health and safety issues you need to be mindful of when you're removing old floor coverings.

At a general level, these include:

- good manual handling practices
- tool safety
- identifying and controlling on-site hazards.

We have discussed these topics in other units from the Flooring Technology series, in particular in 'Safety at work' (see the Overview page of this section for more details).

So in this lesson we'll concentrate on two problems that have special importance to floor covering take-ups – biological hazards and dust hazards.

After all, the process of removing old floor coverings is a form of demolition work, which means you may be exposed to hazardous substances that have been in the building for a long time.

Firstly, let's look at biological hazards and infection control. Then we'll turn to the different types of dust hazards you may be exposed to and the best ways to control them.

Biological hazards

All floor surfaces accumulate dirt, contaminants and organic matter over time.

Carpet is particularly prone to trapping particles, but even smooth surfaces can allow contaminants to build up in cracks, corners and underneath furniture.

Organic materials that become embedded in the floor covering may include spilt food and drinks, pet urine and faeces, and any materials that are walked in on the underside of people's shoes.

These contaminants will become a food source for insects and rodents, including cockroaches and mice, as well as a breeding ground for bacteria. Some types of bacteria, such as salmonella, e-coli and leptospira, can cause serious illnesses.

When you're pulling up an old floor covering, especially carpet that has obvious signs of animal wastes or stains, you need to be careful to avoid contracting an infection through inhalation or skin contact.

The easiest way to avoid breathing in airborne particles is to wear a suitable face mask and minimise the amount of dust that's allowed to float in the air. We'll talk more about these steps in the subsections below.

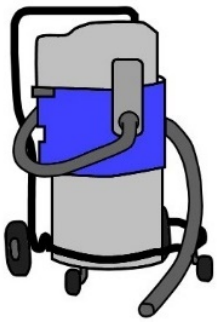
To stop the entry of infections through your skin, you should wear good quality gloves while you're working and wash your hands well when you finish. If you suffer any cuts, make sure you treat them straight away with antiseptic and cover them over with a bandage.

In instances where the carpet is badly soiled, or there is evidence of needles or syringes in the area, you should talk to the client about arranging for a commercial cleaner to come in before you start work. Remember that needle-stick injuries can have serious repercussions, including the risk of contracting hepatitis or HIV.

Always carry out a risk assessment before you commence a take-up, and discuss any major hazards with the client. This will help you to ensure that you have taken all necessary steps to control the risks and have costed in any extra expenses that may be involved.

General dust hazards

Some types of dust are more toxic than others, so we'll discuss specific problem dusts under their own subheadings below. In general, you should take the following steps to minimise the amount of general airborne dust that's produced when you pull up an old floor covering:



- Open doors and windows, where possible, to allow the breeze to flow through
- Turn on exhaust fans to help extract the dust
- Vacuum the old floor covering before you pull it up, using a vacuum cleaner fitted with a HEPA (high efficiency particulate air) filtration system

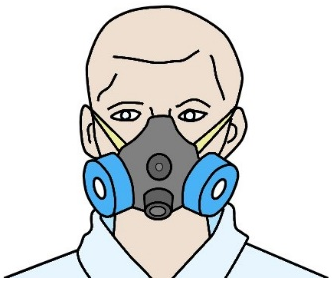
- Vacuum the subfloor after removing the floor covering and underlay
- If sweeping is necessary, spray a water mist on the surface first; or sprinke sawdust on the surface and then spray it with water
- Wear a dust mask if the job you're doing is producing airborne dust.

Allergenic dust

Some people are prone to developing allergic reactions when they're exposed to certain types of dust. These reactions can include hayfever symptoms, headaches, or in serious cases, asthma attacks.

If there are occupants in the building who you think might be susceptible to an allergic reaction, you should warn them in advance so they can leave the area.

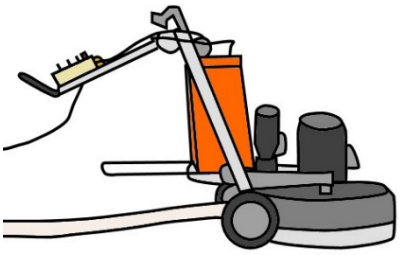
If you have these sorts of allergies yourself, make sure you take all proper precautions. This might include wearing a better quality respirator with cartridge filters and having an asthma puffer (or inhaler) on hand.



Again, you should also use a vacuum cleaner fitted with a HEPA filtration system before you pull up the coverings.

Silica dust

If the subfloor is concrete and you need to grind it to remove adhesive residue, you will be exposed to silica dust. Concrete and cement contain silica particles, and if you breathe the dust in over a period of time it can cause 'silicosis' or scarring of the lungs.

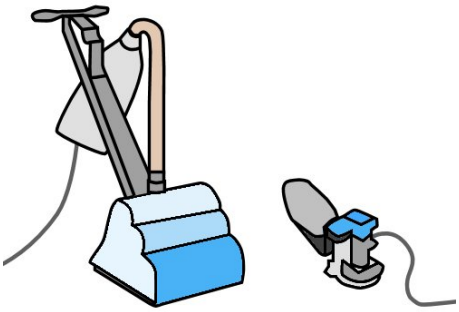


Make sure you use a grinding machine that has a good quality dust extraction system.

This may include an attachment that enables it to be connected to an external blower or industrial vacuum cleaner. It may also have a hose attachment that allows water to be sprayed directly onto the concrete while it's being worked. If you don't have a mist sprayer, you can sprinkle wet sand on the floor before you start grinding.

Wood dust

Wood based subfloors often need to be sanded or planed to remove old adhesive residues or high spots. If the subfloor is solid timber, the dust can trigger allergic reactions in some people, and over time may cause nasal or lung cancer.



If the subfloor is made from a structural sheet product, such as particleboard or plywood, the dust you generate will contain formaldehyde glues in addition to the reconstituted wood fibres.

All floor sanders should have dust extraction systems fitted. These may either include a bag that's attached to the sander or a fitting that allows an external collection system to be attached.

Asbestos dust

The most serious concern when you're working in buildings that were built before the 1990s is the possibility of coming across materials that contain asbestos.

A dust mask alone is not sufficient protection if you disturb any wall sheeting, floor coverings or other building materials that contain asbestos.

Bonded (also called 'non-friable') asbestos products, such as fibro sheeting, are generally safe as long as the material remains undamaged and is left undisturbed, because the fibres are held together with cement or other binding agents. However, if the fibres are released and float into the air, they can cause serious health problems, including lung cancer, if they're inhaled.

Some building products contain friable asbestos fibres even in their undamaged state, such as loose-fill asbestos insulation. These products are dangerous if disturbed in any way, and should not be touched.

There are strict laws in place that control the removal and disposal of asbestos-based building products. These include the requirement that certain amounts and types of asbestos must only be removed by a licensed contractor.

In these cases, you will need to get an 'asbestos clearance certificate' as part of your job sheet documentation before you start work.

We'll talk more about these issues later in the lessons headed: 'Removing resilient flooring' and 'Removing adhesive residue'.

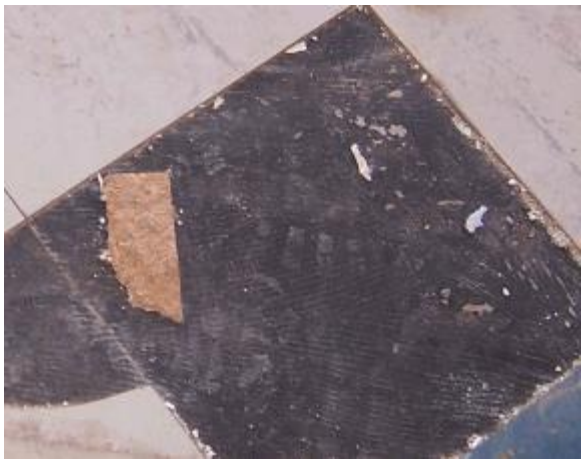
Learning activity

There are many websites that contain information about asbestos-based products. One example is Asbestos Awareness at: https://asbestosawareness.com.au/.

This website is managed by the Asbestos Education Committee on behalf of a wide range of companies, government bodies and research organisations.

Below are some sample photos taken from the Asbestos Awareness website, showing various asbestos-based products you may come across from time to time as a flooring installer.

For each product shown, write down in your workbook what type of product it is (such as vinyl tile, sheet vinyl, cutback adhesive, carpet underlay, etc). Then indicate one or two features about that product (or its surroundings) that would help you in the field to identify that you might be looking at an asbestos-based product.



Section 2

Removal techniques

Overview

The tools and techniques you use to remove different floor coverings will depend on the materials that were used in the original installation.

In this section, we'll look at some typical examples of floor coverings you're likely to come across, and discuss the procedures involved in taking them up.

Some of the lessons in this section contain references to other learner guides in the Flooring Technology series where the installation methods are discussed in more detail.

You should go back to these learner guides if you're not familiar with any of the installation methods, because it is helpful to know what to expect when you're working from the top down to pull the floor covering up again.

Completing this section

There are seven lessons in this section:

- *Removing stretched-in carpet*
- *Removing adhesive-fixed carpet*
- *Removing resilient flooring*
- *Removing timber coverings*
- *Removing floor tiles*
- *Removing adhesive residue*
- *Completing the task.*

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

Removing stretched-in carpet

Stretched-in carpet is conventionally-laid carpet that uses gripper strips around the edges and generally has a cushion underlay between the carpet and subfloor.

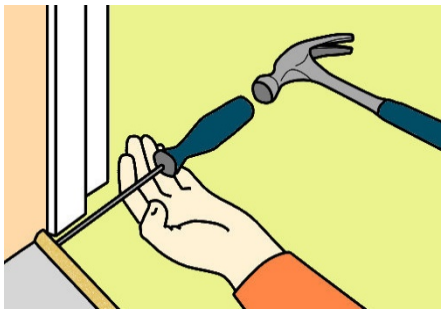
Sometimes adhesive is used to bond the underlay to the subfloor, but generally this is only around the perimeter of the room.

For full details on how stretched-in carpet is laid and fixed in position, see the learner guide: *Carpet basics*.

Before you start to tear up the old carpet, you should find out whether the owner wants to keep it and use it elsewhere. If they don't, it's often easiest to cut the carpet into long strips so you can remove smaller sections and roll them up as you go. Note that if the substrate underneath is going to become the new floor surface, you'll need to be careful to avoid damaging it when you're cutting the old carpet and levering up the grippers.

Below are the steps involved in removing stretched-in carpet, cushion underlay and carpet gripper. We'll start with the procedure used to open up naplocks (floor trims) without damaging them, because these trims are sometimes kept in position and re-used with the new carpet.

Naplocks

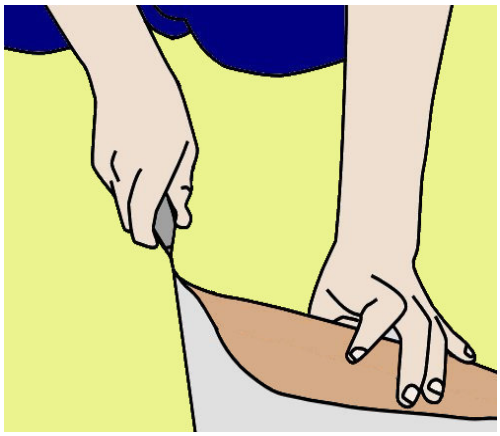


1. Insert a flathead screwdriver under the fold of the naplock at one end and gently lift it up.
2. Prise the naplock open to about halfway, while pressing down with your thumb on the end that's under the carpet.

3. Use the stair tool to finish opening the naplock, and then make any repairs to the pins by bending them back into shape.

If you are removing and disposing of the naplocks, unscrew the fixing screws, or lever up the nails with a pry bar.

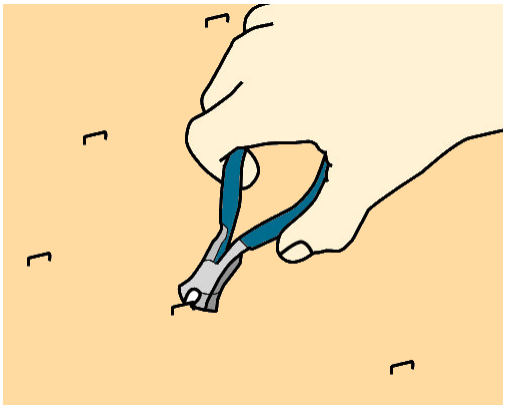
Carpet



1. Pull back a section in one corner of the room using a pair of long nosed pliers.
2. Continue to pull the carpet back by hand to release it from the gripper strip.
3. Cut the carpet into manageable strips, depending on the size of the room.
4. Roll up each section of carpet as you pull it up and take it outside.

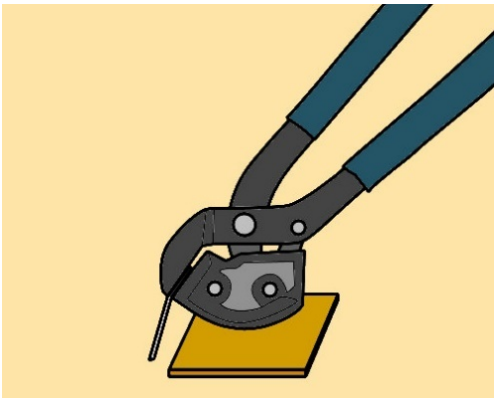
Cushion underlay

1. Pull up the underlay and roll it up.
2. If there are staples left behind in the wooden subfloor, pull them out using one or more of the following techniques:
   - pliers, using a rocking, levering or twisting action
   - hand scraper (with the blade reversed to the dull side), using a scraping action
   - spade, using the same action as with the hand scraper.



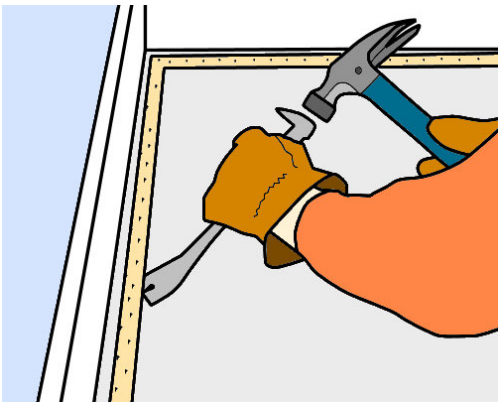
Note that the technique you use to remove staples or nails from the substrate will depend on the whether it's going to be re-covered or left exposed.

For example, if you're working with a strip timber floor that's going to be sanded and re-finished, you'll need to remove the fixings with the minimum of damage to the timber surface, and be careful not to simply break the tops off them.



3. If there is old adhesive under the underlay, remove the glue and any stuck-down underlay with a floor scraper – note that this will not be suitable if the substrate is timber and it needs to be protected. For heavy-duty adhesive, see the next lesson: *Adhesive-fixed carpet*.

Carpet gripper



1. Insert the head of a flat pry bar under the carpet gripper, positioning it near the nail that you wish to pull up, and tap the pry bar in with a hammer.
2. Lever up that section of the gripper.
3. Work along the gripper and lever up each nail as you go, being careful not to do too much damage to the subfloor surface.
4. Put the removed sections of gripper in a safe place while you're working, so that no-one (including yourself!) accidently walks on the sharp pins or nails. It's a good idea to place the discarded grippers in a piece of old underlay so you can wrap them up and take them outside without cutting yourself.

Learning activity

Let's say you have been asked to remove stretched-in tufted carpet from a single room. The carpet is laid over a cushion underlay, which has been secured to the timber subfloor with staples. There was no adhesive used in the original installation.

The subfloor comprises Baltic pine (softwood) T&G boards. It will be sanded back and coated with a clear polyurethane finish.

(a) What tools will you use to remove the carpet, cushion underlay, staples and grippers? List all hand tools you would typically expect to use.

(b) How will avoid putting indentations in the timber subfloor with your tools when you pull out the staples? Describe the technique you should use.

Removing adhesive-fixed carpet

Adhesive-fixed carpet includes direct-stick and double-bond carpet that is stuck down to the subfloor with a full-spread adhesive. It also includes carpet tiles, which are most likely to use a pressure sensitive adhesive.

For full details on how these types of carpet are laid and secured, see the following learner guides:

- *Adhesive-fixed carpet* – for direct stick and double-bond installations, particularly in commercial applications
- *Carpet tiles* – for tiles laid on a pressure sensitive adhesive.

There are various methods used to remove adhesive-fixed carpet and adhesive residue, depending on the age of the original installation, the materials that were used and the difficulty involved in pulling it up. Below are the main methods used.

Hand removal

Sometimes you may be able to pull sections of broadloom carpet up by hand – in which case you can use the techniques described in the previous lesson.

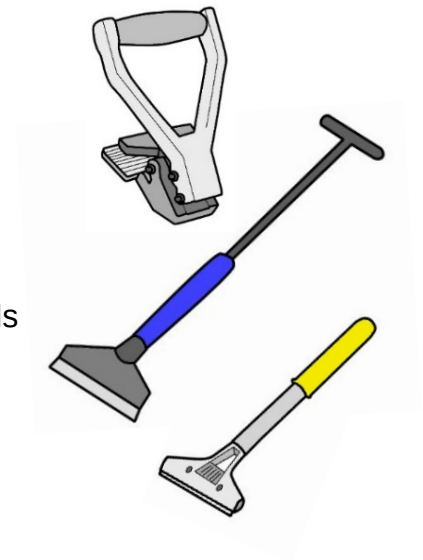
If you have trouble pulling up the full width in one go, cut the carpet into sections and come back to the areas that require mechanical assistance.

Carpet tiles that have been stuck down with pressure sensitive adhesive are designed to be pulled up easily. If you plan to re-use the existing adhesive for a new tiled floor, be careful not to contaminate it with particles or debris.

Chemical adhesive removers

There are some chemical formulations that are designed to be poured onto the carpet to help dissolve and loosen up the adhesive bond. However, this method of removal is not normally used, because the chemical residue can remain on the subfloor surface and react with the new adhesive that will be applied. Generally, it is safer and more reliable to use mechanical removal techniques.

Hand held devices

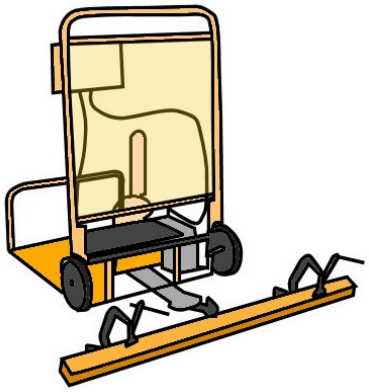


Hand-held devices include carpet pullers and floor scrapers. Carpet pullers are designed to clamp the edge of the carpet and provide a lever action to break the adhesive bond.

For increased leverage, a floor scraper can be slid underneath the carpet or underlay and levered upwards to help separate the material from the subfloor.

A smaller hand-held scraper can also be used to chip away the adhesive while you pull back the carpet with your other hand.

Walk-behind machines



Walk-behind machines range from manually-operated devices through to powered units that run on mains electricity, LPG or battery.

Some stand-up machines use a winch action to pull up the carpet after the leading edge has been clamped into place. Other units use a scraping action, with oscillating blades that can be adjusted to different angles.

Ride-on machines

Ride-on floor scrapers tend to use fixed blades that rely on the weight and power of the machine to break the adhesive bond as it separates the carpet from the substrate.

Most ride-on machines can be fitted with a range of blade attachments to suit other surface materials, such as ceramic tiles, vinyl, parquetry and cement screeds.

Learning activity

Do some research into powered floor scrapers, either on the web or using product brochures. Choose one walk-behind machine and one ride-on machine suitable for removing adhesive fixed carpet. Fill in the table in your workbook, listing the brand name, power source, blade width and other features of the machines.

Removing resilient flooring

Up until the late 1980s, many resilient flooring products contained asbestos.

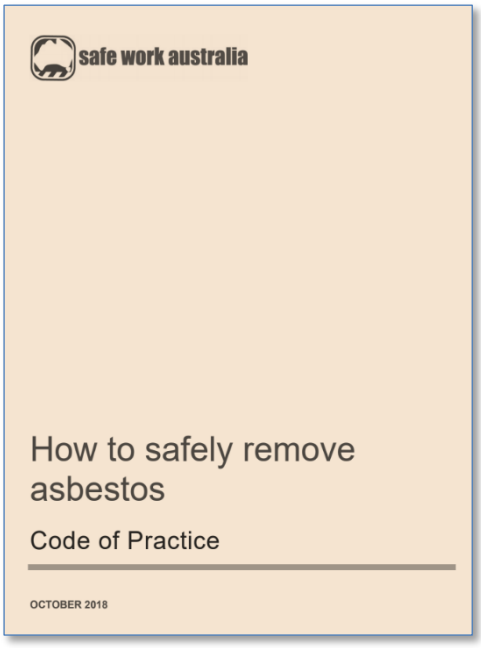
If you're presented with a floor that you suspect might contain asbestos, you should assume that it does and take all necessary precautions until you're able to confirm otherwise.

Note that 'asbestos containing material' (ACM) may include the floor covering, backing, lining felt, cutback adhesive or other types of adhesive.

There are testing services available throughout Australia that can take samples from the old floor and determine whether there is any ACM present. If the floor does contain ACM, the removal must be done by a licensed asbestos remover if:

- there is 10 m^2 or more of non-friable (bonded) ACM to take up
- there is any amount of friable ACM involved (that is, material that can be crumbled into a fine material or dust by hand).

Note that even if there is less than 10 m^2 of non-friable ACM involved and the client or another worker does the removal themselves, they must still take all necessary precautions and comply with the code of practice relating to removing asbestos-based products.



This includes:

- sealing off the area before starting the removal process
- wearing appropriate PPE
- bagging and transporting the ACM in an approved way
- disposing of the material at a licensed facility.

Always bear in mind that the extra work involved in managing ACM products can be very expensive, and needs to be properly costed into your quotation if you are responsible for their removal. Otherwise, you may find yourself doing the additional work for nothing, or taking shortcuts to try to get the job done on a tight budget.

We won't go into further detail in this unit on how to remove flooring products that contain ACM, since it's a task that requires additional training and supervised practice on-the-job.

For more information on this topic, go to the website 'asbestosawareness.com.au' at: https://asbestosawareness.com.au/.

For the remainder of this lesson, we'll cover the procedures involved in removing resilient floor coverings that do not contain ACM. We'll also briefly discuss the option of not removing the old covering at all, and laying the new covering on top of the old one.

Leaving the old resilient floor covering in place

If the old resilient covering is in good condition and well bonded to the subfloor, you may be able to leave it in place.

Before you consider this option, however, you will need to establish whether the new product can be installed on top of the old covering in an approved manner without voiding the floor covering manufacturer's warranty.

In general, this option would only apply to loose-lay or low-adhesive products.

The floor covering manufacturer's installation guide should provide more information, but if you're still not sure you should contact their technical department for advice.

Depending on the products involved, the floor preps may include one or both of the following techniques:

- removing any wax and other finishes on the old floor surface by wet stripping
- filling the embossing in the old resilient covering with an embossing leveller.

These techniques are covered in other learner guides in the Floor Technology series, in particular: *Lay flat vinyl, Commercial vinyl, Resilient tiles, Linoleum* and *Hard underlays.*

Removing resilient sheet products (non-ACM)

The different techniques used to remove resilient sheet flooring are similar to those used for adhesive-fixed carpet, as described in the previous lesson.

In some cases, you may be able to pull back the material by hand, starting in one corner and working across the floor in narrow strips.

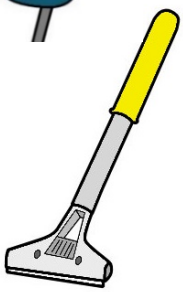
Cut each strip into a manageable width with a utility knife. Take care not to damage the substrate if it's going to become the new floor surface (such as a solid timber floor).

If you need to soften up the adhesive before blade scraping it, you can spray water on the floor. Hot water is also useful for more stubborn adhesive. Don't use chemical adhesive removers, as they will leave a residue on the substrate that will be difficult to get off.

Another option for softening up adhesive is to use a heat gun. The hot air can be aimed directly at the adhesive, or at the top surface of the floor covering, allowing the heat to transfer to the underside.

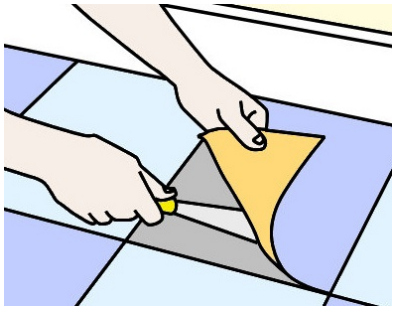
Make sure the heat gun is not held too close to any flammable materials, because there is a risk that it might start a fire.

A hand scraper can also be used to chip away the adhesive while you peel back the resilient sheet with your other hand.



Removing resilient tiles (non-ACM)

The methods described above can also be used with resilient tiles.



Note that if pressure sensitive adhesive has been used and you plan to re-use it for the new floor, you need to be careful not to contaminate it with particles or debris.

For large areas or heavily bonded tiles, a floor stripping machine will lift the tiles and adhesive more efficiently. Some strippers are provided with double sided blades that can be reversed for either concrete or timber substrates. The first two images below show walk-behind and ride-on floor strippers.

Another option is a chisel scraper, which uses a reciprocating chiselling action to loosen up and lift the floor coverings from a concrete substrate. Chisel scrapers can also be used to remove adhesive residues. Most scrapers are pneumatic, but some models run on 240 volt or battery power. The image below on the right hand side shows a mains-power electric chisel scraper.

Learning activity

Write up a brief comparison of the following methods of taking up vinyl flooring:

- hand scraping plus a heat gun
- hand scraping plus water
- machine scraping with a floor stripper or chisel scraper.

You may do some research on the web or look up product brochures or datasheets for extra information. You can also read ahead to the next lesson, ‘Removing adhesive residue’ – keeping in mind that the next lesson deals more specifically with the removal of old adhesive after the floor covering has already been taken up.

The sorts of issues you should consider in your comparison include: size of the job, speed and efficiency, noise, dust, availability of power, possibility of live wires near water, impact on other people in the building, and any other factors that you think are important.

Removing timber coverings

Timber floor coverings include all timber and wood-based coverings that are laid over the top of a structural subfloor. The most common examples are:

- tongue and grooved floor boards (also called strip flooring), laid on battens or an underlay board product fixed to a structural subfloor
- direct-stick parquetry and strip flooring overlay, which are glued directly to a concrete slab or wood-based subfloor
- engineered timber flooring products (such as laminated timber on a wood-based backing), fixed to an underlay or laid without fixings as a 'floating floor' over a structural subfloor.

Note that none of these examples perform a structural function – unlike the following types of timber or wood-based flooring, which can't be removed without taking into account the role they play in the building's structure:

- solid T&G floor boards that span across joists
- wood-based T&G sheet products, such as plywood or particleboard flooring, that span across joists.

Below are the main procedures used to remove different types of timber floor coverings.

T&G floor boards on battens

The easiest way to take up strip flooring on battens is to put saw cuts across the boards, in between the battens, so that the boards can be pulled up in shorter lengths.

Lever the boards up using a pry bar or claw hammer.

If the boards are difficult to lift, use a lever with a longer handle, such as a floor scraper.

Direct stick timber flooring

Timber flooring that is glued directly to the structural subfloor needs to be removed with a chiselling action.

Small areas can be lifted with a hammer and old chisel. Don't use your good wood-working chisels, since the cutting edge will be quickly damaged by the concrete and hard adhesive.

Larger areas will require a jackhammer, chisel scraper or floor scraper.

If the timber covering is long-length T&G overlay boards, cut across them first with a circular saw. Make sure the depth setting on the blade is fractionally less than the thickness of the board, to avoid cutting into the subfloor.

Floating floors

Engineered boards that are installed as floating floors should be easy to remove, since they're not fixed to the subfloor in any way.

If the client wants to re-use the boards elsewhere, you should try to unclip them gently and stack them neatly, to avoid damaging the surface or breaking the tongues and grooves.

However, if they're going to be disposed of, you can work across the floor with a pry bar or other type of lever.

Learning activity

Let's say you were pulling up an old timber floor covering and you noticed that there was fungal decay in some of the boards, or that mould was growing underneath the boards.

What alarm bells would that ring for you? In particular, what sorts of checks would you make to try to track down the source of the problem, and what types of questions could you ask the client to get a better understanding of the issues?

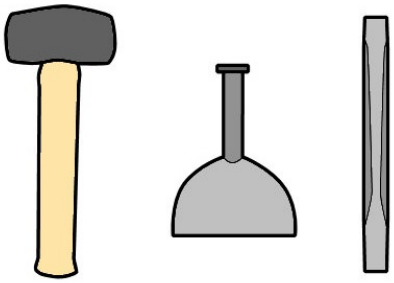
Removing floor tiles

The term ‘floor tiles’ generally refers to hard tiles made from mineral products, such as ceramic, slate and marble.

It doesn’t normally include carpet tiles or resilient tiles, which we have already discussed in previous lessons.

Floor tiles are often fixed in position with adhesive, but they can also be laid on a mortar bed, particularly when the substrate is concrete.

When an adhesive is used, it’s common to have a hard underlay between the tiles and subfloor, typically plywood or fibre cement. The underlay will be fixed to the subfloor using fasteners, such as nails, staples or screws for wooden subfloors, and concrete nails for slab subfloors.



Floor tiles are removed in a similar way as for parquetry (see the previous lesson). The main difference is that if you’re using hand tools, you’ll need a lump hammer and cold chisel rather than claw hammer and woodworking chisel, since you’re basically working with masonry products.

For large areas, use a jackhammer, chisel scraper or ride-on floor scraper.

Learning activity

We’ve indicated in this lesson that hard tiles are made from mineral products, which make them brittle and liable to break with sharp edges when they’re lifted from the floor.

They’re also often bedded down on a mortar base, which can be very dusty when it breaks up.

Let’s say you were removing ceramic tiles with a jackhammer or chisel scraper. What personal protective equipment would you need to wear for this task, over and above your normal worksite PPE (such as hi-vis shirt and safety boots)?

Include the PPE needed while you’re using the power tools as well as while you’re shoveling up and disposing of the rubble.

Removing adhesive residue

Once the old floor covering and underlay have been taken up, any remaining adhesive residue will need to be removed.

Some installers take shortcuts at this stage of the job and leave bits of old residue behind because they think it's too time consuming to strip it back. But this can cause its own problems.

One of the potential problems is that the ridges from the old glue will affect your ability to control the spread rate of the new adhesive.

Manufacturers specify certain-sized notched trowels to ensure that the spread rate is maintained at a precise level. If you change the spread rate, you'll affect the working time and bonding properties of the new adhesive. You will also void the warranty that the manufacturer provides on the performance of their adhesive.

Another potential problem is the fact that adhesives were often made with solvent-based formulations in years past. These days, they tend to be water based, as manufacturers move towards more environmentally-friendly formulations. So if you apply a new water-based adhesive over an old solvent-based residue, you're likely to have a compatibility problem which might affect the strength of the bond.

Below are the main methods used to remove old adhesive. We'll deal with the issue of asbestos-based adhesives at the end of this discussion.

Hand scraping

Hand scraping is very labour intensive, but it can still be the most efficient way to remove small quantities of adhesive, particularly if it's only around the perimeter of a floor surface.

It is possible to combine hand scraping with chemicals that soften the adhesive – but you need to ensure that the chemical won't leave traces behind that will react with the new adhesive or floor coverings.

Always follow the manufacturer's directions when using chemical adhesive removers. In particular, pay

attention to safety considerations, such as wearing appropriate PPE and providing good ventilation in the room you're working in.

Different formulations are used for different types of adhesive. For example, solvent-based chemicals are used to remove solvent-based glues, and water-based chemicals are used to remove acrylic and latex glues.

Remember that if you use any type of liquid on the subfloor, including water on its own, you must allow sufficient time for it to dry out to a relative humidity level that's within the specifications for the new floor covering you will be installing.

Acid washing

For concrete substrates, some people like to wash the surface with acid.

However, this should only ever be used as a last resort, because most levelling compound manufacturers will not warrant their products unless the concrete surface has been mechanically ground to remove contaminants.

If you do decide to acid wash the surface, be careful to keep the solution within the confines of the slab and to completely remove any residue when you finish. Muriatic acid is generally used, which is a commercial grade of hydrochloric acid.

To prepare the solution, mix 1 part muriatic acid to 10 parts water. Apply the solution with a watering can and use a stiff-bristled broom to spread it around the floor. Once the reaction has taken place, wash it off and make sure that it's completely neutralised before leaving the floor to dry

Note that acid washes are not effective in removing grease and oil. The same applies to solvent washes, which have a tendency to drive the contaminants further into the concrete pores.

Grinding

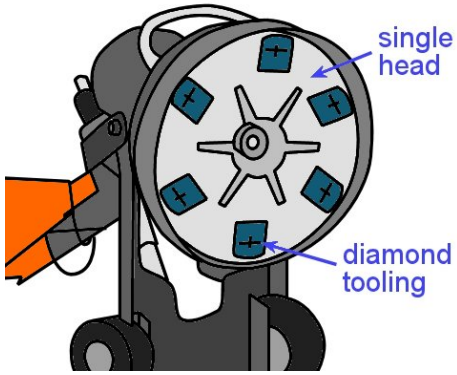
Concrete subfloors can be ground back with a machine to remove adhesive residue and other contaminants.

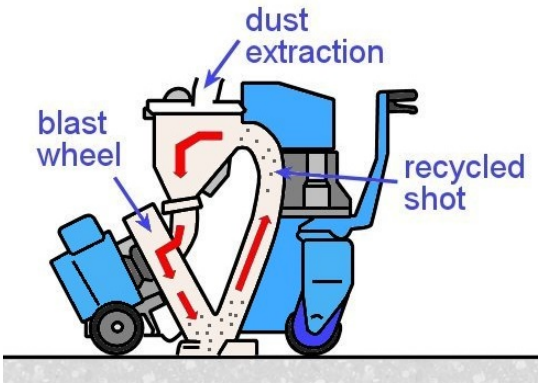
There are various types of machines available, with each type designed for specific applications. These include grinders, chisel scrapers and shot blasters.

Grinders are available as hand-held power tools, walk-behind machines and ride-on machines.

They use abrasive discs, often with diamond or tungsten carbide tooling, to apply a circular rubbing action to the concrete surface.

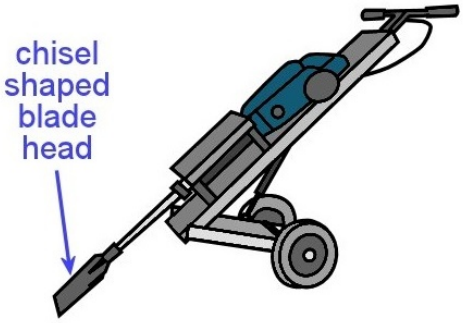
Grinders are the most suitable for removing adhesive, because they tend to do the least amount of damage to the concrete surface.





Shot blasters are generally used when the concrete surface contains weak or loose material that needs removal.

They work by throwing out thousands of shot particles at high speed, similar to the process of sand blasting.



Chisel hammers are basically jack hammers fitted with a wide chisel-shaped blade head.

They can be used for taking up the old floor covering as well as removing adhesive residue.

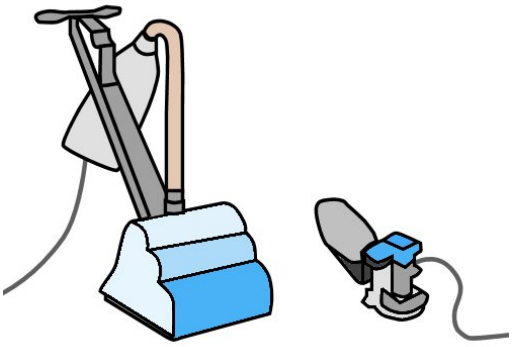
Every grinding and chiselling machine has an optimal method of operation. Some machines are designed to be moved in a circular motion as they're pushed up and down the floor in parallel lines.

Other machines have different processes. For more information on grinding techniques and the various types of tooling and machines available, go to the Flooring Technology learner guide: *Concrete grinding*.

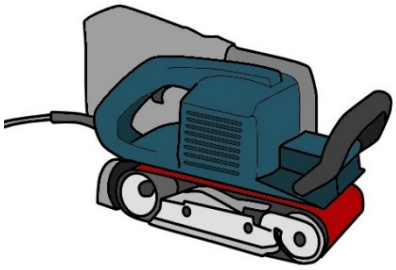
Sanding

Timber and wood-based surfaces generally need to be sanded back, since solvents and floor strippers don't work particularly well on these sorts of floors.

Drum sanders are best on floors that need a lot of material removed.

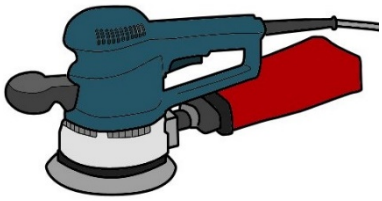


Belt sanders provide a finer finish but get clogged up more easily, so they're most effective when the surface only needs to be lightly sanded.



Orbital sanders and 'edgers' are used around skirting boards and in corners.

Once the sanding is completed, vacuum up the dust with an industrial vacuum cleaner.



Also check that all boards or sheets are well fixed and there are no squeaks or movement underfoot. Re-nail or screw any loose boards or panels.

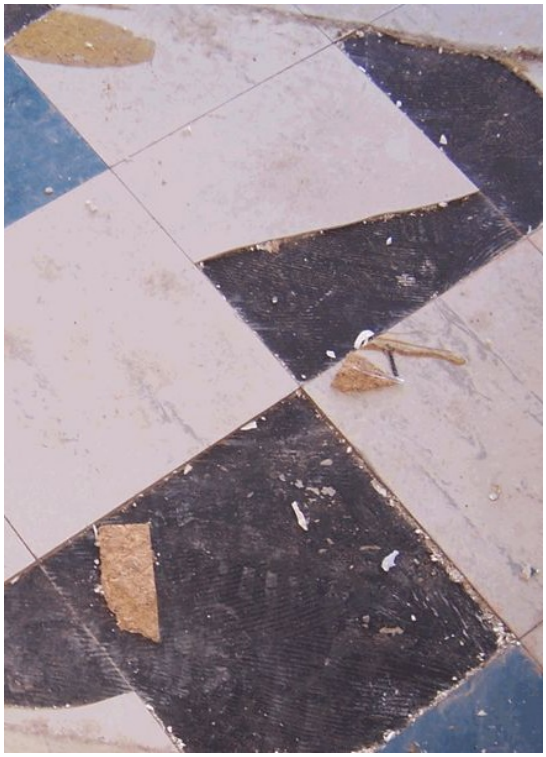
Dealing with 'cutback adhesive'

'Cutback' is a black asphalt-based adhesive that was once used to install vinyl tiles. It often contains asbestos fibres.

If the cutback is still firmly bonded to the floor, it's often easiest to leave it in place and only remove the thick accumulations and brittle or loose material. This is done by wet scraping and mopping the floor to avoid the creation of dust. A solvent-based chemical remover can also be used.

Always remember that you need to be very careful to minimise the amount of dust that's produced, and to wear the protective clothing appropriate for asbestos removal.

You must also follow proper disposal methods for asbestos based products.



(Photo from asbestosawareness.com.au at: https://asbestosawareness.com.au/)

Learning activity

For this exercise, we'll put all the elements together for a removal job that involves taking up an old Axminster carpet from an office reception area.

Your task will be to draw up a 'job plan' for the whole process, starting with arriving at the worksite and inspecting the floor, and finishing with the clean-up once you've removed the carpet, underlay and adhesive.

Let’s say that the project involves a front reception area measuring 7 metres by 5 metres, and that your supervisor has given you a total of 4 hours to complete the job. We’ll assume that all equipment is already on-site and in good working order.

We’ll also assume that the following details apply to the job:

- the broadloom carpet and underlay have been installed as a full spread dual bond system directly to a concrete subfloor
- the adhesive can be lifted through a combination of stripping with a walk-behind machine (powered by mains electricity) and hand scraping.
- the room is on the ground floor of the building, and there is a small step-up from the outside car pack
- the front entrance is through a large double-door, with easy access to the carpark, where the skip bin is already in place.
- all furniture has been removed, and there are no obstacles in the way.

Before you complete this exercise, you may wish to read the next lesson, just to remind yourself of the sorts of issues you should consider when cleaning up the work area at the end of a removal job.

Use the template in your workbook to draw up the job plan. Remember that the total time allocated to the job is 4 hours, so you will need to divide up that time into segments, according to how long you think each stage will take.

Completing the task

Once you've removed the old floor covering, underlay, adhesives and any other materials relating to its original installation, you should inspect the subfloor to check that you haven't missed anything.

Look out for random staples, adhesive residue or other items fixed to the subfloor surface.

Then you can do a final vacuum of the subfloor surface.

For the purposes of this learning unit, we won't go into the subfloor preparations required to repair damaged areas or restore the surface to a suitable condition for the new floor covering.

These topics are dealt with in detail in other modules from the Flooring Technology resource, including:

- *Subfloor coating and toppings*
- *Concrete grinding*
- *Inspecting and testing subfloors*
- each of the floor covering installation modules.

Disposing of used materials

Various companies offer recycling services for different types of used floor coverings. These include the floor covering manufacturers themselves, who sometimes re-process old products for use in the raw materials that go into their new products.

Other manufacturers also use recycled floor covering products in upholstered furniture, automotive seats and other products that require vinyl, carpet or cushion material.

You should fold or roll up the old sheet materials so they're in manageable bundles, especially if they will be loaded and unloaded by hand when you take them away from the site.

Even if you're disposing of used materials in a skip bin on-site, it's still best to keep them in compact bundles so that they don't take up too much space inside the bin.

Cleaning up the worksite

When you have finished the job, pack up all tools and check that they're in good order as you put them away.

If any of the tools are malfunctioning or need parts replaced, fix the issue straight away or tell your supervisor about the problem.

Although it takes time to keep your tools and equipment well maintained, everyone in your team will be thankful when you get to the next jobsite and the tools are ready to go and working properly.

This particularly applies to problems that might make the tool or machine dangerous to use. Always tag out machines that are malfunctioning, or ask your supervisor what to do about the problem. A tag can be as simple as a piece of cardboard taped to the machine that says 'For repair' or 'Do not use'. This will remind your boss to get the problem fixed before anyone uses it again.

Before you leave the site, do one last check to make sure the floor is clean, all rubbish has been picked up and disposed of, and all tools are packed away.

Learning activity

Although there are recycling services available for most types of old floor coverings, their availability varies greatly throughout Australia, and in some regions they are few and far between.

Choose one type of floor covering that your company regularly removes and find out whether there is a recycling facility that will take it in your area. Then answer the following questions:

(a) What is the name of the facility, and who runs it (that is, is it operated by a floor covering manufacturer, private company, local council, etc.)?

(b) Does the company you work for already use this facility? If not, why not (is it too far away, too inconvenient, too expensive, etc.)?

Assessment criteria

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:

- ***MSFFL2031 Remove existing 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 unit.

Specific demonstration requirements (from 'Performance evidence')	**YES**
Remove a floor covering by hand	❑
Remove a floor covering using mechanical equipment	❑

General performance criteria (from 'Elements and performance criteria')	**YES**
Follow safe work practices and site procedures	❑
Identify any hazards in the area and take steps to control the risks	❑
Select the correct tools for the job, and inspect them prior to use	❑
Plan the sequence of work to maximise efficiency	❑
Determine the best starting point and prepare the thoroughfares	❑
Take up the floor covering using suitable techniques and equipment	❑
Remove any fasteners, adhesive residue and other items from the subfloor	❑
Take out the waste materials and recycle or dispose of them appropriately	❑
Clean and inspect the floor substrate and clean up the general work area	❑
Check tools as they are packed up and stored	❑
Complete any required workplace documentation	❑

Background knowledge (from competency 'Knowledge evidence')	YES
Workplace safety and environmental protection requirements	❑
Hazardous substances, including asbestos-based products	❑
Hand tools and mechanical equipment used to take up floor coverings	❑
Procedures for maintaining and recording information	❑
Characteristics and removal techniques for the following types of floors:	
• carpet with soft underlay and gripper strips	❑
• parquetry with hard underlay	❑
• resilient floor covering installed on concrete	❑
• carpet, resilient and cork tile	❑
• tiled floors	❑
• strip timber	❑
• floating floor	❑