

Concrete grinding

Supporting:

MSFFL2011: Select, operate and maintain grinding equipment



Workbook



Name:

Concrete grinding

Workbook

Containing learning activities and assignments for the unit of competency:

MSFFL2011: Select, operate and maintain grinding equipment

The assignment templates are also available in an electronic 'Word' version, downloadable from the INTAR website at:

www.intar.com.au



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This training resource forms part of the **Flooring Technology project**, developed and coordinated by INTAR (Industry Network Training and Assessment Resources). To see the on-line versions of the resources available under this project, please go to the INTAR website and follow the links.



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David McElvenny, Workspace Training, PO Box 1954 Strawberry Hills, NSW, 2012

Email: david@workspacetraining.com.au

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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.

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Introduction

Concrete grinding is a 'learning unit' from the Flooring Technology training resource. It supports the following competency from the *Certificate III in Flooring Technology* (MSF30813):

- *MSFFL2011: Select, operate and maintain grinding equipment*

To be assessed as competent, your assessor will use a range of methods to check your understanding of the concepts presented in the Learner guide for this unit and your practical ability to select, operate and maintain concrete grinding equipment.

These may include:

- written assignments
- practical demonstrations
- on-the-job discussions about how you go about particular activities
- learning activities undertaken while you're progressing through the unit
- examples of installations you have undertaken
- log book or work diary.

Literacy, numeracy and computer skills

Literacy is the ability to read and write. To complete this qualification, you will need sufficient literacy skills to produce a range of workplace documents. You will also need the skills to be able to read and understand documents such as order forms, installation instructions, project briefs and safe operating procedures.

Numeracy is the ability to work with numbers. Flooring installers need to do lots of measure-ups and calculations, so there will be many opportunities for you to learn and practise your numeracy skills.

When it comes to completing the written assignments for this qualification, a certain level of literacy ability is required to read the questions and write down your answers. There will also be times when you are asked to generate documents on a computer.

Obviously, it's important that you clearly understand what the assignment is asking you to do, and that your work is a good reflection of what you really know. So if you're having trouble reading the questions, writing down your answers, or using certain computer programs, make sure you speak to your trainer before you hand the assignment in.

There are various ways your trainer can help you. For example, they may be able to ask the assignment questions verbally and help you to write down your answers.

They may also be able to show you sample answers to similar questions, which will let you look at the way they're written and give you hints on how to write your own. You may also be allowed to do the assignment with the assistance of another person.

Applying for RPL

RPL stands for **Recognition of Prior Learning**. It is a form of assessment that acknowledges the skills and knowledge you have gained through:

- on-the-job experience
- formal training in other courses
- life experience, through your hobbies or other outside activities.

If you believe that you are already competent in some or all of the skills covered in this unit, ask your assessor about how to apply for RPL.

Using this workbook

All of the lessons in the Learner guide for this unit have learning activities at the end. Their purpose is to provide discussion points and questions to help reinforce your understanding of the concepts being presented.

There are also a range of assignments, which appear at the end of each section. These are designed to test your knowledge of the subject matter and ability to submit written responses in an acceptable format.

This workbook reproduces all of the learning activities and assignments in a format that lets you handwrite your answers to the questions.

Note that your trainer may ask you to produce a computer-generated document for all of the formal assignments, either printed out in hard copy or submitted electronically. To do this, go to the website version of the unit and look for the *Assignment* link in each section. This will allow you to type your answers into the 'Word' document and then either print it out or email it direct to your trainer as an attachment.

You may also be asked to share your learning activity answers electronically, especially if you are undertaking this unit by distance learning and are linked up with fellow students in other locations. This might be done through group emails or via a social networking site such as Facebook. In these cases, you should use the website resource rather than this workbook.

Part 1

Learning activities



Section 1: Principles of grinding

Machines used to prepare concrete

Let's say you had a subfloor with a heavy layer of laitance on the surface, and it was too deep to remove easily with a grinder. What machine would you choose to clean up the laitance before you finished the floor with a grinder?

State the name of the machine below and explain why you would choose it.

Machine name	Why you would choose it

Concrete surface profiles

Have a close look at each of the CSP photos in the learner guide. From what you know about the different processes used to create these CSPs, what characteristics can you see that makes each one distinctive?

In particular, what is it about the surface texture of the following processes that makes that type of concrete removal distinctive: grinding (CSP 2), shotblasting (CSP 3 and 5) and scarifying (CSP 4, 6 and 9).

Process	Surface texture characteristics that make it distinctive
Grinding	
Shotblasting	
Scarifying	

Types of grinders

Do some research on the web or in manufacturers' catalogues to find information on the different types of grinders available in Australia.

Types of grinders:

Single headed grinder

Double headed grinder

Planetary action grinder

1. For each type of grinder complete the table below.

Type of grinder	
Manufacturer's name and model	
Grinding width	
Any special features or significant details about the machine	
Type of grinder	
Manufacturer's name and model	
Grinding width	
Any special features or significant details about the machine	
Type of grinder	
Manufacturer's name and model	
Grinding width	
Any special features or significant details about the machine	

Diamond tooling

Watch the following video clip produced by Worx+:

‘Worx+ Diamond tools – Thick epoxy and levelling compound removal’:

http://www.youtube.com/watch?v=E_gPdd5zqY0

Then go to the following webpage to see the different types of diamond segments available for grinding (use the subcategories or filter buttons in the left hand menu):

<http://www.totallyworks.com/products/categories/diamond-tools>

Now have a look at some of the other types of diamond tooling by going to the All Preparation Equipment site at:

<http://archquip.com.au/>

Click on the menu link ‘Diamond tooling’ (in the top line of links) to see the range of products available.

Name three different types of tooling suitable for concrete grinding.

1.
2.
3.

Section 2: Practice of grinding

Health and safety

1. Are you required to complete a risk assessment or other type of safety document before you start work on-site?

2. What are the forms called, and what is their purpose?

Selecting the tooling

On the following page is an excerpt from a diamond selection table published in a Husqvarna operator's manual. Use the table to answer the following questions:

1. What is the suggested tooling and set-up for flattening undulations in medium concrete?

2. What is the suggested tooling and set-up for removing vinyl or carpet glue in medium concrete?

3. Why are these recommendations different? Explain the reasons for the different choices in grit size and set-up (that is, full set or half set of diamonds)

Reasons for different grit sizes	
Reasons for full set or half set of diamonds	

Sample diamond selection table

Application	Metal bond	Grit size	Full set	Half set
Flatten undulations – hard concrete	SOFT	16 or 30	✓	
Flatten undulations – medium concrete	MEDIUM	16 or 30	✓	
Flatten undulations – soft concrete	HARD	16 or 30	✓	
Vinyl or carpet glue removal – hard concrete	SOFT	16 or 30		✓
Vinyl or carpet glue removal – medium concrete	MEDIUM	6 or 16		✓
Vinyl or carpet glue removal – soft concrete	HARD	6 or 16		✓
Epoxy paint removal – hard concrete	SOFT	6, 16 or 30	✓	✓
Epoxy paint removal – medium concrete	MEDIUM	6, 16 or 30	✓	
Epoxy paint removal – soft concrete	HARD	6, 16 or 30	✓	
Ceramic tile adhesive removal	HARD	6, 16 or 30	✓	
Rain damaged concrete	HARD	16 or 30	✓	

Operating procedures

Watch the following two video clips and then answer the questions below.

‘Husqvarna PG 280 and DC 1400 - Grinding a concrete floor’:

http://www.youtube.com/watch?v=Z7wm_zbS8d8&feature=player_detailpage

1. How are the diamond segments attached to the disc?

2. What sort of movement does the operator use while he’s grinding the floor? That is, what pattern is the machine being moved in?

'Husqvarna PG 820 and PG 680':

<http://www.youtube.com/watch?v=jCyoTdloVHA>

3. What type of machine is the operator using?

4. What sort of movement does the operator use when he grinds the floor on the first pass? That is, what pattern is he moving the machine in?

Basic maintenance

1. Does your company have a maintenance checklist that you need to complete before operating a grinding machine? (Note that it may be called a different name or be built into another form, such as an SOP or pre-start checklist.)

2. What maintenance procedures are you responsible for? List the procedures and state how often you're required to carry them out.

Maintenance procedure	Frequency

Part 2

Assignments



Assignment 1

Name		Date	
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1. What does 'diamond grinding' mean? That is, how are the diamonds used and what is their purpose?

2. What are the main advantages of using a concrete grinder, compared with other surface preparation machines?

3. (a) What does CSP stand for?

- (b) What CSP can a diamond grinder achieve?

4. Circle the correct word in each of the following sentences:

If the concrete is **hard** – use a **hard / soft** bond segment

If the concrete is **soft** – use a **hard / soft** segment.

-
5. (a) If you found that the diamond segments had glazed over and become very hot, what would that tell you about your choice of bond hardness?

- (b) What bond hardness would you fit to the machine to overcome the problem?

Assignment 2

Name		Date	
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The questions below relate to the planetary action grinder that you'll use for your practical demonstration. You should complete this assignment after you've selected the specific machine you plan to use.

1. Answer the following questions in the table below:
 - (a) Who is the manufacturer, what model is it, and how would you describe it?
 - (b) What voltage and amperage does it draw?
 - (c) What is the machine's grinding width?

Manufacturer	
Model	
Grinder type	
Voltage / amperage	
Grinding width	

2. Complete the following table to show the diamond tooling and disc set-up you would choose for each of the four different grinding applications.

Application	Diamond tooling			
	Bond	Grit size	Full set	Half set
Smooth and remove high spots in hard concrete				
Smooth and remove high spots in soft concrete				
Remove old carpet adhesive in medium concrete				
Smooth rain damaged concrete surface				

3. Complete the following tables to show the operator maintenance you should carry out at various times on the grinding machine and dust extraction system.

Grinding machine	
Frequency	Operator maintenance
Daily (or before each use)	
Weekly (or at regular intervals)	
Every few months (or periodically)	

Dust extraction system	
Frequency	Operator maintenance
Daily (or before each use)	
Weekly (or at regular intervals)	
Every few months (or periodically)	

Practical demonstrations

The checklist below sets out the sorts of things your trainer will be looking for when you undertake the practical demonstrations for this unit. 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 event is 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 carry out the practical demonstration component of this unit.

Specific performance evidence	YES
Smooth a concrete subfloor using single headed, double headed and planetary action grinders, to Australian Standard specifications (Demonstration 1)	<input type="checkbox"/>
Complete operator maintenance on grinding equipment (Demonstration 2)	<input type="checkbox"/>

General performance evidence	YES
1. Follow all relevant WHS laws and regulations, and company policies and procedures	<input type="checkbox"/>
2. Identify different types of grinding equipment and their functions	<input type="checkbox"/>
3. Read and interpret plans and written instructions relevant to the tasks	<input type="checkbox"/>
4. Recognise different power supply sources	<input type="checkbox"/>
5. Select appropriate grinding equipment and attachments for the job at hand	<input type="checkbox"/>
6. Carry out all necessary pre-start checks, and correct faults or report for repairs	<input type="checkbox"/>
7. Wear appropriate personal protective equipment	<input type="checkbox"/>
8. Remove fixtures and fitting from the floor and clean up debris and dirt	<input type="checkbox"/>
9. Plan the sequence of work tasks and choose starting point	<input type="checkbox"/>
10. Grind perimeter to smoothness required using appropriate equipment and cutters	<input type="checkbox"/>
11. Grind main area to smoothness required using appropriate equipment	<input type="checkbox"/>

and cutters	
12. Clean and inspect floor area, and carry out any re-work required	<input type="checkbox"/>
13. Clean, maintain and store tools and equipment appropriately	<input type="checkbox"/>
14. Clean up work area and dispose of rubbish properly	<input type="checkbox"/>