Title	**Demonstrate knowledge of grinding wheels and fluids**		
Level	**2**	**Credits**	**5**

Purpose	People credited with this unit standard are able to: demonstrate knowledge of grinding wheel and/or stone shape and structure; perform grinding wheel calculations; explain the selection of grinding wheels for different applications; explain grinding wheel inspection and storage techniques; and demonstrate knowledge of grinding fluids and their use.

Classification	Solid Wood Manufacturing > Saw Doctoring

Available grade	Achieved

Guidance Information

1 Legislation
Health and Safety at Work Act 2015.
Resource Management Act 1991.

2 Definitions
Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the wider wood manufacturing industry as examples of best practice.
Workplace procedures refer to documented policies and procedures set by the organisation carrying out the work, and to documented or other directions provided to staff, and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the wood manufacturing sector.

3 Assessment information
All activities and evidence must be in accordance with workplace procedures and accepted industry practice.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of grinding wheel and/or stone shape and structure.

Performance criteria

1.1 Characteristics of grinding wheels and/or stones used in the workplace are matched with their code letters and shapes.

1.2 Manufacturer's specifications are interpreted for all wheel types used in the workplace.

Range abrasive type, grit size, wheel grade, abrasive structure, bond type.

1.3 Types of abrasives are explained and matched with their applications.

Range abrasives – aluminium oxide, silicon carbide, cubic boron nitrate, diamond.

1.4 Hazards associated with cobalt leaching on emulsion with tungsten carbide, and its management in a saw shop operation is described.

Outcome 2

Perform grinding wheel calculations.

Performance criteria

2.1 Revolutions per minute (RPM) of a grinding wheel spindle are calculated, given motor RPM, drive pulley diameter and driven pulley diameter.

2.2 Rim speed of a grinding wheel is calculated, given spindle RPM and wheel diameter.

2.3 Wheel speeds are calculated to enable safe operation, and to prevent burning of material, undue wheel wear, glazing, and clogging.

Outcome 3

Explain the selection of grinding wheels for different applications.

Performance criteria

3.1 Selection to match wheel dimensions with grinder capacity is explained.

Range diameter, thickness, bore size, shape, speed.

3.2 Selection to match wheel specifications with the task to be performed is explained.

Range specifications – grit and grade ratings;
tasks may include but are not limited to – wet or dry grinding, stock removal requirements (rough or finish grinding), item being ground (saw sharpen, gullet), knife (sharpen), steel being ground (steel, tungsten carbide), sharpening, shaping, finishing.

Outcome 4

Explain grinding wheel inspection and storage techniques.

Performance criteria

4.1 The inspection techniques of grinding wheels are explained.

4.2 The requirements for storing wheels to avoid moisture absorption and breakages are explained.

4.3 The need for stock rotation is explained.

Outcome 5

Demonstrate knowledge of grinding fluids and their use.

Performance criteria

5.1 Reasons for the use of grinding fluids are described.

Range heat reduction, product quality, dust reduction, wear, and noise reduction.

5.2 Types of grinding fluids are identified.

Range fluids – water with anti-rust, water and oil emulsion, pure oil.

5.3 Method for maintaining coolant to water ratios during grinding is described.

5.4 Fluid components are explained in accordance with manufacturer's specifications.

5.5 First aid data are interpreted from relevant grinding fluid Safety Data Sheets (SDS).

Range swallow, inhale, splash in eye or skin.

5.6 Grinding fluid storage and chemical handling requirements are identified from the relevant grinding fluid SDS.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 January 1994	31 December 2015
Review	2	24 October 1996	31 December 2015
Revision	3	21 April 1998	31 December 2015
Review	4	10 February 1999	31 December 2015
Review	5	18 December 2006	31 December 2015
Review	6	20 March 2014	N/A
Review	7	24 September 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.