

Title	Demonstrate knowledge of processing toughened and heat strengthened glass in a horizontal glass tempering machine		
Level	4	Credits	5

Purpose	<p>This theory-based unit standard is for experienced people in the glass processing industry working with specialist glass.</p> <p>People credited with this unit standard are able to: describe compliance requirements applying to manufacturing toughened and heat strengthened glass; demonstrate knowledge of preparing to manufacture toughened and heat strengthened glass; and demonstrate knowledge of horizontal glass tempering machines used for the manufacture of toughened and heat-strengthened glass.</p>
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Classification	Glass and Glazing > Glass Processing and Manufacturing
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Available grade	Achieved
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Guidance Information

- 1 Legislation and standards relevant to this unit standard include:
[Health and Safety at Work Act 2015](#);
[Resource Management Act 1991](#);
AS/NZS 2208:1996, *Safety glazing materials in buildings*;
AS/NZS 2080:2006, *Safety glazing for land vehicles*, available at
<http://www.standards.co.nz>.

Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes.

- 2 Definitions
Compliance requirements refer to those New Zealand Standards, Australia/New Zealand Standards, and tests which apply to the processing of toughened and heat strengthened glass.
Job specifications refer to the scope of the work being undertaken. It includes the objectives, quality requirements, deliverables, timeline, budget etc.
Workplace procedures refer to the documented procedures specific to a workplace that set out the standard and the required practices of that workplace. This may include job specifications, procedures, practices, manufacturer recommendations, technical data sheets and material safety data sheets.

3 Assessment

Evidence for this unit standard must reflect:

- industry standards, current health, safety, industry, and workplace procedures;
- job specifications and customer requirements;
- industry requirements for commercially acceptable timeframes.

4 Range

Types of glass which can be toughened, or heat strengthened by the processes covered in this unit standard are limited to – float glass from 4 mm to 19 mm in thickness, clear, tinted, painted, obscure glass, both in regular and irregular shapes.

Outcomes and performance criteria

Outcome 1

Describe compliance requirements applying to manufacturing toughened and heat strengthened glass.

Performance criteria

1.1 Purposes and compliance requirements for manufacturing toughened and heat strengthened glass are described.

1.2 Scope and focus of standards applying to manufacturing toughened and heat strengthened glass are described.

Range standards include – AS/NZS 2208:1996, AS/NZS 2080:2006.

1.3 Focus and purpose of tests applied in manufacturing toughened and heat strengthened glass are described.

Range tests may include but are not limited to – size test, thickness test, squareness test, uniformity test, fragmentation test, light transmission test, bow test, edge inspection, impact test.

Outcome 2

Demonstrate knowledge of preparing to manufacture toughened and heat strengthened glass.

Performance criteria

2.1 Requirements for preparing the work area and personal safety precautions are identified and described.

Range preparation includes – selection and use of protective clothing and safety equipment, checks of emergency stops and battery drives on machine, identification of hazards and risks, review of operational procedures, clearing work area.

2.2 Process for checking glass to be manufactured is described.

Range checks include – glass and processing system to be used match with requirements of work and/or customer order, completion of relevant standards tests, glass size is within processing equipment limitations, glass manufacturer's size and processing limitations, printing face, shapes and patterns for printing table placement, coating surface, standards identification.

2.3 Process for preparing to manufacture toughened or heat strengthened glass is described in terms of workplace procedures.

Range process includes – marking of glass with standards identification in accordance with works instruction, selection and positioning of glass on loading table, inputting of machine settings for type of glass being toughened.

Outcome 3

Demonstrate knowledge of horizontal glass tempering machines used for the manufacture of toughened and heat-strengthened glass.

Performance criteria

3.1 Process for pre-start, start and set-up procedures is described.

3.2 Procedures for forwarding glass into the furnace are identified and described.

3.3 Operating principles of horizontal glass tempering process are described.

3.4 Operating principles of horizontal glass heat strengthening process are described.

3.5 Process for monitoring and adjusting the furnace operation is identified and described.

3.6 Emergency procedures if glass breakage occurs in the furnace are described.

Planned review date	31 December 2029
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 2010	31 December 2017
Review	2	18 June 2015	31 December 2026
Rollover and Revision	3	25 August 2022	31 December 2026
Review	4	24 October 2024	N/A

Consent and Moderation Requirements (CMR) reference

0073

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

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council at qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.