Title	**Demonstrate knowledge of manufacturing laminated glass**		
Level	**4**	**Credits**	**5**

Purpose	This theory-based unit standard is for experienced people in the glass processing industry working with specialist glass. People credited with this unit standard are able to describe the manufacturing processes for laminated glass; demonstrate knowledge of preparing to manufacture laminated glass, and manufacturing laminated glass.

Classification	Glass and Glazing > Glass Processing and Manufacturing

Available grade	Achieved

Guidance Information

1 Definition
Worksite requirements – refer to instructions to staff on policy and procedures which are documented in memo or manual format and are available in the workplace. These requirements include – company specifications and procedures, work instructions, manufacturer's specifications, product quality specifications, legislative requirements.

2 Legislation and standards relevant to this unit standard include – Health and Safety at Work Act 2015, Resource Management Act 1991 and the following Australia/New Zealand Standard:
New Zealand Standard (NZS) 4223.3:2016 *Glazing in buildings – Human impact safety requirements*, available at http://www.standards.co.nz.

Outcomes and performance criteria

Outcome 1

Describe the manufacturing processes for laminated glass.

Performance criteria

1.1 Preparation requirements and personal safety precautions required before manufacturing begins are described in terms of worksite requirements.

Range requirements include – selection and use of protective clothing and safety equipment, identification of hazards, storage and handling of dangerous goods, checking of interlayer shelf life, selecting equipment, completing equipment check and maintenance procedures, clearing work area, check of ultra-violet lamp life.

1.2 Process for manufacturing laminated glass is described in accordance with equipment manufacturer's recommendations.

Range process may include – white room procedures, white room hoist operation, pre-press oven and glass stacker operation, air lifter operation, loading and unloading of autoclave;
evidence of two is required.

Outcome 2

Demonstrate knowledge of preparing to manufacture laminated glass.

Performance criteria

2.1 Types of materials used in manufacturing laminated glass are identified and described in terms of worksite requirements.

Range requirements include – glass size, thickness and type match with requirements of works or customer order; interlayer type, colour and thickness match with requirements of work or customer order; glass quality (free from seeds, feather, chips or edge damage); glass free from grease or dirt.

2.2 Process of preparing glass for manufacturing is described in terms of worksite requirements.

Range process includes – washing glass using washing machine, checking glass quality to ensure no scratches or watermarks are left after washing, laying-up-of glass and interlayers to meet work or customer order requirements.

Outcome 3

Demonstrate knowledge of manufacturing laminated glass.

Performance criteria

3.1 Process for preparing and injecting resin is described in terms of the job specifications and worksite requirements.

3.2 Types of faults that can occur in injected laminate are identified and described in terms of their impact on the finished product.

Range faults include – bubbles, cracks.

3.3 Process for curing laminate is described in terms of worksite requirements.

3.4 Process for inspecting and marking approved laminates is described in terms of the requirements of NZS 4223.3:2016.

3.5 Documentation requirements are identified and described in terms of worksite requirements.

Planned review date	31 December 2022

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 June 2015	N/A
Rollover and Revision	2	25 August 2022	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.