Title	**Produce screens, and make stencils using the direct emulsion system, for screen printing**		
Level	**3**	**Credits**	**12**

Purpose	People credited with this unit standard are able to: check documentation and confirm job requirements are available; check film positives for faults; demonstrate knowledge of screens and select screens to meet the job requirements; demonstrate knowledge of stencils and select stencils to meet the job requirements; prepare screens for the stencils; make stencils using the direct emulsion system; and make final preparation to screens ready for printing.

Classification	Printing > Printing - Screen

Available grade	Achieved

Prerequisites	Unit 340, *Demonstrate knowledge of safe working practices in the print industry*, or demonstrate equivalent knowledge and skills.

Guidance Information

1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act 2015;
- Privacy Act 2020;
- Resource Management Act 1991.

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, pending review of this unit standard.

2 Definitions
Job documentation refers to the documentation that is used in the workplace that contains the instructions and requirements for a particular production job. This may include but is not limited to workplace orders, production orders, workplace specifications, samples, lay cards.
Job requirements refer to specific requirements for the job at hand. These requirements may or may not be covered in the job documentation and may include special instructions, quality requirements expected by the customer, and/or production standards of the workplace and/or organisation.

Workplace procedures refer to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. 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, manufacturer's requirements, 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 print sector.

3 It is recommended that people hold credits for Unit 21328, *Demonstrate industry knowledge for screen printing*, before being assessed against this unit standard.

4 Assessment information
Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 1

Check documentation and confirm job requirements are available.

Performance criteria

1.1 Check job documentation to ensure that all specifications for the process being undertaken are complete and report any discrepancies.

Range quantity, press, special instructions.

1.2 Check required job components against the job documentation and confirm their availability.

Range may include but is not limited to – job samples or layouts, frames, mesh, film positives, ink, substrates.

1.3 Confirm equipment is available, as determined by the job documentation.

Outcome 2

Check film positives for faults.

Performance criteria

2.1 Explain reasons for checking film positives.

Range density, emulsion side, image resolution definition, trap.

2.2 Check film positives for any imperfections and errors, and rectify or report any faults.

Outcome 3

Demonstrate knowledge of screens and select screens to meet the job requirements.

Performance criteria

3.1 Describe the characteristics and uses of different types of screen frames.

Range frames – wooden, steel, aluminium, self-stretching; characteristics – cost, weight, strength, solvent resistance, corrosion resistance.

3.2 Describe the characteristics and uses of mesh.

Range may include but is not limited to – nylon, polyester, metal, carbon fibre, combinations of these; characteristics – film deposit, substrate, static control, warp, weft, mesh count, tension stability, flexibility, durability, chemical resistance.

3.3 Describe methods of stretching mesh to achieve the required tension.

Range manual, mechanical, pneumatic.

3.4 Explain factors affecting the way mesh is stretched.

Range mesh material, mesh count, tension control, angle.

3.5 Select screens to meet the job requirements and press specifications.

Outcome 4

Demonstrate knowledge of stencils and select stencils to meet the job requirements.

Performance criteria

4.1 Describe stencil systems, and explain the work each system is most suited to.

Range capillary, indirect, direct.

4.2 Select stencils to meet the job specifications.

Range may include but is not limited to – film deposit, substrate, ink, quality of print required, run length, mesh material, mesh count.

Outcome 5

Prepare screens for the stencils.

Performance criteria

5.1 Check screen size and mesh count meet the job specifications.

5.2 Pre-treat screens to ensure that stencil adhesion is achieved.

Range chemical, mechanical.

5.3 Degrease screens using degreasing agents.

5.4 Rectify any faults found when preparing the screens.

Range may include but is not limited to – poor reclaiming, poor screen preparation, unsuitable screen size, unsuitable mesh count, poor adhesion.

Outcome 6

Make stencils using the direct emulsion system.

Performance criteria

6.1 Coat screens with direct emulsion to ensure that an even coating is achieved.

6.2 Dry coated screens.

6.3 Check film positives to ensure that they meet the job specifications and are in position on the screen.

6.4 Expose stencils.

Range any of – laser, mercury vapour, xenon, metal halide.

6.5 Wash out and dry stencils.

Range may include but is not limited to – pressure of water, incomplete wash out, incomplete image, drying temperature.

Outcome 7

Make final preparation to screens ready for printing.

Performance criteria

7.1 Explain the reasons for ‘spotting’ and ‘blocking out’ the stencil, and taping the inside edges.

Range water based inks, solvent based inks.

7.2 Check stencils for imperfections, spotting, and blocked out areas.

7.3 Apply tape to the inside edges of the screen frames to prevent ink seepage.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 August 1995	31 December 2025
Revision	2	20 July 1998	31 December 2025
Review	3	30 August 1999	31 December 2025
Review	4	21 February 2005	31 December 2025
Rollover and Revision	5	12 December 2008	31 December 2025
Review	6	30 March 2023	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 Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.