

<b>Title</b>	<b>Demonstrate knowledge of and operate product storage equipment in an energy and chemical plant</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>8</b>

<b>Purpose</b>	<p>This unit standard is intended for people working as boiler operators and energy and chemical process operators in an energy and chemical plant.</p> <p>People credited with this unit standard are able to: demonstrate knowledge of product storage equipment and systems in an energy and chemical plant; and the product storage system, and malfunctions, deviations, and faults of product storage equipment and systems in an energy and chemical plant. They are also able to operate the product storage system in an energy and chemical plant.</p>
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<b>Classification</b>	Energy and Chemical Plant > Operation of Energy and Chemical Plant
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<b>Available grade</b>	Achieved
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### Guidance Information

- Legislation relevant to this unit standard includes but is not limited to:
  - Health and Safety at Work Act 2015;
  - Hazardous Substances and New Organisms Act 1996;
  - Resource Management Act 1991;
 and any subsequent amendments.
- Definitions
 

*Energy and chemical plant* may be in – petrochemical, agri-nutrient, power generation, dairy processing, meat processing, and wood fibre manufacturing, or other plants that operate with a combination of high temperatures, pressures, steam and/or chemicals in gas, liquid or solid form.

*Organisational requirements* – documented policies and procedures. These may include: equipment manufacturers' procedures; plant procedures; suppliers' instructions; site signage; codes of practice; company health and safety plans; on site briefings; and supervisor's instructions. This includes all regulatory and legislative obligations that apply to the plant.

*Plant* – the operational unit, equipment and/or workplace at which the person is working.
- For the purposes of assessment:
  - evidence for the practical components of this unit standard must be supplied from the workplace.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of product storage equipment and systems in an energy and chemical plant.

#### Performance criteria

- 1.1 Identify and describe types of product storage in terms of design concepts and suitability for different products.
- Range product storage may include but is not limited to – open roof tank, fixed roof tank, floating roof tank, sphere, bullet, sump, drum, tanker, silo, hopper, stockpile; evidence of four types is required.
- 1.2 Describe product storage in terms of types and operation of auxiliary equipment and systems.
- Range auxiliary equipment includes but is not limited to – mixing, heating, transfer, safety, ventilation; systems include but are not limited to – fire protection, heat tracing, sampling, purge, blanketing, spill containment.
- 1.3 Describe components of storage vessels in terms of their purpose.
- Range components include but are not limited to – shell, roof, dip hatch, flame arrester, earth strap, roof drain, vessel drain, vent, vacuum breaker, instrumentation, pontoon, roof legs.
- 1.4 Describe hazards of static electricity in terms of product storage requirements.
- Range evidence of two hazards is required.

### Outcome 2

Demonstrate knowledge of the product storage system, and malfunctions, deviations, and faults of product storage equipment and systems in an energy and chemical plant.

#### Performance criteria

- 2.1 Describe the product storage system in terms of the purpose and operation of components, process controls and protection systems.
- 2.2 Identify and describe equipment malfunctions that can occur in the product storage system in terms of the operational steps and techniques used to respond to each malfunction.
- Range evidence of three equipment malfunctions is required.

- 2.3 Identify and describe deviations from normal operating parameters that can occur in the product storage system in terms of the operational steps and techniques used to respond to each deviation.

Range evidence of three deviations is required.

- 2.4 Identify and describe potential product storage problems in terms of organisational requirements.

Range evidence of three product storage problems is required.

- 2.5 Identify and describe construction materials used for storage of products in terms of their use.

Range evidence of three different construction materials is required.

### Outcome 3

Operate the product storage system in an energy and chemical plant.

#### Performance criteria

- 3.1 Use the relevant identification coding system to locate and identify product storage equipment in accordance with organisational requirements.
- 3.2 Operate product storage equipment using safe work practices in accordance with organisational requirements.
- 3.3 Carry out checks and routine procedures on product storage equipment in accordance with organisational requirements.
- 3.4 Complete all plant documentation related to the product storage system in accordance with organisational requirements.

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<b>Replacement information</b>	This unit standard was replaced by skill standard 40452.
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**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	8 November 1995	31 December 2014
Revision	2	15 December 1998	31 December 2014
Review	3	29 May 2000	31 December 2014
Revision	4	24 July 2002	31 December 2014
Review	5	27 June 2005	31 December 2014
Rollover and Revision	6	25 July 2006	31 December 2014
Review	7	22 May 2009	31 December 2016
Review	8	24 October 2014	31 December 2022
Review	9	27 February 2020	31 December 2026
Review	10	24 April 2025	31 December 2026

**Consent and Moderation Requirements (CMR) reference**

0079

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