Title	**Demonstrate knowledge and use of hand operated fire fighting equipment**		
Level	**3**	**Credits**	**5**

Purpose	This unit standard is for the training of personnel employed in the fire protection industry. People credited with this unit standard are able to demonstrate knowledge of fire and extinguishing methods, the construction of hand operated fire fighting equipment, the operation of hand operated fire fighting equipment, applications of hand operated fire fighting equipment; and demonstrate the use of hand operated fire fighting equipment.

Classification	Mechanical Engineering > Hand Operated Fire Fighting Equipment

Available grade	Achieved

Guidance Information

1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
Building Act 2004,
Ministry of Business, Innovation and Employment (MBIE) Acceptable Solutions (AS) and Verification Methods (VM)
Ozone Layer Protection Act 2017,
Fire Extinguishers Regulations 2018,
New Zealand Building Code (latest edition: 2022),
AS/NZS 1841.1:2022, *Portable fire extinguishers – General requirements*,
AS/NZS 1841.2:2022, Portable fire extinguishers – Specific requirements for water type extinguishers,
AS/NZS 1841.3:2022, *Portable fire extinguishers – Specific requirements for wet chemical type extinguishers*,
AS/NZS 1841.4:2022, *Portable fire extinguishers – Specific requirements for foam type extinguishers*,
AS/NZS 1841.5:2022, *Portable fire extinguishers – Specific requirements for powder type extinguishers*,
AS/NZS 1841.6:2022, *Portable fire extinguishers – Specific requirements for carbon dioxide type extinguishers*,
AS/NZS 1841.8:2022, *Portable fire extinguishers – Specific requirements for non-rechargeable type extinguishers*,
AS/NZS 1850:2022, *Portable fire extinguishers – Classification, rating and performance testing*,
AS/NZS 1221:1997, *Fire hose reels*,

AS/NZS 3504:2006, *Fire blankets*,
AS 2337.1:2004, *Gas cylinder test stations. – General requirements, inspection and tests – Gas cylinders*,
NZS 4503:2005, *Hand operated fire fighting equipment*.
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

Hand operated fire fighting equipment in this unit standard is as defined by NZS 4503:2005 and includes fire hose reels, fire extinguishers (both gas container and stored pressure), and/or fire blankets.

Industry practice refers to the safe and sound practices generally accepted by competent trade persons within the fire protection industry as examples of best practice and may include documented codes of practice and standardised procedures.

Systems documentation refers to the documentation required to be maintained by NZS 4503:2005, including logbook, test reports, equipment details and drawings, specifications, contract agreement, additions and alterations, fire reports, survey reports, building consents, standards, codes of practice, installation instructions, test and commissioning procedures, test and maintenance records.

Workplace procedures refer to the documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality assurance procedures, housekeeping standards, charging of time and materials, management of drawings and documentation, procedures to comply with legislative and local body requirements.

3 Assessment information

a. Competence must be demonstrated on all equipment defined by NZS 4503:2005.
b. All activities must comply with relevant legislative and/or regulatory requirements and recognised codes of practice.
c. All activities must demonstrate safe working practices.
d. All activities must be completed and reported within agreed timeframes.
e. All activities must be done in accordance with workplace procedures.

4 Range

a Fire situations are to be produced using fuels of the actual class of fire wherever possible (i.e., A – paper, wood, and many plastic materials; B – flammable and combustible liquids; F – cooling oil and fat).
b Demonstration of the use of hand operated fire fighting equipment includes the use of: foam, dry powder and carbon dioxide fire extinguishers, a fire hose reel, and two of the following: wet chemical fire extinguisher, bucket pump, wheeled fire extinguisher, knapsack type fire extinguisher, fire blanket, sand bucket.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of fire and extinguishing methods.

Performance criteria

1.1 Components required to sustain combustion are identified and related to fires.

Range fire tetrahedron – fuel, oxygen, heat, chemical reaction.

1.2 Methods used in controlling combustion are identified and related to extinguishing fires.

Range remove fuel (starvation), remove oxygen (smother), remove heat (cooling), break the chemical reaction.

1.3 Extinguishing agents are identified and related to the types of fires that they are suitable and not suitable for, and their relative advantages and disadvantages are explained.

Range extinguishants – water, foams, wet chemicals, dry powders, carbon dioxide;
fire types – fire classes A, B, C, D, E, and F.

1.4 Extinguishing agents which are subject to legislative controls and the obligations under relevant legislative and/or regulatory requirements for owners of these types of fire extinguishers are identified.

1.5 Personal safety requirements are identified and related to fires and extinguishing methods.

Outcome 2

Demonstrate knowledge of the construction of hand operated fire fighting equipment.

Performance criteria

2.1 Fire extinguisher components, materials, cylinder and valve construction methods, and their suitability for use are identified.

2.2 Fire hose reel components, materials and construction types, and their suitability for use are identified.

Range types – swing arm, cabinet, standard wall mount;
materials – drums (steel, stainless steel, fibre glass), glands (plastic, brass with rubber or synthetic seals), hoses (rubber, extruded or re-enforced plastic), nozzles (brass alloy, moulded plastic).

2.3 Construction methods and materials of fire blankets and their suitability for use are identified.

Range glass fibre, water gel.

2.4 Tests that fire equipment is subjected to are identified and explained.

Range hose reels – pressure, strength, unwind, discharge, operation, coverage and flow tests;
extinguishers – ratings, pressure, clear passage, component material, gas leakage, external corrosion, support fitting, siphon tube, intermittent, effective discharge;
fire blankets – fire, electrical, hand holding devices, size, removal and unpacking, fraying, flexibility.

Outcome 3

Demonstrate knowledge of the operation of hand operated fire fighting equipment.

Performance criteria

3.1 Operation methods of hand operated fire fighting equipment are identified and explained.

Range stored pressure, cartridge operated, fire blankets, hose reels.

3.2 Hazards and safety requirements when using hand operated fire fighting equipment are identified and related to each item of equipment.

Outcome 4

Demonstrate knowledge of applications of hand operated fire fighting equipment.

Performance criteria

4.1 Risks and applications of fire fighting equipment are identified and related to their use in the control of different types of fire.

Range fire extinguishers, fire blankets, bucket pumps, wheeled mobile units, hose reels.

4.2 Factors affecting the selection of fire fighting equipment are identified.

Outcome 5

Demonstrate the use of hand operated fire fighting equipment.

Performance criteria

5.1 Hand operated fire fighting equipment is selected relevant to the type of fire.

Range fire size, location, fuel type, fire class.

5.2 Fire fighting equipment is operated.

5.3 Safety requirements relating to the equipment being used are compliant.

Planned review date	31 December 2029

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 December 1996	31 December 2017
Revision	2	5 January 1999	31 December 2017
Revision	3	20 December 2000	31 December 2017
Review	4	26 March 2007	31 December 2017
Review	5	15 October 2015	31 December 2026
Review	6	27 June 2024	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 the 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.