Title	**Demonstrate knowledge of polyethylene pipe, fittings and fusion jointing for a gas network**		
Level	**3**	**Credits**	**6**

Purpose	People credited with this unit standard are able to demonstrate knowledge of: polyethylene pipe, fittings and fusion jointing equipment; storage and handling of polyethylene pipe, fittings and fusion jointing equipment; and polyethylene pipe fusion jointing for a gas network.

Classification	Gas Industry > Gas Network Construction

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable manufacturer's specifications, company and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of: Health and Safety at Work Act 2015, Resource Management Act 1991, Australian and New Zealand Standards (AS/NZS); and any subsequent amendments and replacements.

3 Definition
Company and legislative 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 but are not limited to – company specifications and procedures, work instructions, manufacturer specifications, product quality specifications and legislative requirements.

4 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.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of polyethylene pipe, fittings and fusion jointing equipment for a gas network.

Performance criteria

1.1 Polyethylene pipe material properties are described.

Range colour, nominal diameter, pressure rating, material grade, density, standard dimension ratio (SDR), identification markings.

1.2 Polyethylene fittings and their application are described.

Range PE fittings – coupler, reducer, equal tee, reducing tee, tapping tee, elbow;
mechanical fittings – crimp fitting, compression fitting, transition fitting.

1.3 Polyethylene pipe and fitting compatibility requirements are described.

Range imperial, metric, diameter, density (PE100, PE80B), standard dimension ratio (SDR), roundness.

1.4 Polyethylene pipe and fitting defects are described.

Range visible heat, surface, manufacturing, packaging.

1.5 Polyethylene pipe fusion jointing equipment and their components are described.

Range butt-fusion, electro-fusion, manual, semi-automatic, fully automatic.

Outcome 2

Demonstrate knowledge of storage and handling of polyethylene pipe, fittings and fusion jointing equipment for a gas network.

Performance criteria

2.1 Common requirements for the storage, handling and inspection of polyethylene pipes and fittings are described.

Range storage location, storage environment, handling, inspection.

2.2 Requirements for the storage and handling of straight lengths of polyethylene pipe are described.

Range pipe storage, lifting and transporting, above 280mm diameter.

2.3 Requirements for the storage and handling of coils of polyethylene pipe are described.

Range pipe storage, lifting and transporting, uncoiling, above 280mm diameter.

2.4 Requirements for the storage and handling of fusion jointing equipment are described.

Range equipment includes – welding machine, heating element, rotary surface peeling tool;
requirements include – storage, transportation, maintenance.

Outcome 3

Demonstrate knowledge of polyethylene pipe fusion jointing for a gas network.

Performance criteria

3.1 Environmental factors that may compromise the integrity of a fusion joint are described.

Range cleanliness, weather, ambient temperature, oxidisation, wind chill.

3.2 Non-environmental factors that may compromise the integrity of a fusion joint are described.

Range operator competency, material compatibility, equipment calibration.

3.3 The butt-welding fusion process is described.

Range butt welding machine, positioning, clamping, facing, cleaning, pre-heating, fusing under pressure, cooling, releasing.

3.4 Causes of butt-fusion jointing faults are described.

Range pipe misalignment, incorrect temperature, incorrect fusion pressure, contaminated joint, lack of ovality.

3.5 The electrofusion process is described.

Range electrofusion machine, positioning, clamping, scraping, cleaning, fusing, cooling, releasing.

3.6 Causes of electro-fusion jointing faults are described.

Range fitting misalignment, incomplete pipe insertion, incorrect fusion settings, contaminated joint, lack of ovality.

3.7 Fusion joint identification and record requirements are described.

Range weld number, welder ID, date, fusion equipment data.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 November 2009	31 December 2020
Review	2	20 October 2016	31 December 2021
Revision	3	30 August 2018	31 December 2021
Review	4	27 February 2020	N/A

Consent and Moderation Requirements (CMR) reference	0014

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

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.