

Title	Cut metals using manual thermal processes		
Level	3	Credits	4

Purpose	<p>This unit standard covers the manual cutting of metals using the oxy-fuel and plasma arc cutting processes.</p> <p>People credited with this unit standard are able to: prepare to cut metals using manual thermal processes; cut metals using manual thermal processes; and control quality of the cut.</p>
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Classification	Mechanical Engineering > Welding
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Available grade	Achieved
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Entry information	
Recommended skills and knowledge	Unit 25783, <i>Demonstrate knowledge of and apply metal cutting and gouging processes.</i>

Explanatory notes

1 References

Health and Safety in Welding. Wellington: Department of Labour, 2006. Available from <http://www.osh.govt.nz>.

WTIA Technical Note 5, *Flame cutting of steels*. Welding Technology Institute of Australia, 1994. Available from Heavy Engineering Research Association, PO Box 76134, Manukau City, Manukau 2241.

2 Definitions

Industry practice – refers to the safe and sound practices accepted by the fabrication industry.

Industry standard – Class 3 of WTIA Technical Note 5, or worksite equivalent.

Manual thermal processes – refers to the oxy-fuel gas and plasma processes with the cutting torch being hand held. Guides may be used.

Metals – refers to carbon steel, stainless steel, and aluminium.

Oxy-fuel – refers to oxygen cutting using a fuel gas such as acetylene or liquid petroleum gas (LPG); also referred to as *gas cutting*.

Safe working practice – refers to formal worksite or company safety policies, or the practices established by *Health and Safety in Welding* or similar codes.

Outcomes and evidence requirements

Outcome 1

Prepare to cut metals using manual thermal processes.

Evidence requirements

- 1.1 Work area is assessed for hazards associated with the cutting process and all necessary precautions taken in accordance with safe working practice.
- Range electric shock, arc radiation, fire, explosion, fumes and gases, heat, confined space, hot metal.
- 1.2 Equipment is assembled and maintained ready for use in accordance with manufacturer's instructions.
- 1.3 Consumables are selected in accordance with cutting requirements.
- Range gases, tips, nozzles.
- 1.4 Metal is positioned and supported for cutting in accordance with safe working practice.
- 1.5 A cutting sequence is followed to minimise material distortion in accordance with industry practice.

Outcome 2

Cut metals using manual thermal processes.

Range oxy-fuel process on steel – evidence of at least five cuts including sheet or plate, pipe, sections, hole piercing, bevelling; plasma arc process on steel, stainless steel, and aluminium. – evidence of at least five cuts is required, demonstrating ability to cut all three metals, sheet or plate, pipe, sections, and hole piercing.

Evidence requirements

- 2.1 Safety procedures are followed and personal protective equipment is worn in accordance with safe working practice.
- 2.2 Cutting parameters are established in accordance with manufacturer's recommendations.
- Range parameters – nozzle or tip size, gas pressures, flame type, travel speed, current electrode.
- 2.3 Metal is cut to industry standard and in accordance with industry practice.

Outcome 3

Control quality of the cut.

Evidence requirements

3.1 Cuts are compared to quality requirements of industry standard by visual examination, and imperfect cuts, if any, are re-worked in accordance with industry practice.

Range typical imperfections – gouges, top edge melting, cut not square or straight, excessive adhering slag.

Replacement information	This unit standard was replaced by unit standard 30279 and unit standard 30280.
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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	30 November 1994	31 December 2022
Revision	2	14 April 1997	31 December 2022
Revision	3	5 January 1999	31 December 2022
Review	4	28 October 1999	31 December 2022
Rollover and Revision	5	20 April 2006	31 December 2022
Review	6	22 May 2009	31 December 2022
Review	7	20 July 2017	31 December 2022

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is expiring