Australian Government
Department of Education, Employment and Workplace Relations

MEM05026C Apply welding principles

Release: 2

ISC INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MEM05026C Apply welding principles

Modification History

Single band identifier removed to clarify dual status

Unit Descriptor

Unit descriptor	This unit of competency covers applying welding principles to meet the statutory and regulatory requirements for welding procedures generally associated with the application of one of the units satisfying Australian Standard 1796 Certificates 1-9.

Application of the Unit

Application of the unit	This unit of competency covers the underpinning knowledge required to satisfy Australian Standard 1796. It includes knowledge of welding terms, codes and symbols, the effects of heat treatment on metal as it relates to welding, and the logical sequence for a welding process required to be conducted to AS 1796. It covers welding, planning and set up principles for a range of materials and processes. This unit must be assessed in combination with one of the units satisfying the Australian Standard 1796 Certificates 1-9 and these units include: • MEM05042B Perform welds to code standards using flux core arc welding process • MEM05043B Perform welds to code standards using gas metal arc welding process • MEM05044B Perform welds to code standards using gas tungsten arc welding process • MEM05045B Perform pipe welds to code standards using manual metal arc welding process • MEM05046B Perform welds to code standards using manual metal arc welding process. This unit has been developed for Engineering Tradespersons - Fabrication in either apprenticeship or post trade training and the recognition of trade level knowledge of welding principles. **Band:** This unit has dual status and is to be regarded as both a Specialisation Band A unit and Specialisation Band B unit for progression to C7 (AQF level IV). **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply all statutory and regulatory requirements to welding procedures	1.1. Statutory and safety requirements are applied to welding
2. Interpret all welding terms, codes and symbols	2.1. Welding terms and symbols are correctly interpreted
3. Determine the effects of heat treatment on metal in relation to welding	3.1. Reasons for performing heat treatment are identified 3.2. Processes such as pre-heat/post-heat treatment, stress relieving, normalising and annealing are appropriately applied
4. Plan the logical sequence of welding operations	4.1. Principles of planning and setting up welding are applied 4.2. Where specified, welds are prepared for testing

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting welding specifications including terms, codes and symbols
- planning the sequence of welding operations

Required knowledge

Required knowledge includes:

- any applicable industry standards, national/Australian standards, NOHSC guidelines, state/territory regulatory codes of practice/standards for the applicable welding processes
- safe work practices and procedures
- hazards related to welding
- safety equipment and procedures related to welding activities
- welding terminology
- welding codes and symbols

REQUIRED SKILLS AND KNOWLEDGE
• heat treatment processes • logical sequence for welding processes • tools, equipment, techniques used in welding • effect of heat treatment on metal

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to apply welding principles to meet the statutory and regulatory requirements for welding procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills and knowledge covered in this unit of competency in new and different workplace situations and contexts. Critical aspects of assessment and evidence include: • applying welding statutory and safety requirements to different welding jobs and environments • interpreting welding codes and symbols including symbols for type of weld, weld size, processing and finishing operations etc • applying appropriate pre and post-heat treatment processes for a range of welded materials • setting up weld sequence and preparing materials in a logical manner for welding job.
Context of and specific resources for assessment	This unit must be assessed in combination with one of the units satisfying the Australian Standard 1796 Certificates 1-9. Welding to AS 1796 requires both theoretical knowledge and high practical skills. The assessment process for the two units must be designed to identify consistent performance to the tandards, the code and specifications across a range of materials and positions. The assessment must also identify a workplace level of performance in terms of defect rates and weld failure rates. It is recommended that assessment involve demonstrations of competency under both workshop and site conditions. This means that the ideal assessment environment is either on the job or a combination of both on and off the job. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
Method of assessment	Typically an Engineering Tradesperson - Fabrication and

EVIDENCE GUIDE	
	other tradespersons engaged in welding are required to apply welding principles and techniques across a range of jobs and specifications. A single assessment event is not appropriate. On the job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	This unit must be assessed in combination with one of the units satisfying the Australian Standard 1796 Certificate 1-9 and these units include: • MEM05042B Perform welds to code standards using flux core arc welding process • MEM05043B Perform welds to code standards using gas metal arc welding process • MEM05044B Perform welds to code standards using gas tungsten arc welding process • MEM05045B Perform pipe welds to code standards using manual metal arc welding process • MEM05046B Perform welds to code standards using manual metal arc welding process. This unit could also be assessed in conjunction with any other units addressing the safety, quality, communication materials handling, recording and reporting associated with applying welding principles to meet the statutory and regulatory requirements for welding procedures or other units requiring the exercise of the skills and

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	knowledge covered by this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Statutory and safety requirements	Statutory and safety requirements as required by AS 1796 welding codes
Welding	Welding to AS 1796 using any of the following processes: • flux core arc welding • gas metal arc welding • gas tungsten arc welding • manual metal arc welding

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units	

Co-requisite units		

Competency field

Competency field	Fabrication