



Australian Government

MEM05052 Apply safe welding practices

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Modification History

Release	Comments
3	Update of unit codes in Application to reflect status.
2	Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05052 Apply safe welding practices (Release 1).
1	This unit of competency was first released in MEM Manufacturing and Engineering Release 2.0.

Application

This unit of competency defines the skills and knowledge required to identify risks associated with welding operations that would typically conform to AS 1554 General Purpose and American Bureau of Shipping (ABS) or equivalent on all commonly used metals and the implementation of techniques used to reduce or eliminate welding hazards.

This unit can only be selected in conjunction with one or more of the following units:

- MEM05090 Weld using manual metal arc welding process
- MEM05091 Weld using gas metal arc welding process
- MEM05092 Weld using gas tungsten arc welding process
- MEM05093 Weld using submerged arc welding process
- MEM05096 Weld using flux core arc welding process
- MEM05097 Weld using oxy fuel gas welding process

Band: A

Unit Weight: 4

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite unit(s)

MEM13015	Work safely and effectively in manufacturing and engineering
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MEM16006	Organise and communicate information
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Competency field(s)

Fabrication

Unit sector(s)

N/A

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications, job sheets or work instructions
2. Identify risks associated with welding	2.1 Obtain and interpret work-related safety information 2.2 Identify pollutants formed by welding processes 2.3 Identify occupational diseases and injuries that are associated with welding 2.4 Identify factors associated with increased risk 2.5 Identify exposure levels for pollutants 2.6 Identify risks and potential health effects associated with specific metals and gases in welding 2.7 Identify other hazards of welding
3. Reduce risks associated with welding	3.1 Use manual handling techniques 3.2 Implement procedures to control hazards and workplace safety procedures 3.3 Report workplace safety non-compliances in accordance with workplace procedures

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.	
WHS information includes one (1) or more of the following:	• Safe Work Australia guidelines • organisational WHS practices and procedures manuals • Australian/New Zealand and ISO standards • company risk management policy • codes of practice • Australian dangerous goods legislation • trade practices • WHS reporting requirements • weld procedures.
Work-related safety information includes one (1) or more of the following:	• SOPs • safety data sheets (SDSs) • job sheets • emergency procedures • safety standards and procedures.
Pollutants include one (1) or more of the following:	• nitrogen oxides • ozone • metal fumes • lead oxide • silicon oxide • calcium fluoride • calcium oxide

	• magnesium oxide • sodium oxide • potassium oxides • carbon dioxide • organics • iron • manganese • calcium carbonate • zirconium oxide • titanium oxide • hexavalent chromium.
Occupational diseases and injuries include one (1) or more of the following:	• eye injuries • skin damage • respiratory irritations • chronic effects • allergies.
Factors include one (1) or more of the following:	• gas leakage from cylinders • type of consumable and metals used • type of welding processes • type of electrodes • welding current • voltage and amperage • ventilation • contamination • interaction of chemicals • exposure levels • flammability.
Exposure levels include one (1) or more of the following:	• time weighted average • short term exposure limit (STEL) • maximum allowable concentration (MAC) or threshold limit value - ceiling (TLV-C)

	• skin notation.
Specific metals include one (1) or more of the following:	• aluminium • antimony • arsenic • beryllium • boron • cadmium • chromium • copper • cobalt • iron • lead • lithium • magnesium • manganese • mercury • molybdenum • nickel • platinum • selenium • silver • thorium • tin • titanium • tungsten • vanadium • zinc • zirconium.
Gases include one (1) or more of the following:	• acetylene • argon • carbon dioxide

	• carbon monoxide • helium • nitrogen oxides • ozone • phosgene • phosphine • stibine.
Other hazards include one (1) or more of the following:	• fluxes • electro-magnetic radiation • electric shock • sparks • spatter • contaminated and coated metals • gas cylinder and electrical hazards • confined spaces • noise • chemical exposure • solvents • musculoskeletal, back and overuse injuries • vibration • dusts • heat stress • ultraviolet radiation • airborne pollutants • flammable gases • infrared radiation • thermal damage.
Manual handling techniques include one (1) or more of the following:	• housekeeping practices • lifting weight limits • appropriate storage • use of lifting devices

	• appropriate training • hazardous materials storage standards and procedures.
PPE includes one (1) or more of the following:	• respirators • ear muffs • protective clothing • gloves • boots • helmets • eye protection • face shields.
Procedures to control hazards include one (1) or more of the following:	• substituting hazardous materials with safer materials • changing workplace design to eliminate hazards • modifying work practices to reduce exposure • using PPE • using adequate and appropriate ventilation.
Workplace safety measures include one (1) or more of the following:	• shielding requirements • ventilation • general and diluted • local exhaustion • use of PPE • checking equipment condition • equipment maintenance • correct operation of equipment • correct voltage and electrical connections • good posture • fire safety, plant and equipment isolation • communications with appropriate personnel.

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM05052 Apply safe welding practices	MEM05052A Apply safe welding practices	Supersedes and is equivalent to MEM05052A Apply safe welding practices	Equivalent

Assessment Requirements for MEM05052 Apply safe welding practices

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting work health and safety (WHS) information and legislation
- identifying risks and hazards associated with welding
- implementing risk control measures and procedures, including using appropriate manual handling techniques and personal protective equipment (PPE)
- reporting workplace non-compliances in accordance with workplace procedures.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of PPE
- characteristics and properties of common metals and welding materials
- effect of gas and electrical welding operations on metals
- effect of various treatments on a range of commonly used metals
- WHS information and sources
- work-related safety information

- pollutants present as a result of welding activities
- all the welding processes, including equipment and material requirements
- hazards associated with welding processes and methods to minimise those hazards.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying safe welding practices at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Link

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.