Training Package	Metal and Engineering (MEM05)			HSC Requirements and Advice
Title	**Perform soft soldering**			
Unit code	Competency field	Band	Unit weight	HSC Indicative Hours
MEM05003B	Fabrication	A	2	**15**

Unit descriptor	This unit applies to performing soft soldering applications of ferrous and non-ferrous materials, using straightforward techniques, where heat damage to components or finish of soldered joint is not critical.
Prerequisites	None
Application of the competency	All work is undertaken to predetermined standards of quality, safety and procedures. Techniques of applying soft solder may include the use of soldering irons (all types) and direct flame or other heating devices. Preparation of materials includes cleaning, deburring, twisting of conductors and fluxing.
Related units	Depending on the actual soldering job, hand and power tools and drawing and interpretation skills may be required. These are covered by units MEM18001C (Use hand tools), MEM18002B (Use power tools/hand held operations) and MEM12023A (Perform engineering measurements). **This unit should not be selected if Unit MEM05001B (Perform manual soldering/desoldering – electrical/electronic components) or Unit MEM10002B (Terminate and connect electrical wiring) has already been selected.**

Evidence Guide

The evidence guide specifies the evidence required to demonstrate achievement in the unit of competency as a whole. It must be read in conjunction with the unit descriptor, performance criteria, range statement and the assessment guidelines for the Metal and Engineering Training Package.

Overview of assessment requirements	Context of assessment	Interdependent assessment	Method of assessment
A person who demonstrates competency in this unit must be able to perform soft soldering.	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. 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.	This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing soft soldering or other units requiring the exercise of the skills and knowledge covered by 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.

Evidence Guide cont/d			HSC Requirements and Advice
Consistency of performance	**Required skills**	**Required knowledge**	**Key Terms and Concepts**
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.	Look for evidence that confirms skills in: • using soldering irons • using direct flame and other heating devices • reading and interpreting routine information on written job instructions, specifications and standard operating procedures • following oral instruction.	Look for evidence that confirms knowledge of: • the effect of material to be soft soldered on the selection of consumables • the reasons for preparing surfaces prior to soldering • the procedures for rectifying defects in soldered joints • use and application of personal protective equipment for soft soldering • safe work practices and procedures.	• align, mount and clamp materials • assemble and prepare tools and equipment • clean and check solder joint • communication • conformance to specifications • ferrous material • job requirements • non-ferrous material • prepare, arrange and check materials • rectifying defects • safe work practices and procedures • selection of consumables • soft soldering • solder joint • soldering techniques using a direct flame • soldering techniques using a soldering iron • specifications • standard operating procedures (SOP) • surface preparation • work instructions and procedures • working knowledge of tools, equipment and consumables.

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
1 Identify job requirements	1.1 Soldering requirements are identified and correctly understood from job sheets or instructions.	The range statement provides information about the context in which the unit of competency is carried out. The variables [in bold] and scope [dot points] cater for different work requirements, work practices and knowledge between States, Territories and the Commonwealth, and between organisations and workplaces. The range statement relates to the unit as a whole and provides a focus for assessment. Text in italics in the performance criteria is explained here. The following variables may be present and *may include*, but are not limited to, the examples listed under the scope. All work is undertaken to relevant legislative requirements, where applicable.	**Learning experiences for the HSC must address:** A range of sources for work instructions and procedures including: • work schedules • job card/sheet/plans/specifications • standard operating procedures (SOP) • standard operation sheets • Material Safety Data Sheets (MSDS) • diagrams/sketches • regulations/legislation • manufacturer/workplace guidelines, policies and procedures • suppliers handbooks/representatives • standard operating procedures • seminars, field days and exhibitions. An awareness of various modes of communication to receive work instructions including: • verbal - face to face (supervisor to employee) - telephone/mobile phone - workplace meetings • written communication - work plans - drawings - memos/messages - job descriptions/statements - workplace forms - rosters • non-verbal - signage - diagrams. Safe work practices and procedures.
2 Undertake soft soldering	2.1 *Tools*, equipment and consumables appropriate to the task are assembled and prepared for use as required.	**Tools** • soldering irons (all types) and direct flame or other heating devices.	**Learning experiences for the HSC must address:** A working knowledge of a range of tools, equipment and consumables. Safe work practices for using tools and equipment

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
			including: • following SOP and manufacturer's specifications before, during and after use • risk management (identifying hazards and implementing control measures) • safe handling, application and storage of hazardous substances • appropriate use of PPE • regular servicing and maintenance of tools and equipment • selection of appropriate tool for use • adequate ventilation. Use and application of a range of PPE including: • footwear • head protection • gloves • protective clothing • respirator • face mask/shield • hearing protection • eye protection. Importance of correct fitting PPE.
	2.2 *Materials* to be soldered are prepared, arranged and checked as required, to ensure solder joint meets specifications.	**Materials** • ferrous and non-ferrous.	**Learning experiences for the HSC must address:** A definition of: • ferrous • non-ferrous. A range of ferrous and non-ferrous materials. SOP for the preparation of ferrous and non-ferrous materials including: • cleaning • deburring • twisting of conductors • fluxing. Knowledge of: • the reasons for preparing surfaces prior to soldering
			• the effect of material to be soldered on the selection

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
			of consumables. The techniques to align, mount and clamp materials to be joined.
	2.3 Correct techniques are used to apply soft solder to standard operating procedures.		**Learning experiences for the HSC must address:** Knowledge of a range of soldering techniques including those that: • use a soldering iron • use a direct flame. Performing soft soldering applications for ferrous and non-ferrous materials using straightforward techniques.
	2.4 Solder joint is cleaned and checked for conformance to specifications using standard operating procedures.		**Learning experiences for the HSC must address:** Knowledge of the procedures for rectifying defects in soldered joints.