



Australian Government

MEM04021 Supervise individual non-ferrous melting and casting operation

Release: 2

MEM04021 Supervise individual non-ferrous melting and casting operation

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM04021 Supervise individual non-ferrous melting and casting operation (Release 1).

Release 1. Supersedes and is equivalent to MEM04021A Supervise individual non-ferrous melting and casting operation.

Application

The unit of competency defines the skills and knowledge required by a foundry tradesperson to supervise non-ferrous melting and casting operations in a foundry to ensure specifications are met and safety procedures maintained. This work is performed under the overall direction of a metallurgist.

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

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM04001	Operate melting furnaces
MEM04004	Prepare and mix sand for metal moulding
MEM04007	Pour molten metal
MEM04024	Produce moulds and cores by hand
MEM04025	Produce moulds and cores by hand (advanced)
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13004	Work safely with molten metals/glass
MEM13015	Work safely and effectively in manufacturing and engineering

MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Casting and moulding

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, drawings, job sheets or work instructions
2	Identify specifications for required casting	2.1	Identify required material specifications and mould requirements
		2.2	Identify any special melting and casting requirements for the job
		2.3	Identify safety procedures for the required melting and casting operation
		2.4	Identify and follow regulations and codes of practice relevant to foundry and individual melting, pouring and casting operation
3	Verify metal charges to	3.1	Select required components to give the required metal specification

	melting	3.2	Calculate required charge of each component
		3.3	Select required components to give the required metal specification
		3.4	Recommend changes and/or additions to the charge
		3.5	Monitor the preparation of the charge, including checking for contaminants
4	Monitor furnace operation	4.1	Check that the furnace is in good operational condition and that appropriate lining is present
		4.2	Organise for maintenance and repairs as required
		4.3	Identify metal or alloy specification for required casting
		4.4	Monitor a melt to ensure the product meets specification
5	Monitor pouring of molten metal	5.1	Check pouring area is secure and that all non-essential personnel are excluded
		5.2	Check all members of pouring crew are wearing appropriate PPE
		5.3	Ensure escape routes are known in advance by all members of the pouring crew
		5.4	Check emergency pour out pit is operational and other safety measures are in place
		5.5	Ensure moulds are ready to receive liquid metal, ensure access ways and pouring ways are clear, and that there are appropriate spaces between each mould
		5.6	Check pouring is undertaken at correct temperature and in efficient order
		5.7	Ensure pouring basin and moulds are ready to receive liquid metal
		5.8	Take required samples for analysis
6	Control hazards	6.1	Identify hazards in the metal melting and pouring process

- 6.2 Assess the risks arising from those hazards
- 6.3 Implement procedures to control those hazards in line with procedures and duty of care

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.

Moulds include one (1) or more of the following:

- sand
- die
- investment

Contaminants include one (1) or more of the following:

- non-specified metal
- rubber
- grease
- water
- paint and non-metallics
- closed containers or pipes
- pressure containers, including aerosols

Material specification includes one (1) or more of the following:

- non-ferrous metals
- non-ferrous alloys
- contaminants

Furnaces include one (1) or more of the following:

- crucible
- oil
- gas
- induction
- channel
- coreless

- resistance
- reverberatory

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM04021 Supervise individual non-ferrous melting and casting operation (Release 1).

Release 1. Supersedes and is equivalent to MEM04021A Supervise individual non-ferrous melting and casting operation.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>