



Australian Government

Assessment Requirements for MEM48005

Apply basic knowledge of casting operations

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM305A Demonstrate basic knowledge of casting operations.

Performance Evidence

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

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, safety procedures and codes of practice and/or standards
- observing and monitoring product flow through a foundry for at least two metals or alloys
- identifying basic items of casting equipment
- analysing mould materials and casting processes on at least two occasions
- identifying casting defects
- identifying and controlling hazards.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

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 work practices and procedures
- classification of casting processes including:
 - sand casting
 - investment casting
 - die casting
 - lost foam
 - vacuum process and protective atmospheres
 - ingot casting
- preparation of a mould including:
 - types of mould, shell moulds and dies
 - pattern types, materials, construction and design
 - raw materials including sand and bonds
 - sand moulding processes, manual moulding and machine moulding

- moulding equipment, machines and applications and safety around machinery
- cores, basic core making procedures, equipment and machines
- mould assembly and handling
- ancillary equipment, sand handling, mould handling and processing
- preparation of molten alloys including:
 - ferrous alloys
 - cast irons, white, grey, malleable and SG cast irons
 - cast steels, carbon steels and alloy steels
 - nonferrous alloys
 - cast aluminium alloys
 - aluminium silicon (Al-Si) alloys
 - cast copper, magnesium, titanium and zinc alloys
- melting including:
 - type of furnaces with applications
 - electric-arc furnace and induction furnace
 - structure and melting principles
 - pouring including:
 - pouring and molten metal safety
 - pouring equipment
 - running and gating systems
 - solidification process including grain growth, effects of super heat, mould geometry and chill
- feeding risers outline of basic principles
 - cleaning of castings including:
 - shakeout
 - cleaning room practices including methods and equipment
 - removing the mould materials
 - removing gate and risers
 - finish cleaning
- inspection of castings including:
 - visual examination
 - magnetic and penetrant methods
 - radiographic and ultrasonic methods
 - chemical, metallographic and mechanical testing
- repair of casting including:
 - aligning
 - welding
 - filling.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying basic knowledge of casting operations 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.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, 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.

Links

Companion Volume Implementation Guides are available on VETNet -

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