



Australian Government

Assessment Requirements for MEM48008 Evaluate mould design and gating

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM403A Evaluate mould design and gating

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 occasions and include:

- Following work instructions, standard operating procedures and safe work practices
- Identifying and interpreting design specifications, drawings, safety procedures and codes of practice/standards for evaluating mould design and gating
- Applying scientific principles to foundry mould design
- Evaluating mould design to suit specific applications
- Calculating mould runner and feeding systems using manual calculations and the use of computer programs
- Selecting appropriate techniques and associated software and hardware technologies to suit specific applications in foundry mould design
- Presenting solutions and any associated limitations referring to the original aim of the application

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
- Solidification including:
 - nucleation
 - growth mechanisms (crystal and interfacial)
 - dendrite coherency
 - constitutional undercooling
 - superheat
 - eutectic and peritectic solidification
 - grain structure
- Running, gating and feeding including:
 - terminology
 - runner and gating principles (ratios)
 - pouring basin or cup
 - sprue design

- runner design
- ingate design
- inclusion control (slag and erosion)
- metal flow (lamellar and turbulent), velocity and temperature
- modulus principle (calculation of feeder size)
- location of feeders (end and feed zones, neighbourhood effect, feeding distances)
- exothermic and insulating feeding aids (sleeves and topping)
- feeding mechanisms (liquid, mass, interdendritic, burst & solid)
- computer packages (runner and feeder calculations, mould simulations)
- yield calculations
- Defect formation including:
 - shrinkage
 - porosity
 - segregation
 - hot tearing
 - shear

Assessment Conditions

- Assessors must:
 - have vocational competency in evaluating mould design and gating 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 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 suitable access to an operating plant or equipment that allows for appropriate and realistic simulation and documentation including relevant workplace procedures, industry codes and standards.
- 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 found in VETNet -

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