



Australian Government

Assessment Requirements for MEM04023

Undertake prescribed tests on foundry-related materials

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM04023A Undertake prescribed tests on foundry related materials

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
- selecting of appropriate test methods from a prescribed range of tests against predetermined specifications and standards
- preparing samples according to appropriate procedures
- ensuring the test instrument is prepared according to specifications, standards and procedures
- conducting tests either in a workplace or suitable laboratory facility, including:
 - selecting appropriate test methods
 - obtaining repeatable results
 - interpreting test results for a foundry
 - obtaining reproducible test results from testing across different samples requiring different sample preparation/test conditions
- arranging other internal/external testing as prescribed
- preparing and circulating reports and filing report in accordance with SOPs.

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 and use of personal protective equipment (PPE)
- standards:
 - needs for standards
 - standards organisations
 - structure and operations of Standards Australia (SA)
- the role of National Association of Testing Australia (NATA);
- tensile testing, methods for tensile testing, e.g. AS 1391-2007 Metallic materials – Tensile testing at ambient temperature or equivalent international standard, and determination of tensile properties

- general impact testing:
 - factors affecting impact properties of materials, impact testing (AS 1544 Methods for impact tests on metals) or equivalent international standard and drop weight tear test (AS 1330-2004 Metallic materials – Drop weight tear test for ferritic steels) or equivalent international standard
- hardness testing:
 - Vickers hardness testing (AS 1817.1-2003 Metallic materials – Vickers hardness test – Test methods) or equivalent international standard
 - Brinell Hardness Testing (AS 1816.1-2007 Metallic materials Brinell hardness test – Test method) or equivalent international standard
 - Rockwell Hardness Testing (AS 1815.1-2007 Metallic materials – Rockwell hardness test – Test methods) or equivalent international standard
 - other hardness testing methods (e.g. Equotip and other rebound methods)
- principles of operation, uses and limitations of optical emission spectroscopy (OES) otherwise known as atomic emission spectroscopy (AES)
- purpose and scope of the following tests to the level required to determine the suitability or otherwise of the test but not to the level of conducting the test or interpreting the test:
 - fatigue/flex testing
 - creep testing
 - strain test and measurement
 - static shear and bend test
 - ultraviolet-visible (UV-VIS) spectrophotometry
 - infrared spectroscopy (IR)
 - gas chromatography (GC)
 - X-ray fluorescence (XRF)
 - flame photometry
 - atomic absorption spectrometry (AAS)
 - scanning electron microscopy (SEM)
- mathematics relevant to the collation and reporting of test data
- impact of chemical composition on the foundry process and product
- potential implications of the variety of adjustments that could be made in response to test results.

Assessment Conditions

- Assessors must:
 - have vocational competency in undertaking prescribed tests on foundry related materials 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. This must 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 found in VETNet -

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