



Australian Government

Assessment Requirements for MEM24020 Apply materials technology principles to non-destructive tests

Release: 1

Assessment Requirements for MEM24020 Apply materials technology principles to non-destructive tests

Modification History

Release 1: New unit.

Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- select and document an NDT strategy and techniques for a specified NDT method for at least three manufactured products to confirm integrity or detect degradation with details of methodology used and advantages and limitations of possible options and with supporting arguments for preferred NDT strategy
- assess the materials present in at least three manufactured products and relate the structure and composition of each product to its physical and mechanical properties
- report on the effects of manufacturing processes, product use, and operating conditions on the structure, integrity and physical/mechanical properties of at least two manufactured products.

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

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- requirements of all applicable industry standards, national/Australian standards, Safe Work Australia guidelines, and state/territory regulatory codes of practice/standards relevant to NDT used in job role
- principles of solidification and crystal structures in metals including:
 - classification of materials
 - structure of atoms
 - process of solidification and defects formed during solidification
 - crystal structures and modification of crystal structure
 - heat treatment processes and defects formed during heat treatment
- information contained in equilibrium diagrams representative of a range of metals including aluminium, iron, steel and common nonferrous alloys:
 - alloy systems
 - solid and liquid solubility
 - basic equilibrium diagrams for common alloys
- principles of fusion welding relevant to NDT
- defects in fusion welding
- processing and service defects

- grinding, pickling, heat treatment, fatigue, corrosion and stress corrosion cracks
- principles of casting and common defects in castings
- principles of forging and common defects in forging
- principles of fabrication of composites/plastics and common defects in composites/plastics
- principles of mechanical, tensile, impact, hardness and fatigue testing
- standard recording and reporting formats and procedures for reporting test results, job records, routine reports
- hazards, health, safety and environment requirements relevant to job role.
-

Assessment Conditions

- Assessors must:
 - have vocational competency in applying materials technology principles to NDT 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.
- There must be 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>