



Australian Government

Assessment Requirements for MEM48011 Apply basic chemical principles to metallurgy

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM406A Apply basic chemical principles to metallurgy.

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:

- writing and using chemical formulae in relevant metallurgical processes on at least two occasions
- writing and balancing chemical equations
- calculating heat of reaction
- determining the amounts of reactants consumed and/or products made using the stoichiometry of a reaction on at least two occasions.

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:

- context and industrial environments
- structure of atoms including sub-atomic particles, charge, atomic number, mass number and valency
- three states of matter in terms of shape, volume and compression
- difference between organic and inorganic compounds
- concepts of latent and sensible heat
- kinetic theory including:
 - Boyle's Law and Charles' Law
 - ideal gas equation $PV=nRT$
- molar volume of a gas
- Gay-Lussac's Law
- Avogadro's Law
- gas reaction calculations
- symbols of common elements including:
 - importance of valence in formulae and reactions
 - model of an atom including electron shells
- ionic, covalent and metallic bonding

- chemical basis of energy transformations in chemical reactions
- properties of crystalline solids
- periodic table
- acids and bases
- stoichiometry.
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Assessment Conditions

- Assessors must:
 - have vocational competency in applying basic chemical principles to metallurgy 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.
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Links

Companion Volume implementation guides are found in VETNet -

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