



Australian Government

MEM48006 Prepare and examine metallographic samples

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM401A Prepare and examine metallographic samples.

Application

This unit of competency defines the knowledge and skills required to prepare and examine a metallographic sample.

It applies where a technician will be required to examine samples as part of quality control, product development or problem solving/forensic investigation. This unit covers the preparation of relevant samples and then the microscopic and other examination of such samples.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM48004 Interpret basic binary phase diagrams

Competency Field

Metallurgy

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from work information
2. Prepare chemical etchants for use with metallographic samples	2.1 Identify the hazards of the required chemical etchants and apply hazard controls 2.2 Prepare etchant solution from bulk stocks following hazard controls and good laboratory practice

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.3 Label and store etchants to standard 2.4 Standardise and check etchants in accordance with procedures
3. Prepare sample for metallographic examination	3.1 Undertake mechanical sample preparation 3.2 Label or otherwise identify sample to procedure 3.3 Select etchant(s) appropriate to the metal and the examination 3.4 Etch and prepare metal surface to standard 3.5 Protect prepared surface
4. Undertake microscopic examination of sample	4.1 Set up microscope using appropriate fittings and magnifications 4.2 Examine and identify different metallic and non-metallic phases 4.3 Identify areas requiring further examination and/or photomicrographs
5. Prepare photomicrographs	5.1 Set up equipment and materials for photomicrograph 5.2 Adjust photomicrograph equipment, including bright and dark field illumination 5.3 Take photomicrograph and make required edits and enhancements to meet requirements 5.4 Process and record photomicrograph to procedures
6. Report result of examination	6.1 Identify reporting requirements 6.2 Make reference to relevant national and/or international standards 6.3 Prepare report to meet requirements 6.4 Circulate and file report to procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Hazards include:	• identification by standard techniques including safety data sheets (SDS) • control according to the hierarchy of control and SOPs.
Etchants include:	• all common etchants including strong acid solutions.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSATCM401A Prepare and examine metallographic samples.

Links

Companion Volume implementation guides are found in VETNet -

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