

Title	Test the physical properties of engineering metals		
Level	4	Credits	4

Purpose	People credited with this unit standard are able to prepare to test the physical properties of engineering metals, test the physical properties of engineering metals, and interpret test results.
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Classification	Mechanical Engineering > Engineering - Materials
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Available grade	Achieved
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Entry information	
Recommended skills and knowledge	Unit standards 29551, <i>Demonstrate knowledge of the strength, mechanical properties, and treatment of engineering metals</i> or demonstrate equivalent knowledge and skills.

Explanatory notes

1 References

Health and Safety at Work Act 2015 and supporting Regulations.

BS EN ISO 6508-1-:2005, *Metallic materials. Rockwell hardness test. Test method (scales A, B, C, D, E, F, G, H, K, N, T)*.

BS EN ISO 6508-2:2005, *Metallic materials. Rockwell hardness test. Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)*.

BS EN ISO 6508-3:2005, *Metallic materials. Rockwell hardness test. Calibration and reference blocks (scales A, B, C, D, E, F, G, H, K, N, T)*.

BS EN ISO 6892-1:2009, *Metallic materials. Tensile testing. Method of testing at ambient temperature*.

BS EN ISO 148-2:2008, *Metallic materials. Charpy pendulum impact test. Verification of testing machines*.

BS EN ISO 148-3:2008, *Metallic materials. Charpy pendulum impact test. Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines*.

BS EN ISO 7438:2005, *Metallic materials. Bend test*.

2 Definitions

Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the wider mechanical engineering industry sectors as examples of best practice.

Job specifications – instructions relevant to the safe completion of the specific task, such as technical specifications, assembly instructions, drawings, parts lists, standards, codes of practice, test and commissioning procedures, and verbal instructions.

Workplace procedures refer to procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements

3 Assessment information

The physical properties to be tested include – hardness, tensile, impact, bend.

Samples used for testing must include a mix of ferrous and non-ferrous metals.

Equipment used for testing must be identified in internationally recognised standards as being applicable to both the test undertaken and the type of metal sample used.

Outcomes and evidence requirements

Outcome 1

Prepare to test the physical properties of engineering metals.

Evidence requirements

- 1.1 Techniques for using metal test equipment are established for each test in accordance with internationally accepted standards such as those listed in the references.
- 1.2 Test equipment is selected and prepared in accordance with task requirements, internationally accepted standards, and certified reference materials.
- 1.3 Test equipment that is damaged, faulty, or out of calibration is identified and remedial action taken in accordance with workplace procedures and accepted industry practice.
- 1.4 Test samples are prepared in accordance with test requirements.

Outcome 2

Test the physical properties of engineering metals.

Evidence requirements

- 2.1 Tests are completed in accordance with workplace procedures and job specification.
- 2.2 Test results and method are recorded in accordance with workplace procedures and job specification.

- 2.3 Test results are verified in accordance with workplace procedures and job specification.

Outcome 3

Interpret test results.

Evidence requirements

- 3.1 Results are interpreted in accordance with internationally recognised standards.
- 3.2 Documented recommendations are made in accordance with workplace procedures and/or accepted industry practice.

Planned review date	31 December 2021
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30 June 1995	31 December 2011
Revision	2	14 April 1997	31 December 2011
Revision	3	5 January 1999	31 December 2011
Revision	4	23 May 2001	31 December 2011
Review	5	26 July 2004	31 December 2014
Review	6	17 June 2011	31 December 2017
Review	7	8 December 2016	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing

to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.