

Specification of Competency Standards
for the Testing, Inspection and Certification Industry
Unit of Competency

Functional Area - Testing Operations

Title	Perform physical and mechanical tests on steel
Code	105836L4
Range	This unit of competency (UoC) covers the abilities to carry out physical and mechanical tests on steel materials, record and analyse test data in testing laboratories.
Level	4
Credit	6 (For Reference Only)
Competency	<p>Performance Requirements</p> <ol style="list-style-type: none"> 1. Possess knowledge of physical and mechanical tests applicable to steel materials <ul style="list-style-type: none"> • Describe the physical and mechanical properties of steel materials, e.g. yield strength, ultimate tensile strength, proof load, elongation, strain and modulus. • Employ the principles of test methods for determining physical and mechanical properties of different types of steel materials, e.g. hot-rolled reinforcement steel bars, structural steel, pre-stressed steel wires, cold-drawn steel wires. • Identify the requirements on sample preparation, e.g. selection and condition of test specimens. • Identify the number of test specimens required for each type of tests. • Explain the principles and operation of equipment used for physical and mechanical tests on steel. • Specify the calibration requirement of equipment. 2. Perform physical and mechanical tests on steel materials <ul style="list-style-type: none"> • Apply appropriate test methods/standards and conditions for different types of steel materials. • Apply and operate appropriate testing equipment, e.g. universal testing machine, Charpy impact tester, bending test machine. • Carry out appropriate tests on selected steel specimen according to the requirements of relevant test methods/standards, e.g.: <ul style="list-style-type: none"> ○ tensile test and re-bend test on reinforcing steel bars, ○ tensile test on bolt and nut, ○ tensile and impact test on structural steel, ○ hardness test on metal. • Carry out required calibration checks on testing equipment and conduct validation checks on test data. • Record and analyse test data for reporting. 3. Exhibit professionalism <ul style="list-style-type: none"> • Ensure integrity and confidentiality of test data by observing the code of conduct of the laboratory. • Follow established safe work practices and use appropriate personal protective equipment.
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • carry out physical and mechanical tests on selected steel specimen by applying appropriate testing equipment and test conditions according to the requirements of test methods/standards, • record and analyse test data by verifying equipment calibration status and checking the validity of test data within the acceptable range specified in test methods/standards.
Remark	