Title	**Inspect parts using liquid penetrant inspection**		
Level	**3**	**Credits**	**10**

Purpose	This unit standard is for people seeking certification at Surface Methods level 1 (SM1) from the Certification Board for Inspection Personnel (CBIP) to meet regulatory obligations of surface methods inspection operators. People credited with this unit standard are able to: prepare for inspection of the part; inspect the part using liquid penetrant inspection; and report on the inspection.

Classification	Mechanical Engineering > Mechanical Engineering Inspection

Available grade	Achieved

Explanatory notes

1 References
Health and Safety at Work Act 2015 and supporting regulations.
ISO 9712:2012, *Non-destructive testing - Qualification and certification of NDT personnel*.

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.
Contract refers to customer instructions and the requirements of standards, codes and specifications.
Part refers to structures such as buildings and bridges, machinery, transport equipment including aircraft, and pressure equipment.
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 Range
This unit standard covers new work, modifications, and repairs.

4 Assessment information
a All on-job activities must comply with applicable workplace procedures and must be consistent with accepted industry practice.

b The inspection procedure(s) shall meet the requirements of a recognised code or standard such as the American Society for Mechanical Engineers (ASME) Section V, Art 6.
c Evidence requirements of this unit standard require near vision acuity at the level of N5 at 380 mm as outlined in ISO 9712, *Non-destructive testing - Qualification and certification of personnel*.
d Certification requirements in addition to the competencies outlined in this unit standard are available from CBIP, PO Box 8056, New Plymouth, email cbip@cbip.co.nz.

Outcomes and evidence requirements

Outcome 1

Prepare for inspection of the part.

Evidence requirements

1.1 Inspection requirements are established from supervisor and contract.

Range inspection requirements are
penetrant type – contrast, fluorescent, dual;
penetrant method – solvent removable, water washable, post emulsifiable;
developer – aqueous, non aqueous, soluble, suspendable, special.

1.2 Equipment and consumables are selected and set up for the inspection in accordance with the manufacturer's instructions.

Range materials, tools, safety equipment, ultra violet (UV) light, cleaner, cleaning materials.

1.3 Preparation of the part is carried out.

Range preparation includes – cleaning (washing, drying), verifying part condition, part identification.

Outcome 2

Inspect the part using liquid penetrant inspection.

Evidence requirements

2.1 Application of penetrant and the monitoring of dwell time are carried out.

Range application methods may include – brush, dip, spray, flow.

2.2 Removal of excess penetrant is carried out.

Range solvent wipe, water wash, hydrophilic, lipophilic.

2.3 Application of developer and monitoring of the developing time is carried out.

2.4 Defects are located by examination of the part.

Range defect types may include – relevant, non relevant, false indications.

2.5 Post inspection actions are completed and the inspection area is left ready for the next inspection.

Range post inspection activities may include but are not limited to – cleaning, marking, storage, dispatch.

Outcome 3

Report on the inspection.

Evidence requirements

3.1 Results are classified, interpreted, and documented to meet the contract requirements.

3.2 Inspection report(s) is completed to meet the contract requirements.

Planned review date	31 December 2021

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 July 1999	31 December 2018
Review	2	15 September 2016	N/A

Consent and Moderation Requirements (CMR) reference	0013

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 address if you wish to suggest changes to the content of this unit standard.