

<b>Title</b>	<b>Perform gas chromatography</b>		
<b>Level</b>	<b>6</b>	<b>Credits</b>	<b>4</b>

<b>Purpose</b>	People credited with this unit standard are able to: select gas chromatography technique; carry out gas chromatography; and analyse a sample.
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<b>Classification</b>	Science > Chemistry
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures (SOP) typically acceptable in a commercial or research laboratory.
- 2 Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243:2010 Set – *Safety in Laboratories*, available at <http://www.standards.co.nz> and <http://infostore.saiglobal.com/store>.
- 3 Legislation applicable to this unit standard includes:  
Health and Safety at Work Act 2015;  
Hazardous Substances and New Organisms Act 1996.
- 4 Knowledge underpinning the competencies in this unit standard includes but is not limited to:
  - the principles of gas chromatography including retention time, partition coefficient, column efficiency in terms of theoretical plates and the height equivalent to a theoretical plate (HETP), resolution, selectivity;
  - Kovat indices, McReynold's numbers, stationary phases, inlet systems and their applications, specialised techniques: gas sampling, headspace analysis, pyrolysis;
  - quantitative methods of analysis including – area normalisation, internal standard, external standard;
  - column types.
- 5 Glossary  
*Laboratory procedures* refer to documented systems or processes of operation, which may be found in a SOP manual, quality management system or protocol system documentation. These procedures are external and/or internal laboratory requirements governing laboratory work.

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## Outcomes and performance criteria

### Outcome 1

Select gas chromatography technique.

#### Performance criteria

- 1.1 Column is selected in accordance with the separation requirements and sample.
- Range stationary phase, capillary column.
- 1.2 Detector is selected in accordance with the requirements of the analysis.
- Range one of – flame ionisation, thermal conductivity, electron capture, alkali flame ionisation, flame photometric, mass spectrometric.
- 1.3 Injection technique is selected and justified in accordance with sample and column.
- Range flash injection, split or splitless, on column, gas sampling valve.

### Outcome 2

Carry out gas chromatography.

#### Performance criteria

- 2.1 Parameters are selected which allow separation of compounds.
- Range temperature, flow rates.
- 2.2 Any problems in the carrying out of the gas chromatography are identified and remedial action is applied.

### Outcome 3

Analyse the sample.

#### Performance criteria

- 3.1 Quantitative analysis is performed on the sample and results are documented in accordance with laboratory procedures.
- 3.2 Accurate quantitative result is achieved consistent with the expected yield for the sample.

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**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	22 December 1996	31 December 2014
Revision	2	19 February 1998	31 December 2014
Review	3	23 November 1999	31 December 2014
Review	4	18 June 2010	31 December 2022
Rollover	5	27 January 2015	31 December 2022
Rollover and Revision	6	15 June 2017	31 December 2022
Revision	7	26 October 2017	31 December 2022
Review	8	22 October 2020	31 December 2022

<b>Consent and Moderation Requirements (CMR) reference</b>	0113
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.