

Title	Demonstrate knowledge of, and synthesise, aromatic compounds		
Level	5	Credits	3

Purpose	People credited with this unit standard are able to: describe aromatic compounds; describe the mechanism of electrophilic aromatic substitution; carry out the synthesis of an aromatic compound by electrophilic substitution; predict the orientation in disubstituted aromatic compounds; and describe multi-step organic transformations.
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Classification	Science > Chemistry
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Available grade	Achieved
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Guidance Information

- 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.
- 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>.
- Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.
- 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.

Outcomes and performance criteria

Outcome 1

Describe aromatic compounds.

Performance criteria

- Names and all classifications of aromatic compounds are identified in accordance with scientific nomenclature.

1.2 Aromaticity is described in terms of the structural requirements.

Range benzene, polycyclic, benzenoid, heterocyclic.

Outcome 2

Describe the mechanism of electrophilic aromatic substitution.

Range may include – Friedel-Crafts alkylation and acylation, nitration, halogenation, sulfonation.

Performance criteria

2.1 Mechanistic pathways are described in relation to the electrophilic aromatic substitution reaction.

Outcome 3

Carry out the synthesis of an aromatic compound by electrophilic substitution.

Performance criteria

3.1 The aromatic compound is synthesised by electrophilic substitution, purified, and identified as the required product in accordance with laboratory procedures.

Outcome 4

Predict the orientation in disubstituted aromatic compounds.

Range nitration, halogenation, alkylation.

Performance criteria

4.1 Substituent groups are identified in terms of activating or deactivating.

4.2 Substituent groups are identified in terms of ortho-para or meta orientation.

Outcome 5

Describe multi-step organic transformations.

Performance criteria

5.1 The synthesis of aromatic organic compounds by two or more steps is described and justified in terms of the required product in accordance with laboratory procedures.

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

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