Achievement Standard

Subject Reference Chemistry 2.5

Title Describe the structural formulae and reactions of compounds containing selected organic functional groups

Level 2 **Credits** 4 **Assessment** External

Subfield Science

Domain Chemistry

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This achievement standard involves describing the structural formulae and reactions of compounds containing selected organic functional groups.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Describe structures and reactions of organic compounds.	• Link structure and reactivity of organic compounds.	• Discuss reactivity and structure of organic compounds.

Explanatory Notes

1 This achievement standard is derived from achievement objectives 7.1, 7.2 and 7.3 in *Chemistry in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1994, p. 23.

2 Naming of organic molecules is done according to IUPAC convention.

3 Equations should be written using either names or structural formulae.

4 In writing structural formulae, students may use either the condensed or expanded forms.

5 *Selected organic functional groups* are limited to haloalkanes, alcohol, alkene, alkyne, ester, carboxylic acid.

6 The *compounds* are limited to those containing no more than eight carbon atoms. Larger organic molecules may be used in questions involving the linking of structure and reactivity.

7 Isomerism is limited to structural and geometric (*cis-trans*) isomers.

8 Knowledge of primary, secondary, and tertiary classification of alcohols and haloalkanes is expected.

9 Reactions are limited to:
- the addition reactions of alkenes with H_2/Pt, Cl_2, Br_2, H_2O/H^+ and HCl (including identification of major and minor products on addition to asymmetric alkenes)
- the reactions of alkenes with MnO_4^-
- polymerisation of alkenes
- halogenation of alkanes (limited to monosubstitution)
- oxidation of primary alcohols to form carboxylic acids
- elimination of water from alcohols
- acid reactions of carboxylic acids
- formation of esters (may include triglycerides) from carboxylic acids and alcohols
- hydrolysis of esters (may include triglycerides).

10 Terms:
- *Describe* requires the student to identify, name, draw, give characteristics of, or an account of.
- *Discuss* requires the student to show understanding as to how or why something occurs by linking chemistry ideas/principles. It may involve students in justifying, relating, evaluating, comparing and contrasting, analysing.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against achievement standards.

2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference 0226