



# ChemStart

Unleashing the Scientist in you

# GRADE 12

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## FIRST THINGS FIRST: SAFETY

This section of the manual is the most important of all. Please take care to follow the rules carefully.

### GENERAL RULES

1. Conduct yourself in a responsible manner always with the kit.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, rather wait to ask your teacher at school or send us a message on [info@nkazisciences.co.za](mailto:info@nkazisciences.co.za).
3. Never work alone, always have someone older than you around.
4. Perform only those experiments in the kit. Unauthorized experiments are not allowed.
5. Do not eat food, drink beverages, or chew gum while conducting experiments.
6. Horseplay, practical jokes and pranks are dangerous and prohibited.
7. Be prepared for your work. Read all procedures thoroughly before starting with any experiment.
8. Always work in a well-ventilated area.
9. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times.
10. Dispose of all chemical waste properly as indicated in the manual.
11. Keep hands away from face, eyes, mouth, and body while using chemicals or lab equipment. Wash your hands with soap and water after performing all experiments.
12. Experiments must be personally monitored at all times. Do not wander around the room.

### CLOTHING

1. Protective gear has to be comfortable.
2. Any time chemicals, heat, or glassware are used, wear safety goggles. **NO EXCEPTIONS TO THIS RULE!**
3. Contact lenses may not be worn in the laboratory.
4. Dress properly during an experiment. Long hair, dangling jewellery, and loose or baggy clothing are a hazard. Shoes must completely cover the foot. No sandals to be worn when conducting experiments.

### ACCIDENTS AND INJURIES

1. If there is a spillage, wash with water.
2. If a chemical should splash in your eye(s) or on your skin, immediately flush with running water for at least 20 minutes.

### HANDLING CHEMICALS

1. All chemicals in the kit are to be considered dangerous. Avoid handling chemicals with fingers. When making an observation, keep at least 1 meter away from the reaction. Do not taste, or smell any chemicals.
2. Check the label on all chemical bottles twice before removing any of the contents. Take only as much chemical as you need.

3. Never return unused chemicals to their original container.
4. Never remove chemicals or other materials from the kit.

#### HANDLING GLASSWARE AND EQUIPMENT

1. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass.
2. Do not immerse hot glassware in cold water. The glassware may shatter.

#### HEATING SUBSTANCES

1. Do not operate a hot plate by yourself. Take care that hair, clothing, and hands are a safe distance from the hot plate at all times. Use of hot plate is only allowed in the presence of an adult.
2. Never look directly into a container that is being heated.

## Contents

### Chemicals

Acetic acid	100ml	
Cobalt chloride	2g	
Dextrose	10g	
Ethanol	50ml	
Hydrochloric acid concentrated	50ml	
Hydrogen peroxide	20ml	
Indophenol	20ml	
Iron (ii) sulphate	10g	
Isopropanol	20ml	
Methanol	20ml	
Methylated spirit	100ml	
Methylene blue	20ml	
Oxalic acid	10g	
Pentanol	15ml	
Potassium chromate	50ml	
Potassium dichromate	50ml	
Potassium iodate solution	100ml	
Potassium iodide	5g	
Potassium permanganate	10g	
Sodium bicarbonate	10g	
Sodium hydroxide	15g	
Sodium metabisulphite solution	100ml	
Sodium polyacrylate	5g	
Sodium silicate	20 ml	
Starch	10g	
Sulphur	10g	
Sulphuric acid concentrated	20ml	
Vinegar	100ml	

### Labware

Beaker-glass- 100ml	1
Beaker-plastic-100ml	2
Burner with stand	1
Conical flask-100ml	1
Glass rod	1
Gloves	2
Lighter	1
Measuring cylinder-50ml	1
Pasteur pipette	2
Rubber band	1
Safety glasses	1
Spatula	1
String	1
Test tube	3
Test tube holder	1
Test tube rack	1
Test tube-large	1
Thermometer	1
Tuning fork	1
Watch glass	2