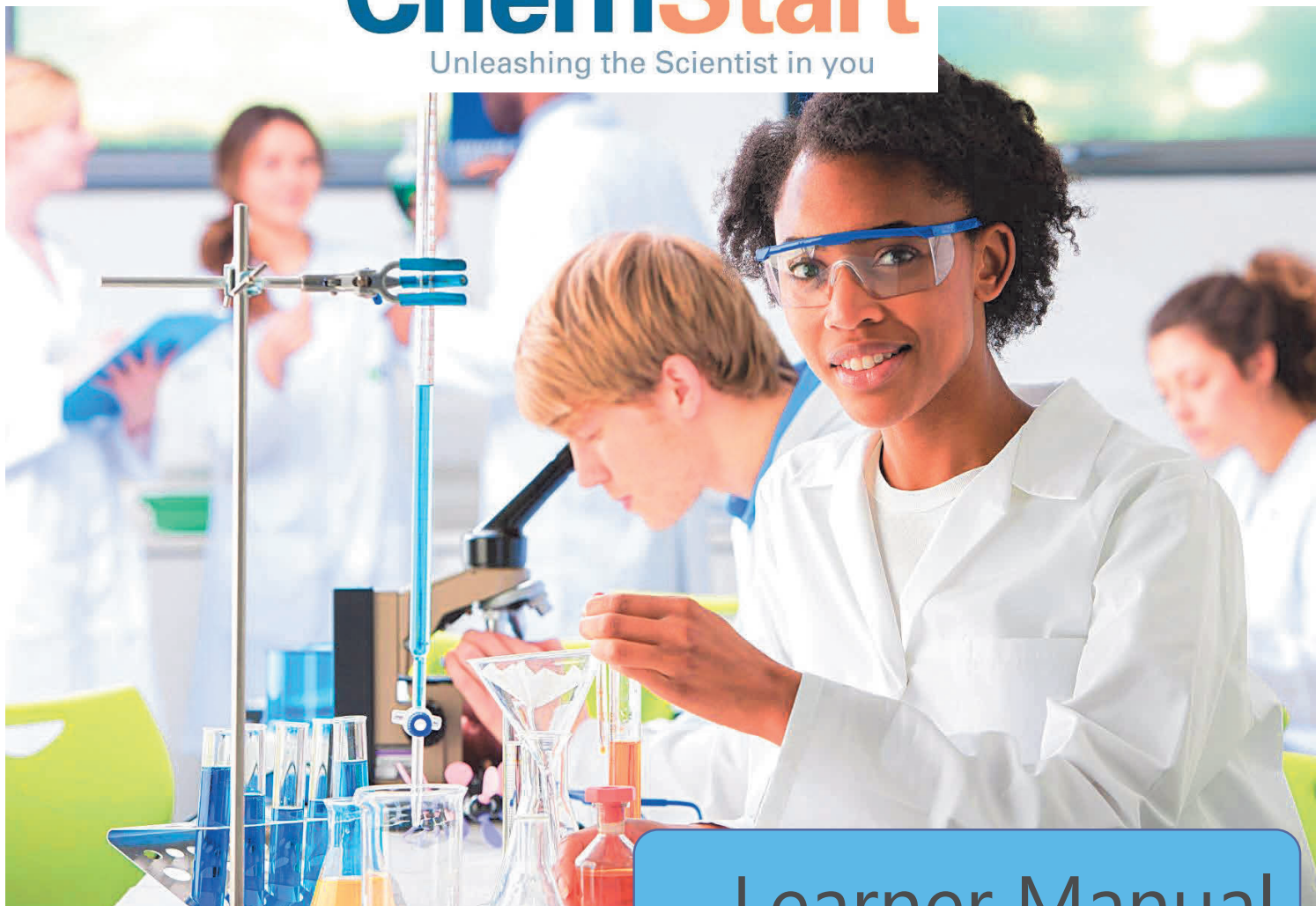


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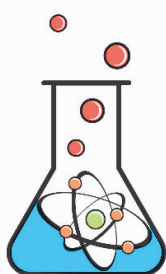


ChemStart

Unleashing the Scientist in you



Learner Manual



NKAZIMULO
APPLIED SCIENCES

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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.
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		Labware	
Acetic acid	200ml	Balloons	4
Cobalt chloride solution	50ml	Beaker-glass- 100ml	1
Dextrose	10g	Beaker-plastic-100ml	2
Ethanol	50ml	Burner with stand	1
Hydrochloric acid dilute	200ml	Conical flask-100ml	1
Hydrochloric acid conc.	20ml	Glass rod	1
Iron (ii) sulphate	10g	Gloves	2
Isopropanol	20ml	Lighter	1
Methanol	20ml	Measuring cylinder-50ml	1
Methylated spirit	200ml	Pasteur pipette	2
Methylene blue	20ml	Safety glasses	1
Oxalic acid	10g	Spatula	1
Pentanol	15ml	Test tube	3
Phenolphthalein	20ml	Test tube holder	1
Potassium chromate	50ml	Test tube rack	1
Potassium dichromate	50ml	Test tube-large	1
Potassium iodate solution	100ml	Thermometer	1
Potassium iodide	5g	Tuning fork	1
Potassium permanganate	10g	Watch glass	2
Rubber band	1		
Salicylic acid	3g		
Sodium bicarbonate	10g		
Sodium hydroxide	15g		
Sodium metabisulphite	100ml		
Sodium polyacrylate	5g		
Sodium silicate	20 ml		
Sodium thiosulphate	12g		
Starch	10g		
Sulphuric acid conc.	20ml		
Zinc powder	5g		