

Viscosity: Technical Notes

Introduction

This is a simple exercise that is designed to enable students to learn about the relationship between viscosity and temperature.

Equipment and Materials

The following list of equipment is per group of four students. Multiply by 7 for a class of 24 students (plus one set for the teacher).

- Test tubes (5). Standard 15×150 mm test tubes. It is possible to use slightly larger or smaller test tubes.
- Test tube holder (peg)
- Test tube rack
- Beakers (250mL or 500 mL)
- Measuring cylinder (10 mL)
- Thermometer (0–100°C)
- Fly wire (plastic insect screen). Ideally pre-cut to 4 cm × 4 cm squares.
- Rubber bands (5) to secure fly wire to top of test tubes
- White tile or cavity tile
- Honey

The following list of equipment is for the entire class.

- Water baths set up at the following temperatures (10°C, 20°C, 40°C, 60°C and 80°C). if water baths are not available it be possible to set up large beakers (1 L) with water at various temperatures. The exact temperature is not critical, provided that the water does not cool significantly during the lesson.

Preparation suggestions

Given the challenges of managing a viscous material such as honey, the 2 mL of honey in each test tube could be measure before class to save time.

Water baths could be set up in advance of lesson, with temperatures adjusted and managed during the lesson.

Risk Management

Hot objects and **hot liquids** can burn or scald. Take special care near hot objects and when handling hot liquids. Use test tube holders for holding hot test tubes and for pouring hot liquids. Inform the teacher if you burn yourself so that first aid can be applied.

Broken glass is a hazard. Do not handle broken glass. Tell the teacher immediately if any glass is broken so that it may be cleaned up safely.

Spilt water (or any other liquid) on the floor can be a slipping hazard and must be cleaned immediately.

Teachers should be made aware of procedures for managing first aid, broken glass and the availability water clean-up equipment.

Suppliers

The materials for this exercise are readily available

- Plastic fly wire (plastic insect screen).is available form hardware suppliers such as Bunnings.
- Honey from supermarket.
- Other equipment is common science equipment in the science prep room.

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