

Rheoscopic Fluid

for
Flow Visualization

•Non-toxic•

Shake Well Before Using

Educational Innovations, Inc.

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Educational Innovations[®]

RH-100

Rheoscopic Fluid

With rheoscopic fluid one is able to see minute flow patterns in a liquid. The effect of stirring, heating and cooling small portions of the liquid in the container results in beautiful flow patterns.

Activity #1

Pour the rheoscopic fluid into a clear, colorless container such as a beaker.

- a) How does stirring affect the flow patterns?
Stirring in a figure eight pattern is considered by some to be the most efficient method for stirring. Do you think this is true?
- b) Hold a piece of ice near the edge of the container with a small portion of it below the surface of the liquid. What do you observe?
- c) Place a small warm object such as a glass stirring rod or a metal spoon below the surface of the liquid and near the side of the container. What do you observe? Can you tell when the object becomes the same temperature as the liquid?
- d) What happens when you place drops of hot water into the container near the side?
- e) What happens when you place drops of cold water into the container near the side?
- f) What happens when you place drops of the solution into the container from various heights? Note: In this case the drops and the solution will be at the same temperature.

Activity #2

Pour the rheoscopic fluid into a flat tray with low sides. The advantage of using a clear, colorless tray is that different sheets of colored paper can be placed under it.

- a) Set a glass drinking glass into the solution, resting on the bottom of the tray. Drag a flat spatula through the liquid and notice the flow patterns around the drinking glass.
- b) Set other objects into the solution and notice the flow patterns around them.
How do the flow patterns differ around objects with sharp right-angled edges vs. more rounded edges? Around objects slightly below the surface of the liquid?
- c) Use clay to produce barrier outcroppings along the edge of the tray. How does this affect the flow patterns?
- d) Try blowing through a straw to investigate the effect of air currents.

EXPLANATION

Rheoscopic fluid consists of a suspension of flat particles which are slightly denser than water. When at rest, the particles will settle to the bottom. Shaking or stirring bring them back into suspension. Small groups of the flat particles position themselves in the stream of flowing liquid the same way. As these groups twist and turn, sometimes the flat side of the particles face us and reflect more light; sometimes the edge of the particles face us and reflect less light. This explains why we easily see the swirling patterns.

Note: Food coloring is often used to more easily see the swirling patterns.

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Material Safety Data Sheet for Rheoscopic Fluid

Section I: Educational Innovations, Inc.
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Emergency Telephone Number: (888) 912-7474 Date: 01/31/02

Section II: This product contains no hazardous ingredients.

Section III: Boiling Point n.a. Specific Gravity n.a.
Vapor Pressure n.a. Melting Point n.a.
Vapor Density n.a. Evaporation Rate n.a.
Solubility in H₂O n.a. Appearance & Odor n.a.

Section IV: This product is not flammable.

Section V: This product is not reactive.

Section VI: This product contains no toxic ingredients. As with most foreign materials, should eye contact occur, flush with plenty of water.

Section VII: In case of spills: Absorb with paper and discard.
Waste disposal: No special considerations apply.
Handling & storing: Maintain normal temperature.
Other precautions: None considered necessary.

Section VIII: Inhalation: No respiratory protection required.
Ventilation: None required.
Protective gloves: None required.
Eye protection: Wear safety glasses with chemicals.
Other protection: None required.
Hygienic practices: None required.

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