PACKAGE DATA SHEET

Uniform Latex Particles
June 20, 1990

DESCRIPTION

Uniform Latex is produced by polymerizing styrene, vinyliouene, or butadiene in various combinations, producing small diameter spherical particles with low standard deviations. The sizes produced range from 0.03 to 3.12 micrometers (µm). These are packaged at 10% solids by weight in deionized water with trace amounts of surfactants. Their sizes were determined either by electron microscope, or, for particles above 0.5 microns, by light microscope and/or electrical resistance type particle size analyzer. The polymer density is 1.05 g/ml, and the index of refraction is 1.59 @ 590 nm.

HANDLING SUGGESTIONS

The particles can be easily suspended by gently rolling or swirling the bottle, followed by a brief (30 second) immersion in a low power ultrasonic bath. The contents should be sampled immediately using the dropper tip or a microliter syringe. Shaking the bottles is not recommended, as the product may foam.

They can be resuspended in other media after removing the packaging fluid by sedimentation and decantation. Gentle centrifugation may be necessary for particles less than 1µm in diameter. If necessary, dispersion can be aided by the addition of a trace amount of ethyl alcohol or a nonionic dispersing agent. The ionic concentration of the solution should be kept as low as possible to prevent agglutination. For some applications, such as protein adsorption, cleaning the latex with dialysis or ion-exchange may be desirable. More information is available from Duke Scientific Corporation.

The particles can be dried by "spray drying" from a dilute suspension, but filter drying is not recommended as irreversible agglomeration may occur. Also, their shape may become deformed when they are dried.

LIMITED WARRANTY

These products are for laboratory use only by trained scientific personnel; they are not intended for food, drug, cosmetic or medical diagnostic use except in medical research applications. We neither guarantee our data nor warrant our products for specific uses. Our warranty is limited to replacement of defective or unsuitable merchandise or refund of purchase price if returns are made with our authorization within sixty days of the purchase date.

REORDER DUKE SCIENTIFIC CORPORATION
CATALOG NUMBER

5D24A

PHONE: 415-962-1100
MATERIAL SAFETY DATA SHEET

I. Product Identification
PRODUCT: Polymer Latex Suspensions
CONTENTS: Aqueous Suspensions of Polymer Microspheres.
The microspheres are made of: Polystyrene, Polystyrene Divinylbenzene, Polyvinyltoluene, Styrene-Butadiene or Carboxylated Polystyrene.

II. Hazardous Ingredients

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>PERCENT</th>
<th>HAZARD DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Values:</td>
<td></td>
<td></td>
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<tr>
<td>solid plastic spheres</td>
<td>10</td>
<td>non-hazardous C.A.S.# 25038-60-2</td>
</tr>
<tr>
<td>water</td>
<td>90</td>
<td>non-hazardous C.A.S.# 7732-18-5</td>
</tr>
<tr>
<td>surfactant</td>
<td>trace</td>
<td>proprietary, on file</td>
</tr>
</tbody>
</table>

III. Physical Data
Boiling Point: 100°C
Vapor Density: NA
Vapor Pressure: NA
Volatiles, percent by volume: 90% as water
Water Solubility: Material is a suspension of insoluble plastic spheres in water.
Specific Gravity: 1.0-1.05
Molecular Weight: varies
Appearance: Milky white to colorless liquid

IV. Health Hazard Data
EFFECTS OF EXPOSURE:
- **Eyes:** Possible minor irritation.
- **Skin:** Non-irritating, except for prolonged and repeated exposure.
- **Ingestion:** Possible minor gastric irritation.
- **Inhalation:** No known adverse effects, but respiration of fine particles should be avoided as a general principal.

FIRST AID:
- **Eye Contact:** Wash thoroughly with water. If irritation persists, consult a physician and stain for corneal abrasion.
- **Skin Contact:** Wash thoroughly with soap and water.
- **Inhalation:** Remove to clean air. Consult a physician if irritation persists.
- **Ingestion:** For large volumes, induce vomiting and consult physician.
V. Fire and Explosion Hazard Information

The suspensions are non-flammable.
For dried material, use CO₂, water or dry chemical extinguisher.
Combustion can produce noxious gases. Use suitable breathing equipment.

VI. Reactivity Data

STABILITY: The suspensions are chemically stable and no polymerizations will occur. They are incompatible with highly ionic solutions as these will cause the particles to flocculate.
DECOMPOSITION PRODUCTS: Combustion of dried material may produce carbon monoxide and other hazardous gases.

VII. Storage and Handling Precautions

AVOID CREATING, INGESTING OR INHALING DUSTS OR AEROSOLS OF FINE PARTICLES.
Store between 4 and 25°C. DO NOT FREEZE. Keep lightly sealed to prevent contamination. Avoid damaging or puncturing containers.
For instrumental analysis only: do not disperse into the workplace.

VIII. Special Protection Information

RESPIRATORY PROTECTION: None required under normal usage. Filtered respirator is recommended for aerosol or dust production.
VENTILATION: Normal ventilation is sufficient for most applications.
GLOVES: Recommended
EYE PROTECTION: Highly recommended
PROTECTIVE CLOTHING: Recommended

IX. Spill, Leak and Disposal Procedures

SPILLS: AVOID CREATING, INGESTING OR INHALING DUSTS OR AEROSOLS. Wipe or wash up the material.
Caution: surfaces covered with dried microspheres may become slippery.
DISPOSAL: Small volumes (1 liter or less) may be disposed of in laboratory sinks and drains. Flush with water.
Material may clog drains in large quantities. Bury large amounts of dried material in approved landfill.

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Ellen B. Layendecker, Operations Manager