

Experimental Procedure

In this year's science course you will conduct experiments and other lab activities . Experiments are used to answer questions about the world around you . Lab experiments should be organized as follows :

- Purpose-** The purpose should answer the questions : Why is the experiment being done? What question do you hope to answer?
- Hypothesis-** The hypothesis is a written statement about what you think will happen in the experiment based on your past experiences.
- Materials-** This is a list of the materials needed for the experiment.
- Method-** This section deals with the steps that must be followed in order to properly complete the experiment.
- Observations-** In this section a written description of what happens in the experiment is included. Questions to be answered may deal with the following: What happened? What did you see, hear or smell? What changes occurred? How do you know these changes occurred? Also this section usually deals with numerical results recorded either in chart or table form. A diagram is sometimes included to show all the equipment.
- Conclusions-** An answer is written for the question posed in the purpose. This answer is based on the results of the experiment. An evaluation of your hypothesis is also written here. Finally, explain why your results turned out the way they did.

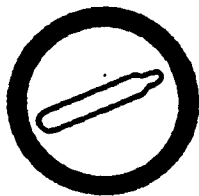
Applications - How the findings in your lab could be used in the real world.

Lab Safety Regulations

These regulations **MUST** be kept in your notebook at all times!

1. Be sure you are aware of the locations for lab safety devices: goggles, fire blanket, eye wash station and fire extinguisher(s).
2. If you have long hair, be sure to tie it back when working with a burner or other open flame. Pipe cleaners, hair nets, twist ties, rubber bands, bobby pins, or string may be used for this purpose.
3. Do NOT mix chemicals or do unassigned experiments without the teacher's approval. The activities in your science course have been tested and are safe if the directions are followed.
4. Do NOT use chemicals from unlabeled containers.
5. When helping yourself to chemicals, only take approximate amounts as called for in your experiment. Use a spatula, spoon or wooden split to remove solids. NEVER return unused chemicals and solutions to the stock bottles. Dispose of unused chemicals and solutions according to directions given in your experiment or as directed by your teacher.
6. Do NOT taste chemicals or bring them into contact with your eyes, nose or mouth.
7. Always wear safety goggles when the activity calls for them.
8. Clean up spilled liquid immediately. Use paper towel soaked in water or the special absorbent material available in the lab. Dispose of these towels as directed by the teacher.
9. When heating a liquid in a test tube or flask always point the open end away from yourself and others. Also, NEVER heat a closed container.
10. Discard wastes in special containers when instructed to do so by your teacher or by the directions in your lab procedures.
11. Notify your teacher immediately of any accident (no matter how small), chemical spill or equipment breakdown.
12. Unless otherwise directed, heat liquids and solids only when they are in test tubes, beakers, evaporating dishes, or crucibles. ABSOLUTELY NEVER heat a graduated cylinder, buret, dropper or with or without a liquid or solid inside.
13. In case of fire, call the teacher immediately.

WHMIS SYMBOLS



Class A

**COMPRESSED
GASES**



Division 1

HEALTH

Class D - Division 1
Materials Causing
immediate and serious
effects

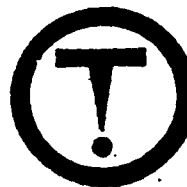


Class B

FLAMMABILITY

Flammable and
Combustible
Materials

- Class B - Division 1
Flammable Gas
- Class B - Division 2
Flammable Liquids
- Class B - Division 3
Combustible Liquids
- Class B - Division 4
Flammable Solids
- Class B - Division 5
Flammable Aerosols
- Class B - Division 6
Reactive Flammable
Materials



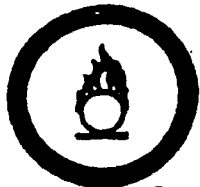
Division 2

Class D - Division 2
Materials causing
other toxic effects



Division 3

Class D - Division 3
Biohazardous
infectious material



Class C

OXIDIZERS



Class F

REACTIVITY

Dangerously Reactive
Materials



Class E

**CORROSIVE
MATERIAL**

Material Safety Data Sheet

Section 1: Company and Product Identification

Scholar[™]
Chemistry

Manufactured by:
Columbus Chemical Industries, Inc.
14035 Tumbler Rd.
Columbus, WI 53025
TEL: (800) 622-2140

(866) 260-0501

Product Name Bromothymol Blue Solution

Product No. 9447007

CAS 34722-90-2

Section 2: Hazardous Ingredients

Product Name

1) Bromothymol blue, sodium salt

2) Water (Non-hazardous)

| CAS | Conc (%) | PIN |
|------------|----------|-----|
| 34722-90-2 | 0.04 | N/A |
| 7732-18-5 | 99.96 | N/A |

Material Uses Not available.

Synonyms Not available.

Formula $C_{27}H_{27}Br_2O_5SNa$

| 24 HOUR EMERGENCY ASSISTANCE CHEMTREC 800-424-9300 | | |
|---|--------------|---|
| HAZARD RATING | | |
| 4- EXTREME | HEALTH | 1 |
| 3- SEVERE | | |
| 2- MODERATE | FLAMMABILITY | 0 |
| 1- SLIGHT | | |
| 0- MINIMAL | REACTIVITY | 0 |

For Exposure Limits (TLV, PEL), LD50 and LC50 see section 5 of this document.

* Chemical subject to the reporting of SARA Title III.

Section 3: Physical Data

| | | | |
|-------------------------------------|----------------|---|--------------------|
| Appearance | Liquid. | Odor Threshold | Not available. |
| Color | Blue. | Vapor Pressure | Not available. |
| Odor | Odorless. | Evaporation Rate (Reference solvent) | Not available. |
| Specific Gravity (Water = 1) | 1 (Water = 1) | Vapor Density (Air = 1) | Not available. |
| Melting Point | 0°C (32°F) | Percent Volatile by Volume | 100% (v/v). |
| Boiling Point | 100°C (212°F) | pH (1% water soln) | Not available. |
| Water/Oil Dist. Coeff. | Not available. | Solubility | Miscible in water. |

Section 4: Fire and Explosion Hazard Data

| | | | |
|--|-----------------|---------------------------|-----------------|
| Flash Point (Methods) | Not applicable. | Autoignition Temp. | Not applicable. |
| Flammable Limits in Air by Volume | Not applicable. | | |
| Flammability | Not applicable. | | |

Explosion Hazard Not available.

Haz. Comb. Prod. Toxic fumes of oxides of sulfur may be produced in fire.

Means of Extinction Use extinguishing media suitable for surrounding materials.

Special Fire Fighting Procedures

Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Unusual Fire and Explosion Hazards

Not available.

Section 5: Health Hazard Data

Exposure Limits (P.E.L., TLV, etc.) Not available.

Acute Effects Slightly hazardous in case of eye contact (irritant).

Routes of Entry Not available.

LD50/LC50 LD50: Not available.
LC50: Not available.

Effects of Overexposure

Repeated or prolonged exposure is not known to aggravate medical condition.

Emergency and First Aid Procedures

SKIN: Wash contaminated skin with soap and water. **EYES:** Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention. **INHALATION:** Move exposed person to fresh air. If irritation persists, get medical attention. **INGESTION:** If affected person is conscious, give plenty of water to drink. Induce vomiting by touching the back of throat with fingers. Seek medical attention.

Section 6: Reactivity Data

| | | | |
|---------------------------|---|----------------------------------|-----------------|
| Stability | The product is stable. | Instability Temp. | Not available. |
| Incompatibility | Reactive with reducing agents, alkalis. Slightly reactive to reactive with oxidizing agents. | | |
| Degradation Prod. | These products are carbon oxides (CO, CO ₂) and water, sulfur oxides (SO ₂ , SO ₃), halogenated compounds. Some metallic oxides. | Hazardous polymerization? | Will not occur. |
| Materials to Avoid | Not available. | | |

Section 7: Spill or Leak Procedures

| | |
|-----------------|--|
| Spill | Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements. |
| Disposal | Waste must be disposed of in accordance with federal, state and local environmental control regulations. |

Section 8: Protection Equipment Information

| | |
|-----------------------------|---|
| Equipment | Safety glasses. Lab coat. |
| Engineering Controls | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. |

Section 9: Other Information

Special Precautions Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Follow all fire fighting procedures (Section 4).

Read label on container before using. Do not wear contact lenses when working with chemicals.

Verified by S. Quandt Effective Date Printed 6/11/2002

For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

Information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to the other information gathered by them and must make independent determination of suitability and completeness of information from all sources to ensure proper use of the product.



ALDON CORPORATION

MATERIAL SAFETY DATA SHEET

1533 W. Henrietta Rd.
Avon, New York 14414
(716) 226-6177

MSDS No. PP 420
Effective Date April 15, 1999

SECTION I NAME 24 HOUR EMERGENCY ASSISTANCE

| | | | | |
|--------------------------|--------------------------------|--|-------------------|---|
| Product | POTASSIUM CARBONATE, ANHYDROUS | CHEMTREC 800-424-9300 Day 716-226-6177 NFPA HAZARD RATING LEAST SLIGHT MODERATE HIGH EXTREME 0 1 2 3 4 HMIS* | Health | 2 |
| Chemical Synonyms | Potash | | Fire | 0 |
| Formula | K ₂ CO ₃ | | Reactivity | 1 |
| Unit Size | up to 2.5 Kg. | | | |
| C.A.S. No. | 584-08-7 | | | |

SECTION II INGREDIENTS OF MIXTURES

| Principal Component(s) | % | TLV Units |
|---|------|-------------------|
| Potassium Carbonate | 100% | None established. |
| WARNING! IRRITANT. HARMFUL IF SWALLOWED. | | |

SECTION III PHYSICAL DATA

| | | | |
|-------------------------------|--|--|--------------------|
| Melting Point (°F) | 891°C (1635°F) | Specific Gravity (H₂O = 1) | 2.428 at 20°C |
| Boiling Point (°F) | Decomposes. | Percent Volatile by Volume (%) | Non-volatile (NA). |
| Vapor Pressure (mm Hg) | Negligible as solid. | Evaporation Rate (n-Butyl Ac. = 1) | Non-volatile (NA). |
| Vapor Density (Air=1) | Data not listed. | | |
| Solubility in Water | 100 grams per 100 mL. water at 20°C. | | |
| Appearance & Odor | White, hygroscopic, granular or translucent powder; no odor. | | |

SECTION IV FIRE AND EXPLOSION HAZARD DATA

| | | | | | |
|----------------------------------|---|--|----|-------|-------|
| Flash Point (Method Used) | Non-flammable (NA). | Flammable Limits in Air % by Volume | NA | Lower | Upper |
| Extinguisher Media | None needed. Material is inherent fire retardant. | | | | |

SPECIAL FIREFIGHTING PROCEDURES

Its presence in a fire does not hinder the use of any standard extinguishing media. In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

No known hazards. Note decomposition beginning temperature, Section III and decomposition products, Section VI. Can react vigorously with acids and acid fumes.

D.O.T. **NON-REGULATED.**

Approved by U.S. Department of Labor "essentially similar" to form OSHA-20

SECTION V HEALTH HAZARD DATA PP 420

Threshold Limited Value None established. (ACGIH 1992-93). RTECS No. TS7750000
Toxicity data: Oral (rat) LD50: 1870 mg/kg. Rated - slightly toxic.

Effects of Overexposure **TARGET ORGANS AFFECTED:** Respiratory tract/Gastrointestinal tract, lungs. **INHALATION:** High dust concentrations may cause upper respiratory tract irritation. **EYES:** Contact with the powder causes eye irritation or burns. **SKIN:** Prolonged or repeated skin contact causes skin irritation or burns. **INGESTION:** May be severely irritating to mucous membranes, mouth, throat, esophagus and stomach.

Emergency and First Aid Procedures **EYES:** Flush thoroughly with water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention. **SKIN:** Flush thoroughly with water, then wash with mild soap and water. **INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. **INGESTION:** If swallowed, do NOT induce vomiting. If conscious, give one or two glasses of water or milk and call a physician. Never give anything by mouth to an unconscious person.

SECTION VI REACTIVITY DATA

| | | | | |
|---|--|---|----------------------------|---|
| Stability | Unstable | | Conditions to Avoid | Excessive temperature and heat. Acids and acid fumes. |
| | Stable | X | | |
| Incompatibility (Materials to Avoid) | Aluminum, Fluorine, Phosphorus pentoxide. Acids cause decomposition liberating gaseous carbon dioxide. Contact with lime dust can cause formation of caustic Potash. | | | |

Hazardous Decomposition Products Carbon dioxide (CO₂).

| | |
|---------------------------------|----------------------------|
| Hazardous Polymerization | Conditions to Avoid |
| May Occur | Will Not Occur |
| | X |
| | Not applicable. |

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled Sweep up and place in a suitable container for proper disposal. Wash spill area with water.

Waste Disposal Method Discharge, treatment, or disposal may be subject to Federal, State or Local laws. These disposal guidelines are intended for the disposal of catalog-size quantities only.
Dispose of in accordance with federal, state and local regulations, or contract with a licensed waste disposal service.

SECTION VIII SPECIAL PROTECTION INFORMATION

| | | | | |
|--|---|---------------------|-----------------------|--------------------------|
| Respiration Protection (Specify Type) | None required in normal handling; under extreme dusting conditions a standard particulate NIOSH/MSHA respirator is desirable or work in a ventilation hood. | | | |
| Ventilation | Local Exhaust | Recommended. | Special | No. |
| | Mechanical (General) | Recommended. | Other | No. |
| Protective Gloves | Rubber. | | Eye Protection | Chemical safety glasses. |
| Other Protective Equipment | Goggles, smock, apron, eye wash station, proper gloves, ventilation hood. | | | |

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling & Storing Store in a cool, dry place away from acid or acid fumes and lime dust. Wash thoroughly after handling.
Keep container tightly closed when not in use.

Other Precautions Read label on container before using. Do not wear contact lenses when working with chemicals.
Avoid breathing dust. Avoid contact with eyes and skin. Use with adequate ventilation. Remove and wash contaminated clothing.

For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

| | | | |
|-----------------------|---------------------|---------------------------------|---------------------------------------|
| Revision No. 6 | Date 4/15/99 | Approved Michael Raszeja | Chemical Safety Coordinator MR |
|-----------------------|---------------------|---------------------------------|---------------------------------------|

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. * Hazardous Materials Industrial Standards. Printed on recycled paper.