Brenntag Canada Inc.

BRENNTAG

MATERIAL SAFETY DATA SHEET

SILICA GEL INDICATING (BLUE), SOLID

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Brenntag Canada Inc.
43 Jutland Road.
Toronto, Ontario
M8Z 2G6
(416) 259-8231

WHMIS Number: 00061218
Index: HCI0059/05C
Effective Date: 2005 July 05
Date of Revision: 2005 July 05
Website: http://www.brenntag.ca

EMERGENCY TELEPHONE NUMBERS (FOR EMERGENCIES INVOLVING CHEMICAL SPILLS OR RELEASE)

Toronto, ON (416) 226-6117	Montreal, QC (514) 861-1211	Winnipeg, MB (204) 943-8827
Edmonton, AB (780) 424-1754	Calgary, AB (403) 263-8660	Vancouver, BC (604) 685-5036

PRODUCT IDENTIFICATION

Product Name: Silica Gel Indicating (Blue), Solid.
Chemical Name: Synthetic Amorphous Silica.
Synonyms: Sorbead Blue; Sorbead Blue Plus; Tel-Tale indicating Gel; Davison Blue Indicationg Gel; Silica Gel, Grade(s): 42, 43, 44, 47, 48 and 49; Amorphous Silicon Dioxide; Silica Acid; Sorbead Gel (Sorbead Blue).
Chemical Family: Silica Gel.
Molecular Formula: $SiO_2.xH_2O+CoCl_2$.
Product Use: Adsorbent / Desiccant. Drying agent. This product is impregnated with Cobalt Chloride to act as a moisture indicator by changing from a deep, lustrous blue to pink to very pale blue as a function of the amount of moisture absorbed. This product is reusable and will change back to deep blue when reactivated at 125 to 160 Degrees Celsius. (3)
CAS #: See Section 3, "Composition, Information on Ingredients".
WHMIS Classification / Symbol: D-2A: Very Toxic (Carcinogenic) (Cobalt Chloride).

READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Harmful if inhaled or swallowed. Dust is irritating to respiratory tract. Suspect cancer hazard. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases.

POTENTIAL HEALTH EFFECTS

. Inhalation: Product may be mildly irritating to the nose, throat and respiratory tract and may cause coughing and sneezing. Excessive contact may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. See "Other Health Effects" Section.

. Skin Contact: This product may cause irritation due to abrasive action. Contact may cause drying of the skin due to absorption of moisture and oils. May cause defatting, drying and cracking of the skin.

. Skin Absorption: Not applicable.

. Eye Contact: This product may cause irritation, redness and possible damage due to abrasiveness. Excessive contact may cause drying of mucous membranes of the eyes due to absorption of moisture and oils.

. Ingestion: This product may cause mild gastrointestinal discomfort. Ingestion of large amounts may cause intestinal obstruction. Ingestion of very high levels may cause diarrhea, nausea and vomiting.

Other Health Effects: Effects (irritancy) on the skin and eyes may be delayed. Strict adherence to first aid measures following any exposure is essential.

May cause shortness of breath, lung damage, pneumoconiosis, damage to red blood cells, internal bleeding, thyroid effects and cardiovascular effects. Prolonged and repeated exposure may cause liver damage and kidney damage. Liver damage is characterized by the loss of appetite, jaundice (yellowish skin colour), and occasional pain in the upper left-hand side of the abdomen. Signs and symptoms of kidney damage generally progress from oliguria, to blood in the urine, to total renal failure. Pneumoconiosis is the deposition of dust in the lungs and the tissue's reaction to its presence. When exposure to the dust is severe or prolonged, the lungs' defenses are overwhelmed.

Cobalt Chloride: Occupational exposure to cobalt-containing dusts can cause fibrotic changes in the lung and can precipitate asthma. Chronic pulmonary disease has been reported in the cemented tungsten carbide industry where cobalt is used. This effect has not been reported in workers refining or using cobalt metal, cobalt oxide and other compounds of cobalt.

3. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

Hazardous Ingredients	CAS No.	ACGIH TLV	%
Cobalt Chloride	007646-79-9	0.02 mg/M3 as Co *A3	0.1 - 1.0

A3 = Animal Carcinogen (ACGIH-A3).

Non-Hazardous Ingredients	CAS No.	ACGIH TLV	%
Synthetic Silica	007631-86-9	Not Listed.	95 - 100
or			
Silica	001327-36-2	Not Listed.	95 - 100

4. FIRST AID MEASURES

FIRST AID PROCEDURES

. Inhalation: If respiratory problems arise, move the victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.

. Skin Contact: Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.

. Eye Contact: Immediately flush eyes thoroughly for 5 minutes with running water. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention.

. Ingestion: Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention IMMEDIATELY.

Note to Physicians: Treat symptomatically. Medical conditions that may be aggravated by exposure to this product include diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flammability Class (WHMIS): Not regulated.
Flash Point (TCC, Deg. Celsius): Not applicable.
Autoignition Temperature (Deg. Celsius): Not applicable.
Flammability Limits in Air (%): LEL: Not applicable. UEL: Not applicable.

Hazardous Combustion Products: Thermal decomposition products are toxic and may include hydrogen chloride, oxides of silicon and cobalt.

Unusual Fire or Explosion Hazards: Spilled material may cause floors and contact surfaces to become slippery.

Sensitivity to Mechanical Impact: Not expected to be sensitive to mechanical impact.
Rate of Burning: Not available.
Explosive Power: Not available.
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge.

EXTINGUISHING MEDIA

Fire Extinguishing Media: Foam. Dry Chemical, Carbon dioxide or water spray. Use media appropriate for surrounding fire and/or materials.

FIRE FIGHTING INSTRUCTIONS

Instructions to the Fire Fighters: Fire-exposed containers should be kept cool by spraying with water to reduce pressure. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Wear respirator, protective clothing and gloves. Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination. Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment. Replace damaged containers immediately to avoid loss of material and contamination of surrounding atmosphere. Collect product for recovery or disposal. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING

This product is impregnated with Cobalt Chloride to act as a moisture indicator by changing from a deep, lustrous blue to pink to very pale blue as a function of the amount of moisture absorbed. This product is reusable and will change back to deep blue when reactivated at 125 to 160 Degrees Celsius. (3)

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. When

pouring into a container of flammable liquid, ground both containers electrically to prevent a static electric spark. Clean up immediately to eliminate slipping hazard.

Ventilation Requirements: See Section 8, "Engineering Controls".

Other Precautions: Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (Deg Celsius): See below.
Ventilation Requirements: General exhaust is acceptable.

Storage Requirements: Store in a cool, well-ventilated area. Keep containers closed. Avoid moisture contamination. Protect from direct sunlight. Protect against physical damage.

Special Materials to be Used for Packaging or Containers: Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls: Local exhaust ventilation required. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.

Skin Protection: Gloves and protective clothing made from cotton, canvas, rubber or plastic should be impervious under conditions of use. Prior to use, user should confirm impermeability. Discard contaminated gloves.

Respiratory Protection: No specific guidelines available. A NIOSH/MSHA-approved air-purifying respirator equipped with dust, mist, fume cartridges for concentrations up to 0.2 mg/M3 Cobalt Chloride or 100 mg/M3 particulate. An air-supplied respirator if concentrations are higher or unknown.

Immediately Dangerous to Life and Health (IDLH) value: 20 mg/M3 As For Cobalt. The purpose of establishing an IDLH value is to ensure that the worker can escape from a given contaminated environment in the event of failure of the most protective respiratory equipment. In the event of failure of respiratory protective equipment, every effort should be made to exit immediately. (4)

Other Personal Protective Equipment: Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

	ACGIH TLV		OSHA PEL		NIOSH REL	
	(STEL)	(TWA)	(STEL)	(TWA)	(STEL)	
Cobalt Chloride	----	0.1 mg/M3 as Co	----	0.05 mg/M3 as Co	----	

Recommended Exposure Limit: Particulate Not Otherwise Classified

ACGIH	OSHA
10 mg/M3 - Inhalable particulate	50 mppcf* or 15 mg/M3 - Total Dust
3 mg/M3 - Respirable particulate.	15 mppcf* or 5 mg/M3 - Respirable Fraction

* mppcf = million particles per cubic foot

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State: Solid.
Appearance and Odour: Blue or pink beads. Odourless.
Odour Threshold (ppm): Not available.
Boiling Range (Deg Celsius): Not applicable.
Melting/Freezing Point (Deg Celsius): Above 1,000.
Vapour Pressure (mm Hg at 20 Deg. Celsius): Not applicable.
Vapour Density (Air = 1.0): Not applicable.
Relative Density (g/cc): Not available.
Bulk Density: 672 to 800 Kg/M3.
Viscosity: Not applicable.
Evaporation Rate (Butyl Acetate = 1.0): Not applicable.
Solubility: Not soluble in water.
% Volatile by Volume: Not available.
pH: 4.5 to 6.5 at 20 Degrees Celsius. (3)
Coefficient of Water/Oil Distribution: Not applicable.
Volatile Organic Compounds (VOC): Not applicable.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions: Stable.
Under Fire Conditions: Not flammable.
Hazardous Polymerization: Will not occur.

Conditions to Avoid: High temperatures, sparks, open flames and all other sources of ignition. Keep tightly closed to protect quality. Sweep up immediately to eliminate slipping hazard.

Materials to Avoid: Strong oxidizers. Violently reactive with: Hydrogen Fluoride. Silica will dissolve in hydrofluoric acid to produce a corrosive gas, silicon tetrafluoride.

Decomposition or Combustion Products: Thermal decomposition products are toxic and may include hydrogen chloride, oxides of silicon and cobalt.

11. TOXICOLOGICAL INFORMATION

Toxicological Data: None established for this product.

Silicon Dioxide (Amorphous)	LD50 (Oral, Rat)	= 3,160 - Above 10,000 mg/Kg (3)
	LC50 (Inhal'n, Rat, 4h)	= Above 0.139 mg/L (3)
Silica	Meaningful toxicological test data could not be found for this product.	
Cobalt Chloride	LD50 (Oral, Rat)	= 80 mg/Kg (1)
	LD50 (Oral, Mouse)	= 80 mg/Kg (1)

Carcinogenicity Data: Cobalt Chloride is classified as a suspected carcinogen by IARC (Group-2B). See "Other Studies Relevant to Material".

Reproductive Data: No adverse reproductive effects are anticipated.
Mutagenicity Data: No adverse mutagenic effects are anticipated.
Teratogenicity Data: No adverse teratogenic effects are anticipated.

Respiratory / Skin Sensitization Data: None known.
Synergistic Materials: None known.

Other Studies Relevant to Material: Cobalt Chloride: Cobalt is classified as a confirmed animal carcinogen and suspected human carcinogen by MAK (Federal Republic of Germany).

Application of Cobalt Chloride to rabbit cornea after removal of the outer layer caused cloudiness and redness. Systemic poisoning of rabbits and rats by Cobalt Chloride caused opacity of the lens, oedema (fluid on the retina) and optic nerve damage. Rats fed 0.15 mg/Kg of Cobalt Chloride in food had impaired ability to concentrate iodine in the thyroid. (4) Rabbits inhaled up to 1.3 mg/M3 Cobalt Chloride (0.6 mg/M3 as Co) for 6 hours/day, 5 days/week for 4 to 6 weeks. No gross abnormalities were observed. Microscopic examination revealed cell proliferation (hyperplasia). (4)

Synthetic Silica: An epidemiological study was conducted which included 165 precipitated silica workers who had been exposed an average time span of 8.6 years. Of these 165 workers, 44 had been exposed for an average of 18 years. No adverse effects were noted in complete medical examinations (including chest roentgenograms) of these workers. Pulmonary function decrements were correlated only with smoking and age but not with the degree or duration of dust exposures. (3)

Laboratory studies have also been conducted in small animals via inhalation to levels of precipitated silica dust of up to 126 mg/M3 for periods from six months to two years. Although precipitated silica was temporarily deposited in the animals' lungs, most of the deposited material was cleared soon after the dust exposure ended. (3)

12. ECOLOGICAL INFORMATION

Ecotoxicity: May be harmful to aquatic life. May cause long-term adverse effects in the aquatic environment.

Synthetic Silica:
96-hour LC50 (Brachydanio Rerio) = Above 10,000 mg/L (3)
24-hour EC50 (Daphnia magna) = Above 1,000 mg/L (3)

Environmental Fate: Not available. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals: Not required.

Waste Disposal Methods: This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.

Safe Handling of Residues: See "Disposal of Packaging".

Disposal of Packaging: Recycling is encouraged. Empty containers retain product residue and can be dangerous. Treat package in the same manner as the product. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility or waste incineration facility in accordance with applicable local, provincial and federal regulations.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT / U.S. DOT CLASSIFICATION: Not regulated.

15. REGULATORY INFORMATION

CANADA
CEPA - NSNR: All constituents of this product are included on the DSL.
CEPA - NPRI: Cobalt (and its compounds).
Controlled Products Regulations Classification (WHMIS): D-2A: Very Toxic (Carcinogenic).

USA
Environmental Protection Act: All constituents of this product are included on the TSCA inventory.
OSHA Hazard Communication (29CFR 1910.1200) Classification: Carcinogenic.

HMIS: 2 Health, 0 Fire, 0 Reactivity. (3)

INTERNATIONAL: All components are on the following inventories: EINECS (European Inventory of Existing Commercial Chemical Substances), ACOIN (Australia), MITI (Japan) and Korea.

16. OTHER INFORMATION

ADDITIONAL INFORMATION AND SOURCES USED

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheet(s).
4. "CHEMINFO", through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 2004, American Conference of Governmental Industrial Hygienists, Cincinnati, 2004.
6. Regulatory Affairs Group, Brenntag Canada Inc.

To obtain revised copies of this or other Material Safety Data Sheets, contact your nearest Brenntag Canada Regional office.

British Columbia: 20333-102B Avenue, Langley, BC, V1M 3H1
Phone: (604) 513-9009 Facsimile: (604) 513-9010

Alberta: 6628 - 45 th. Street, Leduc, AB, T9E 7C9
Phone: (780) 986-4544 Facsimile: (780) 986-1070

Manitoba: 681 Plinquet Street, Winnipeg, MB, R2J 2X2
Phone: (204) 233-3416 Facsimile: (204) 233-7005

Ontario: 43 Jutland Road, Toronto, ON, M8Z 2G6
Phone: (416) 259-8231 Facsimile: (416) 259-6175

Quebec: 2900 Jean Baptiste Des., Lachine, PQ, H8T 1C8
Phone: (514) 636-9230 Facsimile: (514) 636-0877

Atlantic: A-105 Akerley Boulevard, Dartmouth, NS, B3B 1R7
Phone: (902) 468-9690 Facsimile: (902) 468-3085

Prepared By: Regulatory Affairs Group, Brenntag Canada Inc., (416) 259-8231.