CALEDON LABORATORY CHEMICALS

MATERIAL SAFETY DATA SHEET

SILICA GEL, INDICATING

PRODUCT CODE NUMBER(S):6980-8, 6981-8

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Silica gel, indicating*
Chemical Family: *Desiccant/adsorbent*
Chemical Formula: *SiO_2, $CoCl_2.6H_2O$*
Product Use: *Chromatography use, dessicant*
Manufacturer's Name and Address:
Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9
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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients	*%*	*TLV Units*	*CAS No.*
Silica gel	*>99*	*10 mg/m^3*	*7631-86-9*
Cobalt II chloride hexahydrate	*<1*	*0.02 mg/m^3 (as Co)*	*7791-13-1*

PHYSICAL DATA

Physical State: *Solid*
Odour and Appearance: *Fine white crystalline powder, odourless*
Odour Threshold (ppm): *Not applicable*
Vapour Pressure (mm Hg): *Not applicable*
Vapour Density (Air = 1): *Not applicable*
Evaporation Rate: *Not applicable*
Boiling Point (degrees C): *2230°C*
Melting Point (degrees C): *1610°C*
pH: *6.5 to 7.5*
Specific Gravity: *2.1*
Coefficient of Water/Oil distribution: *Not applicable*

SHIPPING DESCRIPTION

UN: *Not regulated*
T.D.G. Class: *Not regulated*
Pkg. Group: *Not regulated*

REACTIVITY DATA

Chemical Stability: *Stable; moisture sensitive*
Incompatibility with other substances: *Silica gel may react violently or explosivley with strong oxidiers such as fluorine, chlorine trifluoride, oxygen dichloride, manganese trifluoride. Will dissolve in hydrofluoric acid to form the corrosive gas, silicon tetrafluoride. Mixtures of magnesium with wet silica gel exploded violently. May react with burning sodium. Reacts with xenon hexa fluoride to form explosive xenon trioxide.*
Reactivity: *Avoid excessive heat, generation of dust, moisture, all incompatible materials.*
Hazardous Decomposition Products: *Toxic gases*

FIRE AND EXPLOSION DATA

Flammability: *Not combustible. Will not burn.*
Extinguishing Media: *Use an extinguisher appropriate to the surrounding material that is burning. Water spray can also be used to cool containers, prevent dust formation, flush chemcial away from fire. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment and clothing sufficienet to prevent inhalation of dust or fumes, and contact with skin and eyes.*
Flash Point (Method Used): *Not applicable*
Autoignition Temperature: *Not applicable*
Upper Flammable Limit (% by volume): *Not applicable*
Lower Flammable Limit (% by volume): *Not applicable*
Hazardous Combustion Products: *May emit toxic gases in fire situation*
Sensitivity to Impact: *None*
Sensitivity to Static discharge: *None*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:

LD_{50}: *SiO_2 (oral, rat) 31.6 g/kg; (skin, rabbit) 2g/kg/48h*
LD_{50}: *($CoCl_2.6H_2O$), (oral, rat) 766 mg/kg; (dermal, guinea pig) 165 mg/kg*
LC_{50}: *Not available*

Effects of Acute Exposure to Product:

Inhaled: *Silica gel may be irritating and drying, causing temporary discomfort, coughing. Inhalation of cobalt chloirde may cause irritation of the upper respiratory tract, coughing, nausea, and ringing in ears. Severe irritation and pulmonary edema have been observed in laboratory animals; no human information is available.*
In contact with skin: *Silica gel may cause mild mechanical irritation or drying. Cobalt chloride may cause dermatitis.*
In contact with eyes: *Silica gel may cause mild, mechanical, reversible irritation. Cobalt chloride dust or solution may cause permanent cloudiness of cornea.*
Ingested: *May be harmful in very large amounts. Ingestion in sufficiently large amounts of cobalt salts may cause nausea, vomiting, diarrhea. In animal testing, large oral doses of cobalt salts caused reduced blood pressure, internal bleeding, diarrhea, muscle paralysis, damage to heart, kidneys and lungs.*

Effects of Chronic Exposure to Product:

No reports of lung damage, such as are seen with crystalline types of silica. If silica gel is heated to a sufficiently high temperature, for a sufficient length of time, it can be converted to cystalline silica, which causes severe, chronic lung

disease (silicosis). There is no data regarding the conversion temperature.

Prolonged or repeated exposure to cobalt salts may cause damage to spleen and blood cells, degeneration of heart muscle, thyroid gland, pancreas, and kidneys. Reaction to cobalt salts, with severe skin eruptions, swellng, reddening and itching may occur at low concentrations in sensitized individuals. Cross sensitivity to nickel and chromium has occurred. Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of this material. Persons with allergies or sensitivity to cobalt may also be more susceptible.

Carcinogenicity: *Cobaltous compounds are carcinogenic in laboratory animals under conditions that are not considered relevant to worker exposure (A3).*

Teratogenicity: *Studies with cobalt salts are inconclusive*

Reproductive Effects: *No information available*

Mutagenicity: *Insufficient information available. Early data suggests cobalt is not mutagenic.*

Synergistic Products: *None known*

PREVENTIVE MEASURES

Engineering Controls: *Local exhaust ventilation recommended*

Respiratory Protection: *Dust mask. Up to 10x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH/OSHA approved half- face dust/mist filter respirator. Up to 50x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH/OSHA approved full face-piece dust/mist filter respirator. Higher or unknown concentrations, or for fire or spill conditions, self-contained breathing apparatus, or full face-piece, positive-pressure supplied-air respirator.*

Eye Protection: *Chemical safety glasses. Do not wear contact lenses when working with chemicals.*

Skin Protection: *Rubber or plastic gloves. Plastic apron, sleeves and boots as required to prevent contact.*

Other Personal Protective Equipment: *Safety shower and eye-wash fountain in work area.*

Leak and Spill Procedure: *Clean up personnel must be thoroughly trained in the handling of hazardous materials, and must wear protective equipment and clothing sufficient to prevent inhalation and contact with skin, eyes and clothing. Gather up carefully, in a manner that avoids raising dust, and place in covered container for waste disposal. Prevent from entering sewers or waterways. Ventilate area and wash spill site thoroughly after material pick up is completed.*

Waste Disposal: *Follow all federal, provincial and local regulations for disposal.*

Handling Procedures and Equipment: *TOXIC, IRRITANT. Workers must be thoroughly trained in the hazards of this substance and its safe use, and must wear appropriate protective equipment and clothing. Use routine safe handling procedures. Use good housekeeping procedures to prevent accumulation of dust. Use the smallest amount possible for the purpose in designated areas with adequate ventilation. Avoid generating dust. Avoid contact with eyes, skin, or clothing; avoid breathing dust. Wash thoroughly after handling.*

Storage Requirements: *Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Keep containers tightly closed.*

FIRST AID MEASURES

Specific Measures:

Eyes: *Flush eyes thoroughly with gently running water, holding eyelids open while flushing, for five to ten (5-10) minutes, or until no trace of chemical remains. Get medical advice if irritation develops.*

Skin: *Brush or wipe off dry material. Flush skin with plenty of running water until no evidence of chemical remains. If irritation develops get medical attention.*

Inhalation: *Remove to fresh air. Give oxygen and get medical attention for any breathing difficulty.*

Ingestion: *If victim is alert and NOT convulsing, rinse mouth, give several glasses of water to drink to dilute. If discomfort occurs, or if a large amount has been ingested, get medical attention.*

REFERENCES USED

CCINFO disc: Cheminfo

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: *October 28, 1991*

Revision: *June 2011*

MSDS: *6980-8, 6981-8*

WHMIS Designation: *D2B*

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