Testing Equipment for Construction Materials

HUMBOLDT

VITROBOND® High-Strength Capping Compound— H-2959VH

VITROBOND® High-Strength Capping Compound is a mineral-filled, sulfur-based compound formulated for capping concrete test cylinders. It is easily melted, pours smoothly, possesses higher compressive strength and gives consistent test results. Sulfur-based capping compounds have been used for many years by independent testing laboratories, pre-stressed concrete structures manufacturers and federal, state and local testing agencies. This compound is suitable for running compressive strength tests upon high-strength concrete.

Compound Offers the Following Advantages:

- Ready-to-use—just melt and pour. No mixing or possibility of low strength or erratic results from improper proportions.
- Does not require controlled room temperature or humidity conditions during pouring of caps.
- Does not require moist curing or other tedious handling procedures.
- Not affected by dry cylinders.
- Can be tested two hours after cooling.
- Virtually no settling in the melting pot, thus, results are uniform from cylinder to cylinder.

Physical Properties		
Property	Test Method	Typical Value
Density	ASTM C905	136 lb/ft^3 (2.18 g/cc)
Tensile Strength 48 hrs @77°F (25°C)	ASTM C307	> 1,000 psi (6.89 MPa)
Compressive Strength 48 hrs @77°F (25°C)	ASTM C579	> 9,000 psi (62.1 MPa)
Compressive Strength 2 hrs @77°F (25°C)	ASTM 617	> 8,000 psi (55.2 MPa)
Color	—	Dark Gray

VITROBOND® High-Strength Capping Compound— H-2959VH

Procedure For Use

Capping compound caps are applied to a concrete test cylinder per ASTM C617. It is suggested that at least two capping rigs be prepared to avoid loss of time in testing. The base plates of the capping rigs should be very lightly oiled or coated with silicone compound, such as a 1% solution of General Electric Fluid SPFE or equal in toluene to facilitate removal of the cap. When silicone release agents are used, the capping rig should be allowed to stand approximately 30 minutes after coating before pouring caps. If oil is used, extreme care should be taken to see that there is not an excess of oil which would affect the capping compound.

It is recommended that the base plate of the capping rig be preheated to retard the cooling rate of the capping compound.

For the most consistent test results, it is suggested that the caps be applied using a vertical capper. Pour the molten capping compound on the base plate of the rig and promptly place the cylinder into the molten compound to a depth so that a cap of approximately 1/8" thick will be obtained. It is essential to ascertain that each cylinder is properly aligned so that the caps will be parallel. The cylinder may be removed as soon as the capping compound has hardened, and the other end may then be capped. The specimen may be tested 2 hours after the final pouring, but not before. It is not necessary to carry out any moist curing before the tests are performed.

Capping Compound Preparation

1. Break up ingots and place in a thermostatically controlled electrical melting pot. Melt the compound, stirring occasionally with metal rod or ladle. Recommended pouring temperature range is from 275°F (135°C) to 295°F (146°C).
2. Do not heat above suggested pouring temperature. Ignition of the capping compound could occur at temperatures above 320°F (160°C).If ignition occurs, turn off unit, and cover the melting pot. Burning will render capping compound useless.
3. If molten capping compound foams due to entrapped air or moisture, continue heating and stirring until smooth again.

Packaging

- 50 lb. (22.7 kg.) carton containing 5 lb. (2.3 kg.) ingots

Storage and Shelf Life

- Store all materials in a cool, dry environment. Keep all materials out of direct sunlight. Ideal storage temperature is 75°F (24°C). In unopened original containers, the materials referred to in this Data Sheet have a shelf life of approximately one year.

Testing Equipment for Construction Materials
HUMBOLDT

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SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label

: **VITROBOND® HIGH STRENGTH CAPPING COMPOUND CRUSHED**

Product Code(s) : **TBD**

Recommended use of the chemical and restrictions on use

: Sulfur Cement
Use Pattern: Professional Use Only
Recommended Restrictions: None known.

Chemical family : Mixture

Name, address, and telephone number of the supplier:

Atlas Minerals and Chemicals Inc.

1227 Valley Road
Mertztown, PA, USA
19539

Supplier's Telephone # : 610-682-7171

Name, address, and telephone number of the manufacturer:

Refer to supplier

24 Hr. Emergency Tel # : Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887 (Outside U.S.).

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Gray solid.
Mild sulfur odor.

Most important hazards: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:

Skin Corrosion/Irritation - Category 2

Label elements

Hazard pictogram(s)

Signal Word

WARNING!

Hazard statement(s)

Causes skin irritation. Contains Sulfur. May liberate trace amounts of Hydrogen Sulfide and/or sulfur dioxide gases when heated. Vapors from heated material may cause eye or respiratory irritation. Contact with heated material causes thermal burns.

Precautionary statement(s)

Wash thoroughly after handling. Provide adequate ventilation when melting. Avoid prolonged breathing of vapor. Wear a respirator with organic vapor cartridges if exposure limits are exceeded. Wear protective equipment, such as gloves and face shields, when handling heated material. Keep containers upright to prevent leakage. In case of spillage of heated material, let cool, remove and dispose of in accordance with all applicable local, state and federal environmental regulations. After using, wash hands thoroughly before eating, drinking or smoking.

If overcome by inhalation of vapors, remove to fresh air. If breathing stops, begin artificial respiration. Get medical attention. In case of skin contact with heated material, immerse the affected area in cold water immediately and keep immersed. Do not attempt to remove the material. Get medical attention immediately. In case of eye contact with heated material, flush with water and get medical attention immediately. If contact is with cold material, wash with soap and water. Get medical attention if irritation develops.

IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before re-use. If skin irritation occurs, get medical advice/attention.

Other hazards

Other hazards which do not result in classification:
Burning produces obnoxious and toxic fumes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause respiratory tract irritation. May cause eye irritation. May cause an allergic respiratory reaction (e.g. asthma) in some hypersensitive individuals. May cause an allergic skin reaction (e.g. hives, rash) in some hypersensitive individuals.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Common name and synonyms	CAS #	Concentration
Silica	Crystalline silica, quartz	14808-60-7	40.0 - 60.0
Sulfur	Sulphur	7704-34-9	40.0 - 60.0
Carbon black	Acetylene black	1333-86-4	0.1 - 1.0
At 285°F (141°C) [ie. for normal use], fumes may contain trace amounts of the following chemical:			
Hydrogen sulfide	Dihydrogen sulfide H2S	7783-06-4	**Trace**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

Inhalation : IF INHALED: Remove person to fresh air and keep comfortable for breathing. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact : IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs, get medical advice/attention. Take off contaminated clothing and wash before re-use.

Eye contact : For eye contact, flush with running water for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Most important symptoms and effects, both acute and delayed

: Causes skin irritation. Contact may cause redness, swelling and a painful sensation. May cause eye irritation. Symptoms may include stinging and tearing. May cause respiratory irritation. Symptoms may include coughing, choking and wheezing. May cause an allergic skin reaction (e.g. hives, rash) in some hypersensitive individuals.

Indication of any immediate medical attention and special treatment needed

: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Carbon dioxide (CO2); dry chemical; alcohol-resistant foam; water fog .

Unsuitable extinguishing media

: Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability

: Not considered flammable.

Flammability classification (OSHA 29 CFR 1910.106)

: Not flammable.

Hazardous combustion products

: Carbon dioxide and carbon monoxide. sulfur oxides Hydrogen sulfide

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: All persons dealing with the clean-up should wear the appropriate chemically protective equipment. Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Do not breathe fumes or vapors. Refer to protective measures listed in Sections 7 and 8.

Environmental precautions : Do not allow material to contaminate ground water system. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

: Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. If product is heated and molten, allow product to cool off before cleaning up. Absorb spillage to prevent material damage. Sweep up and shovel into suitable containers for disposal. Pick up and transfer to properly labelled containers. Contact the proper local authorities. Refer to Section 13 for disposal of contaminated material.

Special spill response procedures

: Contact appropriate local and provincial environmental authorities for assistance and/or reporting requirements.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/clothing and eye/face protection. Use only in well-ventilated areas. Do not breathe fumes or mists. Avoid contact with skin, eyes and clothing. Keep container tightly closed. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. At 141°C (285°F) toxic hydrogen sulfide fumes may be present.

Conditions for safe storage : Store in cool/well-ventilated place. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking.

Incompatible materials : Oxidizing agents, mineral acids .

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA I	
	TWA	STEL	PEL	STEL
Silica	0.025 mg/m³ (respirable fraction)	N/Av	0.1 mg/m³ (final rule limit)	N/Av
Sulfur	N/Av	N/Av	N/Av	N/Av
Carbon black	3.0 mg/m³ (inhalable)	N/Av	3.5 mg/m³	N/Av
Hydrogen sulfide	1 ppm	5 ppm	N/Av	N/Av

Exposure controls

Ventilation and engineering measures

: Use only in well-ventilated areas. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Use explosion-proof equipment. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection : If airborne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02. Advice should be sought from respiratory protection specialists.

Skin protection : Wear protective gloves/clothing. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye / face protection : Wear eye/face protection. Wear as appropriate: Tightly fitting safety goggles

Other protective equipment : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations

: Do not breathe fumes or vapors. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Do not take contaminated clothing home. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Gray solid.

Odor : Sulfur odor

Odor threshold : No information available.

pH : No information available.

Melting/Freezing point : No information available.

Initial boiling point and boiling range

: >427°C (800°F)

Flash point : 207°C (405°F)

Flashpoint (Method) : Cleveland closed cup

Evaporation rate (BuAe = 1) : No information available.

Flammability (solid, gas) : Not applicable.

Lower flammable limit (% by vol.)

: Not applicable.

Upper flammable limit (% by vol.)

: Not applicable.

Oxidizing properties : None known.

Explosive properties	:	Not explosive
Vapor pressure	:	Low
Vapor density	:	N/Ap
Relative density / Specific gravity	:	2.15-2.30
Solubility in water	:	Slightly soluble.
Other solubility(ies)	:	No information available.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution	:	No information available.
Auto-ignition temperature	:	No information available.
Decomposition temperature	:	No information available.
Viscosity	:	4000 cps maximum @ 275°F to 300°F (preferred temperature 275°F to 285°F)
Volatiles (% by weight)	:	none
Volatile organic Compounds (VOC's)	:	No information available.
Absolute pressure of container	:	Not applicable.
Flame projection length	:	Not applicable.
Other physical/chemical comments	:	No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not normally reactive.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous polymerization does not occur.
Conditions to avoid	:	Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials.
Incompatible materials	:	Oxidizing agents, mineral acids.
Hazardous decomposition products	:	At 141°C (285°F) toxic hydrogen sulfide fumes may be present.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation	:	YES
Routes of entry skin & eye	:	YES
Routes of entry Ingestion	:	YES
Routes of exposure skin absorption	:	YES

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: May cause respiratory irritation. Symptoms may include coughing and sneezing.

Sign and symptoms ingestion

: Ingestion may cause severe irritation to the mouth, throat and stomach.

Sign and symptoms skin : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:Skin Irritation - Category 2 Causes skin irritation.

Sign and symptoms eyes : May cause eye irritation. Symptoms may include tearing, redness and discomfort.

Potential Chronic Health Effects

: May cause damage to the lungs through prolonged or repeated exposure if inhaled. Prolonged exposure may cause cracking of the skin, dermatitis, possible allergenic response and sensitization.

Mutagenicity : Not expected to be mutagenic in humans.

Carcinogenicity : This material is not classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Contains crystalline silica. Crystalline silica is classified as carcinogenic by IARC (Group 1), the ACGIH (Category A2) and the NTP (Group 1 - Known human carcinogen). However, Crystalline silica is listed as causing cancer only when it's particles are airborne and of a respirable size. Airborne respirable particles are not expected for this product, based on the intended use and form of the product as a whole.

This product contains Carbon black, an IARC Group 2B carcinogen. However, the Carbon black used in this product is in a non-respirable form and under normal conditions of use, Carbon black cannot become airborne. The carcinogenic effects of Carbon black are therefore not applicable to this product.

Reproductive effects & Teratogenicity

: This product is not expected to cause reproductive or developmental effects.

Sensitization to material : Not expected to be a respiratory sensitizer. May cause an allergic skin reaction (e.g. hives, rash) in some hypersensitive individuals.

Specific target organ effects : The substance or mixture is not classified as specific target organ toxicant, single exposure.

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Medical conditions aggravated by overexposure

: Pre-existing skin and respiratory disorders.

Synergistic materials : No information available.

Toxicological data : See below for individual ingredient acute toxicity data.

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
Silica	N/Av	N/Av	N/Av
Sulfur	> 9.23 mg/L	> 3000 mg/kg	> 2000 mg/kg
Carbon black	6.75 mg/L (dust)	> 10 000 mg/kg	> 3000 mg/kg
At 285°F (141°C) [i.e. for normal use], fumes may contain trace amounts of the following chemical:			
Hydrogen sulfide	0.701 mg/L 4 h	N/Av	N/Av

Other important toxicological hazards

: None reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : Do not release, unmonitored, into the environment. See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Silica	14808-60-7	N/Av	N/Av	N/Av
Sulfur	7704-34-9	>0.005 mg/L (Rainbow trout) (No effects)	N/Av	None.
Carbon black	1333-86-4	> 1000 mg/L (Zebra fish)	N/Av	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Silica	14808-60-7	N/Av	N/Av	N/Av
Sulfur	7704-34-9	>0.005 mg/L(Water flea) (No effects)	N/Av	None.
Carbon black	1333-86-4	> 5600 mg/L/24hr (Daphnia magna)	N/Av	None.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Silica	14808-60-7	N/Av	N/Av	N/Av
Sulfur	7704-34-9	N/Av	N/Av	N/Ap
Carbon black	1333-86-4	> 10 000 mg/L/72hr (Green algae)	N/Av	None.

Persistence and degradability

: No data is available on the product itself.

Bioaccumulation potential : No data is available on the product itself.

Components	Partition coefficent n-octanol/ater (log Kow)	Bioconcentration factor (BCF)
Sulfur (CAS 7704-34-9)	N/Ap	N/Ap
Hydrogen sulfide (CAS 7783-06-4)	0.45 at 25°C	no bioaccumulation expected

Mobility in soil : The product itself has not been tested.

Other Adverse Environmental effects

: None known.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in Sections 7 and 8.

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Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations.

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RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	None.	Not regulated.	not regulated	none	
49CFR/DOT Additional information					
TDG	None.	Not regulated.	not regulated	none	
TDG Additional information					
IMDG	None.	Not regulated.	not regulated	none	
IMDG Additional information					
ICAO/IATA	None.	Not regulated.	not regulated	none	
ICAO/IATA Additional information					

Special precautions for user : Appropriate advice on safety must accompany the package.

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Environmental hazards : See ECOLOGICAL INFORMATION, Section 12.

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: This information is not available.

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SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

SAFETY DATA SHEET

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Silica	14808-60-7	Yes	N/Ap	N/Av	No	N/Ap
Sulfur	7704-34-9	Yes	N/Ap	N/Av	No	N/Ap
Carbon black	1333-86-4	Yes	None.	None.	No	N/Ap
Hydrogen sulfide	7783-06-4	Yes	100 lb/ 45.4 kg	500 lb TPQ	No	1%

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Fire Hazard; Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Silica	14808-60-7	Yes	airborne particles of	No	Yes	Yes	Yes	Yes	Yes
Sulfur	7704-34-9	No	N/Ap	Yes	Yes	No	Yes	Yes	Yes
Carbon black	1333-86-4	Yes	ne, unbound particle	Yes	Yes	Yes	Yes	Yes	Yes
Hydrogen sulfide	7783-06-4	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes

Canadian Information:

Canadian Environmental Protection Act (CEPA): All ingredients are present on the DSL.

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this Safety Data Sheet contains all the information required by the CPR.

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Silica	14808-60-7	238-878-4	Present	Present	(1)-548	KE-29983	Present	HSR003125
Sulfur	7704-34-9	231-722-6	Present	Present	Present	KE-32688	Present	HSR001284
Carbon black	1333-86-4	215-609-9	Present	Present	(5)-3328; (5)-5222	KE-04682	Present	HSR002801
Hydrogen sulfide	7783-06-4	231-977-3	Present	Present	(1)-434; (1)-434; (1)-434	KE-20209	Present	HSR001061

SECTION 16. OTHER INFORMATION

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
AICS: Australian Inventory of Chemical Substances
ATE: Acute Toxicity Estimate
CA: California

CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DOT: Department of Transportation
ECHA: European Chemicals Agency
ECOTOX: U.S. EPA Ecotoxicology Database
EINECS: European Inventory of Existing Commercial chemical Substances
ENCS: Existing and New Chemical Substances
EPA: Environmental Protection Agency
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
IBC: Intermediate Bulk Container
IECSC: Inventory of Existing Chemical Substances
IMDG: International Maritime Dangerous Goods
IOC: Inventory of Chemicals
IUCLID: International Uniform Chemical Information Database
KECI: Korean Existing Chemicals Inventory
KECL: Korean Existing Chemicals List
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NOEC: No observable effect concentration
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
PICCS: Philippine Inventory of Chemicals and Chemical Substances
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
SDS: Safety Data Sheet / Material Safety Data Sheet
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2014.
2. International Agency for Research on Cancer Monographs, searched 2015.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2015 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - October 2012 version.
6. California Proposition 65 List - December 26, 2014 version

Preparation Date (mm/dd/yyyy)

: 10/09/2023

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

SAFETY DATA SHEET

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