

BIO-CHEM ZORB

Chemwatch Material Safety Data Sheet

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

BIO-CHEM ZORB

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

SUPPLIER

Company: Aquarium Pharmaceuticals Incorporated

Address:

PO Box 218

Chalfont

PA, 18914-0218

USA

Telephone: +1 215 822 8181

Emergency Tel: +1800 222 1222 (US Only)

Company: Aquarium Pharmaceuticals Incorporated

Address:

50 East Hamilton Street

Chalfont

PA, 18914

USA

Telephone: +1 215 822 8181

PRODUCT USE

Used according to manufacturers directions. For product 108.

SYNONYMS

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ion-exchange resin, proprietary		30-40
zeolites	1318-02-1	10-30
carbon, activated	7440-44-0	10-30
water	7732-18-5	10-20

Section 3 - HAZARDS IDENTIFICATION

CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

May cause fire.

continued...

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Section 3 - HAZARDS IDENTIFICATION

Inhalation may produce health damage*.
Cumulative effects may result following exposure*.
Exposure may produce irreversible effects*.
May produce discomfort of the eyes and respiratory tract*.

*(limited evidence)

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Although ingestion is not thought to produce harmful effects, the material may still be damaging to the health of the individual following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality (death) rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern. Ingestion of finely divided carbon may produce gagging and constipation. Aspiration does not appear to be a concern as the material is generally regarded as inert and is often used as a food additive. Ingestion may produce a black stool.

EYE

There is some evidence to suggest that this material can cause eye irritation and damage in some persons. Eyes exposed to carbon particulates may be liable to irritation and burning. These can remain in the eye causing inflammation lasting weeks, and can cause permanent dark dotted discoloration.

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

There is some evidence to suggest that this material, if inhaled, can irritate the throat and lungs of some persons. Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Impurities found in carbons can be toxic, including iodine. Carbon dusts in the air may cause irritation of the mucous membranes, eyes and skin. Coughing, irritation of the upper airways and eye burning may occur.

CHRONIC HEALTH EFFECTS

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

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Section 3 - HAZARDS IDENTIFICATION

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. There is insufficient evidence to suggest that exposure to carbon black causes increased susceptibility to cancer or other ill effects. Some lung changes can occur after a prolonged period of exposure as well as increased strain on the right side of the heart.

Section 4 - FIRST AID MEASURES

SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Flash Point (F): Not Applicable

Lower Explosive Limit (%): Not Applicable

Upper Explosive Limit (%): Not Applicable

Autoignition Temp (F): Not Applicable

EXTINGUISHING MEDIA

- There is no restriction on the type of extinguisher which may be used. Use extinguishing media suitable for surrounding area.

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Section 5 - FIRE FIGHTING MEASURES

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Non combustible.
 - Not considered to be a significant fire risk, however containers may burn.
- Decomposition may produce toxic fumes of, carbon dioxide (CO₂), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
May emit corrosive fumes.

FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

- Glasses:
Chemical goggles.
- Gloves:
PVC chemical resistant type.
- Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

MAJOR SPILLS

- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into

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Section 6 - ACCIDENTAL RELEASE MEASURES

drains.

- If contamination of drains or waterways occurs, advise emergency services.

ACUTE EXPOSURE GUIDELINE LEVELS (AEGLE) (in ppm)

AEGLE 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEGLE 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGLE 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

carbon, activated 500 mg/m³

water 500 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

carbon, activated 10 mg/m³

water 500 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:

carbon, activated 6 mg/m³

water 500 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:

carbon, activated 2 mg/m³

water 500 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according exceed the following cutoffs

Very Toxic (T+) \geq 0.1% Toxic (T) \geq 3.0%

R50 \geq 0.25% Corrosive (C) \geq 5.0%

R51 \geq 2.5%

else \geq 10%

where percentage is percentage of ingredient found in the mixture

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Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

NOTE: Wet, activated carbon removes oxygen from the air thus producing a severe hazard to workers inside carbon vessels and in enclosed or confined spaces where activated carbons might accumulate. Before entry to such areas, sampling and test procedures for low oxygen levels should be undertaken; control conditions should be established to ensure the availability of adequate oxygen supply.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
US - Idaho - Toxic and Hazardous Substances - Mineral Dust	Silicates (less than 1% crystalline silica): Graphite (natural)	15					
US - California Permissible Exposure Limits for Chemical Contaminants	Graphite, synthetic	--	5				
US - Vermont Permissible Exposure Limits Table	Respirable fraction(n) Graphite, synthetic -		5				

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
Z-1-A Final Rule Limits for Air Contaminants US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances US - California Permissible Exposure Limits for Chemical Contaminants US - Minnesota Permissible Exposure Limits (PELs)	Respirable Fraction Graphite, synthetic - Total dust Graphite (synthetic) Graphite, synthetic Total dust Graphite, synthetic - Total dust		10				
No data available:	zeolites as (CAS: 1318-02-1) / (CAS: 37305-72-9) / (CAS: 50809-51-3) / (CAS: 52349-29-8) / (CA						
No data available:	water as (CAS: 7732-18-5)						

No data for Bio-Chem Zorb.

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) :3 mg/m³.

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) (mg/m³):

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc (%).

Component	Breathing Zone (mg/m ³)	Mixture Conc (%)
carbon, activated	3.0000	30.0

INGREDIENT DATA

ZEOLITES:

Dusts not otherwise classified, as inspirable dust;

ES TWA: 10 mg/m³.

Particulate (insoluble or poorly soluble *) Not Otherwise Specified (P.N.O.C)

TLV TWA: 10 mg/m³ Inhalable particulate

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

TLV TWA: 3 mg/m³ Respirable particulate
OEL-Sweden, United Kingdom: 10 mg/m³ total dust, 5 mg/m³ respirable dust

These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics:

- the architecture of the air spaces remain intact,
- scar tissue (collagen) is not synthesised to any degree,
- tissue reaction is potentially reversible.

Extensive concentrations of P.N.O.C.s may:

- seriously reduce visibility,
- cause unpleasant deposits in the eyes, ears and nasal passages,
- contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]

This limit does not apply:

- to brief exposures to higher concentrations
- nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined.

This exposure standard applies to particles which

- are insoluble or poorly soluble* in water or, preferably, in aqueous lung fluid (if data is available) and
- have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lung tissue, and do not emit ionizing radiation, cause immune sensitization, or cause toxic effects other than by inflammation or by a mechanism of lung overload)

* Notice of intended change.

CARBON, ACTIVATED:

as carbon black CAS RN 1333-86-4

TLV TWA: 3.5 mg/m³ A4

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans.

ES TWA: 3 mg/m³

MAK value: 6 mg/m³

- as fine dust: defined as a dust which can reach the alveolar region of the lung.

MAK Group C: There is no reason to fear risk of damage to the developing embryo when MAK and BAT values are observed.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany.

WATER:

No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

HANDS/FEET

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

RESPIRATOR

Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
10 x PEL	P1 Air-line*	-	PAPR-P1
50 x PEL	Air-line**	P2	PAPR-P2
100 x PEL	-	P3 Air-line*	-
100+ x PEL	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow

Explanation of Respirator Codes:

Class 1 low to medium absorption capacity filters.

Class 2 medium absorption capacity filters.

Class 3 high absorption capacity filters.

PAPR Powered Air Purifying Respirator (positive pressure) cartridge.

Type A for use against certain organic gases and vapors.

Type AX for use against low boiling point organic compounds (less than 65°C).

Type B for use against certain inorganic gases and other acid gases and vapors.

Type E for use against sulfur dioxide and other acid gases and vapors.

Type K for use against ammonia and organic ammonia derivatives

Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, silica.

Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.

Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator. Correct fit is essential to obtain adequate protection an approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Does not mix with water.

Molecular Weight: Not Applicable

Melting Range (C): Not Applicable

Solubility in water (g/L): Immiscible

pH (1% solution): Not Applicable

Volatile Component (%vol): Not Applicable

Relative Vapor Density (air=1): Not Applicable

Lower Explosive Limit (%): Not Applicable

Autoignition Temp (C): Not Applicable

State: Divided Solid

Boiling Range (C): Not Applicable

Specific Gravity (water=1): Not Available

pH (as supplied): Not Applicable

Vapor Pressure (kPa): Not Applicable

Evaporation Rate: Not Applicable

Flash Point (C): Not Applicable

Upper Explosive Limit (%): Not Applicable

Decomposition Temp (°C): Not Available

APPEARANCE

Mixture of black, off-white and brown beads and granules with no odor; insoluble in water.

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerization will not occur.

STORAGE INCOMPATIBILITY

Activated carbon, when exposed to air, represents a potential fire hazard due to a high surface area and adsorptive capacity. Freshly prepared material may ignite spontaneously in the presence of air especially at high humidity. Spontaneous combustion in air may occur at 90-100 deg. C. The presence of moisture in air facilitates the ignition. Drying oils and oxidising oils promote spontaneous heating and ignition; contamination with these must be avoided. Unsaturated drying oils (linseed oil etc.) may ignite following adsorption owing to an enormous increase in the surface area of oil exposed to air; the rate of oxidation may also be catalysed by metallic impurities in the carbon. A similar, but slower effect occurs on fibrous materials such as cotton waste. Spontaneous heating of activated carbon is related to the composition and method of preparation of the activated carbon. Free radicals, present in charcoal, are responsible for autoignition. Self-heating and autoignition may also result from adsorption of various vapours and gases (especially oxygen). For example,

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Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

activated carbon auto- ignites in flowing air at 452-518 deg. C.; when the base, triethylene-diamine, is adsorbed on the carbon (5%) the autoignition temperature is reduced to 230-260 deg. C.. An exotherm is produced at 230-260 deg. C., at high flow rates of air, although ignition did not occur until 500 deg. C..

Mixtures of sodium borohydride with activated carbons, in air, promote the oxidation of sodium borohydride, producing a self-heating reaction that may result in the ignition of charcoal and in the production of hydrogen through thermal decomposition of the borohydride.

Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.

Avoid reaction with oxidizing agents.

Section 11 - TOXICOLOGICAL INFORMATION

Bio-Chem Zorb

Not available. Refer to individual constituents.

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

ZEOLITES:

~TOXICITY FIGURE

Oral~rat~LD50~>5110~mg/kg

Dermal~rabbit~LD50~>2000~mg/kg

Inhalation~--~LC50~>18.3~mg/l/1hr

~OTHER

for sodium aluminosilicate, zeolite A:

Skin (rabbit): non-irritating

Eye (rabbit): slight

[Grace]

CARBON, ACTIVATED:

No significant acute toxicological data identified in literature search.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

WATER:

No significant acute toxicological data identified in literature search.

Section 12 - ECOLOGICAL INFORMATION

DO NOT discharge into sewer or waterways.

Refer to data for ingredients, which follows:

ZEOLITES:

for sodium aluminosilicate, zeolite A

Fish toxicity (Brachidario rerio) 96H LC50: 1800 mg/l

Aquatic toxicity (Daphnia magna) 24H EC50: 2808 mg/l

Algal toxicity (Scenedesmus subspecies) 96H NOEC: 10 mg/l

Bacterial toxicity (Pseudomonas putida): 330 mg/l, initial inhibition of cell multiplication

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Section 12 - ECOLOGICAL INFORMATION

[Grace]

CARBON, ACTIVATED:

DO NOT discharge into sewer or waterways.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN,IATA,IMDG

Section 15 - REGULATORY INFORMATION

RISK

Risk Codes
R07

Risk Phrases
May cause fire.

REGULATIONS

No regulations applicable

carbon, activated (CAS: 7440-44-0) is found on the following regulatory lists;
Canada Domestic Substances List (DSL)
US - Minnesota Hazardous Substance List
US EPA High Production Volume Program Chemical List
US Toxic Substances Control Act (TSCA)

water (CAS: 7732-18-5) is found on the following regulatory lists;
Canada Domestic Substances List (DSL)
US Toxic Substances Control Act (TSCA)

No data available for zeolites as CAS: 1318-02-1, CAS: 37305-72-9, CAS: 50809-51-3, CAS: 52349-29-8, CAS: 53025-48-2, CAS: 53060-43-8, CAS: 53569-61-2, CAS: 53789-62-1, CAS: 54693-40-2, CAS: 54824-24-7, CAS: 56747-83-2, CAS: 61710-45-0, CAS: 75216-11-4, CAS: 76774-74-8, CAS: 85117-23-3.

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Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

Inhalation may produce health damage*.

Cumulative effects may result following exposure*.

May produce discomfort of the eyes and respiratory tract*.

Limited evidence of a carcinogenic effect*.

* (limited evidence).

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