

**Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME**

SENGUARD

**STATEMENT OF HAZARDOUS NATURE**

**CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.**

**NFPA**



**SUPPLIER**

Company: Dry- Treat Inc  
 Address:  
 1104 Philadelphia Pike  
 Willmington  
 DE, 19809  
 USA  
 Telephone: +1 866 667 5119  
 Telephone: +61 2 9954 3211  
 Emergency Tel: Outside USA +1 (813) 248 0585  
 Emergency Tel: CHEM- TEL (800) 255- 3924  
 Fax: +61 2 9954 3162  
 Email: chemwatch@chemwatch.net

Company: Dry- Treat Ltd  
 Address:  
 3 North Street  
 Oatby  
 Leicester, LE2 5AH  
 GBR  
 Telephone: 0800 0964 760  
 Telephone: +61 2 9954 3211  
 Emergency Tel: Outside USA +1 (813) 248 0585  
 Emergency Tel: +61 2 9954 3211  
 Fax: +61 2 9954 3162

**PRODUCT USE**

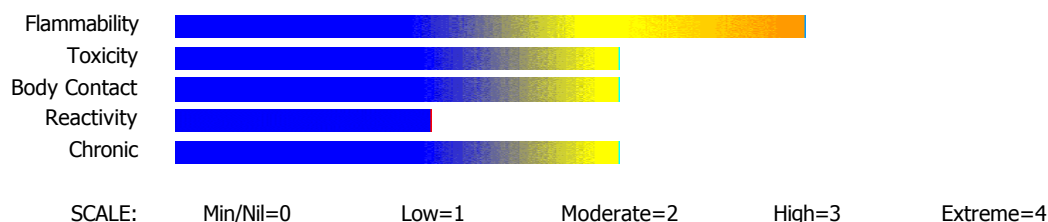
Water and stain protection for masonry substrate.

**SYNONYMS**

"stain preventer", "masonry sealant"

**Section 2 - HAZARDS IDENTIFICATION**

**CHEMWATCH HAZARD RATINGS**



## CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

**RISK**

Irritating to eyes and skin.  
 Highly flammable.  
 Vapors may cause dizziness or suffocation.  
 Harmful to aquatic organisms.

**POTENTIAL HEALTH EFFECTS****ACUTE HEALTH EFFECTS****SWALLOWED**

! Accidental ingestion of the material may be damaging to the health of the individual.  
 ! Ingestion of ethanol (ethyl alcohol, "alcohol") may produce nausea, vomiting, bleeding from the digestive tract, abdominal pain, and diarrhea. Effects on the body:

## Blood concentration

<1.5 g/L

1.5- 3.0 g/L

3- 5 g/L

## Effects

Mild: impaired vision, co- ordination and reaction time; emotional instability  
 Moderate: Slurred speech, confusion, inco-ordination, emotional instability, disturbances in perception and senses, possible blackouts, and impaired objective performance in standardized tests. Possible double vision, flushing, fast heart rate, sweating and incontinence. Slow breathing may occur rarely and fast breathing may develop in cases of metabolic acidosis, low blood sugar and low blood potassium. Central nervous system depression may progress to coma.  
 Severe: cold clammy skin, low body temperature and low blood pressure. Atrial fibrillation and heart block have been reported. Depression of breathing may occur, respiratory failure may follow serious poisoning, choking on vomit may result in lung inflammation and swelling. Convulsions due to severe low blood sugar may also occur. Acute liver inflammation may develop.

**EYE**

! There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. There may be damage to the cornea.

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**Section 2 - HAZARDS IDENTIFICATION**

Unless treatment is prompt and adequate there may be permanent loss of vision. Conjunctivitis can occur following repeated exposure.

‡ Direct contact of the eye with ethanol may cause immediate stinging and burning with reflex closure of the lid and tearing, transient injury of the corneal epithelium and hyperaemia of the conjunctiva. Foreign-body type discomfort may persist for up to 2 days but healing is usually spontaneous and complete.

**SKIN**

‡ The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.

‡ 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**

‡ Inhalation of high concentrations of gas/vapor causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

‡ Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.

‡ The most common signs of inhalation overexposure to ethanol, in animals, include ataxia, incoordination and drowsiness for those surviving narcosis. The narcotic dose for rats, after 2 hours of exposure, is 19260 ppm.

**CHRONIC HEALTH EFFECTS**

‡ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Prolonged exposure to ethanol may cause damage to the liver and cause scarring. It may also worsen damage caused by other agents. Large amounts of ethanol taken in pregnancy may result in "fetal alcohol syndrome", characterized by delay in mental and physical development, learning difficulties, behavioral problems and small head size. A small number of people develop allergic reactions to ethanol, which include eye infections, skin swelling, shortness of breath, and itchy rashes with blisters.

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

NAME	CAS RN	%
alkylalkoxysilane		30-60
ethanol	64-17-5	30-60
n- butyl acetate	123-86-4	<10
ingredients not contributing to the classification		10-30

**Section 4 - FIRST AID MEASURES****SWALLOWED**

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

continued...

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Section 4 - FIRST AID MEASURES

**EYE**

‡ If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with 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.
- Continue flushing until advised to stop by the Poisons Information Center or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**SKIN**

‡ If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- 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.
- Prostheses 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**

‡ For acute or short term repeated exposures to ethanol:

- Acute ingestion in non-tolerant patients usually responds to supportive care with special attention to prevention of aspiration, replacement of fluid and correction of nutritional deficiencies (magnesium, thiamine pyrodoxine, Vitamins C K)
- Give 50% dextrose (50-100 ml) IV to obtunded patients following blood draw for glucose determination.
- Comatose patients should be treated with initial attention to airway, breathing, circulation and drugs of immediate importance (glucose, thiamine)
- Decontamination is probably unnecessary more than 1 hour after a single observed ingestion. Cathartics and charcoal may be given but are probably not effective in single ingestions.
- Fructose administration is contra-indicated due to side effects.

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**Section 5 - FIRE FIGHTING MEASURES**

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Vapor Pressure (mmHg): 33.7 @ 20 degC

Upper Explosive Limit (%): Not Available

Specific Gravity (water=1): 0.86

Lower Explosive Limit (%): Not Available

**EXTINGUISHING MEDIA**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

**FIRE FIGHTING**

- Alert Emergency Responders and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.

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Section 5 - FIRE FIGHTING MEASURES

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- Consider evacuation (or protect in place).
  - Fight fire from a safe distance, with adequate cover.
  - If safe, switch off electrical equipment until vapor fire hazard removed.
  - Use water delivered as a fine spray to control the fire and cool adjacent area.
  - Avoid spraying water onto liquid pools.
  - DO NOT approach containers suspected to be hot.
  - Cool fire exposed containers with water spray from a protective location.
  - If safe to do so, remove containers from path of fire.

**GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**

- Liquid and vapor are highly flammable.
  - Severe fire hazard when exposed to heat, flame and/or oxidizers.
  - Vapor may travel a considerable distance to source of ignition.
  - Heating may cause expansion or decomposition leading to violent rupture of containers.
  - On combustion, may emit toxic fumes of carbon monoxide (CO).
- Combustion products include: carbon dioxide (CO<sub>2</sub>), other pyrolysis products typical of burning organic material.

**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:

Type A Filter of sufficient capacity

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**Section 6 - ACCIDENTAL RELEASE MEASURES**

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**MINOR SPILLS**

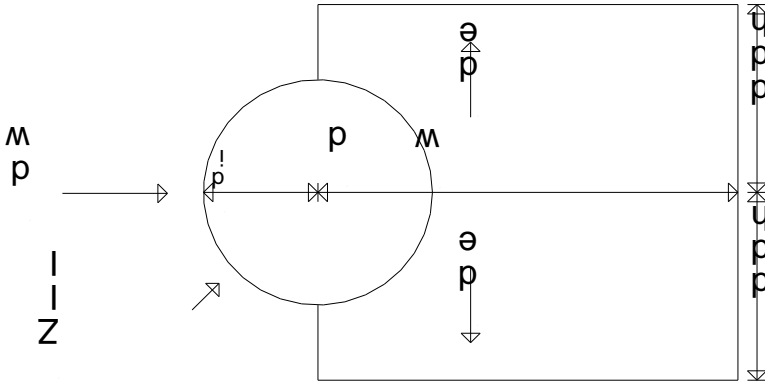
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapors and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb small quantities with vermiculite or other absorbent material.
- Wipe up.
- Collect residues in a flammable waste container.

**MAJOR SPILLS**

- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapor.
- Contain spill with sand, earth or vermiculite.
- Use only spark-free shovels and explosion proof equipment.
- Collect recoverable product into labeled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labeled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

continued...

**PROTECTIVE ACTIONS FOR SPILL**



From IERG (Canada/Australia)  
 Isolation Distance                      25 meters  
 Downwind Protection Distance        300 meters

**FOOTNOTES**

- 1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapor plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapor concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
- 3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localized wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
- 4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".  
 LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
- 5 Guide 128 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC - Transport Canada.

**Section 7 - HANDLING AND STORAGE**

**PROCEDURE FOR HANDLING**

- Containers, even those that have been emptied, may contain explosive vapors.
- Do NOT cut, drill, grind, weld or perform similar operations on or near containers.
- DO NOT allow clothing wet with material to stay in contact with skin.
- 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.
- Avoid smoking, naked lights, heat or ignition sources.
- When handling, DO NOT eat, drink or smoke.

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- Vapor may ignite on pumping or pouring due to static electricity.
- DO NOT use plastic buckets.
- Earth and secure metal containers when dispensing or pouring product.
- Use spark-free tools when handling.
- Avoid contact with incompatible materials.
- Keep containers securely sealed.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- 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.

**RECOMMENDED STORAGE METHODS**

‡ Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid. Check that containers are clearly labeled and free from leaks.

- For low viscosity materials (i): Drums and jerricans must be of the non-removable head type. (ii): Where a can is to be used as an inner package, the can must have a screwed enclosure.
- For materials with a viscosity of at least 2680 cSt. (23 deg. C)
- For manufactured product having a viscosity of at least 250 cSt. (23 deg. C)
- Manufactured product that requires stirring before use and having a viscosity of at least 20 cSt (23 deg. C) - (i): Removable head packaging; (ii): Cans with friction closures and (iii): low pressure tubes and cartridges may be used.
- Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages
- In addition, where inner packagings are glass and contain liquids of packing group I there must be sufficient inert absorbent to absorb any spillage, unless the outer packaging is a close fitting molded plastic box and the substances are not incompatible with the plastic.

**STORAGE REQUIREMENTS**

- Store in original containers in approved flame-proof area.
- No smoking, naked lights, heat or ignition sources.
- DO NOT store in pits, depressions, basements or areas where vapors may be trapped.
- Keep containers securely sealed.
- Store away from incompatible materials in a cool, dry well ventilated area.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

**SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS**

+



X



X



X



X



+

+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**EXPOSURE CONTROLS**

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Notes
Canada - Alberta Occupational Exposure Limits	ethanol (Ethanol (Ethyl alcohol))	1000	1880			
Canada - British Columbia Occupational Exposure Limits	ethanol (Ethanol Revised 2009)			1000		
Canada - Ontario Occupational Exposure Limits	ethanol (Ethanol)	1, 000	1, 900			
US ACGIH Threshold Limit Values (TLV)	ethanol (Ethanol)			1000		TLV Basis: upper respiratory tract irritation
US NIOSH Recommended Exposure Limits (RELs)	ethanol (Ethyl alcohol)	1000	1900			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	ethanol (Ethyl alcohol (Ethonal))	1000	1900			
US - Vermont Permissible Exposure Limits Table Z- 1- A Transitional Limits for Air Contaminants	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
US - Vermont Permissible Exposure Limits Table Z- 1- A Final Rule Limits for Air Contaminants	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
US - Minnesota Permissible Exposure Limits (PELs)	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
US - California Permissible Exposure Limits for Chemical Contaminants	ethanol (Ethyl alcohol; ethanol)	1, 000	1, 900			
US - Idaho - Limits for Air Contaminants	ethanol (Ethyl alcohol (ethanol))	1000	1900			
US OSHA Permissible Exposure Levels (PELs) - Table Z1	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
US - Hawaii Air Contaminant Limits	ethanol (Ethyl alcohol (Ethanol))	1, 000	1, 900			
US - Alaska Limits for Air Contaminants	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
US - Michigan Exposure Limits for Air Contaminants	ethanol (Ethyl alcohol (Ethanol))	1000	1900			

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Notes
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	ethanol (Ethyl alcohol (Ethanol))	1, 000	1, 900	1, 000	1, 900	
US - Washington Permissible exposure limits of air contaminants	ethanol (Ethyl alcohol (ethanol))	1, 000		1, 250		
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	ethanol (Ethanol)	1000		1250		
Canada - Prince Edward Island Occupational Exposure Limits	ethanol (Ethanol)			1000		TLV Basis: upper respiratory tract irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	ethanol (Ethyl alcohol (Ethanol))	1000	1900			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	ethanol (Ethyl alcohol)	1000	1880			
US - Oregon Permissible Exposure Limits (Z1)	ethanol (Ethyl alcohol (ethanol))	1, 000	1, 900			
Canada - Northwest Territories Occupational Exposure Limits (English)	ethanol (Ethyl alcohol (Ethanol))	1000	1884	1250	2355	
Canada - Nova Scotia Occupational Exposure Limits	ethanol (Ethanol)			1000		TLV Basis: upper respiratory tract irritation
Canada - Alberta Occupational Exposure Limits	n- butyl acetate (n- Butyl acetate)	150	713	200	950	
Canada - British Columbia Occupational Exposure Limits	n- butyl acetate (n- Butyl acetate)	20				
Canada - Ontario Occupational Exposure Limits	n- butyl acetate (n- Butyl acetate)	150	710	200	950	
US OSHA Permissible Exposure Levels (PELs) - Table Z1	n- butyl acetate (n- Butyl- acetate)	150	710			

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Notes
US ACGIH Threshold Limit Values (TLV)	n- butyl acetate (n- Butyl acetate)	150		200		TLV Basis: eye & upper respiratory tract irritation
US NIOSH Recommended Exposure Limits (RELs)	n- butyl acetate (n- Butyl acetate)	150	710	200	950	
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	n- butyl acetate (n- butyl- acetate)	150	710	200	950	
US - Vermont Permissible Exposure Limits Table Z- 1- A Transitional Limits for Air Contaminants	n- butyl acetate (n- Butyl- acetate.)	150	710			
US - Vermont Permissible Exposure Limits Table Z- 1- A Final Rule Limits for Air Contaminants	n- butyl acetate (n- Butyl- acetate)	150	710	200	950	
US - Minnesota Permissible Exposure Limits (PELs)	n- butyl acetate (n- Butyl- acetate)	150	710	200	950	
US - California Permissible Exposure Limits for Chemical Contaminants	n- butyl acetate (n- Butyl acetate)	150	710	200	950	
US - Idaho - Limits for Air Contaminants	n- butyl acetate (n- Butyl acetate)	150	710			
US - Hawaii Air Contaminant Limits	n- butyl acetate (n- Butyl- acetate)	150	710	200	950	
US - Alaska Limits for Air Contaminants	n- butyl acetate (n - Butyl acetate)	150	710	200	950	
US - Michigan Exposure Limits for Air Contaminants	n- butyl acetate (n- Butyl acetate)	150	710	200	950	
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	n- butyl acetate (n- Butyl acetate)	150	710	200	950	
US - Washington Permissible exposure limits of air contaminants	n- butyl acetate (n- Butyl acetate)	150		200		
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	n- butyl acetate (n- Butyl acetate)	150		200		

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Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Notes
Canada - Prince Edward Island Occupational Exposure Limits	n- butyl acetate (n- Butyl acetate)	150		200		TLV Basis: eye & upper respiratory tract irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	n- butyl acetate (n- Butyl- acetate)	150	710			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	n- butyl acetate (n- Butyl acetate)	150	713	200	950	
US - Oregon Permissible Exposure Limits (Z1)	n- butyl acetate (Butyl acetate (n- Butyl acetate))	150	710			
Canada - Northwest Territories Occupational Exposure Limits (English)	n- butyl acetate (n- Butyl acetate)	150	713	200	950	
Canada - Nova Scotia Occupational Exposure Limits	n- butyl acetate (n- Butyl acetate)	150		200		TLV Basis: eye & upper respiratory tract irritation

**EMERGENCY EXPOSURE LIMITS**

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
ethanol		3,300 [LEL]
n-butyl acetate		1,700 [LEL]

**NOTES**

Values marked LEL indicate that the IDLH was based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.

**MATERIAL DATA**

ETHANOL:

SENGUARD:

‡ Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be

**continued...**

consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

ETHANOL:

| For ethanol:

Odour Threshold Value: 49-716 ppm (detection), 101 ppm (recognition)

Eye and respiratory tract irritation do not appear to occur at exposure levels of less than 5000 ppm and the TLV-TWA is thought to provide an adequate margin of safety against such effects. Experiments in man show that inhalation of 1000 ppm caused slight symptoms of poisoning and 5000 ppm caused strong stupor and morbid sleepiness. Subjects exposed to 5000 ppm to 10000 ppm experienced smarting of the eyes and nose and coughing. Symptoms disappeared within minutes. Inhalation also causes local irritating effects to the eyes and upper respiratory tract, headaches, sensation of heat intraocular tension, stupor, fatigue and a need to sleep. At 15000 ppm there was continuous lachrymation and coughing.

N-BUTYL ACETATE:

| For n-butyl acetate

Odour Threshold Value: 0.0063 ppm (detection), 0.038-12 ppm (recognition)

Exposure at or below the recommended TLV-TWA is thought to prevent significant irritation of the eyes and respiratory passages as well as narcotic effects. In light of the lack of substantive evidence regarding teratogenicity and a review of acute oral data a STEL is considered inappropriate.

Odour Safety Factor(OSF)

OSF=3.8E2 (n-BUTYL ACETATE).

Exposed individuals are reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odor Safety Factor (OSF) is determined to fall into either Class A or B.

The Odor Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odor Threshold Value (OTV) ppm

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	Idem for 50- 90% of persons being distracted
C	1- 26	Idem for less than 50% of persons being distracted
D	0.18- 1	0- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	Idem for less than 10% of persons aware of being tested

Amoore and Hautala \* have determined that it is only at an OSF value of 26 that 50% of distracted persons can detect the substance at the Exposure Standard value. In the case of alerted persons, an OSF of 26 means that 99% of them can detect the odor at the Exposure Standard value. It is ONLY for substances belonging to

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Class A and B that there is a reasonable chance of being warned in time, that the Exposure Standard is being exceeded. \* Journal Applied Toxicology: Vol 3, 1983, p272

NOTE: The use of the OSF may be inappropriate for mixtures where substances mask the odor of others.

**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.

**HANDS/FEET**

! Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly.

Application of a non-perfumed moisturiser is recommended.

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

**OTHER**

- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.

**RESPIRATOR**

! Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	A- 1	-
1000	50	-	A- 1
5000	50	Airline*	-

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**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

5000	100	-	A- 2
10000	100	-	A- 3
	100+		Airline* *

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

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 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**

! For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapors, degreasing etc., evaporating from tank (in still air).	0.25- 0.5 m/s (50- 100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favorable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

## PHYSICAL PROPERTIES

State	LIQUID	Molecular Weight	Not Applicable
Melting Range (°F)	Not Available	Viscosity	Not Available
Boiling Range (°F)	Not Available	Solubility in water (g/L)	Partly Miscible
Flash Point (°F)	55.4	pH (1% solution)	Not Available
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not Applicable
Autoignition Temp (°F)	Not Available	Vapor Pressure (mmHg)	33.7 @ 20 degC
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	0.86
Lower Explosive Limit (%)	Not Available	Relative Vapor Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

## APPEARANCE

Highly flammable liquid with a characteristic odour; partly mixes with water.

Refractive Index @ 20°C: 1.38 to 1.39

Moisture by Karl Fisher: 235 ppm (0.024%)

Viscosity @ 20°C: 1.49 cSt

USA VOC content: &lt; 615 g/litre

Material	Value
ETHANOL:	
log Kow	- 0.31- - 0.32

## 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

- Avoid strong bases.

\*.

- Avoid oxidizing agents, acids, acid chlorides, acid anhydrides.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

## Senguard

## TOXICITY AND IRRITATION

N-BUTYL ACETATE:

ETHANOL:

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

‡ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

continued...

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**Section 11 - TOXICOLOGICAL INFORMATION**

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

‡ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

**ETHANOL:**

**TOXICITY**

Oral (rat) LD50: 7060 mg/kg  
 Oral (human) LDLo: 1400 mg/kg  
 Oral (man) TDLo: 50 mg/kg  
 Oral (man) TDLo: 1.40 mg/kg  
 Oral (woman) TDLo: 256 mg/kg/12 wks  
 Inhalation (rat) LC50: 20, 000 ppm/10h  
 Inhalation (rat) LC50: 64000 ppm/4h

**IRRITATION**

Skin (rabbit):20 mg/24hr- Moderate  
 Skin (rabbit):400 mg (open)- Mild  
 Eye (rabbit):100mg/24hr- Moderate  
 Eye (rabbit): 500 mg SEVERE

**N-BUTYL ACETATE:**

**TOXICITY**

Oral (rat) LD50: 13100 mg/kg  
 Dermal (rabbit) LD50: 3200 mg/kg\*  
 Inhalation (human) TClO: 200 ppm  
 Inhalation (rat) LC50: 2000 ppm/4h  
 Inhalation (Human) TClO: 200 ppm/4h \* [PPG]  
 Oral (Rat) LD50: 10768 mg/kg  
 Inhalation (Rat) LC50: 390 ppm/4h  
 Intraperitoneal (Mouse) LD50: 1230 mg/kg  
 Oral (Rabbit) LD50: 3200 mg/kg  
 Oral (Guinea pig) LD50: 4700 mg/kg  
 Intraperitoneal (Guinea pig) LD: 1500 mg/kg

**IRRITATION**

Skin (rabbit): 500 mg/24h- Moderate  
 Eye (rabbit): 20 mg (open)- SEVERE  
 Eye (rabbit): 20 mg/24h - Moderate  
 Eye ( human): 300 mg

‡ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

**CARCINOGEN**

Ethanol in alcoholic beverages	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	1
Ethanol	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	A3
ETHANOL	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	HAZMAP, NTP- C
ETHYL ALCOHOL IN ALCOHOLIC BEVERAGES	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	IARC

**Section 12 - ECOLOGICAL INFORMATION**

Refer to data for ingredients, which follows:

ETHANOL:

N-BUTYL ACETATE:

SENGUARD:

! DO NOT discharge into sewer or waterways.

SENGUARD:

! Harmful to aquatic organisms.

ETHANOL:

! Fish LC50 (96hr.) (mg/l):	13480
! Algae IC50 (72hr.) (mg/l):	1450
! log Kow (Sangster 1997):	- 0.3
! BOD5:	63%
! ThOD:	2.1
! Half- life Soil - High (hours):	24
! Half- life Soil - Low (hours):	2.6
! Half- life Air - High (hours):	122
! Half- life Air - Low (hours):	12.2
! Half- life Surface water - High (hours):	26
! Half- life Surface water - Low (hours):	6.5
! Half- life Ground water - High (hours):	52
! Half- life Ground water - Low (hours):	13
! Aqueous biodegradation - Aerobic - High (hours):	26
! Aqueous biodegradation - Aerobic - Low (hours):	6.5
! Aqueous biodegradation - Anaerobic - High (hours):	104
! Aqueous biodegradation - Anaerobic - Low (hours):	26
! Aqueous biodegradation - Removal secondary treatment - High (hours):	67%
! Photooxidation half- life water - High (hours):	3.20E+05
! Photooxidation half- life water - Low (hours):	8020
! Photooxidation half- life air - High (hours):	122
! Photooxidation half- life air - Low (hours):	12.2

! When ethanol is released into the soil it readily and quickly biodegrades but may leach into ground water; most is lost by evaporation. When released into water the material readily evaporates and is biodegradable. Ethanol does not bioaccumulate to an appreciable extent. The material is readily degraded by reaction with photochemically produced hydroxy radicals; release into air will result in photodegradation and wet deposition.

Environmental Fate:

TERRESTRIAL FATE: An estimated Koc value of 1 indicates that ethanol is expected to have very high mobility in soil. Volatilisation of ethanol from moist soil surfaces is expected to be an important fate process given a Henry's Law constant of 5X10-6 atm-m3/mole. The potential for volatilization of ethanol from dry soil surfaces may exist based upon an extrapolated vapor pressure of 59.3 mm Hg Biodegradation is expected to be an important fate process for ethanol based on half-lives on the order of a few days for ethanol in sandy soil/groundwater microcosms

AQUATIC FATE: An estimated Koc value of 1 indicates that ethanol is not expected to adsorb to suspended solids and sediment. Volatilisation from water surfaces is expected based upon a Henry's Law constant of 5X10-6 atm-m3/mole. Using this Henry's Law constant and an estimation method, volatilisation half-lives for a model river and model lake are 3 and 39 days, respectively. An estimated BCF= 3, from a log Kow of -0.31 suggests bioconcentration in aquatic organisms is low. Hydrolysis and photolysis in sunlit surface waters is not expected to be an important environmental fate process for ethanol since this compound lacks functional groups that hydrolyse or absorb light under environmentally relevant conditions. Ethanol was degraded with half-lives on the order of a few days in aquatic studies conducted using microcosms constructed with a low organic sandy soil and groundwater, indicating it is unlikely to be persistent in aquatic environments(8).

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Section 12 - ECOLOGICAL INFORMATION

ATMOSPHERIC FATE: Ethanol, which has an extrapolated vapor pressure of 59.3 mm Hg at 25 deg C, is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase ethanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 5 days, calculated from its rate constant of  $3.3 \times 10^{-12}$  m<sup>3</sup>/molecule-sec at 25 deg C.

Ecotoxicity:

log Kow : -0.31- -0.32

Half-life (hr) air : 144

Half-life (hr) H<sub>2</sub>O surface water : 144Henry's atm m<sup>3</sup> /mol: 6.29E-06

BOD 5 if unstated: 0.93-1.67,63%

COD : 1.99-2.11,97%

ThOD : 2.1.

N-BUTYL ACETATE:

| Fish LC50 (96hr.) (mg/l): 18

| Daphnia magna EC50 (48hr.) (mg/l): 44

| log Kow (Prager 1995): 1.82

| Fish LC50 (96hr.) (mg/l): 100- 185

| Daphnia magna EC50 (48hr.) (mg/l): 44

| Algae IC50 (72hr.) (mg/l): 280

| log Kow (Sangster 1997): 1.78

| COD: 78%

| For n-butyl acetate:

Half-life (hr) air : 144

Half-life (hr) H<sub>2</sub>O surface water : 178-27156Henry's atm m<sup>3</sup> /mol: 3.20E-04

BOD 5 if unstated: 0.15-1.02,7%

COD : 78%

ThOD : 2.207

BCF : 4-14

Environmental Fate:

TERRESTRIAL FATE: An estimated Koc value of 200 determined from a measured log Kow of 1.78 indicates that n-butyl acetate is expected to have moderate mobility in soil. Volatilisation of n-butyl acetate is expected from moist soil surfaces given its Henry's Law constant of  $2.8 \times 10^{-4}$  atm-cu m/mole. Volatilisation from dry soil surfaces is expected based on a measured vapor pressure of 11.5 mm Hg. Using a standard BOD dilution technique and a sewage inoculum, theoretical BODs of 56 % to 86 % were observed during 5-20 day incubation periods, which suggests that n-butyl acetate may biodegrade in soil.

AQUATIC FATE: An estimated Koc value indicates that n-butyl acetate is not expected to adsorb to suspended solids and sediment in water. Butyl acetate is expected to volatilise from water surfaces based on a Henry's Law constant of  $2.8 \times 10^{-4}$  atm-cu m/mole. Estimated half-lives for a model river and model lake are 7 and 127, hours respectively. An estimated BCF value of 10 based on the log Kow, suggests that bioconcentration in aquatic organisms is low. Using a filtered sewage seed, 5-day and 20-day theoretical BODs of 58 % and 83 % were measured in freshwater dilution tests; 5-day and 20-day theoretical BODs of 40 % and 61 % were measured in salt water. A 5-day theoretical BOD of 56.8 % and 51.8 % were measured for n-butyl acetate in distilled water and seawater, respectively. Hydrolysis may be an important environmental fate for this compound based upon experimentally determined hydrolysis half-lives of 114 and 11 days at pH 8 and 9 respectively.

ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere, n-butyl acetate, which has a vapour pressure of 11.5 mm Hg at 25 deg C, is expected to exist solely as a vapor in the ambient atmosphere. Vapour-phase n-butyl acetate is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be about 4 days

Environmental fate:

Fish LC50 (96 h, 23 C): island silverside (*Menidia beryllina*) 185 ppm (static bioassay in synthetic seawater, mild aeration applied after 24 h); bluegill sunfish (*Lepomis macrochirus*) 100 ppm (static bioassay in fresh water, mild aeration applied after 24 h)

Fish EC50 (96 h): fathead minnow (*Pimephales promelas*) 18 mg/l (affected fish lost equilibrium prior to death)

continued...

Daphnia LC50 (48 h): 44 ppm  
 Algal LC50 (96 h): Scenedesmus 320 ppm.

**Ecotoxicity**

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
ethanol	LOW	MED	LOW	HIGH
n- butyl acetate	LOW		LOW	HIGH

**Section 13 - DISPOSAL CONSIDERATIONS**

**US EPA Waste Number & Descriptions**

A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

**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**



**DOT:**

Symbols:	None	Hazard class or Division:	3
Identification Numbers:	UN1993	PG:	II
Label Codes:	3	Special provisions:	IB2, T7,
TP1, TP8, TP28			
Packaging: Exceptions:	150	Packaging: Non-bulk:	202
Packaging: Exceptions:	150	Quantity limitations: Passenger aircraft/rail:	5 L
Quantity Limitations: Cargo aircraft only:	60 L	Vessel stowage: Location:	B
Vessel stowage: Other:	None		
Hazardous materials descriptions and proper shipping names: Flammable liquids, n.o.s.			

**Air Transport IATA:**

ICAO/IATA Class:	3	ICAO/IATA Subrisk:	??
UN/ID Number:	1993	Packing Group:	II
Special provisions:	A3		

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## Section 14 - TRANSPORTATION INFORMATION

Shipping Name: FLAMMABLE LIQUID, N.O.S. \*(CONTAINS ETHANOL)

**Maritime Transport IMDG:**

IMDG Class:	3	IMDG Subrisk:	None
UN Number:	1993	Packing Group:	II
EMS Number:	F-E,S-E	Special provisions:	274 330 944
Limited Quantities:	1 L		

Shipping Name: FLAMMABLE LIQUID, N.O.S.(contains ethanol)

## Section 15 - REGULATORY INFORMATION

**REGULATIONS****US CERCLA List of Hazardous Substances and Reportable Quantities**

Ingredient	CAS	RQ
n-butyl acetate	123-86-4	5000 lb (2270 kg)

Regulations for ingredients

**ethanol (CAS: 64-17-5) is found on the following regulatory lists;**

"Canada - Alberta Occupational Exposure Limits", "Canada - British Columbia Occupational Exposure Limits", "Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Ontario Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)", "Canada - Saskatchewan Industrial Hazardous Substances", "Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits", "Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances", "Canada ARET (Accelerated Reduction / Elimination of Toxics) Substance List", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada National Pollutant Release Inventory (NPRI)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (French)", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 18: List of products to which the Code does not apply", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Air Transport Association (IATA) Dangerous Goods Regulations", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals", "US - Alaska Limits for Air Contaminants", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - California Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity", "US - California Proposition 65 - Reproductive Toxicity", "US - Connecticut Hazardous Air Pollutants", "US - Hawaii Air Contaminant Limits", "US - Idaho - Limits for Air Contaminants", "US - Maine Chemicals of High Concern List", "US - Massachusetts Oil & Hazardous Material List", "US - Michigan Exposure Limits for Air Contaminants", "US - Minnesota Hazardous Substance List", "US - Minnesota Permissible Exposure Limits (PELs)", "US - New Jersey Right to Know Hazardous Substances", "US - Oregon Permissible Exposure Limits (Z1)", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US -

continued...

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## Section 15 - REGULATORY INFORMATION

Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US - Washington Permissible exposure limits of air contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US ACGIH Threshold Limit Values (TLV)", "US ACGIH Threshold Limit Values (TLV) - Carcinogens", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US DOT Coast Guard Bulk Hazardous Materials - List of Flammable and Combustible Bulk Liquid Cargoes", "US EPA High Production Volume Program Chemical List", "US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives", "US Food Additive Database", "US NIOSH Recommended Exposure Limits (RELs)", "US OSHA Permissible Exposure Levels (PELs) - Table Z1", "US Postal Service (USPS) Hazardous Materials Table: Postal Service Mailability Guide", "US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants", "US Toxic Substances Control Act (TSCA) - Inventory"

**n-butyl acetate (CAS: 123-86-4) is found on the following regulatory lists;**

"Canada - Alberta Occupational Exposure Limits", "Canada - British Columbia Occupational Exposure Limits", "Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Ontario Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)", "Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits", "Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada National Pollutant Release Inventory (NPRI)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (French)", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals", "US - Alaska Limits for Air Contaminants", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - Connecticut Hazardous Air Pollutants", "US - Hawaii Air Contaminant Limits", "US - Idaho - Limits for Air Contaminants", "US - Michigan Exposure Limits for Air Contaminants", "US - Minnesota Hazardous Substance List", "US - Minnesota Permissible Exposure Limits (PELs)", "US - New Jersey Right to Know Hazardous Substances", "US - Oregon Permissible Exposure Limits (Z1)", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US - Washington Permissible exposure limits of air contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US ACGIH Threshold Limit Values (TLV)", "US CWA (Clean Water Act) - List of Hazardous Substances", "US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US EPA High Production Volume Program Chemical List", "US EPA Master Testing List - Index I Chemicals Listed", "US Food Additive Database", "US NFPA 30B Manufacture and Storage of Aerosol Products - Chemical Heat of Combustion", "US NIOSH Recommended Exposure Limits (RELs)", "US OSHA Permissible Exposure Levels (PELs) - Table Z1", "US Toxic Substances Control Act (TSCA) - Inventory", "US TSCA Section 4 - Chemicals Subject to Testing Consent Orders", "US TSCA Section 4/12 (b) - Sunset Date/Status"

**No data for Senguard (CW: 4682-46)**

## Section 16 - OTHER INFORMATION

**LIMITED EVIDENCE**

‡ Inhalation and/or ingestion may produce health damage\*.

‡ Cumulative effects may result following exposure\*.

‡ May produce discomfort of the respiratory system\*.

\* (limited evidence).

continued...

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Section 16 - OTHER INFORMATION

**REPRODUCTIVE HEALTH GUIDELINES**

Ingredient	ORG	UF	Endpoint	CR	Adeq	TLV
ethanol	1880 mg/m3	NA	NA	NA	Yes	

‡ These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive Health Risk: American Industrial Hygiene Association Journal 57: 641-649 (1996).

‡ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net/references](http://www.chemwatch.net/references).

‡ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

‡ For detailed advice on Personal Protective Equipment, refer to the following U.S. Regulations and Standards:

OSHA Standards - 29 CFR:

1910.132 - Personal Protective Equipment - General requirements

1910.133 - Eye and face protection

1910.134 - Respiratory Protection

1910.136 - Occupational foot protection

1910.138 - Hand Protection

Eye and face protection - ANSI Z87.1

Foot protection - ANSI Z41

Respirators must be NIOSH approved.

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