

Ethyl Alcohol Hand Sanitizer

Kem Krest

Version No: 2.6 Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 04/03/2020 Print Date: 04/03/2020 S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier **Product name** Ethyl Alcohol Hand Sanitizer

Synonyms Hand Sanitizer; Hand Rub

Proper shipping name Ethanol or Ethyl alcohol or Ethanol solutions or Ethyl alcohol solutions

Other means of identification 130012

Recommended use of the chemical and restrictions on use

Relevant identified uses Hand Rub/Hand Sanitizer to help reduce bacteria that potentially cause disease.

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name Kem Krest

Address 12785 Emerson Dr., Brighton, Michigan 48116 United States

Telephone 248-486-3800

Fax 248-486-3810

Website Not Available

Email sdsrequests@kemkrest.com

Emergency phone number

Association / Organisation CHEMTREC

Emergency telephone

numbers 800-424-9300

Other emergency telephone

numbers Not Available

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

NFPA 704 diamond

Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification Eye Irritation Category 2A, Flammable Liquid Category 2

Label elements

Hazard pictogram(s)

SIGNAL WORD DANGER

Hazard statement(s)

H319 Causes serious eye irritation.

H225 Highly flammable liquid and vapour.

Hazard(s) not otherwise classified

Not Applicable

Precautionary statement(s) Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

Continued...

Version No: 2.6 Page 2 of 15

Ethyl Alcohol Hand Sanitizer

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement(s) Response

P370+P378 In case of fire: Use alcohol resistant foam or normal protein foam for extinction.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/attention.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Precautionary statement(s) Storage

P403+P235 Store in a well-ventilated place. Keep cool.

Precautionary statement(s) Disposal

P501 Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No %[weight] Name

7732-18-5 22.56-22.85

75-65-0 0.06-0.12

3734-33-6 <0.01

64-17-5 71.33-72.68
7722-84-1 0.05-0.34
56-81-5 2.09

SECTION 4 FIRST-AID MEASURES

Description of first aid measures

Eye Contact

water
tertiary butanol
denatonium benzoate
ethanol
hydrogen peroxide
glycerol

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. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact

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.

Inhalation If fumes, aerosols or combustion products are inhaled remove from contaminated area.

Other measures are usually unnecessary.

Ingestion Immediately give a glass of water.

First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Continued...

Version No: **2.6** Page **3** of **15**

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Ethyl Alcohol Hand Sanitizer

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 pyridoxine, Vitamins C and 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. Hydrogen peroxide at moderate concentrations (5% or more) is a strong oxidant.

Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of systemic effects attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation" Fisher Scientific SDS

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing media

For hydrogen peroxide NOTE: Chemical extinguishing agents may accelerate decomposition.

[CCINFO]

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

Special hazards arising from the substrate or mixture

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

Special protective equipment and precautions for fire-fighters

exposed containers with water
containers from path of fire.

Fire Fighting

on and nature of hazard. May be violently or
apparatus plus protective gloves in the event of a fire.
age from entering drains or water course. Consider
fire from a safe distance, with adequate cover. If safe,
vapour fire hazard removed. Use water delivered as a
adjacent area. Avoid spraying water onto liquid pools.

Fire/Explosion Hazard

en exposed to heat, flame and/or oxidisers.
. Heating may cause expansion or
bustion, may emit toxic fumes of carbon
(CO₂) other pyrolysis products typical of

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

itions for safe handling

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Minor Spills

all spills immediately. Avoid breathing vapours and
ersonal contact with the substance, by using protective
quantities with vermiculite or other absorbent material.
ble waste container.

Major Spills

ind. Alert Fire Brigade and tell them location and
explosively reactive. Wear breathing apparatus plus
ans available, spillage from entering drains or water
et in place). No smoking, naked lights or ignition
k if safe to do so. Water spray or fog may be used to

Version No: **2.6** Page **4** of **15**

Continued...

Ethyl Alcohol Hand Sanitizer

Contain spill with sand, earth or vermiculite. Use only spark-free shovels and explosion proof
equipment. Collect recoverable product into labelled containers for recycling. Absorb
remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled
drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or
waterways occurs, advise emergency services. For hydrogen peroxide:

Dilute with large quantities of water (at least ten (10) times the volume of hydrogen peroxide). Sodium
bicarbonate may be used to accelerate breakdown.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Safe handling
n explosive vapours. Do NOT cut, drill, grind, weld or perform similar
t, including inhalation. Wear protective clothing when risk of exposure
n in hollows and sumps. **DO NOT enter confined spaces until atmosphere**
rition sources. When handling, **DO NOT eat, drink or smoke**. Vapour may
NOT use plastic buckets. Earth and secure metal containers when
handling. Avoid contact with incompatible materials. Keep containers
ays wash hands with soap and water after handling. Work clothes should be
. Observe manufacturer's storage and handling recommendations contained

be regularly checked against established exposure standards to ensure safe working conditions.
erial to stay in contact with skin

No smoking, naked lights, heat or ignition
areas where vapours may be trapped. Keep
materials in a cool, dry well ventilated area.
larly for leaks. Observe manufacturer's storage

Other information

Conditions for safe storage, including any incompatibilities

stoneware Teflon lined containers.

Suitable container

ic containers may only be used if approved for flammable liquid. Check that containers are clearly labelled and free from
ms and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can
with a viscosity of at least 2680 cSt. (23 deg. C) For manufactured product having a viscosity of at least 250 cSt. (23 deg.
before use and having a viscosity of at least 20 cSt (25 deg. C): (i) Removable head packaging; (ii) Cans with friction
tridges may be used. Where combination packages are used, and the inner packages are of glass, there must be sufficient
ner and outer packages In addition, where inner packagings are glass and contain liquids of packing group I there must be
lage, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the
erating materials requiring rigid packaging. Store in:

containers with vented lids. properly passivated
aluminium containers. properly passivated stainless
steel. polyethylene containers. porcelain, vitreous

Version No: 2.6 Page 5 of 15

Ethyl Alcohol Hand Sanitizer

hydrogen selenide, iron oxides, lithium tetrahydroaluminate, magnesium tetrahydroaluminate, manganese(II) oxide, mercury oxide, methyl hydrazine, nickel monoxide, nitrogenous
bases, osmium tetroxide, alpha-phenylselenoketones, phosphorus, phosphorus(V) oxide, quinoline, tetrahydrothiophene, tin(II) chloride, thiodiglycol, thiophane, tin(II) chloride,
unsaturated organic compounds, readily oxidisable and combustible materials; avoid contact with combustibles including lubricants and graphite reacts with cobalt, copper and its
alloys, chromium, iridium, iron, lead, manganese, Monel, osmium, palladium, platinum, gold, silver, zinc, and other catalytic metals, metal oxides and salts - avoid metallic bowls and
stirrers. violent catalytic decomposition will occur in contact with certain metals such as iron, copper, chromium, brass, bronze, lead, silver, manganese or their salts. forms unstable
and possible explosive materials with acetic anhydride, aconitic acid, aniline, carboxylic acids, 1,4-diazabicyclo[2,2,2]octane, diphenyl diselenide, ethyl acetate, glycols, ketene,
ketones, triethyltin hydroperoxide, 1,3,5-trioxane, vinyl acetate. is incompatible with mercurous chloride decomposes in presence of alkalis and even ordinary dust or rust decomposes
slowly at ordinary temperatures and builds up pressure in a closed container; the rate of decomposition doubles for each 10 deg C rise in temperature and decomposition becomes
self-sustaining at 141 deg. C contact with rough surfaces can cause decomposition attacks and may ignite some plastics, rubber and coatings Avoid oxidising agents, acids, acid
chlorides, acid anhydrides, chloroformates. Avoid strong bases. *

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source Ingredient Material name TWA STEL Peak Notes

US NIOSH Recommended Exposure Limits (RELs)

tertiary butanol 2-Methyl-2-propanol, Trimethyl carbinol 100 ppm / 300

mg/m3

450 mg/m3 / 150 ppm

Not Available Not Available

US OSHA Permissible Exposure Levels (PELs) - Table Z1

tertiary butanol tert-Butyl alcohol 100 ppm / 300

mg/m3 Not Available Not

Available Not Available

US ACGIH Threshold Limit Values (TLV)

tertiary butanol tert-Butanol 100 ppm Not Available Not

Available CNS impair

US NIOSH Recommended Exposure Limits (RELs) ethanol Alcohol, Cologne spirit, Ethanol, EtOH, Grain alcohol 1000 ppm /

1900 mg/m3 Not Available Not

Available Not Available

US OSHA Permissible Exposure Levels (PELs) - Table Z1 ethanol Ethyl alcohol (Ethanol) 1000 ppm /

1900 mg/m³ Not Available Not

Available Not Available

US ACGIH Threshold Limit Values (TLV) ethanol Ethanol Not Available 1000 ppm Not

Available URT irr

US NIOSH Recommended Exposure Limits (RELs)

hydrogen High-strength peroxide

hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide

1 ppm / 1.4 mg/m³ Not Available Not

Available Not Available

US OSHA Permissible Exposure Levels (PELs) - Table Z1

hydrogen peroxide Hydrogen peroxide 1 ppm / 1.4

mg/m³ Not Available Not

Available Not Available

US ACGIH Threshold Limit Values (TLV)

hydrogen peroxide Hydrogen peroxide 1 ppm Not Available Not

Available

Eye, URT, & skin irr

US NIOSH Recommended Exposure Limits (RELs) glycerol Glycerin (anhydrous); Glycerol; Glycyl alcohol; 1,2,3-

Propanetriol; Trihydroxypropane Not Available Not Available Not

Available

See Appendix D

US OSHA Permissible Exposure Levels (PELs) - Table Z1 glycerol Glycerin (mist): Respirable fraction 5 mg/m³ Not Available Not

Available Not Available

US OSHA Permissible Exposure Levels (PELs) - Table Z1 glycerol Glycerin (mist): Total dust 15 mg/m³ Not Available Not

Available Not Available

EMERGENCY LIMITS

Ingredient Material name TEEL-1 TEEL-2 TEEL-3

tertiary butanol Butyl alcohol, tert; (tert-Butanol) 150 ppm 1,300 ppm 8000* ppm

ethanol Ethanol: (Ethyl alcohol) Not Available Not Available 15000* ppm

hydrogen peroxide Hydrogen peroxide Not Available Not Available Not Available

glycerol Glycerine (mist); (Glycerol; Glycerin) 45 mg/m³ 180 mg/m³ 1,100 mg/m³

Ingredient Original IDLH Revised IDLH

water Not Available Not Available

tertiary butanol 1,600 ppm Not Available

denatonium benzoate Not Available Not Available

ethanol 3,300 ppm Not Available

hydrogen peroxide 75 ppm Not Available

glycerol Not Available Not Available

OCCUPATIONAL EXPOSURE BANDING

Ingredient Occupational Exposure Band Rating Occupational Exposure Band Limit

denatonium benzoate E ≤ 0.01 mg/m³

Issue Date: 04/03/2020

Print Date: 04/03/2020

Continued...

Version No: 2.6 Page 6 of 15

Ethyl Alcohol Hand Sanitizer

Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the Notes: adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. 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, vapours, 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 favourable 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.

Personal protection

Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption **Eye and face protection** and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

Skin protection See Hand protection below

Hands/feet protection

Wear chemical protective gloves, e.g. PVC. Wear safety footwear or safety gumboots, e.g. Rubber The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care. 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. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

- 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, AS/NZS 2161.1 or national equivalent).
- 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, AS/NZS 2161.10.1 or national equivalent) 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, AS/NZS 2161.10.1 or national equivalent) is recommended.
- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Continued...

Version No: **2.6** Page 7 of 15

Ethyl Alcohol Hand Sanitizer

· Contaminated gloves should be replaced. As defined in ASTM F-739-96 in any application, gloves are rated as:

- Excellent when breakthrough time > 480 min
- Good when breakthrough time > 20 min
- Fair when breakthrough time < 20 min
- Poor when glove material degrades For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended. It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times. Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task. Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:
 - Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.
 - Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential 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.

Where hydrogen peroxide exposure may occur do NOT wear PVA gloves. DO NOT use leather or cotton gloves, leather shoes as spill may cause fire. Care: Effects may be delayed.

Hand cream offers no protection for hydrogen peroxide and should not be used.

Body protection See Other protection below

Other protection

Overalls. PVC Apron. PVC protective suit may be required if exposure severe. Eyewash unit. Ensure there is ready access to a safety shower. Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index". The effect(s) of the following substance(s) are taken into account in the *computer-generated* selection: Ethyl Alcohol Hand Sanitizer

Material CPI

BUTYL C

NAT+NEOPR+NITRILE C

NATURAL RUBBER C

NATURAL+NEOPRENE C

NEOPRENE C

NEOPRENE/NATURAL C

NITRILE C

NITRILE+PVC C

PE/EVAL/PE C

PVA C

PVC C

VITON C

* CPI - Chemwatch Performance Index A: Best Selection B: Satisfactory; may degrade after 4 hours continuous immersion C: Poor to Dangerous Choice for other than short term immersion **NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. - * Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor

Half-Face Respirator

Full-Face Respirator

Powered Air Respirator up to 10 x ES A-AUS - A-PAPR-AUS /

Class 1 up to 50 x ES - A-AUS / Class 1 - up to 100 x ES - A-2 A-PAPR-2 ^

^ - Full-face A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate. Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Colorless

Issue Date: 04/03/2020

Print Date: 04/03/2020

Continued...

Version No: 2.6 Page 8 of 15

Ethyl Alcohol Hand Sanitizer

Physical state Liquid Relative density (Water = 1) 0.863

Odour Not Available Partition coefficient n-octanol

/ water Not Available

Odour threshold Not Available Auto-ignition temperature (°C) Not Available

pH (as supplied) Not Available Decomposition temperature Not Available

Melting point / freezing point

(°C) Not Available Viscosity (cSt) Not Available

Initial boiling point and boiling

range (°C) Not Available Molecular weight (g/mol) Not Available

Flash point (°C) 20.56 Taste Not Available

Evaporation rate Not Available Explosive properties Not Available

Flammability HIGHLY FLAMMABLE. Oxidising properties Not Available

Upper Explosive Limit (%) Not Available Surface Tension (dyn/cm or

mN/m) Not Available

Lower Explosive Limit (%) Not Available Volatile Component (%vol) Not Available

Vapour pressure (kPa) Not Available Gas group Not Available

Solubility in water Miscible pH as a solution (1%) Not Available

Vapour density (Air = 1) Not Available VOC g/L Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity See section 7

Chemical stability

Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur. Solutions of hydrogen peroxide slowly decompose, releasing oxygen, and so are often stabilised by the addition of acetanilide, etc.

Possibility of hazardous reactions See section 7

Conditions to avoid See section 7

Incompatible materials See section 7

Hazardous decomposition products See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. Animal testing shows that the most common signs of inhalation overdose is inco-ordination and drowsiness. Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination. Inhaling excessive levels of mist may result in headache, dizziness, vomiting, diarrhoea, irritability, sleeplessness and fluid in the lungs, and cause extreme irritation of the nose and chest, cough, discomfort, shortness of breath and inflammation of the nose and throat. Whole-body effects of hydrogen peroxide poisoning include tremor, numbness of the limbs, convulsions, coma and shock. Hydrogen peroxide has poor warning properties. Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

Ingestion

Ingestion of ethanol (ethyl alcohol, "alcohol") may produce nausea, vomiting, bleeding from the digestive tract, abdominal pain, and diarrhoea. Effects on the body:

Blood concentration Effects

<1.5 g/L Mild: impaired vision, co-ordination and

reaction time; emotional instability

1.5-3.0 g/L

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.

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Continued...

Issue Version No: **2.6** Page **9** of **15**

Date: **04/03/2020**

Ethyl Alcohol Hand Sanitizer

Print Date: **04/03/2020**

Severe: cold clammy skin, low body temperature and low blood pressure. Atrial fibrillation and heart block have been reported. Depression of breathing may

3-5 g/L

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.

The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. Hydrogen peroxide may cause blistering and bleeding from the throat and stomach. When swallowed, it may release large quantities of oxygen which could hyper-distend the stomach and gut and may cause internal bleeding, mouth and throat burns and rupture of the gut. There may also be fever, nausea, foaming at the mouth, vomiting, chest and stomach pain, loss of consciousness, and movement disorders and death. Large amounts can also cause cessation of breath, dizziness, headache, tremors weakness or numbness in the extremities and convulsions. Hydrogen peroxide concentrate is corrosive and must not be taken undiluted. Accidental ingestion of the material may be damaging to the health of the individual.

Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin **Skin Contact**

prior to the use of the material and ensure that any external damage is suitably protected. Hydrogen peroxide is used topically as dental gel and to clean minor wounds. It may cause dose dependent effect on the skin including bleaching, blistering, reddening and corrosion (at >50% concentration). There is some evidence to suggest that 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 characterised by redness, swelling and blistering.

Eye

Continued... Direct contact of the eye with ethanol (alcohol) may cause an immediate stinging and burning sensation, with reflex closure of the lid, and a temporary, tearing injury to the cornea together with redness of the conjunctiva. Discomfort may last 2 days but usually the injury heals without treatment. Hydrogen peroxide concentrations above 10% are corrosive to the eye and may cause corneal ulceration even days after exposure. 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.

Chronic

Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defects that can be inherited. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. Ample evidence exists that this material directly causes reduced fertility Prolonged exposure to ethanol may cause damage to the liver and cause scarring. It may also worsen damage caused by other agents. Hydrogen peroxide as a human food additive is generally regarded as safe, when used with certain limitations. In experimental animals hydrogen peroxide given by mouth causes damage to the teeth, liver, kidney, stomach and bowel. Inhalation exposure to hydrogen peroxide caused skin irritation, sneezing and death in animals. Skin irritation, sneezing, excessive secretion of tears, and whitening of the hair was also seen in animals chronically exposed to hydrogen peroxide.

Ethyl Alcohol Hand Sanitizer TOXICITY Not Available IRRITATION Not Available

water

TOXICITY IRRITATION

Oral (rat) LD50: >90000 mg/kg^[2] Not Available

tertiary butanol

TOXICITY IRRITATION

Dermal (rabbit) LD50: >2000 mg/kg^[2] Eye: adverse effect observed (irritating)^[1]

Inhalation (rat) LC50: >9988.59 mg/l/4H^[2] Skin: adverse effect observed (irritating)^[1]

Oral (rat) LD50: 1500 mg/kg^[2] Skin: no adverse effect observed (not irritating)^[1]

denatonium benzoate

TOXICITY IRRITATION

dermal (rat) LD50: >2000 mg/kg^[1] Eye: adverse effect observed (irreversible damage)^[1]

Inhalation (rat) LC50: 0.2 mg/l/4H^[2] Skin: adverse effect observed (irritating)^[1]

Oral (rat) LD50: 584 mg/kg^[2]

ethanol

TOXICITY IRRITATION

Inhalation (rat) LC50: 124.7 mg/l/4H^[2] Eye (rabbit): 500 mg SEVERE

Oral (rat) LD50: =1501 mg/kg^[2] Eye (rabbit):100mg/24hr-moderate

Eye: adverse effect observed (irritating)^[1]

Skin (rabbit):20 mg/24hr-moderate

Skin (rabbit):400 mg (open)-mild

Skin: no adverse effect observed (not irritating)^[1]

Version No: 2.6 Page 10 of 15

Ethyl Alcohol Hand Sanitizer

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ethyl Alcohol Hand Sanitizer

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

Not Available Not Available Not Available Not Available

Available

Not Available

water

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish 897.520mg/L 3

EC50 96 Algae or other aquatic plants 8768.874mg/L 3

tertiary butanol

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish 106.428mg/L 3

EC50 48 Crustacea 5-504mg/L 2

EC50 72 Algae or other aquatic plants >1-mg/L 2

NOEC 72 Algae or other aquatic plants 1-mg/L 2

denatonium benzoate

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish >1-mg/L 2

EC50 48 Crustacea >500mg/L 2

Serious Eye Damage/Irritation

TOXICITY IRRITATION

dermal (rat) LD50: >2000 mg/kg^[2] Not Available

Inhalation (rat) LC50: 2 mg/l/4H^[2]

Oral (rat) LD50: >225 mg/kg^[2]

glycerol

TOXICITY IRRITATION

Oral (rat) LD50: >10000 mg/kg^[2] Not Available

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

DENATONIUM BENZOATE

Somnolence, tremor, ataxia recorded. Most undiluted cationic surfactants satisfy the criteria for classification as Harmful (Xn) with R22 and as Irritant (Xi) for skin and eyes with R38 and R41. For quaternary ammonium compounds (QACs): Quaternary ammonium compounds are synthetically made surfactants. Studies show that its solubility, toxicity and irritation depend on chain length and bond type while effect on histamine depends on concentration. QACs may cause muscle paralysis with no brain involvement. There is a significant association between the development of asthma symptoms and the use of QACs as disinfectant.

ETHANOL 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.

HYDROGEN PEROXIDE

Exposure to hydrogen peroxide via the skin or oral route can produce toxic effects. Animal studies have shown evidence of damage to the kidney, gut, thymus and liver. Stomach and intestinal lesions including benign and malignant cancers have been observed in mice. It may produce genetic and developmental defects but no reproductive toxicity was reported in

mice. 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.

GLYCEROL At very high concentrations, evidence predicts that glycerol may cause tremor, irritation of the skin, eyes, digestive tract and airway. Otherwise it is of low toxicity. There is no significant evidence to suggest that it causes cancer, genetic, reproductive or developmental toxicity.

WATER & HYDROGEN

PEROXIDE No significant acute toxicological data identified in literature search.

TERTIARY BUTANOL & DENATONIUM BENZOATE & HYDROGEN PEROXIDE & GLYCEROL

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.

Acute Toxicity

Skin Irritation/Corrosion

Respiratory or Skin sensitisation

hydrogen peroxide

Mutagenicity

Legend: – Data either not available or does not fill the criteria for classification

– Data available to make classification

STOT - Repeated Exposure

STOT - Single Exposure

Aspiration Hazard

Carcinogenicity

Reproductivity

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

Continued...

Issue Date: **04/03/2020**

Print Date: **04/03/2020**

EC50 72 Algae or other aquatic plants >100mg/L 2

NOEC 48 Crustacea 50mg/L 2

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish 11-mg/L 2

ethanol

EC50 48 Crustacea 2mg/L 4

EC50 96 Algae or other aquatic plants 17.921mg/L 4

NOEC 2016 Fish 0.000375mg/L 4

hydrogen peroxide

Continued... ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish 0.020mg/L 3

EC50 48 Crustacea 2mg/L 2

EC50 72 Algae or other aquatic plants 0.71mg/L 4

EC0 24 Crustacea 1.1mg/L 2

NOEC 192 Fish 0.028mg/L 4

glycerol Version No: **2.6** Page **11** of **15**

Ethyl Alcohol Hand Sanitizer

ENDPOINT TEST DURATION (HR) SPECIES VALUE SOURCE

LC50 96 Fish >0.011-mg/L 2

EC50 96 Algae or other aquatic plants 77712.039mg/L 3

Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

For Ethanol: log Kow: -0.31 to -0.32; Koc 1: Estimated BCF= 3; Half-life (hr) air: 144; Half-life (hr) H2O surface water: 144; Henry's atm m³/mol: 6.29E-06; BOD 5 if unstated: 0.93-1.67,63% COD: 1.99-2.11,97%;

ThOD : 2.1. Environmental Fate: Terrestrial - Ethanol quickly biodegrades in soil but may leach into ground water; most is lost by evaporation. Ethanol is expected to have very high mobility in soil. Volatilization of ethanol from moist soil surfaces is expected to be an important fate process. The potential for volatilization of ethanol from dry soil surfaces may exist. 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.

Atmospheric Fate: Ethanol is expected to exist solely as a vapour in the ambient atmosphere. Vapour-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. Ethanol readily degraded by reaction with photochemically produced hydroxy radicals; release into air will result in photodegradation and wet deposition. Aquatic Fate: When released into water ethanol readily evaporates and is biodegradable. Ethanol is not expected to adsorb to suspended solids and sediment. Volatilization from water surfaces is expected and volatilization half-lives for a model river and model lake are 3 and 39 days, respectively. Bioconcentration in aquatic organisms is considered to be low. Hydrolysis and photolysis in sunlight surface waters is not expected to be an important environmental fate process for ethanol and is unlikely to be persistent in aquatic environments.

For hydrogen peroxide: log Kow: -1.36; Environmental Fate: Hydrogen peroxide is a naturally occurring substance (typical background concentrations < 1 - 30 g/l), which is produced by almost all cells in their metabolism, with the exception of anaerobic bacteria. Hydrogen peroxide is a reactive substance in the presence of other substances, elements, radiation, materials and can be degraded by micro-organisms or higher organisms. Air - Hydrogen peroxide is degraded by light and thus may be removed from the atmosphere by photolysis giving rise to hydroxyl radicals, by reaction with hydroxyl radicals, or by heterogenous loss processes such as rain-out. Significantly higher hydrogen peroxide concentrations are found in polluted atmospheres as compared with clean air, presumably due to oxidation of reactive hydrocarbons as a result of exposure to light. Soil - No information was found

regarding the transformation or persistence of hydrogen peroxide in soil, however, solutions of hydrogen peroxide gradually deteriorate. Water - Hydrogen peroxide is a naturally occurring substance. Surface water concentrations of hydrogen peroxide have been found to vary between 51-231 mg/L, increasing both with exposure to sunlight and the presence of dissolved organic matter. Hydrogen peroxide degrades by various mechanisms, including chemical reduction and enzymatic decomposition by algae, zooplankton, and bacteria. However microorganisms, especially bacteria, account for the majority of degradation. The rate of decomposition in natural water varies from a few minutes to more than a week, depending on numerous chemical, biological, and physical factors. Hydrogen peroxide is rapidly degraded in a biological waste water treatment plant. Hydrogen peroxide adsorbs poorly to sediment particles and is rapidly degraded, thus accumulation in the sediment is also not expected. Hydrogen peroxide (log Kow < -1) is an inorganic substance and therefore shows little potential to bioaccumulate. Ecotoxicity: Fish LC50 (96 h): catfish 37.4 mg/l/Fish LC50 (24 h): mackerel 89 mg/l; chameleon gobi 155 mg/l/Zebra mussel LC50 (28 h) 30 mg/l; (228 h): 12 mg/l Ecotoxicity data show that microorganisms (i.e., bacteria, algae) and zooplankton present in aquatic ecosystems are generally less tolerant of hydrogen peroxide exposure than fish or other vertebrates. Effects of short-term exposures on sensitive bacteria and invertebrates (e.g., Daphnia pulex) have been observed at concentrations in the low mg/L (ppm) range, while effects on sensitive algae have been reported at levels less than 1.0 mg/L. Algae are the most sensitive species for hydrogen peroxide. The algal EC50 of hydrogen peroxide was 1.6-5 mg/l, while the NOEC was 0.1 mg/l. In a 21-d continuous exposure study on Daphnia magna, the chronic no observable effect concentration (NOEC) for reproduction was 0.63 mg/L and the NOEC for mortality was 1.25 mg/L. In chronic toxicity studies with invertebrates (zebra mussels) and hydrogen peroxide shows an NOEC of 2 mg/l. The PNEC of hydrogen peroxide is equal to 10 ug/l. Risk mitigation is needed to ensure that use of hydrogen peroxide will not adversely impact aquatic life. An acute water quality criterion or "benchmark" has been determined. For hydrogen peroxide, the acute benchmark is 0.7 mg/L. This value was calculated using the extensive toxicity database for hydrogen peroxide and procedures in U.S. Environmental Protection Agency guidance for deriving numerical national water quality criteria. The use of hydrogen peroxide in intensive aquaculture in finfish (at up to 100 mg/L for 60 minutes) and finfish eggs (at up to 1,000 mg/L for 15 minutes) is not expected to have a significant impact on the environment. **DO NOT discharge into sewer or waterways.**

Persistence and degradability

Ingredient Persistence: Water/Soil Persistence: Air

water LOW LOW

tertiary butanol HIGH (Half-life = 360 days) LOW (Half-life = 24.58 days)

ethanol LOW (Half-life = 2.17 days) LOW (Half-life = 5.08 days)

hydrogen peroxide LOW LOW

glycerol LOW LOW

Version No: 2.6 Page 12 of 15

Ethyl Alcohol Hand Sanitizer

Bioaccumulative potential

Ingredient Bioaccumulation

water LOW (LogKOW = -1.38)

tertiary butanol LOW (BCF = 1.09)

ethanol LOW (LogKOW = -0.31)

hydrogen peroxide LOW (LogKOW = -1.571)

glycerol LOW (LogKOW = -1.76)

Mobility in soil

Ingredient Mobility

water LOW (KOC = 14.3)

tertiary butanol HIGH (KOC = 1.471)

ethanol HIGH (KOC = 1)

hydrogen peroxide LOW (KOC = 14.3)

glycerol HIGH (KOC = 1)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal

Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible. Otherwise:

If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and SDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate:

Reduction Reuse Recycling Disposal (if all else fails) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority. Recycle wherever possible. Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes 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 TRANSPORT INFORMATION

Labels Required

Marine Pollutant NO

Land transport (DOT)UN number 1170

UN proper shipping name Ethanol or Ethyl alcohol or Ethanol solutions or Ethyl alcohol solutions

Transport hazard class(es) Class 3

Subrisk Not Applicable

Packing group II

Environmental hazard Not Applicable

Special precautions for user Hazard Label 3

Special provisions 24, IB2, T4, TP1

Issue Date: 04/03/2020

Print Date: 04/03/2020

Continued...

Version No: 2.6 Page 13 of 15

Ethyl Alcohol Hand Sanitizer

Air transport (ICAO-IATA / DGR)

UN number 1170

UN proper shipping name Ethanol or Ethanol. solution

Transport hazard class(es)

ICAO/IATA Class 3

ICAO / IATA Subrisk Not Applicable

ERG Code 3L

Packing group II

Environmental hazard Not Applicable

Special precautions for user

Special provisions A3 A58 A180

Cargo Only Packing Instructions 364

Cargo Only Maximum Qty / Pack 60 L

Passenger and Cargo Packing Instructions 353

Passenger and Cargo Maximum Qty / Pack 5 L

Passenger and Cargo Limited Quantity Packing Instructions Y341

Passenger and Cargo Limited Maximum Qty / Pack 1 L

Sea transport (IMDG-Code / GGVSee)

UN number 1170

UN proper shipping name ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)

Transport hazard class(es) IMDG Class 3

IMDG Subrisk Not Applicable

Packing group II

Environmental hazard Not Applicable

Special precautions for user

EMS Number F-E , S-D

Special provisions 144

Limited Quantities 1 L

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

WATER IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

TERTIARY BUTANOL IS FOUND ON THE FOLLOWING REGULATORY LISTS

US ACGIH Threshold Limit Values (Spanish) US ACGIH Threshold Limit Values (TLV) US AIHA Workplace Environmental Exposure Levels (WEELs) US DOE Temporary Emergency Exposure Limits (TEELs) US EPCRA Section 313 Chemical List US NIOSH Recommended Exposure Limits (RELs) US NIOSH Recommended Exposure Limits (RELs) (Spanish) US OSHA Permissible Exposure Levels (PELs) - Table Z1 US OSHA Permissible Exposure Limits - Annotated Table Z-1 (Spanish) US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

DENATONIUM BENZOATE IS FOUND ON THE FOLLOWING REGULATORY LISTS

US List of Active Substances Exempt from the TSCA Inventory Notifications (Active-Inactive) Rule US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

ETHANOL IS FOUND ON THE FOLLOWING REGULATORY LISTS

US ACGIH Threshold Limit Values (Spanish) US ACGIH Threshold Limit Values (TLV) US AIHA Workplace Environmental Exposure Levels (WEELs) US DOE Temporary Emergency Exposure Limits (TEELs) US NIOSH Recommended Exposure Limits (RELs) US NIOSH Recommended Exposure Limits (RELs) (Spanish) US OSHA Permissible Exposure Levels (PELs) - Table Z1 US OSHA Permissible Exposure Limits - Annotated Table Z-1 (Spanish)

Issue Date: 04/03/2020

Print Date: 04/03/2020

Continued...

Issue Version No: 2.6 Page 14 of 15

Date: 04/03/2020

Ethyl Alcohol Hand Sanitizer

Print Date: 04/03/2020

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

HYDROGEN PEROXIDE IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs US ACGIH Threshold Limit Values (Spanish) US ACGIH Threshold Limit Values (TLV) US AIHA Workplace Environmental Exposure Levels (WEELs) US Department of Homeland Security (DHS) - Chemical Facility Anti-Terrorism Standards (CFATS) - Chemicals of Interest US DOE Temporary Emergency Exposure Limits (TEELs) US NIOSH Recommended Exposure Limits (RELs) US NIOSH Recommended Exposure Limits (RELs) (Spanish) US OSHA Permissible Exposure Levels (PELs) - Table Z1 US OSHA Permissible Exposure Limits - Annotated Table Z-1 (Spanish) US SARA Section 302 Extremely Hazardous Substances US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

GLYCEROL IS FOUND ON THE FOLLOWING REGULATORY LISTS

US ACGIH Threshold Limit Values (Spanish) US DOE Temporary Emergency Exposure Limits (TEELs) US NIOSH Recommended Exposure Limits (RELs) US NIOSH Recommended Exposure Limits (RELs) (Spanish) US OSHA Permissible Exposure Levels (PELs) - Table Z1 US OSHA Permissible Exposure Limits - Annotated Table Z-1 (Spanish) US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory US TSCA Chemical Substance Inventory - Interim List of Active Substances

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES

Flammable (Gases, Aerosols, Liquids, or Solids) Yes

Gas under pressure No

Explosive No

Self-heating No

Pyrophoric (Liquid or Solid) No

Pyrophoric Gas No

Corrosive to metal No

Oxidizer (Liquid, Solid or Gas) No

Organic Peroxide No

Self-reactive No

In contact with water emits flammable gas No

Combustible Dust No

Carcinogenicity No

Acute toxicity (any route of exposure) No

Reproductive toxicity No

Skin Corrosion or Irritation No

Respiratory or Skin Sensitization No

Serious eye damage or eye irritation Yes

Specific target organ toxicity (single or repeated exposure) No

Aspiration Hazard No

Germ cell mutagenicity No

Simple Asphyxiant No

Hazards Not Otherwise Classified No

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

None Reported

State Regulations

US. CALIFORNIA PROPOSITION 65

None Reported

National Inventory Status

National Inventory Status

Australia - AICS Yes

Canada - DSL Yes

Continued...

Issue Version No: 2.6 Page 15 of 15

Date: 04/03/2020

Ethyl Alcohol Hand Sanitizer

Print Date: 04/03/2020

Canada - NDSL No (hydrogen peroxide; glycerol; tertiary butanol; ethanol; water; denatonium benzoate)

China - IECSC Yes

Europe - EINEC / ELINCS / NLP Yes

Japan - ENCS No (denatonium benzoate)

Korea - KECI Yes

New Zealand - NZIoC Yes

Philippines - PICCS Yes

USA - TSCA Yes

Taiwan - TCSI Yes

Mexico - INSQ Yes

Vietnam - NCI Yes

Russia - ARIPS Yes

Legend: Yes = All CAS declared ingredients are on the inventory

No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Revision Date 04/03/2020

Initial Date 03/24/2020

SDS Version Summary

Version Issue Date Sections Updated

1.6.1.1.1 04/02/2020 Ingredients

Other information

Classification of the preparation 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. The 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.

Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average PC-STEL: Permissible Concentration-Short Term Exposure Limit IARC: International Agency for Research on Cancer ACGIH: American Conference of Governmental Industrial Hygienists STEL: Short Term Exposure Limit TEEL: Temporary Emergency Exposure Limit. IDLH: Immediately Dangerous to Life or Health Concentrations OSF: Odour Safety Factor NOAEL :No Observed Adverse Effect Level LOAEL: Lowest Observed Adverse Effect Level TLV: Threshold Limit Value LOD: Limit Of Detection OTV: Odour Threshold Value BCF: BioConcentration Factors BEI: Biological Exposure Index

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