2-ETHYLHEXAN-1-OL

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
2-ETHYL HEXAN-1-OL

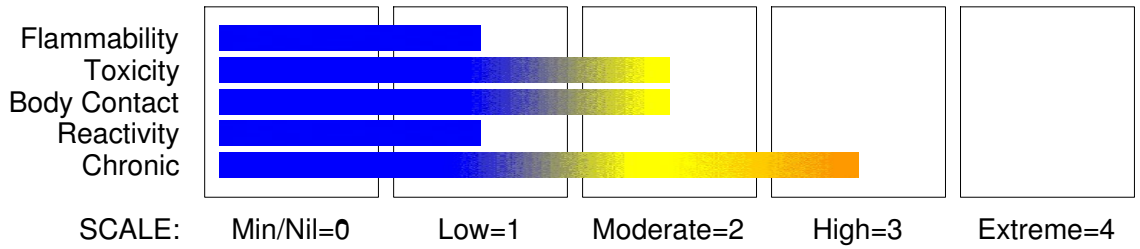
OTHER NAMES

C8-H18-O, CH3(CH2)3CHC2H5CH2OH, ethylhexanol, "2-ethyl hexylalcohol", "2-ethyl hexylalcohol", "2-ethyl hexyl alcohol", "2-ethyl hexyl alcohol", 2-ethyl-1-hexanol, 2 -ethyl-1-hexanol, "1-hexanol, 2-ethyl", "1-hexanol, 2-ethyl", "octyl alcohol", "iso -octyl alcohol"

PRODUCT USE
Plasticiser for PVC resins, defoaming agent, wetting agent, organic synthesis, solvent mix for nitrocellulose, paints, lacquers, baking finishes; penetrant for mercerising cotton, textile finishing compounds, plasticisers. Also used in inks, rubber, paper, lubricants, photography and dry cleaning.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Dermal) Category 4
Acute Toxicity (Oral) Category 4
Eye Irritation Category 2A
Reproductive Toxicity Category 1B
Respiratory Effects Category 3
Skin Corrosion/Irritation Category 3
Skin Sensitizer Category 1

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H336 H312 H302 H316 H319 H317 H360
May cause drowsiness and dizziness
Harmful in contact with skin
Harmful if swallowed
Causes mild skin irritation
Causes serious eye irritation
May cause allergic skin reaction
May damage the unborn child

PRECAUTIONARY STATEMENTS

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/clothing
Avoid breathing dust/fume/gas/mist/vapours/spray.
Contaminated clothing should not be allowed out of the workplace.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use personal protective equipment as required.

Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Wear eye/face protection.
If skin irritation occurs, seek medical advice/attention.
If exposed or concerned: Get medical attention advice.
If skin irritation or rash occurs, seek medical advice/attention.
If eye irritation persists, get medical advice/attention.

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IF ON SKIN: Gently wash with plenty of soap and water.
Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment: refer to Label or MSDS.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Wash contaminated clothing before reuse.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
2- ethyl hexanol	104-76-7	> 95

Section 4 - FIRST AID MEASURES

SWALLOWED

If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.
· 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.

EYE

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

SKIN

If skin 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.

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· 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

To treat poisoning by the higher aliphatic alcohols:
· Gastric lavage with copious amounts of water.
· It may be beneficial to instill 60 ml of mineral oil into the stomach.
· Oxygen and artificial respiration as needed.
· Electrolyte balance: it may be useful to start 500 ml. M/6 sodium bicarbonate intravenously but maintain a cautious and conservative attitude toward electrolyte replacement unless shock or severe acidosis threatens.
· To protect the liver, maintain carbohydrate intake by intravenous infusions of glucose.
· Haemodialysis if coma is deep and persistent. [GOSSELIN, SMITH HODGE: Clinical Toxicology of Commercial Products, Ed 5)

BASIC TREATMENT

· Establish a patent airway with suction where necessary.
· Watch for signs of respiratory insufficiency and assist ventilation as necessary.
· Administer oxygen by non-rebreather mask at 10 to 15 l/min.
· Monitor and treat, where necessary, for shock.
· Monitor and treat, where necessary, for pulmonary oedema.
· Anticipate and treat, where necessary, for seizures.
· DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
· Give activated charcoal.

ADVANCED TREATMENT

· Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
· Positive-pressure ventilation using a bag-valve mask might be of use.
· Monitor and treat, where necessary, for arrhythmias.
· Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
· If the patient is hypoglycaemic (decreased or loss of consciousness, tachycardia, pallor, dilated pupils, diaphoresis and/or dextrose strip or glucometer readings below 50 mg), give 50% dextrose.
· Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
· Drug therapy should be considered for pulmonary oedema.
· Treat seizures with diazepam.
· Proparacaine hydrochloride should be used to assist eye irrigation.

EMERGENCY DEPARTMENT

· Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.

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· Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
· Acidosis may respond to hyperventilation and bicarbonate therapy.
· Haemodialysis might be considered in patients with severe intoxication.
· Consult a toxicologist as necessary. BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.
Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

Section 5 - FIRE FIGHTING MEASURES

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

FIRE FIGHTING
· Alert Fire Brigade and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water course.
· Use water delivered as a fine spray to control 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 protected location.
· If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD
· Combustible.
· Slight fire hazard when exposed to heat or flame.
· Heating may cause expansion or decomposition leading to violent rupture of containers.
· On combustion, may emit toxic fumes of carbon monoxide (CO).
· May emit acrid smoke.
· Mists containing combustible materials may be explosive.
Combustion products include: carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
May emit corrosive fumes.

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

Personal Protective Equipment
Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable labelled container for waste disposal.

MAJOR SPILLS
Chemical Class: alcohols and glycols

For release onto land: recommended sorbents listed in order of priority.

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
LAND SPILL - SMALL				
cross- linked polymer - particulate	1	shovel	shovel	R, W, SS
cross- linked polymer - pillow	1	throw	pitchfork	R, DGC, RT
sorbent clay - particulate	2	shovel	shovel	R, I, P
wood fiber - pillow	3	throw	pitchfork	R, P, DGC, RT
treated wood fiber - pillow	3	throw	pitchfork	DGC, RT
foamed glass - pillow	4	throw	pichfork	R, P, DGC, RT
LAND SPILL - MEDIUM				
cross- linked polymer - particulate	1	blower	skiploader	R, W, SS
polypropylene - particulate	2	blower	skiploader	W, SS, DGC
sorbent clay - particulate	2	blower	skiploader	R, I, W, P, DGC
polypropylene - mat	3	throw	skiploader	DGC, RT
expanded mineral - particulate	3	blower	skiploader	R, I, W, P, DGC
polyurethane - mat	4	throw	skiploader	DGC, RT

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Legend
DGC: Not effective where ground cover is dense
R; Not reusable
I: Not incinerable
P: Effectiveness reduced when rainy
RT:Not effective where terrain is rugged
SS: Not for use within environmentally sensitive sites
W: Effectiveness reduced when windy

Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;
R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988.
Moderate hazard.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- 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.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)
The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
2-ethyl hexanol 500 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
2-ethyl hexanol 100 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:
2-ethyl hexanol 15 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:
2-ethyl hexanol 5 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

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SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+	X	+	X	0	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

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 or ignition sources.
· Avoid contact with incompatible materials.
· When handling, DO NOT eat, drink or smoke.
· Keep containers securely sealed when not in use.
· Avoid physical damage to containers.
· Always wash hands with soap and water after handling.
· Work clothes should be laundered separately.
· 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.

SUITABLE CONTAINER

Glass container.
· Metal can or drum
· Packaging as recommended by manufacturer.
· Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

Incompatible with aluminium. DO NOT heat above 49 deg. C. in aluminium equipment.
Avoid storage with strong acids, acid chlorides, acid anhydrides, oxidising agents.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.
· No smoking, naked lights or ignition sources.
· Store in a cool, dry, well-ventilated area.
· Store away from incompatible materials and foodstuff containers.
· Protect containers against physical damage and check regularly for leaks.
· Observe manufacturer's storing and handling recommendations.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• 2- ethyl hexanol: CAS:104- 76- 7 CAS:111675- 57- 1

MATERIAL DATA

CEL: 50 ppm, 226 mg/m3 skin [Manufacturer]
for iso-octanol
TLV TWA: 50 ppm, 266 mg/m3 (skin)
ES TWA: 50 ppm, 270 mg/m3 (skin)
Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.
Threshold odour concentration: 100% recognition, 0.138 ppm.

PERSONAL PROTECTION

EYE

· 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 lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption 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].

HANDS/FEET

Suitability and durability of glove type is dependent on usage. Factors such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity,
are important in the selection of gloves.
Wear chemical protective gloves, eg. PVC.
Wear safety footwear or safety gumboots, eg. Rubber.

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NOTE: The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

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

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: 2- ethyl hexanol

Protective Material	
BUTYL	A
NEOPRENE	A
PVA	A
VITON	A

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.

RESPIRATOR
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.

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	A- AUS	-	A- PAPR- AUS
20 x ES	-	A- AUS	-
100 x ES	-	A- 2	A- PAPR- 2 ^

^ - Full-face.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult
your
Occupational Health and Safety Advisor.

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ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. 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.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 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.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear colourless liquid with mild, sweet, slightly floral odour.
Slightly soluble in water. Miscible with most organic solvents.

PHYSICAL PROPERTIES

Liquid.
Does not mix with water.
Floats on water.

Molecular Weight: 130.26
Melting Range (°C): - 76
Solubility in water (g/L): Partly miscible
pH (1% solution): 7 (approx.)
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 4.5
Lower Explosive Limit (%): 0.88
Autoignition Temp (°C): 288
State: Liquid

Boiling Range (°C): 183.5
Specific Gravity (water=1): 0.83
pH (as supplied): Not applicable
Vapour Pressure (kPa): 0.36 @ 20 C.
Evaporation Rate: 0.01 BuAc=1
Flash Point (°C): 81.1
Upper Explosive Limit (%): 9.7
Decomposition Temp (°C): Not available.
Viscosity: Not Available

log Kow: 2.81

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

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

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual.
Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result.
(ICSC13733).
Effects on the nervous system characterise over-exposure to higher aliphatic alcohols. These include headache, muscle weakness, giddiness, ataxia, (loss of muscle coordination) , confusion, delirium and coma. Gastrointestinal effects may include nausea, vomiting and diarrhoea. In the absence of effective treatment, respiratory arrest is the most common cause of death in animals acutely poisoned by the higher alcohols. Aspiration of liquid alcohols produces an especially toxic response as they are able to penetrate deeply in the lung where they are absorbed and may produce pulmonary injury. Those possessing lower

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viscosity elicit a greater response. The result is a high blood level and prompt death at doses otherwise tolerated by ingestion without aspiration. As a general observation, alcohols are more powerful central nervous system depressants than their aliphatic analogues. In sequence of decreasing depressant potential, tertiary alcohols with multiple substituent OH groups are more potent than secondary alcohols, which, in turn, are more potent than primary alcohols. The potential for overall systemic toxicity increases with molecular weight, principally because the water solubility is diminished and lipophilicity is increased.

EYE
Evidence exists, or practical experience predicts, that the material may cause severe eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Eye contact may cause significant inflammation with pain. Corneal injury may occur; permanent impairment of vision may result unless treatment is prompt and adequate. Repeated or prolonged exposure to irritants may cause inflammation characterised by a temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

SKIN
Skin contact with the material may be harmful; systemic effects may result following absorption.
The material may produce moderate skin irritation; limited evidence or practical experience suggests, that the material either:

· produces moderate inflammation of the skin in a substantial number of individuals following direct contact and/or
· produces significant, but moderate, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period.

Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
Most liquid alcohols appear to act as primary skin irritants in humans. Significant percutaneous absorption occurs in rabbits but not apparently in man.
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 may produce health damage*.
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.
Exposure to aliphatic alcohols with more than 3 carbons may produce central nervous system effects such as headache, dizziness, drowsiness, muscle weakness, delirium, CNS depression, coma, seizure, and neurobehavioural changes. Symptoms are more acute with higher alcohols. Respiratory tract involvement may produce irritation of the mucosa, respiratory insufficiency, respiratory depression secondary to CNS depression, pulmonary oedema, chemical pneumonitis and bronchitis. Cardiovascular involvement may result in arrhythmias and hypotension. Gastrointestinal effects may include nausea and vomiting.

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Kidney and liver damage may result following massive exposures. The alcohols are potential irritants being, generally, stronger irritants than similar organic structures that lack functional groups (e.g. alkanes) but are much less irritating than the corresponding amines, aldehydes or ketones. Alcohols and glycols (diols) rarely represent serious hazards in the workplace, because their vapour concentrations are usually less than the levels which produce significant irritation which, in turn, produce significant central nervous system effects as well.
The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.

CHRONIC HEALTH EFFECTS
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals.
There is some evidence that human exposure to the material may result in developmental toxicity. This evidence is based on animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.
The material may accumulate in the human body and progressively cause tissue damage.
Prolonged or repeated skin contact may result in irritation, reddening and sensitisation.
Repeated oral and dermal exposures to animals has resulted in adverse liver and kidney effects.
Male and female rats receiving 1.25% 2-ethyl hexanol in the diet for 90 days showed evidence of kidney and liver effects.
The material produces teratogenic effects in laboratory rats when administerd orally to prenant Wistar rats on day 12 of gestation (1 and 2 ml/kg). These rats were sacrificed on day 20; the percent surviving foetuses with malformations in had increased to 2% and 22.2% in tehe low and high doses groups respectively. Maternal toxicity may have been a factor. Two subsequent studies indicate that birth defects in rats do not occur following inhalation of the vapour at maximum saturation concentration (850 mg/m3), or dermally at 3 ml/kg doses. Preliminary evidence suggests that absorption through human skin occurs more slowly than in rat.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (rat) LD50: 2049 mg/kg	Skin (rabbit): 415 mg (open)- Mild
Dermal (rabbit) LD50: 1970 mg/kg	Skin (rabbit): 500 mg/24h- Moderate
	Eye (rabbit): 4.17 mg - SEVERE
	Eye (rabbit): 20 mg/24h - Moderate

The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

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Section 12 - ECOLOGICAL INFORMATION

Fish LC50 (96hr.) (mg/l): 32- 37

DO NOT discharge into sewer or waterways.
log Kow: 2.81
Ecotoxicology:
Fish LC50 (48 h): Leuciscus idus 23 mg/l
Biodegradability:
>60% BOD of the ThOD (OECD 310F/ISO 9408)
Toxicity invertebrate: ethylformate
some
decomp in H2O,Rxn OH*

Section 13 - DISPOSAL CONSIDERATIONS

· Recycle wherever possible or consult manufacturer for recycling options.
· Consult State Land Waste Authority for disposal.
· Bury or incinerate residue at an approved site.
· Recycle containers if possible, or dispose of in an authorised landfill.
· 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 MSDS and observe all notices pertaining to the product.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

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

Section 15 - REGULATORY INFORMATION

REGULATIONS

2-ethyl hexanol (CAS: 104-76-7) is found on the following regulatory lists;
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for 2-ethyl hexanol as CAS: 111675-57-1.

continued...

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
2- ethyl hexanol	104- 76- 7, 111675- 57- 1

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproductive no -observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
2- ethyl hexanol	97.7 mg/m3	100	D	NA	-

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 American Industrial Hygiene Association Journal 57: 641-649 (1996).

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

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