

SAFETY DATA SHEETS

According to Regulation (EU) No.1907/2006, Regulation (EU) No. 1272/2008 and their subsequent amendments and corrigenda

Version: 1.0
Creation Date: Aug. 26, 2019
Revision Date: Aug. 26, 2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	white-board ink(black)
Other means of identification	-
Other names	Ethanol; Ethyl alcohol
Product number	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	writing
Uses advised against	no data available
Reason why uses advised against	no data available

1.3. Details of the supplier of the safety data sheet

Details of the supplier	-
Company	suzhou xiongying ink
Address	suhzou city
Telephone	+86-512-63331385
Details of the non-Community manufacturer or formulator	
Company	Suzhou xiongying Ink New Materials Co.,Ltd
Address	NO.539 , Yunli Road , Economic and Technological development Zone
Telephone	+86-512-63331385
E-mail address of competent person responsible for the SDS	zhangshenghong001@126.com

1.4. Emergency telephone number

Emergency telephone number	+86-512-63331385
Opening hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT+8 hours).

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP)

Flam. Liq. 2,H225
Skin Corr. 1,H314
Eye Dam. 1,H318

2.1.2. Additional information

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P310 Immediately call a POISON CENTER/doctor/...

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

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

Supplemental Hazard information (EU)

no data available

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical name	Common names and synonyms	CAS number	EC number	Registration number	Classification according to Regulation (EC) No 1278/2008(CLP)	Concentration
Ethanol	Ethyl Alcohol	64-17-5	200-578-6	-	Flam. Liq. 2,H225	50.0
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7	-	Flam. Liq. 2,H225;Eye Irrit. 2,H319;STOT SE 3,H335,H336	30.0
Carbon black	C.I. Pigment Black 7	1333-86-4	215-609-9	-	Not classified.	7.0
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2	-	Not classified.	5.0
Butyl stearate	Butyl Stearate	123-95-5	204-666-5	-	Not classified.	5.0
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1	-	Not classified.	3.0

SECTION 4: First aid measures

4.1. Description of first aid measures

General notes

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

Following inhalation

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Refer for medical attention .

4.2. Most important symptoms and effects, both acute and delayed

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016) VAPOR: Irritating to eyes, nose and throat. LIQUID: Not harmful. (USCG, 1999) SYMPTOMS: Symptoms of exposure to this compound may include irritation. Ingestion may result in mucous membrane irritation. Eye contact may cause immediate pain and conjunctival hyperemia, but no serious injury. ACUTE/CHRONIC HAZARDS: This compound may cause local irritation. It may also cause mucous membrane irritation. When heated to decomposition it emits acrid smoke and fumes. (NTP, 1992)

4.3. Indication of any immediate medical attention and special treatment needed

Emergency and supportive measures: 1. Acute intoxication. Treatment is mainly supportive. a. Protect the airway to prevent aspiration and intubate and assist ventilation if needed. b. Give glucose and thiamine, and treat coma and seizures if they occur. Glucagon is not effective for alcohol-induced hypoglycemia. c. Correct hypothermia with gradual rewarming. d. Most patients will recover within 4-6 hours. Observe children until their blood alcohol level is below 50 mg/dL and there is no evidence of hypoglycemia. 2. Alcoholic ketoacidosis. Treat with volume replacement, thiamine, and supplemental glucose. Most patients recover rapidly. 3. Alcohol withdrawal. Treat with benzodiazepines.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016) FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. (USCG, 1999) This chemical is probably combustible. (NTP, 1992)

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2. Environmental precautions

Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.3. Methods and materials for containment and cleaning up

Land spill: Apply appropriate foam to diminish vapor and fire hazard.

6.4. Reference to other sections

For disposal suggestions see section 13. For exposure controls / personal protection suggestions see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2. Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Keep tightly closed, cool and away from flame.

7.3. Specific end use(s)

Main uses of the chemical are mentioned in section 1.2. No other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Component	Ethyl Alcohol			
CAS No.	64-17-5			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	1000	1880		
Austria	1000	1900	2000	3800
Belgium	1000	1907		
Canada - Ontario			1000	
Canada - Québec	1000	1880		
Denmark	1000	1900	2000	3800
Finland	1000	1900	1300 (1)	2500 (1)
France	1000	1900	5000	9500
Germany (AGS)	500	960	1000 (1)	1920 (1)
Germany (DFG)	500	960	1000 (1)	1920 (1)
Hungary		1900		7600
Ireland			1000 (1)	
Latvia		1000		
New Zealand	1000	1880		
Poland		1900		

Component	Ethyl Alcohol			
CAS No.	64-17-5			
Singapore	1000	1880		
South Korea	1000	1900		
Spain			1000	1910
Sweden	500	1000	1000 (1)	1900 (1)
Switzerland	500	960	1000	1920
The Netherlands		260		1900
USA - NIOSH	1000	1900		
USA - OSHA	1000	1900		
United Kingdom	1000	1920		
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	(1) 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Sweden	(1) 15 minutes average value			

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia	400	983	500	1230
Austria	200	500	800	2000
Belgium	200	500	400	1000
Canada - Ontario	200		400	
Canada - Québec	400	983	500	1230
Denmark	200	490	400	980
Finland	200	500	250 (1)	620 (1)
France			400	980
Germany (AGS)	200	500	400 (1)	1000 (1)
Germany (DFG)	200	500	400	1000
Hungary		500		2000
Ireland	200		400 (1)	
Japan	400			
Japan - JSOH	400 (1)	980 (1)		
Latvia		350		600 (1)
New Zealand	400	983	500	1230
People's Republic of China		350		700 (1)
Poland		900		1200
Singapore	400	983	500	1230
South Korea	200	480	400	980

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
Spain	200	500	400	1000
Sweden	150	350	250 (1)	600 (1)
Switzerland	200	500	400	1000
USA - NIOSH	400	980	500 (1)	1225 (1)
USA - OSHA	400	980		
United Kingdom	400	999	500	1250
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Japan - JSOH	(1) Occupational exposure limit ceiling: Reference value to the maximal exposure concentration of the substance during a working day			
Latvia	(1) 15 minutes average value			
People's Republic of China	(1) 15 minutes average value			
Sweden	(1) 15 minutes average value			
USA - NIOSH	(1) 15 minutes average value			

Component	C.I. Pigment Black 7			
CAS No.	1333-86-4			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia		3		
Belgium		3,5		
Canada - Ontario		3 (1)		
Canada - Québec		3,5		
Denmark		3,5		7,0
Finland		3,5		7 (1)
France		3,5		
Ireland		3,5		7 (1)
Israel		3,5 (1)		
Japan - JSOH		1 (1)		
		4 (2)		
New Zealand		3		
People's Republic of China		4 (1)		
Singapore		3,5		
South Korea		3,5		
Spain		3,5		

Component	C.I. Pigment Black 7			
CAS No.	1333-86-4			
Sweden		3		
USA - NIOSH		3,5 (1)		
USA - OSHA		3,5		
United Kingdom		3,5		7
	Remarks			
Canada - Ontario	(1) Inhalable fraction			
Finland	(1) 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Israel	(1) Inhalable fraction			
Japan - JSOH	(1) Respirable dust (2) Total dust: Total dust comprises particles with a flow speed of 50 to 80 cm/sec at the entry of a particle sampler.			
People's Republic of China	(1) Inhalable fraction			
USA - NIOSH	(1) in presence of PAHs: limit PAHs to 0,1 mg/m ³ TWA (detected as cyclohexane soluble extract)			

Component	Dioctyl Adipate			
CAS No.	103-23-1			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Poland		400		
	Remarks			

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

8.2.3. Environmental exposure controls

See section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Odour	pure CAS 64-17-5: Mild, rather pleasant; like wine or whiskey; pure CAS 67-63-0: Pleasant odor; pure CAS 123-95-5: ODORLESS OR FAINTLY FATTY ODOR; pure CAS 103-23-1: SLIGHT AROMATIC SMELL
Odour threshold	pure CAS 64-17-5: 10 PPM; pure CAS 67-63-0: 90 mg/cu m
pH	pure CAS 103-23-1: Acidity: 0.25 (meg/100 gm. max)
Melting point/ freezing point	pure CAS 64-17-5: -114 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: -89.5 °C.; pure CAS 123-95-5: -37°C(lit.); pure CAS 103-23-1: -67.8 °C.
Initial boiling point and boiling range	pure CAS 64-17-5: 78.29°C. Atm. press.: 1 013.25 hPa.; pure CAS 67-63-0: 82.3 °C. Atm. press.: 1 atm.; pure CAS 1333-86-4: 4827°C; pure CAS 27214-90-0: 428°C at 760mmHg; pure CAS 123-95-5: 66°C/11mmHg(lit.); pure CAS 103-23-1: 377.88 °C. Atm. press.: 1 013 hPa. Remarks: Extrapolated value.
Flash point	pure CAS 64-17-5: 13 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: 12 °C.; pure CAS 27214-90-0: 189.7°C; pure CAS 123-95-5: 160°C; pure CAS 103-23-1: 196 °C. Atm. press.: 1 013.25 hPa.
Evaporation rate	no data available
Flammability	pure CAS 64-17-5: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 67-63-0: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 103-23-1: Combustible.
Upper/lower flammability or explosive limits	pure CAS 64-17-5: Lower flammable limit: 3.3% by volume; Upper flammable limit: 19% by volume; pure CAS 67-63-0: Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 deg F (93 deg C); pure CAS 103-23-1: LOWER FLAMMABLE LIMIT: 0.4% BY VOLUME @ 242 DEG C
Vapour pressure	pure CAS 64-17-5: 57.26 hPa. Temperature: 19.6 °C.; pure CAS 67-63-0: 60.2 hPa. Temperature: 25 °C. Remarks: 6.02 kPa at 25°C.; pure CAS 123-95-5: 5.80X10-6 mm Hg @ 25 deg C; pure CAS 103-23-1: Ca. 0 hPa. Temperature: 20 °C. Remarks: Extrapolated value.
Vapour density	pure CAS 64-17-5: 1.59 (vs air); pure CAS 67-63-0: 2.1 (vs air); pure CAS 123-95-5: 11.4 (AIR= 1); pure CAS 103-23-1: 12.8 (NTP, 1992) (Relative to Air)
Relative density	pure CAS 64-17-5: 786.4 kg/m³. Temperature: 25 °C.; pure CAS 67-63-0: 0.8.; pure CAS 1333-86-4: 0.075g/cm³; pure CAS 27214-90-0: 0.916g/cm³; pure CAS 123-95-5: 0.861g/mL at 20°C(lit.); pure CAS 103-23-1: 0.92 g/cm³. Temperature: 20 °C.
Solubility(ies)	pure CAS 64-17-5: Miscible with water; pure CAS 67-63-0: Miscible with water; pure CAS 123-95-5: Insoluble in water; soluble in ethanol; very soluble in acetone; pure CAS 103-23-1: less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	pure CAS 64-17-5: log Pow = -0.35. Temperature: 24 °C.; pure CAS 67-63-0: log Pow = 0.05. Temperature: 25 °C. Remarks: PH not reported.; pure CAS 103-23-1: log Pow = 8.94. Temperature: 25 °C. Remarks: PH value is not reported.
Auto-ignition temperature	pure CAS 64-17-5: 368.8 °C. Remarks: 368.8 +/- 7.4°C.; pure CAS 67-63-0: 399 °C. Remarks: The pressure was not reported.; pure CAS 123-95-5: 671 DEG F (355 DEG C); pure CAS 103-23-1: 377 °C. Atm. press.: 1 013.25 hPa.
Decomposition temperature	no data available
Viscosity	pure CAS 64-17-5: dynamic viscosity (in mPa s) = 1.17. Temperature: 20°C. Remarks: Value attributed to Kirk Othmer.; pure CAS 67-63-0: 2.038 mPa s at 25 deg C; pure CAS 103-23-1: dynamic viscosity (in mPa s) = 13.7. Temperature: 20°C.
Explosive properties	pure CAS 64-17-5: Vapour/air mixtures are explosive.; pure CAS 67-63-0: Vapour/air mixtures are explosive.
Oxidising properties	no data available

9.2. Other information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

3300 ppm [Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

Flammable liquid when exposed to heat or flame ... The vapour mixes well with air, explosive mixtures are easily formed. Acetyl chloride reacts violently with ethanol or water, [Rose, (1961)]. Acetyl bromide reacts violently with alcohols or water, [Merck 11th ed., 1989]. Mixtures of alcohols with concentrated sulfuric acid and strong hydrogen peroxide can cause explosions. Example: An explosion will occur if dimethylbenzylcarbinol is added to 90% hydrogen peroxide then acidified with concentrated sulfuric acid. Mixtures of ethyl alcohol with concentrated hydrogen peroxide form powerful explosives. Mixtures of hydrogen peroxide and 1-phenyl-2-methyl propyl alcohol tend to explode if acidified with 70% sulfuric acid, [Chem. Eng. News 45(43):73(1967); J. Org. Chem. 28:1893(1963)]. Alkyl hypochlorites are violently explosive. They are readily obtained by reacting hypochlorous acid and alcohols either in aqueous solution or mixed aqueous-carbon tetrachloride solutions. Chlorine plus alcohols would similarly yield alkyl hypochlorites. They decompose in the cold and explode on exposure to sunlight or heat. Tertiary hypochlorites are less unstable than secondary or primary hypochlorites, [NFPA 491 M, 1991]. Base-catalysed reactions of isocyanates with alcohols should be carried out in inert solvents. Such reactions in the absence of solvents often occur with explosive violence, [Wischmeyer(1969)].

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Many explosions have been experienced during the gravimetric determination of either perchlorates or potassium as potassium perchlorate by a standard method involving ethanol extraction. During subsequent heating, formation and explosion of ethyl perchlorate is very probable.

10.6. Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Oral: pure CAS 64-17-5: LD50 - rat (female) - 15 010 mg/kg bw.; pure CAS 67-63-0: LD50 Dog oral 4797 mg/kg; pure CAS 123-95-5: LD50 Rat oral 32 g/kg; pure CAS 103-23-1: LD50 - rat (male/female) - > 20 000 mg/kg bw. Remarks: The estimated LD50 was 45 g/kg for males and 24 .6 g/kg for females.
- Inhalation: pure CAS 64-17-5: LC50 - mouse (male) - > 60 000 ppm.; pure CAS 67-63-0: LC50 Mouse inhalation 53 mg/L 2 hr; pure CAS 103-23-1: LC50 - rat (male/female) - > 5.7 mg/L air.
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A3; Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: pure CAS 64-17-5: LC50 - Pimephales promelas - 14.2 g/L - 96 h.;pure CAS 67-63-0: LC50; Species: Lepomis macrochirus (Bluegill) length 40-50 mm; Conditions: static, 22 deg C; Concentration: >1400000 ug/L for 24-96 hr /formulation;pure CAS 103-23-1: LC50 - Oncorhynchus mykiss, Lepomis macrochirus, Pimephales promelas - > 0.78 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: pure CAS 64-17-5: LC50 - Ceriodaphnia dubia - 5 012 mg/L - 48 h.;pure CAS 67-63-0: EC50 - Daphnia magna - > 10 000 mg/L - 24 h.;pure CAS 103-23-1: EC50 - Daphnia magna - > 500 mg/L - 48 h.
- Toxicity to algae: pure CAS 64-17-5: EC10 - Chlorella vulgaris - 86 mg/L - 4 d.;pure CAS 67-63-0: Toxicity threshold - Scenedesmus quadricauda - 1 800 mg/L - 7 d.;pure CAS 103-23-1: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 500 mg/L - 72 h.
- Toxicity to microorganisms: pure CAS 64-17-5: IC50 - activated sludge from domestic and industrial sewage treatment plants - > 1 000 mg/L - 3 h.;pure CAS 103-23-1: EC50 - activated sludge - > 350 mg/L - 3 h. Remarks:Respiration rate.

12.2. Persistence and degradability

AEROBIC: Ethanol was shown to biodegrade under aerobic conditions in various screening tests using different types of inocula and incubation periods(1-7). 5 day theoretical BOD values range from 37% - 86%(1,4). Biodegradation of 3, 7, and 10 mg/L ethanol with filtered sewage seed in fresh water resulted in a 74% theoretical BOD in 5 days and 84% in 20 days; in salt water 45% of the theoretical BOD was reached in 5 days and 75% was reached in 20 days(4). Formaldehyde and acetic acid are products of biodegradation by a soil inoculum(6). Ethanol present at 100 mg/L, achieved 89% of its theoretical BOD using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(7). Ethanol was rapidly degraded in aerobic microcosms prepared from low organic (0.2% organic carbon) sandy aquifer material obtained from Jurere Beach, Brazil(8). Microcosms were prepared with 20 grams of aquifer material and 50 mL of groundwater (pH 5.2). At a starting concentration of 100 mg/L, ethanol had half-lives of approximately 3 days in samples prepared with 20 mg/L of either benzene, toluene or o-xylene under aerobic conditions(8).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated for ethanol(SRC), using a log Kow of -0.31(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4. Mobility in soil

A log K_{oc} of 0.44 has been reported for ethanol(2), corresponding to a K_{oc} of 2.75(SRC). According to a classification scheme(2), this estimated K_{oc} value suggests that ethanol is expected to have very high mobility in soil. Ethanol leaching was measured using a shallow sand and gravel test aquifer in Merrick Co, central Platte Valley, Nebraska which was subjected to a pulse containing 220 mg/L ethanol and 12 mg/L bromide and monitored for 2.5 months. Transport was not retarded. An average first-order decay constant was estimated of be 0.32/day, corresponding to a half-life of 2.2 days(3). A sorption coefficient on a snow surface was reported as log K = -3.04 (cu m snow surface/sq m air) at -6.8 deg C(4).

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN1993

IMDG: UN1993

IATA: UN1993

14.2. UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, N.O.S.

IMDG: FLAMMABLE LIQUID, N.O.S.

IATA: FLAMMABLE LIQUID, N.O.S.

14.3. Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4. Packing group

ADR/RID: II

IMDG: II

IATA: II

14.5. Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6. Special precautions for user

no data available

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

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Ethanol	Ethyl Alcohol	64-17-5	200-578-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Carbon black	C.I. Pigment Black 7	1333-86-4	215-609-9
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Butyl stearate	Butyl Stearate	123-95-5	204-666-5
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Indication of changes

Version 1.0 Initial issue.

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

Key literature references and sources for data

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Full text of H-Statements referred to under sections 2 and/or 3.

Flam. Liq. 2,H225	Flammable liquids, Category 2
Skin Corr. 1,H314	Skin corrosion, Category 1
Eye Dam. 1,H318	Serious eye damage, Category 1
H225	Highly flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.

Advice on any training appropriate for workers to ensure protection of human health and the environment

Provide sufficient information, guidance and training to operating personnel.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.

SAFETY DATA SHEETS

According to Regulation (EU) No.1907/2006, Regulation (EU) No. 1272/2008 and their subsequent amendments and corrigenda

Version: 1.0
Creation Date: Aug. 26, 2019
Revision Date: Aug. 26, 2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	white-board ink(blue)
Other means of identification	-
Other names	Ethanol; Ethyl alcohol
Product number	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	writing
Uses advised against	no data available
Reason why uses advised against	no data available

1.3. Details of the supplier of the safety data sheet

Details of the supplier	-
Company	suzhou xiongying ink
Address	suhzou city
Telephone	+86-512-63331385
Details of the non-Community manufacturer or formulator	
Company	Suzhou xiongying Ink New Materials Co.,Ltd
Address	NO.539 , Yunli Road , Economic and Technological development Zone
Telephone	+86-512-63331385
E-mail address of competent person responsible for the SDS	zhangshenghong001@126.com

1.4. Emergency telephone number

Emergency telephone number	+86-512-63331385
Opening hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT+8 hours).

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP)

Flam. Liq. 2,H225
Skin Corr. 1,H314
Eye Dam. 1,H318

2.1.2. Additional information

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P310 Immediately call a POISON CENTER/doctor/...

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

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

Supplemental Hazard information (EU)

no data available

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical name	Common names and synonyms	CAS number	EC number	Registration number	Classification according to Regulation (EC)No 1278/2008(CLP)	Concentration
Ethanol	Ethyl Alcohol	64-17-5	200-578-6	-	Flam. Liq. 2,H225	50.0
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7	-	Flam. Liq. 2,H225;Eye Irrit. 2,H319;STOT SE 3,H335,H336	30.0
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2	-	Not classified.	5.0
Butyl stearate	Butyl Stearate	123-95-5	204-666-5	-	Not classified.	5.0
29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32 copper	C.I. Pigment Blue 15:3	147-14-8	205-685-1	-	Not classified.	5.0
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1	-	Not classified.	3.0

8,18-dichloro-5,15-diethyl-5,15-dihydrodiindolo[3,2-b:3',2'-m]triphenodioxazine	C.I.Pigment violet 23	6358-30-1	228-767-9	-	Not classified.	2.0
---	-----------------------	-----------	-----------	---	-----------------	-----

SECTION 4: First aid measures

4.1. Description of first aid measures

General notes

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

Following inhalation

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Refer for medical attention .

4.2. Most important symptoms and effects, both acute and delayed

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016) VAPOR: Irritating to eyes, nose and throat. LIQUID: Not harmful. (USCG, 1999) SYMPTOMS: Symptoms of exposure to this compound may include irritation. Ingestion may result in mucous membrane irritation. Eye contact may cause immediate pain and conjunctival hyperemia, but no serious injury. ACUTE/CHRONIC HAZARDS: This compound may cause local irritation. It may also cause mucous membrane irritation. When heated to decomposition it emits acrid smoke and fumes. (NTP, 1992)

4.3. Indication of any immediate medical attention and special treatment needed

Emergency and supportive measures: 1. Acute intoxication. Treatment is mainly supportive. a. Protect the airway to prevent aspiration and intubate and assist ventilation if needed. b. Give glucose and thiamine, and treat coma and seizures if they occur. Glucagon is not effective for alcohol-induced hypoglycemia. c. Correct hypothermia with gradual rewarming. d. Most patients will recover within 4-6 hours. Observe children until their blood alcohol level is below 50 mg/dL and there is no evidence of hypoglycemia. 2. Alcoholic ketoacidosis. Treat with volume replacement, thiamine, and supplemental glucose. Most patients recover rapidly. 3. Alcohol withdrawal. Treat with benzodiazepines.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)
 FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. (USCG, 1999)
 This chemical is probably combustible. (NTP, 1992)

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2. Environmental precautions

Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.3. Methods and materials for containment and cleaning up

Land spill: Apply appropriate foam to diminish vapor and fire hazard.

6.4. Reference to other sections

For disposal suggestions see section 13. For exposure controls / personal protection suggestions see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2. Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Keep tightly closed, cool and away from flame.

7.3. Specific end use(s)

Main uses of the chemical are mentioned in section 1.2. No other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Component	Ethyl Alcohol			
CAS No.	64-17-5			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	1000	1880		
Austria	1000	1900	2000	3800
Belgium	1000	1907		
Canada - Ontario			1000	

Component	Ethyl Alcohol			
CAS No.	64-17-5			
Canada - Québec	1000	1880		
Denmark	1000	1900	2000	3800
Finland	1000	1900	1300 (1)	2500 (1)
France	1000	1900	5000	9500
Germany (AGS)	500	960	1000 (1)	1920 (1)
Germany (DFG)	500	960	1000 (1)	1920 (1)
Hungary		1900		7600
Ireland			1000 (1)	
Latvia		1000		
New Zealand	1000	1880		
Poland		1900		
Singapore	1000	1880		
South Korea	1000	1900		
Spain			1000	1910
Sweden	500	1000	1000 (1)	1900 (1)
Switzerland	500	960	1000	1920
The Netherlands		260		1900
USA - NIOSH	1000	1900		
USA - OSHA	1000	1900		
United Kingdom	1000	1920		
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	(1) 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Sweden	(1) 15 minutes average value			

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia	400	983	500	1230
Austria	200	500	800	2000
Belgium	200	500	400	1000
Canada - Ontario	200		400	
Canada - Québec	400	983	500	1230
Denmark	200	490	400	980
Finland	200	500	250 (1)	620 (1)
France			400	980
Germany (AGS)	200	500	400 (1)	1000 (1)
Germany (DFG)	200	500	400	1000
Hungary		500		2000

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
Ireland	200		400 (1)	
Japan	400			
Japan - JSOH	400 (1)	980 (1)		
Latvia		350		600 (1)
New Zealand	400	983	500	1230
People's Republic of China		350		700 (1)
Poland		900		1200
Singapore	400	983	500	1230
South Korea	200	480	400	980
Spain	200	500	400	1000
Sweden	150	350	250 (1)	600 (1)
Switzerland	200	500	400	1000
USA - NIOSH	400	980	500 (1)	1225 (1)
USA - OSHA	400	980		
United Kingdom	400	999	500	1250
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Japan - JSOH	(1) Occupational exposure limit ceiling: Reference value to the maximal exposure concentration of the substance during a working day			
Latvia	(1) 15 minutes average value			
People's Republic of China	(1) 15 minutes average value			
Sweden	(1) 15 minutes average value			
USA - NIOSH	(1) 15 minutes average value			

Component	C.I. Pigment Blue 15:3			
CAS No.	147-14-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Latvia		5		
	Remarks			

Component	Dioctyl Adipate			
CAS No.	103-23-1			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Poland		400		
	Remarks			

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

8.2.3. Environmental exposure controls

See section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Odour	pure CAS 64-17-5: Mild, rather pleasant; like wine or whiskey; pure CAS 67-63-0: Pleasant odor; pure CAS 123-95-5: ODORLESS OR FAINTLY FATTY ODOR; pure CAS 103-23-1: SLIGHT AROMATIC SMELL
Odour threshold	pure CAS 64-17-5: 10 PPM; pure CAS 67-63-0: 90 mg/cu m
pH	pure CAS 103-23-1: Acidity: 0.25 (meg/100 gm. max)
Melting point/ freezing point	pure CAS 64-17-5: -114 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: -89.5 °C.; pure CAS 123-95-5: -37°C(lit.); pure CAS 147-14-8: 480 °C. Atm. press.: 1 013 hPa.; pure CAS 103-23-1: -67.8 °C.; pure CAS 6358-30-1: 385°C (DEC.)
Initial boiling point and boiling range	pure CAS 64-17-5: 78.29°C. Atm. press.: 1 013.25 hPa.; pure CAS 67-63-0: 82.3 °C. Atm. press.: 1 atm.; pure CAS 27214-90-0: 428°C at 760mmHg; pure CAS 123-95-5: 66°C/11mmHg(lit.); pure CAS 147-14-8: 93°C/10mmHg(lit.); pure CAS 103-23-1: 377.88 °C. Atm. press.: 1 013 hPa. Remarks: Extrapolated value.
Flash point	pure CAS 64-17-5: 13 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: 12 °C.; pure CAS 27214-90-0: 189.7°C; pure CAS 123-95-5: 160°C; pure CAS 147-14-8: 89°C(lit.); pure CAS 103-23-1: 196 °C. Atm. press.: 1 013.25 hPa.
Evaporation rate	no data available
Flammability	pure CAS 64-17-5: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 67-63-0: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 103-23-1: Combustible.
Upper/lower flammability or explosive limits	pure CAS 64-17-5: Lower flammable limit: 3.3% by volume; Upper flammable limit: 19% by volume; pure CAS 67-63-0: Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 deg F (93 deg C); pure CAS 103-23-1: LOWER FLAMMABLE LIMIT: 0.4% BY VOLUME @ 242 DEG C

Vapour pressure	pure CAS 64-17-5: 57.26 hPa. Temperature:19.6 °C.;pure CAS 67-63-0: 60.2 hPa. Temperature:25 °C. Remarks:6.02 kPa at 25°C.;pure CAS 123-95-5: 5.80X10-6 mm Hg @ 25 deg C;pure CAS 147-14-8: < 0 hPa. Temperature:20 °C. Remarks:Extrapolated.;Ca. 0.018 hPa. Temperature:475 °C.;pure CAS 103-23-1: Ca. 0 hPa. Temperature:20 °C. Remarks:Extrapolated value.
Vapour density	pure CAS 64-17-5: 1.59 (vs air);pure CAS 67-63-0: 2.1 (vs air);pure CAS 123-95-5: 11.4 (AIR= 1);pure CAS 103-23-1: 12.8 (NTP, 1992) (Relative to Air)
Relative density	pure CAS 64-17-5: 786.4 kg/m³. Temperature:25 °C.;pure CAS 67-63-0: 0.8.;pure CAS 27214-90-0: 0.916g/cm³;pure CAS 123-95-5: 0.861g/mL at 20°C(lit.);pure CAS 147-14-8: 1.62.;pure CAS 103-23-1: 0.92 g/cm³. Temperature:20 °C.;pure CAS 6358-30-1: 1.53
Solubility(ies)	pure CAS 64-17-5: Miscible with water;pure CAS 67-63-0: Miscible with water;pure CAS 123-95-5: Insoluble in water; soluble in ethanol; very soluble in acetone;pure CAS 147-14-8: In water: 4 - 9 µg/L. Temperature:23 °C..N-octanol.;pure CAS 103-23-1: less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	pure CAS 64-17-5: log Pow = -0.35. Temperature:24 °C.;pure CAS 67-63-0: log Pow = 0.05. Temperature:25 °C. Remarks:PH not reported.;pure CAS 103-23-1: log Pow = 8.94. Temperature:25 °C. Remarks:PH value is not reported.
Auto-ignition temperature	pure CAS 64-17-5: 368.8 °C. Remarks:368.8 +/- 7.4°C.;pure CAS 67-63-0: 399 °C. Remarks:The pressure was not reported.;pure CAS 123-95-5: 671 DEG F (355 DEG C);pure CAS 147-14-8: 356 °C. Remarks:At atm. press. of 1013.0 hPa.;pure CAS 103-23-1: 377 °C. Atm. press.:1 013.25 hPa.
Decomposition temperature	no data available
Viscosity	pure CAS 64-17-5: dynamic viscosity (in mPa s) = 1.17. Temperature:20°C. Remarks:Value attributed to Kirk Othmer.;pure CAS 67-63-0: 2.038 mPa s at 25 deg C;pure CAS 103-23-1: dynamic viscosity (in mPa s) = 13.7. Temperature:20°C.
Explosive properties	pure CAS 64-17-5: Vapour/air mixtures are explosive.;pure CAS 67-63-0: Vapour/air mixtures are explosive.
Oxidising properties	no data available

9.2. Other information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

3300 ppm [Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

Flammable liquid when exposed to heat or flame ... The vapour mixes well with air, explosive mixtures are easily formed. Acetyl chloride reacts violently with ethanol or water, [Rose, (1961)]. Acetyl bromide reacts violently with alcohols or water, [Merck 11th ed., 1989]. Mixtures of alcohols with concentrated sulfuric acid and strong hydrogen peroxide can cause explosions. Example: An explosion will occur if dimethylbenzylcarbinol is added to 90% hydrogen peroxide then acidified with concentrated sulfuric acid. Mixtures of ethyl alcohol with concentrated hydrogen peroxide form powerful explosives. Mixtures of hydrogen peroxide and 1-phenyl-2-methyl propyl alcohol tend to explode if acidified with 70% sulfuric acid, [Chem. Eng. News 45(43):73(1967); J. Org. Chem. 28:1893(1963)]. Alkyl hypochlorites are violently explosive. They are readily obtained by reacting hypochlorous acid and alcohols either in aqueous solution or mixed aqueous-carbon tetrachloride solutions. Chlorine plus alcohols would similarly yield alkyl hypochlorites. They decompose in the cold and explode on exposure to sunlight or heat. Tertiary hypochlorites are less unstable than secondary or primary hypochlorites, [NFPA 491 M, 1991]. Base-catalysed reactions of isocyanates with alcohols should be carried out in inert solvents. Such reactions in the absence of solvents often occur with explosive violence, [Wischmeyer(1969)].

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Many explosions have been experienced during the gravimetric determination of either perchlorates or potassium as potassium perchlorate by a standard method involving ethanol extraction. During subsequent heating, formation and explosion of ethyl perchlorate is very probable.

10.6. Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Oral: pure CAS 64-17-5: LD50 - rat (female) - 15 010 mg/kg bw.; pure CAS 67-63-0: LD50 Dog oral 4797 mg/kg; pure CAS 123-95-5: LD50 Rat oral 32 g/kg; pure CAS 147-14-8: LD50 - rat (male/female) - > 6 400 mg/kg bw.; pure CAS 103-23-1: LD50 - rat (male/female) - > 20 000 mg/kg bw. Remarks: The estimated LD50 was 45 g/kg for males and 24.6 g/kg for females.
- Inhalation: pure CAS 64-17-5: LC50 - mouse (male) - > 60 000 ppm.; pure CAS 67-63-0: LC50 Mouse inhalation 53 mg/L 2 hr; pure CAS 103-23-1: LC50 - rat (male/female) - > 5.7 mg/L air.
- Dermal: pure CAS 147-14-8: LD50 - rat (male) - > 5 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A3; Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: pure CAS 64-17-5: LC50 - Pimephales promelas - 14.2 g/L - 96 h.; pure CAS 67-63-0: LC50; Species: Lepomis macrochirus (Bluegill) length 40-50 mm; Conditions: static, 22 deg C; Concentration: >1400000 ug/L for 24-96 hr /formulation; pure CAS 147-14-8: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 100 mg/L - 96 h.; pure CAS 103-23-1: LC50 - Oncorhynchus mykiss, Lepomis macrochirus, Pimephales promelas - > 0.78 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: pure CAS 64-17-5: LC50 - Ceriodaphnia dubia - 5 012 mg/L - 48 h.; pure CAS 67-63-0: EC50 - Daphnia magna - > 10 000 mg/L - 24 h.; pure CAS 147-14-8: EC50 - Daphnia magna - > 500 mg/L - 48 h.; pure CAS 103-23-1: EC50 - Daphnia magna - > 500 mg/L - 48 h.
- Toxicity to algae: pure CAS 64-17-5: EC10 - Chlorella vulgaris - 86 mg/L - 4 d.; pure CAS 67-63-0: Toxicity threshold - Scenedesmus quadricauda - 1 800 mg/L - 7 d.; pure CAS 147-14-8: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 100 mg/L - 72 h.; pure CAS 103-23-1: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 500 mg/L - 72 h.
- Toxicity to microorganisms: pure CAS 64-17-5: IC50 - activated sludge from domestic and industrial sewage treatment plants - > 1 000 mg/L - 3 h.; pure CAS 147-14-8: EC50 - activated sludge - > 10 000 mg/L - 3 h. Remarks: Respiration rate.; pure CAS 103-23-1: EC50 - activated sludge - > 350 mg/L - 3 h. Remarks: Respiration rate.

12.2. Persistence and degradability

AEROBIC: Ethanol was shown to biodegrade under aerobic conditions in various screening tests using different types of inocula and incubation periods(1-7). 5 day theoretical BOD values range from 37% - 86%(1,4). Biodegradation of 3, 7, and 10 mg/L ethanol with filtered sewage seed in fresh water resulted in a 74% theoretical BOD in 5 days and 84% in 20 days; in salt water 45% of the theoretical BOD was reached in 5 days and 75% was reached in 20 days(4). Formaldehyde and acetic acid are products of biodegradation by a soil inoculum(6). Ethanol present at 100 mg/L, achieved 89% of its theoretical BOD using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(7). Ethanol was rapidly degraded in aerobic microcosms prepared from low organic (0.2% organic carbon) sandy aquifer material obtained from Jurere Beach, Brazil(8). Microcosms were prepared with 20 grams of aquifer material and 50 mL of groundwater (pH 5.2). At a starting concentration of 100 mg/L, ethanol had half-lives of approximately 3 days in samples prepared with 20 mg/L of either benzene, toluene or o-xylene under aerobic conditions(8).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated for ethanol(SRC), using a log Kow of -0.31(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4. Mobility in soil

A log Koc of 0.44 has been reported for ethanol(2), corresponding to a Koc of 2.75(SRC). According to a classification scheme(2), this estimated Koc value suggests that ethanol is expected to have very high mobility in soil. Ethanol leaching was measured using a shallow sand and gravel test aquifer in Merrick Co, central Platte Valley, Nebraska which was subjected to a pulse containing 220 mg/L ethanol and 12 mg/L bromide and monitored for 2.5 months. Transport was not retarded. An average first-order decay constant was estimated of be 0.32/day, corresponding to a half-life of 2.2 days(3). A sorption coefficient on a snow surface was reported as log K = -3.04 (cu m snow surface/sq m air) at -6.8 deg C(4).

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN1993

IMDG: UN1993

IATA: UN1993

14.2. UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, N.O.S.

IMDG: FLAMMABLE LIQUID, N.O.S.

IATA: FLAMMABLE LIQUID, N.O.S.

14.3. Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4. Packing group

ADR/RID: II

IMDG: II

IATA: II

14.5. Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6. Special precautions for user

no data available

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

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Ethanol	Ethyl Alcohol	64-17-5	200-578-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Butyl stearate	Butyl Stearate	123-95-5	204-666-5
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

Chemical name	Common names and synonyms	CAS number	EC number
29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32 copper	C.I. Pigment Blue 15:3	147-14-8	205-685-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
8,18-dichloro-5,15-diethyl-5,15-dihydrodiindolo[3,2-b:3',2'-m]triphenodioxazine	C.I.Pigment violet 23	6358-30-1	228-767-9
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Indication of changes

Version 1.0 Initial issue.

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

Key literature references and sources for data

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Full text of H-Statements referred to under sections 2 and/or 3.

Flam. Liq. 2,H225	Flammable liquids, Category 2
Skin Corr. 1,H314	Skin corrosion, Category 1
Eye Dam. 1,H318	Serious eye damage, Category 1
H225	Highly flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.

H318

Causes serious eye damage.

Advice on any training appropriate for workers to ensure protection of human health and the environment

Provide sufficient information, guidance and training to operating personnel.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.

SAFETY DATA SHEETS

According to Regulation (EU) No.1907/2006, Regulation (EU) No. 1272/2008 and their subsequent amendments and corrigenda

Version: 1.0
Creation Date: Aug. 26, 2019
Revision Date: Aug. 26, 2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	white-board ink(green)
Other means of identification	-
Other names	Ethanol; Ethyl alcohol
Product number	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	writing
Uses advised against	no data available
Reason why uses advised against	no data available

1.3. Details of the supplier of the safety data sheet

Details of the supplier	-
Company	suzhou xiongying ink
Address	suhzou city
Telephone	+86-512-63331385
Details of the non-Community manufacturer or formulator	
Company	Suzhou xiongying Ink New Materials Co.,Ltd
Address	NO.539 , Yunli Road , Economic and Technological development Zone
Telephone	+86-512-63331385
E-mail address of competent person responsible for the SDS	zhangshenghong001@126.com

1.4. Emergency telephone number

Emergency telephone number	+86-512-63331385
Opening hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT+8 hours).

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP)

Flam. Liq. 2,H225
Skin Corr. 1,H314
Eye Dam. 1,H318

2.1.2. Additional information

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P310 Immediately call a POISON CENTER/doctor/...

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

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

Supplemental Hazard information (EU)

no data available

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical name	Common names and synonyms	CAS number	EC number	Registration number	Classification according to Regulation (EC)No 1278/2008(CLP)	Concentration
Ethanol	Ethyl Alcohol	64-17-5	200-578-6	-	Flam. Liq. 2,H225	50.0
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7	-	Flam. Liq. 2,H225;Eye Irrit. 2,H319;STOT SE 3,H335,H336	30.0
Polychloro copper phthalocyanine	C.I. Pigment Green 7	1328-53-6	215-524-7	-	Not classified.	7.0
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2	-	Not classified.	5.0
Butyl stearate	Butyl Stearate	123-95-5	204-666-5	-	Not classified.	5.0
Bis(2-ethylhexyl) adipate	Diocetyl Adipate	103-23-1	203-090-1	-	Not classified.	3.0

SECTION 4: First aid measures

4.1. Description of first aid measures

General notes

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

Following inhalation

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Refer for medical attention .

4.2. Most important symptoms and effects, both acute and delayed

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016) VAPOR: Irritating to eyes, nose and throat. LIQUID: Not harmful. (USCG, 1999) SYMPTOMS: Symptoms of exposure to this compound may include irritation. Ingestion may result in mucous membrane irritation. Eye contact may cause immediate pain and conjunctival hyperemia, but no serious injury. ACUTE/CHRONIC HAZARDS: This compound may cause local irritation. It may also cause mucous membrane irritation. When heated to decomposition it emits acrid smoke and fumes. (NTP, 1992)

4.3. Indication of any immediate medical attention and special treatment needed

Emergency and supportive measures: 1. Acute intoxication. Treatment is mainly supportive. a. Protect the airway to prevent aspiration and intubate and assist ventilation if needed. b. Give glucose and thiamine, and treat coma and seizures if they occur. Glucagon is not effective for alcohol-induced hypoglycemia. c. Correct hypothermia with gradual rewarming. d. Most patients will recover within 4-6 hours. Observe children until their blood alcohol level is below 50 mg/dL and there is no evidence of hypoglycemia. 2. Alcoholic ketoacidosis. Treat with volume replacement, thiamine, and supplemental glucose. Most patients recover rapidly. 3. Alcohol withdrawal. Treat with benzodiazepines.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016) FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. (USCG, 1999) This chemical is probably combustible. (NTP, 1992)

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2. Environmental precautions

Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.3. Methods and materials for containment and cleaning up

Land spill: Apply appropriate foam to diminish vapor and fire hazard.

6.4. Reference to other sections

For disposal suggestions see section 13. For exposure controls / personal protection suggestions see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2. Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Keep tightly closed, cool and away from flame.

7.3. Specific end use(s)

Main uses of the chemical are mentioned in section 1.2. No other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Component	Ethyl Alcohol			
CAS No.	64-17-5			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	1000	1880		
Austria	1000	1900	2000	3800
Belgium	1000	1907		
Canada - Ontario			1000	
Canada - Québec	1000	1880		
Denmark	1000	1900	2000	3800
Finland	1000	1900	1300 (1)	2500 (1)
France	1000	1900	5000	9500
Germany (AGS)	500	960	1000 (1)	1920 (1)
Germany (DFG)	500	960	1000 (1)	1920 (1)
Hungary		1900		7600
Ireland			1000 (1)	
Latvia		1000		
New Zealand	1000	1880		
Poland		1900		

Component	Ethyl Alcohol			
CAS No.	64-17-5			
Singapore	1000	1880		
South Korea	1000	1900		
Spain			1000	1910
Sweden	500	1000	1000 (1)	1900 (1)
Switzerland	500	960	1000	1920
The Netherlands		260		1900
USA - NIOSH	1000	1900		
USA - OSHA	1000	1900		
United Kingdom	1000	1920		
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	(1) 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Sweden	(1) 15 minutes average value			

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia	400	983	500	1230
Austria	200	500	800	2000
Belgium	200	500	400	1000
Canada - Ontario	200		400	
Canada - Québec	400	983	500	1230
Denmark	200	490	400	980
Finland	200	500	250 (1)	620 (1)
France			400	980
Germany (AGS)	200	500	400 (1)	1000 (1)
Germany (DFG)	200	500	400	1000
Hungary		500		2000
Ireland	200		400 (1)	
Japan	400			
Japan - JSOH	400 (1)	980 (1)		
Latvia		350		600 (1)
New Zealand	400	983	500	1230
People's Republic of China		350		700 (1)
Poland		900		1200
Singapore	400	983	500	1230
South Korea	200	480	400	980

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
Spain	200	500	400	1000
Sweden	150	350	250 (1)	600 (1)
Switzerland	200	500	400	1000
USA - NIOSH	400	980	500 (1)	1225 (1)
USA - OSHA	400	980		
United Kingdom	400	999	500	1250
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Japan - JSOH	(1) Occupational exposure limit ceiling: Reference value to the maximal exposure concentration of the substance during a working day			
Latvia	(1) 15 minutes average value			
People's Republic of China	(1) 15 minutes average value			
Sweden	(1) 15 minutes average value			
USA - NIOSH	(1) 15 minutes average value			

Component	Dioctyl Adipate			
CAS No.	103-23-1			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Poland		400		
	Remarks			

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

8.2.3. Environmental exposure controls

See section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Odour	pure CAS 64-17-5: Mild, rather pleasant; like wine or whiskey; pure CAS 67-63-0: Pleasant odor; pure CAS 123-95-5: ODORLESS OR FAINTLY FATTY ODOR; pure CAS 103-23-1: SLIGHT AROMATIC SMELL
Odour threshold	pure CAS 64-17-5: 10 PPM; pure CAS 67-63-0: 90 mg/cu m
pH	pure CAS 103-23-1: Acidity: 0.25 (meg/100 gm. max)
Melting point/ freezing point	pure CAS 64-17-5: -114 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: -89.5 °C.; pure CAS 1328-53-6: -106°C(lit.); pure CAS 123-95-5: -37°C(lit.); pure CAS 103-23-1: -67.8 °C.
Initial boiling point and boiling range	pure CAS 64-17-5: 78.29°C. Atm. press.: 1 013.25 hPa.; pure CAS 67-63-0: 82.3 °C. Atm. press.: 1 atm.; pure CAS 1328-53-6: 64°C/12mmHg(lit.); pure CAS 27214-90-0: 428°C at 760mmHg; pure CAS 123-95-5: 66°C/11mmHg(lit.); pure CAS 103-23-1: 377.88 °C. Atm. press.: 1 013 hPa. Remarks: Extrapolated value.
Flash point	pure CAS 64-17-5: 13 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: 12 °C.; pure CAS 1328-53-6: 79°C(lit.); pure CAS 27214-90-0: 189.7°C; pure CAS 123-95-5: 160°C; pure CAS 103-23-1: 196 °C. Atm. press.: 1 013.25 hPa.
Evaporation rate	no data available
Flammability	pure CAS 64-17-5: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 67-63-0: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.; pure CAS 103-23-1: Combustible.
Upper/lower flammability or explosive limits	pure CAS 64-17-5: Lower flammable limit: 3.3% by volume; Upper flammable limit: 19% by volume; pure CAS 67-63-0: Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 deg F (93 deg C); pure CAS 103-23-1: LOWER FLAMMABLE LIMIT: 0.4% BY VOLUME @ 242 DEG C
Vapour pressure	pure CAS 64-17-5: 57.26 hPa. Temperature: 19.6 °C.; pure CAS 67-63-0: 60.2 hPa. Temperature: 25 °C. Remarks: 6.02 kPa at 25°C.; pure CAS 123-95-5: 5.80X10 ⁻⁶ mm Hg @ 25 deg C; pure CAS 103-23-1: Ca. 0 hPa. Temperature: 20 °C. Remarks: Extrapolated value.
Vapour density	pure CAS 64-17-5: 1.59 (vs air); pure CAS 67-63-0: 2.1 (vs air); pure CAS 123-95-5: 11.4 (AIR= 1); pure CAS 103-23-1: 12.8 (NTP, 1992) (Relative to Air)
Relative density	pure CAS 64-17-5: 786.4 kg/m ³ . Temperature: 25 °C.; pure CAS 67-63-0: 0.8.; pure CAS 1328-53-6: 2; pure CAS 27214-90-0: 0.916g/cm ³ ; pure CAS 123-95-5: 0.861g/mL at 20°C(lit.); pure CAS 103-23-1: 0.92 g/cm ³ . Temperature: 20 °C.
Solubility(ies)	pure CAS 64-17-5: Miscible with water; pure CAS 67-63-0: Miscible with water; pure CAS 1328-53-6: less than 1 mg/mL at 70° F (NTP, 1992); pure CAS 123-95-5: Insoluble in water; soluble in ethanol; very soluble in acetone; pure CAS 103-23-1: less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	pure CAS 64-17-5: log Pow = -0.35. Temperature: 24 °C.; pure CAS 67-63-0: log Pow = 0.05. Temperature: 25 °C. Remarks: PH not reported.; pure CAS 103-23-1: log Pow = 8.94. Temperature: 25 °C. Remarks: PH value is not reported.
Auto-ignition temperature	pure CAS 64-17-5: 368.8 °C. Remarks: 368.8 +/- 7.4°C.; pure CAS 67-63-0: 399 °C. Remarks: The pressure was not reported.; pure CAS 123-95-5: 671 DEG F (355 DEG C); pure CAS 103-23-1: 377 °C. Atm. press.: 1 013.25 hPa.

Decomposition temperature	no data available
Viscosity	pure CAS 64-17-5: dynamic viscosity (in mPa s) = 1.17. Temperature:20°C. Remarks:Value attributed to Kirk Othmer.;pure CAS 67-63-0: 2.038 mPa s at 25 deg C;pure CAS 103-23-1: dynamic viscosity (in mPa s) = 13.7. Temperature:20°C.
Explosive properties	pure CAS 64-17-5: Vapour/air mixtures are explosive.;pure CAS 67-63-0: Vapour/air mixtures are explosive.
Oxidising properties	no data available

9.2. Other information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

3300 ppm [Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

Flammable liquid when exposed to heat or flame ... The vapour mixes well with air, explosive mixtures are easily formed. Acetyl chloride reacts violently with ethanol or water, [Rose, (1961)]. Acetyl bromide reacts violently with alcohols or water, [Merck 11th ed., 1989]. Mixtures of alcohols with concentrated sulfuric acid and strong hydrogen peroxide can cause explosions. Example: An explosion will occur if dimethylbenzylcarbinol is added to 90% hydrogen peroxide then acidified with concentrated sulfuric acid. Mixtures of ethyl alcohol with concentrated hydrogen peroxide form powerful explosives. Mixtures of hydrogen peroxide and 1-phenyl-2-methyl propyl alcohol tend to explode if acidified with 70% sulfuric acid, [Chem. Eng. News 45(43):73(1967); J. Org. Chem. 28:1893(1963)]. Alkyl hypochlorites are violently explosive. They are readily obtained by reacting hypochlorous acid and alcohols either in aqueous solution or mixed aqueous-carbon tetrachloride solutions. Chlorine plus alcohols would similarly yield alkyl hypochlorites. They decompose in the cold and explode on exposure to sunlight or heat. Tertiary hypochlorites are less unstable than secondary or primary hypochlorites, [NFPA 491 M, 1991]. Base-catalysed reactions of isocyanates with alcohols should be carried out in inert solvents. Such reactions in the absence of solvents often occur with explosive violence, [Wischmeyer(1969)].

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Many explosions have been experienced during the gravimetric determination of either perchlorates or potassium as potassium perchlorate by a standard method involving ethanol extraction. During subsequent heating, formation and explosion of ethyl perchlorate is very probable.

10.6. Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Oral: pure CAS 64-17-5: LD50 - rat (female) - 15 010 mg/kg bw.;pure CAS 67-63-0: LD50 Dog oral 4797 mg/kg;pure CAS 123-95-5: LD50 Rat oral 32 g/kg;pure CAS 103-23-1: LD50 - rat (male/female) - > 20 000 mg/kg bw. Remarks:The estimated LD50 was 45 g/kg for males and 24 .6 g/kg for females.
- Inhalation: pure CAS 64-17-5: LC50 - mouse (male) - > 60 000 ppm.;pure CAS 67-63-0: LC50

- Mouse inhalation 53 mg/L 2 hr; pure CAS 103-23-1: LC50 - rat (male/female) - > 5.7 mg/L air.
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A3; Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: pure CAS 64-17-5: LC50 - Pimephales promelas - 14.2 g/L - 96 h.; pure CAS 67-63-0: LC50; Species: Lepomis macrochirus (Bluegill) length 40-50 mm; Conditions: static, 22 deg C; Concentration: >1400000 ug/L for 24-96 hr /formulation; pure CAS 103-23-1: LC50 - Oncorhynchus mykiss, Lepomis macrochirus, Pimephales promelas - > 0.78 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: pure CAS 64-17-5: LC50 - Ceriodaphnia dubia - 5 012 mg/L - 48 h.; pure CAS 67-63-0: EC50 - Daphnia magna - > 10 000 mg/L - 24 h.; pure CAS 103-23-1: EC50 - Daphnia magna - > 500 mg/L - 48 h.
- Toxicity to algae: pure CAS 64-17-5: EC10 - Chlorella vulgaris - 86 mg/L - 4 d.; pure CAS 67-63-0: Toxicity threshold - Scenedesmus quadricauda - 1 800 mg/L - 7 d.; pure CAS 103-23-1: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 500 mg/L - 72 h.
- Toxicity to microorganisms: pure CAS 64-17-5: IC50 - activated sludge from domestic and industrial sewage treatment plants - > 1 000 mg/L - 3 h.; pure CAS 103-23-1: EC50 - activated sludge - > 350 mg/L - 3 h. Remarks: Respiration rate.

12.2. Persistence and degradability

AEROBIC: Ethanol was shown to biodegrade under aerobic conditions in various screening tests using different types of inocula and incubation periods(1-7). 5 day theoretical BOD values range from 37% - 86%(1,4). Biodegradation of 3, 7, and 10 mg/L ethanol with filtered sewage seed in fresh water resulted in a 74% theoretical BOD in 5 days and 84% in 20 days; in salt water 45% of the theoretical BOD was reached in 5 days and 75% was reached in 20 days(4). Formaldehyde and acetic acid are products of biodegradation by a soil inoculum(6). Ethanol present at 100 mg/L, achieved 89% of its theoretical BOD using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(7). Ethanol was rapidly degraded in aerobic microcosms prepared from low organic (0.2% organic carbon) sandy aquifer material obtained from Jurere Beach, Brazil(8). Microcosms were prepared with 20 grams of aquifer material and 50 mL of groundwater (pH 5.2). At a starting concentration of 100 mg/L, ethanol had half-lives of approximately 3 days in samples prepared with 20 mg/L of either benzene, toluene or o-xylene under aerobic conditions(8).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated for ethanol(SRC), using a log Kow of -0.31(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4. Mobility in soil

A log Koc of 0.44 has been reported for ethanol(2), corresponding to a Koc of 2.75(SRC). According to a classification scheme(2), this estimated Koc value suggests that ethanol is expected to have very high mobility in soil. Ethanol leaching was measured using a shallow sand and gravel test aquifer in Merrick Co, central Platte Valley, Nebraska which was subjected to a pulse containing 220 mg/L ethanol and 12 mg/L bromide and monitored for 2.5 months. Transport was not retarded. An average first-order decay constant was estimated of be 0.32/day, corresponding to a half-life of 2.2 days(3). A sorption coefficient on a snow surface was reported as log K = -3.04 (cu m snow surface/sq m air) at -6.8 deg C(4).

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN1993

IMDG: UN1993

IATA: UN1993

14.2. UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, N.O.S.

IMDG: FLAMMABLE LIQUID, N.O.S.

IATA: FLAMMABLE LIQUID, N.O.S.

14.3. Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4. Packing group

ADR/RID: II

IMDG: II

IATA: II

14.5. Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6. Special precautions for user

no data available

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

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Ethanol	Ethyl Alcohol	64-17-5	200-578-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Polychloro copper phthalocyanine	C.I. Pigment Green 7	1328-53-6	215-524-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Butyl stearate	Butyl Stearate	123-95-5	204-666-5
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Indication of changes

Version 1.0 Initial issue.

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

Key literature references and sources for data

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Full text of H-Statements referred to under sections 2 and/or 3.

Flam. Liq. 2,H225	Flammable liquids, Category 2
Skin Corr. 1,H314	Skin corrosion, Category 1
Eye Dam. 1,H318	Serious eye damage, Category 1
H225	Highly flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.

Advice on any training appropriate for workers to ensure protection of human health and the environment

Provide sufficient information, guidance and training to operating personnel.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.

SAFETY DATA SHEETS

According to Regulation (EU) No.1907/2006, Regulation (EU) No. 1272/2008 and their subsequent amendments and corrigenda

Version: 1.0
Creation Date: Aug. 26, 2019
Revision Date: Aug. 26, 2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	white-board ink(red)
Other means of identification	-
Other names	Ethanol; Ethyl alcohol
Product number	-

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	writing
Uses advised against	no data available
Reason why uses advised against	no data available

1.3. Details of the supplier of the safety data sheet

Details of the supplier	-
Company	suzhou xiongying ink
Address	suhzou city
Telephone	+86-512-63331385
Details of the non-Community manufacturer or formulator	
Company	Suzhou xiongying Ink New Materials Co.,Ltd
Address	NO.539 , Yunli Road , Economic and Technological development Zone
Telephone	+86-512-63331385
E-mail address of competent person responsible for the SDS	zhangshenghong001@126.com

1.4. Emergency telephone number

Emergency telephone number	+86-512-63331385
Opening hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT+8 hours).

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP)

Flam. Liq. 2,H225
Skin Corr. 1,H314
Eye Dam. 1,H318
Skin Sens. 1,H317

2.1.2. Additional information

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram(s)**Signal word**

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.
 H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.
 H317 May cause an allergic skin reaction.

Precautionary statement(s)

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P310 Immediately call a POISON CENTER/doctor/...
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard information (EU)

no data available

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients**3.1. Substances**

Not applicable

3.2. Mixtures

Chemical name	Common names and synonyms	CAS number	EC number	Registration number	Classification according to Regulation (EC) No 1278/2008(CLP)	Concentration
Ethanol	Ethyl Alcohol	64-17-5	200-578-6	-	Flam. Liq. 2,H225	50.0
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7	-	Flam. Liq. 2,H225;Eye Irrit. 2,H319;STOT SE 3,H335,H336	30.0
3-hydroxy-N-(o-tolyl)-4-[(2,4,5-trichlorophenyl)azo]naphthalene-2-carboxamide	C.I. Pigment Red 112	6535-46-2	229-440-3	-	Skin Sens. 1,H317	7.0
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2	-	Not classified.	5.0
Butyl stearate	Butyl Stearate	123-95-5	204-666-5	-	Not classified.	5.0
Bis(2-ethylhexyl) adipate	Dioctyl Adipate	103-23-1	203-090-1	-	Not classified.	3.0

SECTION 4: First aid measures**4.1. Description of first aid measures**

General notes

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

Following inhalation

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Refer for medical attention .

4.2. Most important symptoms and effects, both acute and delayed

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016)

VAPOR: Irritating to eyes, nose and throat. LIQUID: Not harmful. (USCG, 1999)

SYMPTOMS: Symptoms of exposure to this compound may include irritation. Ingestion may result in mucous membrane irritation. Eye contact may cause immediate pain and conjunctival hyperemia, but no serious injury. ACUTE/CHRONIC HAZARDS: This compound may cause local irritation. It may also cause mucous membrane irritation. When heated to decomposition it emits acrid smoke and fumes. (NTP, 1992)

4.3. Indication of any immediate medical attention and special treatment needed

Emergency and supportive measures: 1. Acute intoxication. Treatment is mainly supportive. a. Protect the airway to prevent aspiration and intubate and assist ventilation if needed. b. Give glucose and thiamine, and treat coma and seizures if they occur. Glucagon is not effective for alcohol-induced hypoglycemia. c. Correct hypothermia with gradual rewarming. d. Most patients will recover within 4-6 hours. Observe children until their blood alcohol level is below 50 mg/dL and there is no evidence of hypoglycemia. 2. Alcoholic ketoacidosis. Treat with volume replacement, thiamine, and supplemental glucose. Most patients recover rapidly. 3. Alcohol withdrawal. Treat with benzodiazepines.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Excerpt from ERG Guide 127 [Flammable Liquids (Water-Miscible)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. (USCG, 1999)

This chemical is probably combustible. (NTP, 1992)

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2. Environmental precautions

Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.3. Methods and materials for containment and cleaning up

Land spill: Apply appropriate foam to diminish vapor and fire hazard.

6.4. Reference to other sections

For disposal suggestions see section 13. For exposure controls / personal protection suggestions see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2. Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Keep tightly closed, cool and away from flame.

7.3. Specific end use(s)

Main uses of the chemical are mentioned in section 1.2. No other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Component	Ethyl Alcohol			
CAS No.	64-17-5			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Australia	1000	1880		
Austria	1000	1900	2000	3800
Belgium	1000	1907		
Canada - Ontario			1000	
Canada - Québec	1000	1880		
Denmark	1000	1900	2000	3800
Finland	1000	1900	1300 (1)	2500 (1)
France	1000	1900	5000	9500
Germany (AGS)	500	960	1000 (1)	1920 (1)
Germany (DFG)	500	960	1000 (1)	1920 (1)
Hungary		1900		7600
Ireland			1000 (1)	
Latvia		1000		
New Zealand	1000	1880		
Poland		1900		
Singapore	1000	1880		
South Korea	1000	1900		
Spain			1000	1910
Sweden	500	1000	1000 (1)	1900 (1)
Switzerland	500	960	1000	1920
The Netherlands		260		1900
USA - NIOSH	1000	1900		
USA - OSHA	1000	1900		

Component	Ethyl Alcohol			
CAS No.	64-17-5			
United Kingdom	1000	1920		
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	(1) 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Sweden	(1) 15 minutes average value			

Component	Isopropyl Alcohol			
CAS No.	67-63-0			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Australia	400	983	500	1230
Austria	200	500	800	2000
Belgium	200	500	400	1000
Canada - Ontario	200		400	
Canada - Québec	400	983	500	1230
Denmark	200	490	400	980
Finland	200	500	250 (1)	620 (1)
France			400	980
Germany (AGS)	200	500	400 (1)	1000 (1)
Germany (DFG)	200	500	400	1000
Hungary		500		2000
Ireland	200		400 (1)	
Japan	400			
Japan - JSOH	400 (1)	980 (1)		
Latvia		350		600 (1)
New Zealand	400	983	500	1230
People's Republic of China		350		700 (1)
Poland		900		1200
Singapore	400	983	500	1230
South Korea	200	480	400	980
Spain	200	500	400	1000
Sweden	150	350	250 (1)	600 (1)
Switzerland	200	500	400	1000
USA - NIOSH	400	980	500 (1)	1225 (1)
USA - OSHA	400	980		
United Kingdom	400	999	500	1250
	Remarks			
Finland	(1) 15 minutes average value			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			
Ireland	(1) 15 minutes reference period			
Japan - JSOH	(1) Occupational exposure limit ceiling: Reference value to the maximal exposure concentration of the substance during a working day			
Latvia	(1) 15 minutes average value			

Component	Isopropyl Alcohol
CAS No.	67-63-0
People's Republic of China	(1) 15 minutes average value
Sweden	(1) 15 minutes average value
USA - NIOSH	(1) 15 minutes average value

Component	Diethyl Adipate			
CAS No.	103-23-1			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m³	ppm	mg/m³
Poland		400		
	Remarks			

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

8.2.3. Environmental exposure controls

See section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Odour	pure CAS 64-17-5: Mild, rather pleasant; like wine or whiskey; pure CAS 67-63-0: Pleasant odor; pure CAS 123-95-5: ODORLESS OR FAINTLY FATTY ODOR; pure CAS 103-23-1: SLIGHT AROMATIC SMELL
Odour threshold	pure CAS 64-17-5: 10 PPM; pure CAS 67-63-0: 90 mg/cu m
pH	pure CAS 103-23-1: Acidity: 0.25 (meg/100 gm. max)
Melting point/ freezing point	pure CAS 64-17-5: -114 °C. Atm. press.: 1 atm.; pure CAS 67-63-0: -89.5 °C.; pure CAS 6535-46-2: Atm. press.: Ca. 1 013. Remarks: Decomposition with a mean energy of -300 J/g.; pure CAS 123-95-5: -37°C(lit.); pure CAS 103-23-1: -67.8 °C.
Initial boiling point and boiling range	pure CAS 64-17-5: 78.29°C. Atm. press.: 1 013.25 hPa.; pure CAS 67-63-0: 82.3 °C. Atm. press.: 1 atm.; pure CAS 6535-46-2: 627.4°C at 760 mmHg; pure CAS 27214-90-0: 428°C at 760mmHg; pure CAS 123-95-5: 66°C/11mmHg(lit.); pure CAS 103-23-1: 377.88 °C. Atm. press.: 1 013 hPa. Remarks: Extrapolated value.

Flash point	pure CAS 64-17-5: 13 °C. Atm. press.:1 atm.;pure CAS 67-63-0: 12 °C.;pure CAS 27214-90-0: 189.7°C;pure CAS 123-95-5: 160°C;pure CAS 103-23-1: 196 °C. Atm. press.:1 013.25 hPa.
Evaporation rate	no data available
Flammability	pure CAS 64-17-5: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.;pure CAS 67-63-0: Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.;pure CAS 103-23-1: Combustible.
Upper/lower flammability or explosive limits	pure CAS 64-17-5: Lower flammable limit: 3.3% by volume; Upper flammable limit:19% by volume;pure CAS 67-63-0: Lower flammable limit: 2.0% by volume; Upper flammable limit: 12.7% by volume @ 200 deg F (93 deg C);pure CAS 103-23-1: LOWER FLAMMABLE LIMIT: 0.4% BY VOLUME @ 242 DEG C
Vapour pressure	pure CAS 64-17-5: 57.26 hPa. Temperature:19.6 °C.;pure CAS 67-63-0: 60.2 hPa. Temperature:25 °C. Remarks:6.02 kPa at 25°C.;pure CAS 6535-46-2: 0 mm Hg. Temperature:25 °C. Remarks:Calculated by EPIWIN v4.00 program, input of exact value technically not possible.;< 0 Pa. Temperature:25 °C. Remarks:Calculated by EPIWIN v4.00 program, input of exact value technically not possible.;pure CAS 123-95-5: 5.80X10-6 mm Hg @ 25 deg C;pure CAS 103-23-1: Ca. 0 hPa. Temperature:20 °C. Remarks:Extrapolated value.
Vapour density	pure CAS 64-17-5: 1.59 (vs air);pure CAS 67-63-0: 2.1 (vs air);pure CAS 123-95-5: 11.4 (AIR= 1);pure CAS 103-23-1: 12.8 (NTP, 1992) (Relative to Air)
Relative density	pure CAS 64-17-5: 786.4 kg/m³. Temperature:25 °C.;pure CAS 67-63-0: 0.8.;pure CAS 6535-46-2: 1.48 g/cm³. Temperature:20 °C.;pure CAS 27214-90-0: 0.916g/cm3;pure CAS 123-95-5: 0.861g/mL at 20°C(lit.);pure CAS 103-23-1: 0.92 g/cm³. Temperature:20 °C.
Solubility(ies)	pure CAS 64-17-5: Miscible with water;pure CAS 67-63-0: Miscible with water;pure CAS 6535-46-2: In water: 9.8 µg/L. Temperature:24 °C. pH:Ca. 7..N-octanol.;pure CAS 123-95-5: Insoluble in water; soluble in ethanol; very soluble in acetone;pure CAS 103-23-1: less than 0.1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	pure CAS 64-17-5: log Pow = -0.35. Temperature:24 °C.;pure CAS 67-63-0: log Pow = 0.05. Temperature:25 °C. Remarks:PH not reported.;pure CAS 6535-46-2: log Pow = Ca. 2.5. Temperature:24 °C.;pure CAS 103-23-1: log Pow = 8.94. Temperature:25 °C. Remarks:PH value is not reported.
Auto-ignition temperature	pure CAS 64-17-5: 368.8 °C. Remarks:368.8 +/- 7.4°C.;pure CAS 67-63-0: 399 °C. Remarks:The pressure was not reported.;pure CAS 6535-46-2: > 420 °C. Atm. press.:Ca. 1 013 hPa.;>= 270 °C. Atm. press.:Ca. 1 013 hPa.;pure CAS 123-95-5: 671 DEG F (355 DEG C);pure CAS 103-23-1: 377 °C. Atm. press.:1 013.25 hPa.
Decomposition temperature	no data available
Viscosity	pure CAS 64-17-5: dynamic viscosity (in mPa s) = 1.17. Temperature:20°C. Remarks:Value attributed to Kirk Othmer.;pure CAS 67-63-0: 2.038 mPa s at 25 deg C;pure CAS 103-23-1: dynamic viscosity (in mPa s) = 13.7. Temperature:20°C.
Explosive properties	pure CAS 64-17-5: Vapour/air mixtures are explosive.;pure CAS 67-63-0: Vapour/air mixtures are explosive.
Oxidising properties	no data available

9.2. Other information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

3300 ppm [Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]

Reacts slowly with calcium hypochlorite, silver oxide and ammonia. This generates fire and explosion hazard. Reacts violently with strong oxidants such as nitric acid, silver nitrate, mercuric nitrate and magnesium perchlorate. This generates fire and explosion hazard.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

Flammable liquid when exposed to heat or flame ... The vapour mixes well with air, explosive mixtures are easily formed. Acetyl chloride reacts violently with ethanol or water, [Rose, (1961)]. Acetyl bromide reacts violently with alcohols or water, [Merck 11th ed., 1989]. Mixtures of alcohols with concentrated sulfuric acid and strong hydrogen peroxide can cause explosions. Example: An explosion will occur if dimethylbenzylcarbinol is added to 90% hydrogen peroxide then acidified with concentrated sulfuric acid. Mixtures of ethyl alcohol with concentrated hydrogen peroxide form powerful explosives. Mixtures of hydrogen peroxide and 1-phenyl-2-methyl propyl alcohol tend to explode if acidified with 70% sulfuric acid, [Chem. Eng. News 45(43):73(1967); J. Org. Chem. 28:1893(1963)]. Alkyl hypochlorites are violently explosive. They are readily obtained by reacting hypochlorous acid and alcohols either in aqueous solution or mixed aqueous-carbon tetrachloride solutions. Chlorine plus alcohols would similarly yield alkyl hypochlorites. They decompose in the cold and explode on exposure to sunlight or heat. Tertiary hypochlorites are less unstable than secondary or primary hypochlorites, [NFPA 491 M, 1991]. Base-catalysed reactions of isocyanates with alcohols should be carried out in inert solvents. Such reactions in the absence of solvents often occur with explosive violence, [Wischmeyer(1969)].

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Many explosions have been experienced during the gravimetric determination of either perchlorates or potassium as potassium perchlorate by a standard method involving ethanol extraction. During subsequent heating, formation and explosion of ethyl perchlorate is very probable.

10.6. Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Oral: pure CAS 64-17-5: LD50 - rat (female) - 15 010 mg/kg bw.; pure CAS 67-63-0: LD50 Dog oral 4797 mg/kg; pure CAS 6535-46-2: LD50 - rat (female) - > 5 000 mg/kg bw.; pure CAS 123-95-5: LD50 Rat oral 32 g/kg; pure CAS 103-23-1: LD50 - rat (male/female) - > 20 000 mg/kg bw. Remarks: The estimated LD50 was 45 g/kg for males and 24.6 g/kg for females.
- Inhalation: pure CAS 64-17-5: LC50 - mouse (male) - > 60 000 ppm; pure CAS 67-63-0: LC50 Mouse inhalation 53 mg/L 2 hr; pure CAS 103-23-1: LC50 - rat (male/female) - > 5.7 mg/L air.
- Dermal: pure CAS 6535-46-2: LD50 - rat (male) - > 5 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A3; Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: pure CAS 64-17-5: LC50 - *Pimephales promelas* - 14.2 g/L - 96 h.; pure CAS 67-63-0: LC50; Species: *Lepomis macrochirus* (Bluegill) length 40-50 mm; Conditions: static, 22 deg C; Concentration: >1400000 ug/L for 24-96 hr /formulation; pure CAS 103-23-1: LC50 - *Oncorhynchus mykiss*, *Lepomis macrochirus*, *Pimephales promelas* - > 0.78 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: pure CAS 64-17-5: LC50 - *Ceriodaphnia dubia* - 5 012 mg/L - 48 h.; pure CAS 67-63-0: EC50 - *Daphnia magna* - > 10 000 mg/L - 24 h.; pure CAS 103-23-1: EC50 - *Daphnia magna* - > 500 mg/L - 48 h.
- Toxicity to algae: pure CAS 64-17-5: EC10 - *Chlorella vulgaris* - 86 mg/L - 4 d.; pure CAS 67-63-0: Toxicity threshold - *Scenedesmus quadricauda* - 1 800 mg/L - 7 d.; pure CAS 6535-46-2: EC50 - *Desmodesmus subspicatus* (previous name: *Scenedesmus subspicatus*) - > 1 mg/L (saturated solution) - 72 h.; pure CAS 103-23-1: EC50 - *Desmodesmus subspicatus* (previous name: *Scenedesmus subspicatus*) - > 500 mg/L - 72 h.
- Toxicity to microorganisms: pure CAS 64-17-5: IC50 - activated sludge from domestic and industrial sewage treatment plants - > 1 000 mg/L - 3 h.; pure CAS 6535-46-2: NOEC - activated sludge - > 1 000 mg/L - 3 h. Remarks: Respiration rate.; pure CAS 103-23-1: EC50 - activated sludge - > 350 mg/L - 3 h. Remarks: Respiration rate.

12.2. Persistence and degradability

AEROBIC: Ethanol was shown to biodegrade under aerobic conditions in various screening tests using different types of inocula and incubation periods(1-7). 5 day theoretical BOD values range from 37% - 86% (1,4). Biodegradation of 3, 7, and 10 mg/L ethanol with filtered sewage seed in fresh water resulted in a 74% theoretical BOD in 5 days and 84% in 20 days; in salt water 45% of the theoretical BOD was reached in 5 days and 75% was reached in 20 days(4). Formaldehyde and acetic acid are products of biodegradation by a soil inoculum(6). Ethanol present at 100 mg/L, achieved 89% of its theoretical BOD using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(7). Ethanol was rapidly degraded in aerobic microcosms prepared from low organic (0.2% organic carbon) sandy aquifer material obtained from Jurere Beach, Brazil(8). Microcosms were prepared with 20 grams of aquifer material and 50 mL of groundwater (pH 5.2). At a starting concentration of 100 mg/L, ethanol had half-lives of approximately 3 days in samples prepared with 20 mg/L of either benzene, toluene or o-xylene under aerobic conditions(8).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated for ethanol(SRC), using a log Kow of -0.31(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4. Mobility in soil

A log Koc of 0.44 has been reported for ethanol(2), corresponding to a Koc of 2.75(SRC). According to a classification scheme(2), this estimated Koc value suggests that ethanol is expected to have very high mobility in soil. Ethanol leaching was measured using a shallow sand and gravel test aquifer in Merrick Co, central Platte Valley, Nebraska which was subjected to a pulse containing 220 mg/L ethanol and 12 mg/L bromide and monitored for 2.5 months. Transport was not retarded. An average first-order decay constant was estimated of be 0.32/day, corresponding to a half-life of 2.2 days(3). A sorption coefficient on a snow surface was reported as log K = -3.04 (cu m snow surface/sq m air) at -6.8 deg C(4).

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN1993

IMDG: UN1993

IATA: UN1993

14.2. UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, N.O.S.

IMDG: FLAMMABLE LIQUID, N.O.S.

IATA: FLAMMABLE LIQUID, N.O.S.

14.3. Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4. Packing group

ADR/RID: II

IMDG: II

IATA: II

14.5. Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6. Special precautions for user

no data available

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

no data available

SECTION 15: Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
Ethanol	Ethyl Alcohol	64-17-5	200-578-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Propan-2-ol	Isopropyl Alcohol	67-63-0	200-661-7
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
3-hydroxy-N-(o-tolyl)-4-[(2,4,5-trichlorophenyl)azo]naphthalene-2-carboxamide	C.I. Pigment Red 112	6535-46-2	229-440-3
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Diisooctyl sebacate	Diisooctyl Sebacate	27214-90-0	248-333-2
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Butyl stearate	Butyl Stearate	123-95-5	204-666-5
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
Chemical name	Common names and synonyms	CAS number	EC number
Bis(2-ethylhexyl) adipate	Diocetyl Adipate	103-23-1	203-090-1

European Inventory of Existing Commercial Chemical Substances (EINECS)	Listed.
---	---------

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Indication of changes

Version 1.0 Initial issue.

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

Key literature references and sources for data

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Full text of H-Statements referred to under sections 2 and/or 3.

Flam. Liq. 2,H225	Flammable liquids, Category 2
Skin Corr. 1,H314	Skin corrosion, Category 1
Eye Dam. 1,H318	Serious eye damage, Category 1
Skin Sens. 1,H317	Skin sensitization, Category 1
H225	Highly flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction.

Advice on any training appropriate for workers to ensure protection of human health and the environment

Provide sufficient information, guidance and training to operating personnel.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.