SDFCL
s d fine-chem limited

ETHYL CHLOROACETATE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
ETHYL CHLOROACETATE

OTHER NAMES

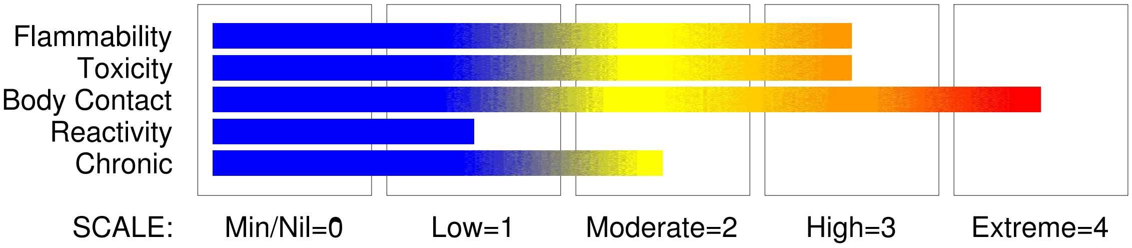
C4-H7-Cl-O2, ClCH2CO2C2H5, "acetic acid, chloro-, ethyl ester", "chloroacetic acid, ethyl ester", "ethyl chloracetate", "ethyl alpha-chloroacetate", "ethyl chloroethanoate", "ethyl monochloroacetate", "ethyl monchloracetate"

PROPER SHIPPING NAME
ETHYL CHLOROACETATE

PRODUCT USE
Solvent, organic syntheses, military poison, vat dyestuffs.

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

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification
Acute Aquatic Hazard Category 1

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Acute Toxicity (Dermal) Category 3
Acute Toxicity (Inhalation) Category 2
Acute Toxicity (Oral) Category 3
Eye Irritation Category 2A
Flammable Liquid Category 2

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H225 H330 H311 H301 H319 H400
Highly flammable liquid and vapour
Fatal if inhaled
Toxic in contact with skin
Toxic if swallowed
Causes serious eye irritation
Very toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.
Ground/bond container and receiving equipment.
Do not eat, drink or smoke when using this product.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wear protective gloves/clothing
Wear respiratory protection.
Use only outdoors or in a well ventilated area.
Use only non-sparking tools.
Wear protective gloves and eye/face protection.
Keep container tightly closed.
Keep away from heat/sparks/open flame - No smoking.
Take precautionary measures against static discharge
Use explosion-proof electrical/ventilating/lighting/equipment

Response

If eye irritation persists, get medical advice/attention.
Immediately call a POISON CENTER or doctor/physician.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Wear eye/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF ON SKIN: Gently wash with plenty of soap and water.
Specific treatment: refer to Label or MSDS.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

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If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.
Remove/Take off immediately all contaminated clothing
Wash/Decontaminate removed clothing before reuse.
Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ethyl chloroacetate	105-39-5	>98
hydrolysis yields		
chloroacetic acid	79-11-8	

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.
For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

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SKIN

If skin or hair contact occurs:

- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
- Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology].

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Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke. May emit corrosive fumes.

Decomposes on heating and produces toxic fumes of: carbon dioxide (CO_2), phosgene, hydrogen chloride and chlorine.

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.
Reactions with metals producing flammable / explosive hydrogen gas.

Personal Protective Equipment

Breathing apparatus.
Chemical splash suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

DO NOT touch the spill material.

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

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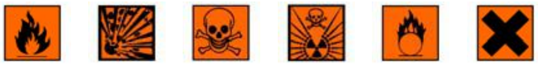
Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

DO NOT touch the spill material.
Clear area of personnel and move upwind.

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Contain or absorb spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X X X X X +

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

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of overexposure occurs.
- Use in a well-ventilated area.
- WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing/handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

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SUITABLE CONTAINER

Glass container.
- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents, bases and strong reducing agents.
Contact with moisture or water may generate heat.

STORAGE REQUIREMENTS

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

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• ethyl chloroacetate:	CAS:105- 39- 5
• chloroacetic acid:	CAS:79- 11- 8

MATERIAL DATA

No exposure limits set by NOHSC or ACGIH.

INGREDIENT DATA

CHLOROACETIC ACID:
ES TWA: 0.3 ppm, 1.2 mg/m3
OES TWA: 0.3 ppm, 1.2 mg/m3 (skin)

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

Odour Threshold Value: < 5 ppm

Monochloroacetic acid (MCA) is a strong acids which causes severe burns to the skin, eyes and respiratory tract. Skin exposure to molten MCA may be lethal. the perception of mucous membrane irritation in humans is reportedly 1.5 ppm (5.7 mg/m3). A workplace environmental exposure limit (WEEL) has been proposed by the AIHA and is thought to be low enough to prevent irritation whilst protecting against systemic toxicity.

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PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

DO NOT handle directly. Wear gloves and use scoop / tongs / tools.
Elbow length PVC gloves.
Nitrile gloves.
PVC boots.

OTHER

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

Operators should be trained in procedures for safe use of this material.
Operators should be trained in correct use & maintenance of respirators.

RESPIRATOR

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

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

^ - Full-face.

The local concentration of material, quantity and conditions of use determine the type of

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personal protective equipment required.
For further information consult
your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25- 0.5 m/s (50- 100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

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

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

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear liquid with pungent fruity odour; decomposes in water and alkalies.
Soluble in alcohol, benzene, chloroform, ether.
Various sources report flash point of 54-55 deg C. Consideration should be given to storing product in flammable liquids store.

PHYSICAL PROPERTIES

Liquid.
Acid.
Toxic or noxious vapours/gas.

Molecular Weight: 122.55
Melting Range (℃): - 26
Solubility in water (g/L): Reacts
pH (1% solution): Not applicable
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 4.23- 4.46
Lower Explosive Limit (%): Not available
Autoignition Temp (℃): Not available
State: Liquid

Boiling Range (℃): 143
Specific Gravity (water=1): 1.145
pH (as supplied): Not applicable
Vapour Pressure (kPa): 0.44 (20 C)
Evaporation Rate: Not available
Flash Point (℃): 65.56
Upper Explosive Limit (%): Not available
Decomposition Temp (℃): Not available

log Kow (Prager 1995): 0.22

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

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

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
Considered an unlikely route of entry in commercial/industrial environments.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of

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experimental animals.
Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
The material may produce severe irritation to the eye causing pronounced inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
The material is not thought to be a skin irritant (i.e. is unlikely to produce irritant dermatitis as described in EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
Toxic effects may result from skin absorption.
Bare unprotected skin should not be exposed to this material.

INHALED

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
Inhalation of vapour may aggravate a pre-existing respiratory condition.

CHRONIC HEALTH EFFECTS

Considered toxic by all exposure routes.
Principal routes of exposure are usually by skin contact/absorption.
The material may accumulate in the human body and progressively cause tissue damage.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Subcutaneous (mouse) LD50: 250 mg/kg	Eye (rabbit): 0.25 mg - SEVERE
Dermal (rabbit) LD50: 230 mg/kg	Eye (rabbit): 0.25 mg/24h- SEVERE

Flaccid paralysis without anaesthesia, respiratory stimulation recorded.

CHLOROACETIC ACID:

TOXICITY	IRRITATION
Oral (rat) LD50: 580 mg/kg	Nil Reported
Oral (rat) LD50: 76 mg/kg*	
Inhalation (rat) LC50: 180 mg/m^3	
Dermal (rabbit) LD50: 175 mg/kg* *[Van Waters & Rogers]	

Equivocal tumorigen by RTECS criteria

Section 12 - ECOLOGICAL INFORMATION

No data for ethyl chloroacetate.
Refer to data for ingredients, which follows:

CHLOROACETIC ACID:

Fish LC50 (96hr.) (mg/l):	150
log Kow (Prager 1995):	0.22
Hazardous Air Pollutant:	Yes
Half- life Soil - High (hours):	168

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Half- life Soil - Low (hours):	24
Half- life Air - High (hours):	2050
Half- life Air - Low (hours):	205
Half- life Surface water - High (hours):	168
Half- life Surface water - Low (hours):	24
Half- life Ground water - High (hours):	336
Half- life Ground water - Low (hours):	48
Aqueous biodegradation - Aerobic - High (hours):	168
Aqueous biodegradation - Aerobic - Low (hours):	24
Aqueous biodegradation - Anaerobic - High (hours):	672
Aqueous biodegradation - Anaerobic - Low (hours):	96
Aqueous biodegradation - Removal secondary treatment - High (hours):	19000
Aqueous biodegradation - Removal secondary treatment - Low (hours):	1900
Photolysis maximum light absorption - High (nano- m):	360
Aqueous photolysis half- life - High (hours):	19000
Aqueous photolysis half- life - Low (hours):	1900
Photooxidation half- life air - High (hours):	2300
Photooxidation half- life air - Low (hours):	230
First order hydrolysis half- life (hours):	23000
Fish LC50 (96hr.) (mg/l):	14- 20
Daphnia magna EC50 (48hr.) (mg/l):	30

Toxicity invertebrate: 2212-67-1
Bioacculmulation: molinate
Nitrif. inhib.: LC50(96)0.2-30ppm
Anaerobic effects: LC50(96)1.0-5.6mg/L

Section 13 - DISPOSAL CONSIDERATIONS

- Consult manufacturer for recycling options and recycle where possible .
- Consult State Land Waste Management Authority for disposal.
- Incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC,FLAMMABLE LIQUID
HAZCHEM: 2WE

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	3
UN Number:	1181	Packing Group:	II

Shipping Name:ETHYL CHLOROACETATE

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Section 14 - TRANSPORTATION INFORMATION

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	3
UN/ID Number:	1181	Packing Group:	II
ERG Code:	6F		

Shipping name:ETHYL CHLOROACETATE

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	3
UN Number:	1181	Packing Group:	II
EMS Number:	F- E, S- D		

Shipping name:ETHYL CHLOROACETATE

Section 15 - REGULATORY INFORMATION

REGULATIONS

ethyl chloroacetate (CAS: 105-39-5) is found on the following regulatory lists;
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals
WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

Section 16 - OTHER INFORMATION

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

Issue Date: 20-Apr-2018