Material Safety Data Sheet

Infosafe No™ 1CH8A Issue Date : July 2022 RE-ISSUED by CHEMSUPP

Product Name **DI-ISO-BUTYL KETONE**

Classified as hazardous

Section 1 - Identification

Product Identifier	DI-ISO-BUTYL KETONE
Company Name	CHEMSUPPLY AUSTRALIA PTY LTD (ABN 19 008 264 211)
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia
Telephone/Fax Number	Tel: (08) 8440-2000
Emergency Phone Number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)
E-mail Address	www.chemsupply.com.au
Recommended use of the chemical and restrictions on use	Solvent for nitrocellulose, rubber, synthetic resins; lacquers; coating compositions; organic synthesis; roll-coating inks; stains and laboratory reagent.

Other Names

Name	**Product Code**
DI ISO-BUTYL KETONE TG	DT018
DI-ISO-BUTYL KETONE LR	DL018
2,6-Dimethyl-4-heptanone	
Isobutyl ketone	

Other Information

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

Section 2 - Hazard(s) Identification

GHS Classification of the Substance/Mixture	Flammable Liquids: Category 3 Specific target organ toxicity - Single Exposure Category 3 (respiratory tract irritation)
Signal Word	WARNING
Hazard Statement (s)	H226 Flammable liquid and vapour. H335 May cause respiratory irritation.
Pictogram (s)	Flame, Exclamation mark

Precautionary Statement – Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement – Response	P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312 Call a POISON CENTER or doctor/physician if you feel unwell. P370+P378 In case of fire: Use foam, dry chemical, CO2 or water spray for extinction.
Precautionary Statement – Storage	P403+P233+P235Store in a well-ventilated place. Keep container tightly closed. Keep cool. P405 Store locked up.
Precautionary Statement – Disposal	P501 Dispose of contents/container according to local, state and federal regulations.

Section 3 - Composition and Information on Ingredients

Ingredients	Name	CAS	Proportion
	2,6-Dimethyl-4-heptanone	108-83-8	100 %

Section 4 - First Aid Measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.
Eye	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. If rapid recovery does not occur, obtain medical attention
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.

Section 5 - Firefighting Measures

Hazards from Combustion Products	Toxic and irritating gases and fumes and acrid smoke, including carbon dioxide (CO2) and carbon monoxide (CO).
Specific Methods	Small fire: Use foam, dry chemical, CO2 or water spray. Large fire: Use foam, fog or water spray. Do not use water jets. If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out. Avoid getting water inside containers.
Specific Hazards Arising from the Chemical	May be ignited by heat, sparks or flames. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Vapours is heavier than air and will spread along ground and collect in low or confined areas (drains, basements, tanks). The liquid is lighter than water. Containers may explode when heated. Fire may produce irritating, poisonous and/or corrosive gases. Vapours from runoff may create explosion hazard.
Hazchem Code	3[Y]
Precautions in connection with Fire	SCBA and structural firefighter's uniform may provide limited protection.

Section 6 - Accidental Release Measures

Spills & Disposal	ELIMINATE all ignition sources (no smoking, flares, sparks or flames) within at least 25m - All equipment used when handling the product must be earthed. Do not touch or walk through spilled material. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. Absorb with earth, sand or other non-combustible

material. Use clean, non-sparking tools to collect absorbed material and place it into loosely-covered metal or plastic containers for later disposal.
SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

Personal Precautions Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.

Section 7 - Handling and Storage

Precautions for Safe Handling Avoid ingestion and inhalation of gas/fumes/vapour/spray. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. If ingested, seek medical advice immediately and show the container or the label. Use in minimal quantities in designated areas with adequate ventilation. Avoid generating mist. Ensure good ventilation at the workplace. Use only in a well-ventilated area. Wear suitable protective equipment. Suitable emergency equipment should be readily available. Wash thoroughly after handling. Protect against physical damage. Separate from incompatibles such as oxidizing agents. Keep away from heat and all sources of ignition. Use areas should be No Smoking areas. Post 'No Smoking' signs in the area of use. Fumes can combine with air to form an explosive mixture. Containers should be bonded and grounded for transfers to avoid static sparks (grounding clips must contact bare metal). Take precautions against static discharge. All electrical equipment must be flameproofed. Use non-sparking type tools and equipment, including explosion proof ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death. Containers of this material may be dangerous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove.

Conditions for safe storage, including any incompatibilities Store in approved, labelled, tightly closed containers, in a cool, dry, well-ventilated area out of direct sunlight and away from incompatible materials and any area where the fire hazard may be acute. Keep containers tightly closed when not in use and when empty, and protect from damage and moisture. Can form unstable peroxides after prolonged storage (12 months) and exposure to air. Peroxides may explode violently when heated. Inspect periodically. Store away from oxidizing agents, alkalies (caustic solutions), reducing agents. Flammable materials should be stored in a separate safety storage cabinet or room. Outside or detached storage is preferred. Limit quantity of material in storage and restrict access to storage area. Post appropriate warning signs. Keep storage area separate from populated work areas and inspect storage area regularly. Storage tanks, buildings, rooms, and cabinets should be of a suitable, approved design. Ventilation fans should be non-sparking, and electrical equipment in the area should be suitable and not provide an ignition source. Keep away from heat and all sources of ignition. Ground all equipment containing material. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove.

Corrosiveness Diisobutyl ketone attacks plastics, such as polyvinylidene chloride (PVDC (Saran)), chlorinated polyvinyl chloride (CPVC), polyvinyl chloride (PVC), polyurethane and polystyrene; and elastomers, such as nitrile Buna-N (NBR), Viton, chloroprene, polyurethane, isoprene, fluorosilicone and silicone. Diisobutyl ketone does not attack plastics, such as Teflon and other fluorocarbons, and polypropylene; and elastomers, such as ethylene-propylene,

	butyl rubber, styrene-butadiene (SBR), Chemraz and Kalrez.
Storage Regulations	Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).
Recommended Materials	Plastics, such as Teflon and other fluorocarbons, and polypropylene; and elastomers, such as ethylene-propylene, butyl rubber, styrene-butadiene (SBR), Chemraz and Kalrez.
Unsuitable Materials	Plastics, such as polyvinylidene chloride (PVDC (Saran)), chlorinated polyvinyl chloride (CPVC), polyvinyl chloride (PVC), polyurethane and polystyrene; and elastomers, such as nitrile Buna-N (NBR), Viton, chloroprene, polyurethane, isoprene, fluorosilicone and silicone.

Section 8 - Exposure Controls and Personal Protection

Occupational Exposure Limit (OEL) Values

Name	**STEL**		**TWA**		
	mg/m3	**ppm**	**mg/m3**	**ppm**	**Footnote**
2,6-Dimethyl-4-hepta none			145	25	

Other Exposure Information	A time weighted average (TWA) has been established for Diisobutyl ketone (2,6-Dimethyl-4-heptanone) (Safe Work Australia) of 145 mg/m³, (25 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
Engineering Controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels. NOTE: The Revised Immediately Dangerous to Life or Health (IDLH) concentration for di-iso-butyl ketone is 500 ppm.
Eye and Face Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Supported Nitrile. Unsupported Butyl. Good: Supported Polyvinyl Alcohol (PVA) gloves.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Flame retardant antistatic protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Section 9 - Physical and Chemical Properties

Form	Liquid
Appearance	Clear, colourless, oily liquid.

Odour	Mild, sweet, characteristic fruit- or peppermint-like odour.
Melting Point	-41.5 °C. Also reported as -46.04 °C.
Boiling Point	168.24 °C; 169.4 °C.
Solubility in Water	Practically insoluble (50 mg/100 mL at 20 °C). Also reported as slightly soluble (264 mg/100 mL at 24 °C).
Solubility in Organic Solvents	Miscible with ethanol, diethyl ether, benzene, chloroform and most common organic solvents; soluble in carbon tetrachloride.
Specific Gravity	0.806 at 20 °C; 0.802 at 25 °C (water = 1).
Vapour Pressure	0.22 kPa (1.65 mm Hg) at 25 °C.
Relative Vapour Density (Air=1)	4.9 (air = 1) (calculated).
Evaporation Rate	30.8 (ether = 1); 0.19 (n-butyl acetate = 1).
Coefficient Water/Oil Distr.	Log P(oct) = 2.56 (estimated).
Odour Threshold	Less than 0.11 ppm (perception); 0.31 ppm (recognition). Warning property (odour/irrit.) Good - TWA is more than 10 times the odour threshold.
Volatile Component	100 %vol @ 21 °C
Surface Tension	24.54 mN/m (24.54 dynes/cm) at 20 °C.
Flash Point	60 °C (open cup); 49 °C (closed cup).
Flammability	FLAMMABLE. Keep away from heat, sparks or naked flames. Use flameproof equipment and fittings to prevent flammability risk. Electrically link and ground metal containers for transfer of the product to prevent accumulation of static electricity. Ensure adequate ventilation to prevent an explosive vapour-air mixture. Vapours will travel considerable distances to sources of ignition.
Auto-ignition Temperature	396 °C.
Flammable Limits - Lower	0.8% at 93 °C
Flammable Limits - Upper	7.1% at 93 °C
Explosion Properties	Above flash point, vapour-air mixtures are explosive within flammable limits noted above. Vapours can flow along surfaces to distant ignition sources and flash back. Sealed containers may explode when heated. Can form explosive peroxides after prolonged storage (12 months) and exposure to air. Peroxides may explode violently when heated. Concentrated solutions of ketone peroxides (greater than 30%) may explode. Contact with strong oxidizing agents (e.g. bromine, chromium trioxide, nitric acid, nitric acid-sulfuric acid mixture) may cause a violent or explosive reaction. Contact with hydrogen peroxide or mixtures of hydrogen peroxide and nitric acid may overheat and explode violently due to the formation of shock- and heat-sensitive peroxides. Contact with mixtures of haloforms (e.g. chloroform or bromoform) and strong bases (e.g. potassium hydroxide) may cause a violent or explosive reaction, with evolution of heat.
Molecular Weight	142.24
Kinematic Viscosity	1.27 mm^2/s (1.27 centistokes) at 20 °C; 1.18 mm^2/s (1.18 centistokes) at 25 °C (calculated); also 1.12 mm^2/s (1.12 centistokes) at 20 °C (calculated).
Dynamic Viscosity	1.02 mPa.s (1.02 centipoises) at 20 °C; 0.95 mPa.s (0.95 centipoises) at 25 °C; also reported as 0.903 mPa.s (0.903 centipoises) at 20 °C.
Saturated Vapour Concentration	2200 ppm (0.22%) at 25 °C (calculated).
Other Information	Conversion Factor: 1 ppm = 5.81 mg/m^3; 1 mg/m^3 = 0.17 ppm at 25 °C

	(calculated). Refractive index: 1412 @ 20 °C.

Section 10 - Stability and Reactivity

Chemical Stability	Stable to heat, light, air, water, acids and bases, under normal temperatures and pressures, at room temperature in sealed containers. Saturated C9 ketones, e.g. diisobutyl ketone, are thermally stable up to pyrolysis temperatures (500-700 °C). Prolonged (12 months) exposure to air can produce peroxides. Concentrated solutions of ketone peroxides (greater than 30%) may explode.
Possibility of Hazardous Reactions	May react violently or explosively with strong oxidizing agents (e.g. bromine, chromium trioxide, nitric acid, nitric acid-sulfuric acid mixture), with increased risk of fire. Ketones may undergo violent decomposition in contact with 68-72% perchloric acid. May overheat and explode violently with hydrogen peroxide or mixtures of hydrogen peroxide and nitric acid, due to the formation of shock- and heat-sensitive peroxides. May react vigorously or explosively with mixtures of haloforms (e.g. chloroform or bromoform) and strong bases (e.g. potassium hydroxide), with evolution of heat. Attacks some forms of plastics.
Conditions to Avoid	Excess heat, hot surfaces, electrical sparks, exposure to open flame, and other ignition sources, prolonged exposure to air, plastics and incompatible materials.
Incompatible Materials	Strong acids (perchloric acid (68-72% acid)), aliphatic amines, strong oxidizing agents (e.g. bromine, chromium trioxide, nitric acid-sulfuric acid mixture, perchlorates, oxalates), hydrogen peroxide or mixtures of hydrogen peroxide and nitric acid, mixtures of haloforms (e.g. chloroform or bromoform) and strong bases (e.g. potassium hydroxide), reducing agents, some forms of plastics, rubber and coatings.
Hazardous Decomposition Products	Toxic and irritating gases and fumes and acrid smoke, including carbon dioxide (CO_2) and carbon monoxide (CO), unstable peroxides (following prolonged storage, and in the presence of air).
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

Acute Toxicity - Oral	LD50 (rat): 5750 mg/kg
Acute Toxicity - Dermal	LD50 (rabbit): 16120 mg/kg (cited as 20 mL/kg);
Acute Toxicity - Inhalation	LC50 (rat): > 2300 ppm/4 hr.
Ingestion	Diisobutyl ketone is not expected to be toxic if ingested, based on animal information. There is no human information available. Ingestion of large amounts may cause gastrointestinal irritation. Symptoms may include nausea, vomiting and diarrhoea. Ingestion of extremely large quantities may result in headache, nausea, vomiting, CNS disorders, narcosis, incoordination and unconsciousness. Although there are no case reports, aspiration into the lungs during ingestion or vomiting may be possible, based on animal information and its physical properties. Aspiration of even a small amount of liquid could result in severe lung irritation, significant damage to the lung tissues (oedema), and, in some cases, death. Ingestion is not a typical route of occupational exposure.
Inhalation	May be harmful if inhaled. Forms a vapour at room temperature - a harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 °C. Inhalation of vapours irritates the eyes, skin, mucous membranes and respiratory system. Vapours may cause coughing, sore throat, dizziness or suffocation, dullness, nausea, vomiting, headache and dyspnoea. Vapour concentrations higher than 25 ppm, had an objectionable odour and caused eye irritation. Exposure may have unspecified eye effects. Exposure for 3 hours to 50 ppm caused slight transitory mucous membrane irritation and to 100 ppm caused slight eye and nose irritation, with slight lacrimation,

	followed by slight headache and dizziness upon return to fresh air. Slight central nervous system (CNS) effects (headache and dizziness) have been reported at 100 ppm. Inhalation of high concentration vapours can produce CNS depression (with effects such as fatigue, headache, nausea, dizziness, nausea, loss of coordination, unconsciousness, and death), and narcosis. Intolerable irritation is expected at 287 ppm. The odour of this material is recognized at levels well below those which cause adverse effects and should be sufficient warning against overexposure.
Skin	Contact with the liquid may result in mild irritation, with redness and numbness, or even a dermatitis depending upon type and duration of contact, based on animal information. Repeated or prolonged exposure may cause dry, red, scaling skin (dermatitis) due to defatting. There is no human information available. Diisobutyl ketone is not expected to produce harmful effects if absorbed through the skin, based on animal toxicity information.
Eye	The vapour is expected to be slightly irritating above 25 ppm. Exposure to 50 ppm for 3 hours produced temporary slight irritation of the eyes at the beginning of the exposure. Exposure to vapours of 100 ppm for 3 hours produced slight irritation of eyes with slight lacrimation, which decreased somewhat during exposure. Exposure to 287 ppm is expected to produce intolerable irritation, based on animal toxicity testing. The liquid should cause no more than minor irritation, based on animal information. May cause redness and pain.
Chronic Effects	Liquid has a degreasing effect on the skin. Repeated or prolonged contact may cause dry, red, scaly skin (contact dermatitis) and possible eczema. Repeated or prolonged exposure may damage the nervous system, liver, gastrointestinal tract, endocrine, eyes, ears, and head. Inhalation has been known to cause headache, nausea and vomiting. High concentrations may have a narcotic effect. May cause liver and kidney effects based upon studies with laboratory animals.

Section 12 - Ecological Information

Ecological Information	No ecological problems are to be expected when the product is handled and used with due care and attention.
Persistence and Degradability	Biodegradation is expected to be an important fate process for this compound. Diisobutyl ketone was shown to rapidly biodegrade under aerobic conditions.
Mobility	Koc ~ 60 (calculated). The mobility in soil is expected to be high.
Bioaccumulative Potential	BCF = 7 (calculated). The bioconcentration in aquatic organisms is expected to be low.
Acute Toxicity - Fish	Fish LC50: > 100 mg/l /96 h.

Section 13 - Disposal Considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

Section 14 - Transport Information

Transport Information	Dangerous Goods of Class 3 Flammable Liquids, are incompatible in a placard load with any of the following: - Class 1, Class 2.1, if both the Class 3 and Class 2.1, dangerous goods are in bulk, Class 2.3, Class 4.2, Class 5, Class 6, if the Class 3 dangerous goods are nitromethane and Class 7.
ADG UN Number	1157
ADG Proper Shipping Name	DIISOBUTYL KETONE
ADG Transport Hazard Class	3
ADG Packing Group	III
Hazchem Code	3[Y]
EPG Number	3A1
IERG Number	15

Section 15 - Regulatory Information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	Not Scheduled

Section 16 - Any Other Relevant Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	Empirical Formula: C9-H18-O. Structural Formula: (CH3)2CHCH2COCH2CH(CH3)2.

...End Of MSDS...