SAFETY DATA SHEET

SPRAY BONDING ADHESIVE – BA 708

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI

Product Name : Spray Bonding Adhesive Product Code : BA 708 HS Code : 350691000000	Version : 00 Initial Date : 01/01/2024 Revision Date : -

SECTION 01: Identification of the substance/mixture and of the company/undertaking

Product name	Spray Bonding Adhesive
Proper shipping name	Chemical under pressure, Flammable, N.O.S.
Chemical product category	PC1 Adhesives/sealants
Sectors of use	SU21 Consumer uses SU 3 Industrial uses
Relevant Identified uses	Use according to manufacturer's directions.
Used advised against	No specific uses advised are identified.
Manufacturer / Supplier	Techno Rubber Company Ltd
Address	PO Box 3508, Dammam 34326, Kingdom of Saudi Arabia
Telephone	+966 13 812 3333
Website	www.technorubber.com.sa
Email	info@technorubber.com.sa
Association / Organisation	Techno Rubber Emergency Response
Telephone	+966 13 812 3333 (Sunday - Thursday 08:00-17:00)

SECTION 02: Hazards identification

2.1. Classification of the substance or mixture

Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567 [1]	H222+H229 - Aerosols, Hazard Category 1, H351 - Carcinogenicity Category 2

Legend: 1. Classified by Chemwatch; 2. Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567

2.2. Label elements

Hazard pictogram	
Signal word	Danger
Hazard statements H222+H229	Extremely flammable aerosol. Pressurized container: may burst if heated.
H351	Suspected of causing cancer.
Supplementary statements EUH044	Risk of explosion if heated under confinement.
Precautionary statements prevention P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P202	Do not handle until all safety precautions have been read and understood.
Precautionary statements response P308+P313	If exposed or concerned: Get medical advice/ attention.
Precautionary statements response P405	Store locked up.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.
Precautionary statements response P501	Dispose of contents/container to authorized hazardous or special waste collection point in accordance with any local regulation.

Material contains methylene chloride, ethyl acetate.

2.3. Other hazards

Other hazards	Inhalation may produce health damage. Cumulative effects may result following exposure. May produce discomfort of the eyes and respiratory tract. Repeated exposure potentially causes skin dryness and cracking. Vapours potentially cause drowsiness and dizziness.
methylene chloride	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
ethyl acetate	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

butane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
propane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
propane	The material within this SDS meets the criteria for persistent, bio accumulative and toxic in accordance with Annex XIII.
iso-butane	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

This substance/mixture does not meet the criteria for classification as Persistent, Bio accumulative, and Toxic (PBT) in accordance with Annex XIII, Commission Delegated Regulation (EU) 2017/2100, and Commission Regulation (EU) 2018/605.

This substance/mixture does not meet the criteria for classification as very Persistent and very Bio accumulative (vPvB) in accordance with Annex XIII, Commission Delegated Regulation (EU) 2017/2100, and Commission Regulation (EU) 2018/605.

This substance/mixture does not meet the criteria for classification as Persistent, Mobile and Toxic (PMT) in accordance with Commission Delegated Regulation (EU) 2023/707.

This substance/mixture does not meet the criteria for classification as very Persistent and very Mobile (vPvM) in accordance with Commission Delegated Regulation (EU) 2023/707.

The substance/mixture does not contain components considered to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605, nor is it included in the list established under REACH Article 59(1), at concentrations equal to or greater than 0.1% (w/w). No further product hazard information.

SECTION 03: Composition/information on ingredients

3.1 Substances

See 'composition on ingredients' in section 3.2

3.2 Mixtures

1. CAS No 2.EC No 3.Index No 4.REACH No	% [weight]	Name	Classified according to GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567	SCL / M-Factor	Nanoform Particle Characteristics
1. 75-09-2 2.200-838-9	35-50	methylene chloride *	Carcinogenicity Category 2; H351 [2]	SCL: Not Available	Not Available

3.602-004-00-3 4.Not Available				Acute M factor: Not Applicable Chronic M factor: Not Applicable	
1. 141-78-6 2.205-500-4 3.607-022-00-5 4.Not Available	1-10	Ethyl acetate *	Flammable Liquids Category 2, Serious Eye Damage/Eye Irritation Category 2, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3; H225, H319,H336 [2]	SCL: Not Available Acute M factor: Not Applicable Chronic M factor: Not Applicable	Not Available
1. 106-97-8. 2.203-448-7 3.601-004-00-0 |601-004-018 4.Not Available	5-15	Butane	Flammable gases, Hazard Category 1A, Gases Under Pressure (Liquefied Gas); H220, H280, EUH044 [1]	SCL: Not Available Acute M factor: Not Applicable Chronic M factor: Not Applicable	Not Available
1. 74-98-6 2.200-827-9 3.601-003-00-5 4.Not Available	15-25	Propane	Flammable gases, Hazard Category 1, Gases Under Pressure, Persistent, Bio accumulative, and Toxic; H220, H280, EUH440 [2]	SCL: Not Available Acute M factor: Not Applicable Chronic M factor: Not Applicable	Not Available
1. 75-28-5. 2.200-857-2 3.601-004-00-0 |601-004-018 4.Not Available	1-10	iso-butane	Flammable gases, Hazard Category 1A, Gases Under Pressure (Liquefied Gas); H220, H280, EUH044 [1]	SCL: Not Available Acute M factor: Not Applicable Chronic M factor: Not Applicable	Not Available

Legend: **[1]** Classified by Chemwatch; **[2]** Classification drawn from GB-CLP Regulation, UK SI 2019/720 and UK SI 2020/1567; **[3]** Classification drawn from C&L; * EU IOELVs available; **[e]** Substance identified as having endocrine disrupting properties.

SECTION 04: First aid measures

4.1. Description of first aid measures

Eye contact	If product comes in contact with eyes remove the patient from gas source or contaminated area. Take the patient to the nearest eye wash, shower or other source of clean water. Open the eyelid(s) wide to allow the material to evaporate. Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners. The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage. Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s) ▸ Transport to hospital or doctor. Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur. If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage. ▸ Ensure verbal communication and physical contact with the patient. DO NOT allow the patient to rub the eyes DO NOT allow the patient to tightly shut the eyes DO NOT introduce oil or ointment into the eye(s) without medical advice DO NOT use hot or tepid water.
Skin contact	If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	Following exposure to gas, remove the patient from the gas source or contaminated area. NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer. Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures. If the patient is not breathing spontaneously, administer rescue breathing. If the patient does not have a pulse, administer CPR. If medical oxygen and appropriately trained personnel are available, administer 100% oxygen. Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction. Keep the patient warm, comfortable and at rest while awaiting medical care. Monitor the breath continuously.

	Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.
Ingestion	Not considered a normal route of entry. Avoid giving milk or oils. Avoid giving alcohol. If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

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

See section 11

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

For intoxication due to Freons/ Halons

Emergency and Supportive Measures	Maintain an open airway and assist ventilation if necessary. Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitization may be treated with propranolol, 1-2 mg IV or esmolol 25-100 micro gm/kg/min IV. Monitor the ECG for 4-6 hours B: Specific drugs and antidotes:
Specific drugs and antidotes	There is no specific antidote.
Decontamination	Inhalation; remove victim from exposure, and give supplemental oxygen if available. Ingestion; (a) Prehospital: Administer activated charcoal, if available. Don't induce vomiting because of rapid absorption and the risk of abrupt onset CNS depression. (b) Hospital: Administer activated charcoal, although the efficacy of charcoal is unknown. Perform gastric lavage only if the ingestion was very large and recent (less than 30 minutes)
Enhanced elimination	There is no documented efficacy for diuresis, hemodialysis, hemoperfusion or repeat-dose charcoal. Poisoning and drug overdose, Californian Poison Control System Ed. Kent R Olson; 3rd Edition Do not administer sympathomimetic drugs unless absolutely necessary as material may increase myocardial irritability. No specific antidote. Because rapid absorption may occur through lungs if aspirated and cause systematic effects, the decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment based on judgment of the physician in response to reactions of the patient.

For petroleum distillates	In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption - decontamination (induced emesis or lavage) is controversial and should be considered on the merits of each individual case; of course the usual precautions of an endotracheal tube should be considered prior to lavage, to prevent aspiration. Individuals intoxicated by petroleum distillates should be hospitalized immediately, with acute and continuing attention to neurologic and cardiopulmonary function. Positive pressure ventilation may be necessary. Acute central nervous system signs and symptoms may result from large ingestions of aspiration-induced hypoxia. After the initial episode, individuals should be followed for changes in blood variables and the delayed appearance of pulmonary oedema and chemical pneumonitis. Such patients should be followed for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. Gastrointestinal symptoms are usually minor and pathological changes of the liver and kidneys are reported to be uncommon in acute intoxications. · Chlorinated and non-chlorinated hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators. For frost-bite caused by liquefied petroleum gas: If part has not thawed, place in warm water bath (41-46 C) for 15-20 minutes, until the skin turns pink or red. Analgesia may be necessary while thawing. If there has been a massive exposure, the general body temperature must be depressed, and the patient must be immediately rewarmed by whole-body immersion, in a bath at the above temperature. Shock may occur during rewarming. Administer tetanus toxoid booster after hospitalization. Prophylactic antibiotics may be useful. The patient may require the anticoagulants and oxygen.
For gas exposures	Basic Treatment: Establish a patent airway with suction where necessary. Watch for signs of respiratory insufficiency and assist ventilation as necessary. Administer oxygen by non-rebreather mask at 10 to 15 l/min. Monitor and treat, where necessary, for pulmonary oedema. Monitor and treat, where necessary, for shock. Anticipate seizures. Advanced Treatment:

	Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred. Positive-pressure ventilation using a bag-valve mask might be of use. Monitor and treat, where necessary, for arrhythmias. Start an IV D5W TKO. If signs of hypovolemia are present use lactated Ringers solution. Fluid overload might create complications. Drug therapy should be considered for pulmonary oedema. Hypotension with signs of hypovolemia requires the cautious administration of fluids. Fluid overload might create complications. Treat seizures with diazepam. Proparacaine hydrochloride should be used to assist eye irrigation. BRONSTEIN, A.C. and CURRANCE, P.L Emergency care for hazardous materials exposure: 2nd Ed. 1994 As in all cases of suspected poisoning, follow the ABCDEs of emergency medicine (airway, breathing, circulation, disability, exposure), then the ABCDEs of toxicology (antidotes, basics, change absorption, change distribution, change elimination).
For poisons (where specific treatment regime is absent)	Basic Treatment: Establish a patent airway with suction where necessary. Watch for signs of respiratory insufficiency and assist ventilation as necessary. Administer oxygen by non-rebreather mask at 10 to 15 L/min. Monitor and treat, where necessary, for pulmonary oedema. Monitor and treat, where necessary, for shock. Anticipate seizures. DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool Advanced Treatment: Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred. Positive-pressure ventilation using a bag-valve mask might be of use. Monitor and treat, where necessary, for arrhythmias. Start an IV D5W TKO. If signs of hypovolemia are present use lactated Ringers solution. Fluid overload might create complications. Drug therapy should be considered for pulmonary oedema. Hypotension with signs of hypovolemia requires the cautious administration of fluids. Fluid overload might create complications. Treat seizures with diazepam. Proparacaine hydrochloride should be used to assist eye irrigation. BRONSTEIN, A.C. and CURRANCE, P.L. EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

SECTION 05: Fire-fighting measures

Extinguishing media	Alcohol stable foam Dry chemical powder BCF (Where regulations permit) Carbon dioxide Water spray or fog- Large fires only Do not extinguish burning gas unless leak can be stopped safely otherwise leave gas to burn.
For small fire	Dry chemical, CO2 or water spray to extinguish gas (only if absolutely necessary and safe to do so). Do not use water jets.
For large fire	Cool cylinder by direct flooding quantities of water onto upper surface until well after fire is out. Do not direct water at source of leak or venting safety devices as icing may occur.
Special hazards arising from the substrate or mixture Fire Incompatibility	Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.
Fire Fighting	For fires involving many gas cylinders: To stop the flow of gas, specifically trained personnel may inert the atmosphere to reduce oxygen levels thus allowing the capping of leaking container(s). Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish the fire until the supply is shut off otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, used increased ventilation to prevent build-up, of explosive atmosphere. Use non-sparking tools to close container valves. General: Alert Fire Brigade and tell them location and nature of hazard. May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Consider evacuation Fight fire from a safe distance, with adequate cover. If safe, switch off electrical equipment until vapor fire hazard removed.
Fire/Explosion Hazard	Highly flammable will be easily ignited by heat, sparks or flames.

	Will form explosive mixtures with air. Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration. Vapours may travel to source of ignition and flash back. Containers may explode when heated- fire raptured cylinders may rocket. Fire may produce irritating, poisonous or corrosive gases. Runoff may create fire or explosion hazard. Combustion products include: carbon monoxide (CO) carbon dioxide (CO2) hydrogen chloride phosgene other pyrolysis products typical of burning organic material. Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

SECTION 06: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

See section 8

6.2. Environmental precautions

See section 12

6.3. Conditions for safe storage, including any incompatibilities

Minor Spills	Avoid breathing vapor and any contact with liquid or gas. Protective equipment including respirator should be used. Don not enter confined spaces where gas may have accumulated. Shut off all sources of possible ignition and increase ventilation. Clear area of personnel.
Major Spills	Clear area of all unprotected personnel and move upwind. Alert Emergency Authority and advise them of the location and nature of hazard. May be violently or explosively reactive. Wear full body clothing with breathing apparatus. Prevent by any means available, spillage from entering drains and water-courses. Remove leaking cylinders to a safe place. Fit vent pipes. Release pressure under safe, controlled conditions.

	Burn issuing gas at vent pipes. Do not exert excessive pressure on valve; Do not attempt to operate damaged valve.

6.4. Reference to other sections

Personal protective equipment advice is contained in section 8 of the SDS.

SECTION 07: Handling and storage

7.1. Precautions for safe handling

Handling	Radon and its radioactive decay products are hazardous if inhaled or ingested. Containers, even those that have been emptied, may contain explosive Vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers. Consider use in closed pressurized systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines. Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended. Before connecting gas cylinders, ensure manifold is mechanically secure and does not containing another gas. Before disconnecting gas cylinder, isolate supply line segment proximal to cylinder, remove trapped gas in supply line with aid of vacuum pump. When connecting or replacing cylinders take care to avoid airborne particulates violently ejected when system pressurizes. ▸ Avoid generation of static electricity. Earth all lines and equipment. Do not transfer gas from one cylinder to another.
Fire and explosion protection	See section 5
Other information	Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open. Such compounds should be sited and built in accordance with statutory requirements. The storage compound should be kept clear and access restricted to authorized personnel only. Cylinders stored in the open should be protected against rust and extremes of weather. Cylinders in storage should be properly secured to prevent toppling or rolling.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	DO NOT use aluminum or galvanized containers. Cylinders. Ensure the use of equipment rated for cylinder pressure. Ensure the use of compatible materials of construction. Valve protection cap to be in place until cylinder is secured, connected. Valve protection cap to be in place until cylinder is secured, connected. Cylinder valve must be closed when not in use or when empty.
Storage incompatibility	Methylene chloride is a combustible liquid under certain circumstances even though there is no measurable flash point and it is difficult to ignite. it is flammable in ambient air in the range 12-23%; increased oxygen content can greatly enhance fire and explosion potential. contact with hot surfaces and elevated temperatures can form fumes of hydrogen chloride and phosgene. reacts violently with active metals, aluminum, lithium, methanol, peroxy disulfuryl difluoride, potassium, potassium tert butoxide, sodium. forms explosive mixtures with nitric acid. is incompatible with strong oxidizers, strong caustics, alkaline earths and alkali metals. attacks some plastics, coatings and rubber. May generate electrostatic charge due to low conductivity. Butane / isobutane: reacts violently with strong oxidizers, acetylene, halogens, and nitrous oxides. does not mix with chlorine dioxide, nitric acid and some plastics. May generate electrostatic charges, due to low conductivity, which may ignite Vapours. store butane well away from nickel carbonyl in the presence of oxygen between 20-40°C. Esters react with acids to liberate heat along with alcohols and acids. Strong oxidizing acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products. Heat is also generated by the interaction of esters with caustic solutions. Flammable hydrogen is generated by mixing esters with alkali metals and hydrides.

	Esters may be incompatible with aliphatic amines and nitrates. Propane: Reacts violently with strong oxidizers, barium peroxide, chlorine dioxide, dichlorine oxide, fluorine etc. Dissolves some plastics, rubbers, and coatings. May accumulate static charges which may ignite its vapours. Segregate from alcohol, water. Compressed gases may contain a large amount of kinetic energy over and above that potentially available from the energy of reaction produced by the gas in chemical reaction with other substances.
Hazard categories in accordance with Regulation (EC) No 2012/18/EU (Seveso III)	P3b: Flammable aerosols
Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of	P3b Lower- / Upper-tier requirements: 5 000 (net) / 50 000 (net)

7.3. Specified end use(s)

See section 1.2

SECTION 08: Exposure controls/Personal protection

8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
Methylene chloride	Dermal 12 mg/kg bw/day (Systemic, Chronic) Inhalation 176 mg/m³ (Systemic, Chronic) Dermal 5.82 mg/kg bw/day (Systemic, Chronic) * Inhalation 0.044 mg/m³ (Systemic, Chronic) * Oral 0.06 mg/kg bw/day (Systemic, Chronic) *	0.13 mg/L (Water (Fresh)) 0.27 mg/L (Water - Intermittent release) 0.031 mg/L (Water (Marine)) 0.163 mg/kg sediment dw (Sediment (Fresh Water)) 0.163 mg/kg sediment dw (Sediment (Marine)) 0.173 mg/kg soil dw (Soil)

		26 mg/L (STP)
Ethyl acetate	Dermal 63 mg/kg bw/day (Systemic, Chronic) Inhalation 734 mg/m³ (Systemic, Chronic) Inhalation 734 mg/m³ (Local, Chronic) Inhalation 1468 mg/m³ (Systemic, Acute) Inhalation 1468 mg/m³ (Local, Acute) Dermal 37 mg/kg bw/day (Systemic, Chronic) * Inhalation 0.367 mg/m³ (Systemic, Chronic) * Oral 4.5 mg/kg bw/day (Systemic, Chronic) * Inhalation 367 mg/m³ (Local, Chronic) * Inhalation 734 mg/m³ (Systemic, Acute) * Inhalation 734 mg/m³ (Local, Acute) *	0.24 mg/L (Water (Fresh)) 1.65 mg/L (Water - Intermittent release) 0.024 mg/L (Water (Marine)) 1.15 mg/kg sediment dw (Sediment (Fresh Water)) 0.115 mg/kg sediment dw (Sediment (Marine)) 0.148 mg/kg soil dw (Soil) 650 mg/L (STP) 200 mg/kg food (Oral)

* Values for General Population

Occupational exposure Limits (OEL)

Ingredient data

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
UK Workplace Exposure Limits (WELs).	methylene chloride	Dichloro methane	100 ppm / 353 mg/m3	706 mg/m3 200 ppm	Not Available	BMGV, Sk
UK Workplace Exposure Limits (WELs).	ethyl acetate	Ethyl acetate	200 ppm / 734 mg/m3	1468 mg/m3 /400 ppm	Not Available	Not Available
UK Workplace Exposure Limits (WELs).	butane	Butane	600 ppm / 1450 mg/m3	1810 mg/m3 750 ppm	Not Available	Carc, (only applies if Butane contains more than 0.1% of buta-1,3-diene)

8.2 Exposure controls

The lists that were valid during the creation were used as basis.

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk.

	Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly.
Individual protection measures, such as personal protective equipment	
Eye and face protection	Safety glasses with side shields. Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent] Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience.
Skin protection	See Hand protection below
Hands/feet protection	For esters: Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials. When handling sealed and suitably insulated cylinders wear cloth or leather gloves.
Body protection	See Other protection below
Other protection	Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]. Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent] Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely. Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance

	and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments, the employee should undergo decontamination and be required to shower upon removal of the garments and hood. The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton. Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost. BRETHERICK: Handbook of Reactive Chemical Hazards. Protective overalls, closely fitted at neck and wrist. ▸ Eye-wash unit. In Confined spaces: Non-sparking protective boots ▸ Static-free clothing. Ensure availability of lifeline. Staff should be trained in all aspects of rescue work. Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). Non-sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms.
Recommended materials	Material-CPI: PE/EVAL/PE-A PVA-A Teflon-B Butyl-C Butyl/ Neoprene-C CPE-C Hypalon-C Natural rubber-C Natural+Neoprene-C Neoprene-C Neoprene/Natural-C Nitrile-C Nitrile+ PVC-C

	PVC-C SARANEX 23-C SARANEX 23 2 PLY-C Viton- C Viton/butyl-C Viton/ Chlorobutyl -C * CPI - Chemwatch Performance Index A: Best Selection B: Satisfactory; may degrade after 4 hours continuous immersion C: Poor to Dangerous Choice for other than short term immersion NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. - Where the glove is to be used on a short term, casual or infrequent basis,factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted. The effect(s) of the following substance(s) are taken into account in the computer-generated selection:
Respiratory protection	GLOVE SELECTION INDEX Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & Glove selection is based on a modified presentation of the: 149:2001, ANSI Z88 or national equivalent) Required minimum protection factor up to 10 x ES: AX-AUS / Class 1 P2 , AX-PAPR-AUS / Class 1 P2 up to 50 x ES: Air-line* up to 100 x ES: AX-3 P2 100+ x ES: Air-line** Required minimum protection factor/ Maximum gas/vapour concentration present in air p.p.m. (by volume)/ Half-face Respirator/ Full-Face Respirator up to 10/1000/ AX-AUS / Class 1 up to 50/1000/ AX-AUS / Class 1 up to 50/5000/ Airline * up to 100/5000/AX-2 up to 100/10000/AX-3 100+/ Airline* * - Continuous-flow; ** - Continuous-flow or positive pressure demand

	A(All classes) = Organic Vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds (below 65 degC) Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. ▸ The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate. ▸ Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used Positive pressure, full face, air-supplied breathing apparatus should be used for work in enclosed spaces if a leak is suspected or the primary containment "Forsberg Clothing Performance Index". 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.

SECTION 09: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Green
Physical state	Dissolved Gas
Odour	Not Available
Odour threshold	Not Available
pH (as supplied)	Not Available
Melting point / freezing point (°C)	Not Available
Initial boiling point and boiling range (°C)	40
Flash point (°C)	Not Available
Evaporation rate	Not Available
Flammability	Highly flammable

Upper Explosive Limit (%)	Not Available
Lower Explosive Limit (%)	Not Available
Relative density (Water = 1)	0.83
Partition coefficient noctanol / water	Not Available
Auto-ignition temperature (°C)	Not Available
Decomposition temperature (°C)	Not Available
Viscosity (cSt)	Not Available
Molecular weight (g/mol)	Not Available
Taste	Not Available
Explosive properties	Not Available
Oxidising properties	Not Available
Surface Tension (dyn/cm or mN/m)	Not Available
Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available
Solubility in water	Immiscible
Vapour density (Air = 1)	Not Available
Heat of Combustion (kJ/g)	Not Available
Flame Height (cm)	Not Available
Enclosed Space Ignition Time Equivalent (s/m3)	Not Available
Nanoform Solubility	Not Available
Particle Size	Not Available
Gas group	Not Available
pH as a solution (1%)	Not Available
VOC g/L	673.33
Ignition Distance (cm)	Not Available
Flame Duration (s)	Not Available

Enclosed Space Ignition Deflagration Density (g/m3)	Not Available
Nanoform Particle Characteristics	Not Available

9.2 Other information

Not available

SECTION 10: Stability and reactivity

Reactivity	See section 7.2
Chemical stability	Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7.2
Conditions to avoid	See section 7.2
Incompatible materials	See section 7.2
Hazardous decomposition products	See section 5.3

SECTION 11: Toxicological information

11.1. Information on toxicological effects- Acute toxicity

Acute Toxicity	Based on available data, the classification criteria are not met.
Skin Irritation/Corrosion	Based on available data, the classification criteria are not met.
Serious Eye Damage/ Irritation	Based on available data, the classification criteria are not met.
Respiratory or Skin sensitisation	Based on available data, the classification criteria are not met.
Mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	There is sufficient evidence to classify this material as carcinogenic
Reproductivity	Based on available data, the classification criteria are not met.
STOT - Single Exposure	Based on available data, the classification criteria are not met.
STOT - Repeated Exposure	Based on available data, the classification criteria are not met.

Aspiration Hazard	Based on available data, the classification criteria are not met.
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 vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. The main effects of simple esters are irritation, stupor and insensibility. Headache, drowsiness, dizziness, coma and behavioral changes may occur. Inhaling high concentrations of mixed hydrocarbons can cause narcosis, with nausea, vomiting and lightheadedness. Low molecular weight (C2-C12) hydrocarbons can irritate mucous membranes and cause incoordination, giddiness, nausea, vertigo, confusion, headache, appetite loss, drowsiness, tremors and stupor. Isobutane produces a dose dependent action and at high concentrations may cause numbness, suffocation, exhilaration, dizziness, headache, nausea, confusion, incoordination and unconsciousness in severe cases. The paraffin gases are practically not harmful at low doses. Higher doses may produce reversible brain and nerve depression and irritation. Exposure to 400ppm ethyl acetate may cause mild eye, nose and throat irritation in an unacclimated persons. However, production workers with regular exposure have better tolerance. Inhalation of non-toxic gases may cause: CNS effects: headache, confusion, dizziness, stupor, seizures and coma; respiratory: shortness of breath and rapid breathing; cardiovascular: collapse and irregular heartbeats; gastrointestinal: mucous membrane irritation, nausea and vomiting. Inhalation hazard is increased at higher temperatures. Inhalation of high concentrations of gas/vapors causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and Inco-ordination. Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The Vapours may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation. Inhalation exposure may cause susceptible individuals to show change in heart beat rhythm i.e. cardiac arrhythmia. Exposures must be terminated.

	Inhalation of Vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages. Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.
Ingestion	Not normally a hazard due to physical form of product. Considered an unlikely route of entry in commercial/industrial environments Acute intoxication by ethyl acetate causes impaired co-ordination, exhilaration, slurred speech, nausea, vomiting, and may progress to stupor, coma and death from failure of breathing or blood circulation. Isoparaffinic hydrocarbons cause temporary lethargy, weakness, inco-ordination and diarrhea. Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
Skin contact	The material may accentuate any pre-existing dermatitis condition Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, though, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. The material may cause severe inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.
Eye	Not considered to be a risk because of the extreme volatility of the gas. There is some evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.
Chronic	Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems. Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. There is sufficient evidence to suggest that this material directly causes cancer in humans.

	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility. Constant or exposure over long periods to mixed hydrocarbons may produce stupor with dizziness, weakness and visual disturbance, weight loss and anaemia, and reduced liver and kidney function. Skin exposure may result in drying and cracking and redness of the skin. Main route of exposure to the gas in the workplace is by inhalation. Dichloromethane exposures cause liver and kidney damage in animals and this justifies consideration before exposing persons with a history of impaired liver function and/or renal disorders.
BA 708	Toxicity – Not available Irritation- Not available
Methylene chloride	Toxicity- Irritation dermal (rat) LD50: >2000 mg/kg [2] Eye (Rodent - rabbit): 10mg - Mild Inhalation (Rat) LC50: 76 mg/L4h [2]Eye (Rodent - rabbit): 162mg - Moderate Oral (Rat) LD50: 1600 mg/kg[2] Eye (Rodent - rabbit): 500mg/24H – Mild Eye: adverse effect observed (irritating)[1] Skin (Rodent - rabbit): 100mg/24H – Moderate Skin (Rodent - rabbit): 810mg/24H – Severe Skin: adverse effect observed (irritating)[1]
Ethyl acetate	Toxicity Irritation Dermal (rabbit) LD50: >18000 mg/kg[2] Eye (Human): 400ppm Inhalation (Mouse) LC50: >18 mg/l4h[1] Eye: no adverse effect observed (not irritating)[1] Oral (Mouse) LD50; 4100 mg/kg[2] Skin: no adverse effect observed(not irritating) [1]
Butane	Toxicity Irritation Inhalation (Rat) LC50: 658 mg/l4h [2] Eye: no adverse effect observed (not irritating) [1] Skin: no adverse effect observed (not irritating) [1]
Propane	Toxicity Irritation

	Inhalation (Rat) LC50: 364726.819 ppm4h[2] – Not Available
Iso-butane	Toxicity Irritation Inhalation (Rat) LC50: >13023 ppm4h [1] – Eye: no adverse effect observed (not irritating)[1] Skin: no adverse effect observed (not irritating) [1]
Legend	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances
BA 708	Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation. Generally, linear and branched-chain alkyl esters are hydrolyzed to their component alcohols and carboxylic acids in the intestinal tract, blood and most tissues throughout the body. Following hydrolysis, the component alcohols and carboxylic acids are metabolized Oral acute toxicity studies have been reported for 51 of the 67 esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids. The very low oral acute toxicity of this group of esters is demonstrated by oral LD50 values greater than 1850 mg/kg bw Genotoxicity studies have been performed in vitro using the following esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids: methyl acetate, butyl acetate, butyl stearate and the structurally related isoamyl format and demonstrates that these substances are not genotoxic. The JEFCA Committee concluded that the substances in this group would not present safety concerns at the current levels of intake the esters of aliphatic acyclic primary alcohols and aliphatic linear saturated carboxylic acids are generally used as flavoring substances up to average maximum levels of 200 mg/kg. Higher levels of use (up to 3000 mg/kg) are permitted in food categories such as chewing gum and hard candy. In Europe the upper use levels for these flavoring substances are generally 1 to 30 mg/kg foods and in special food categories like candy and alcoholic beverages up to 300 mg/kg foods International Program on Chemical Safety: the Joint FAO/WHO Expert Committee on Food Additives (JECFA) Esters of Aliphatic acyclic primary alcohols with aliphatic linear saturated carboxylic acids.; 1998

Methylene chloride	Inhalation (human) TCLo: 500 ppm/ 1 y - I Eye(rabbit): 10 mg - mild The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration. Warning: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
Ethyl acetate	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a nonallergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance.
Propane	No significant acute toxicological data identified in literature search.
BA 708 & METHYLENE CHLORIDE	-
Acute Toxicity	✗
Skin Irritation/Corrosion	✗
Serious Eye Damage/Irritation	✗
Respiratory or Skin sensitization	✗
Mutagenicity	✗
Carcinogenicity	✓
Reproductivity	✗
STOT - Single Exposure	✗
STOT - Repeated Exposure	✗
Aspiration Hazard	✗

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

✓ – Data available to make classification

11.2. Information on other hazards

11.2.1 Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

11.2.2 Other information

See section 11.1

SECTION 12: Ecological information

12.1. Toxicity

BA 708	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
Methylene chloride	Endpoint	Test Duration (hr)	Species	Value	Source
	BCF	1008h	Fish	2-5.4	7
	EC50	72h	Algae or other aquatic plants	202-286mg/l	4
	EC50	48h	Crustacea	108.5mg/l	1
	EC50	96h	Algae or other aquatic plants	0.98mg/l	4
	NOEC(ECx)	24h	Algae or other aquatic plants	0.98mg/l	4
	LC50	96h	Fish	2-3.3mg/l	4
Ethyl acetate	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	72h	Algae or other aquatic plants	>100mg/l	1
	EC50	96h	Algae or other aquatic plants	2500mg/L	4
	LC50	96h	Fish	>75.6mg/l	2

	EC50	72h	Algae or other aquatic plants	1800-3200mg/L	4
	EC50	48h	Crustacea	164mg/l	1
Butane	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	EC50(ECx)	96h	Algae or other aquatic plants	7.71mg/l	2
	EC50	96h	Algae or other aquatic plants	7.71mg/l	2
	LC50	96h	Fish	24.11mg/l	2
Propane	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	Not Available	Not Available	Not Available	Not Available	Not Available
Iso-butane	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	EC50	96h	Algae or other aquatic plants	7.71mg/l	2
	EC50(ECx)	96h	Algae or other aquatic plants	7.71mg/l	2
	LC50	96h	Fish	24.11mg/l	2

Legend: Extracted from

1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity

3. US EPA, Ecotox database - Aquatic Toxicity Data 4. ECETOC Aquatic Hazard Assessment Data 5. NITE (Japan) Bioconcentration Data 6. METI (Japan) - Bioconcentration Data 7. Vendor Data

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high-water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites. For petroleum distillates:

Environmental fate:

When petroleum substances are released into the environment, four major fate processes will take place: dissolution in water, volatilization, biodegradation and adsorption. These processes will cause changes in the composition of these UVCB substances. In the case of spills on land or water surfaces, photodegradationanother fate process-can also be significant.

As noted previously, the solubility and vapour pressure of components within a mixture will differ from those of the component alone. These interactions are complex for complex UVCBs such as petroleum hydrocarbons.

For Methylene Chloride: Log Kow: 1.25; Log Koc: 1.68; Log Kom: 1.44; Henry's atm m3 /mol: 2.68E-03; Henry s Law Constant: 0.002 atm/m3/mol; BCF: 5. Atmospheric Fate: Methylene chloride is a volatile liquid that tends to evaporate to the atmosphere from water and soil. The main degradation pathway for methylene chloride in air is via reactions with hydroxyl radicals the average atmospheric lifetime is estimated to be 130 days. Because this degradation pathway is relatively slow, methylene chloride may become widely dispersed but, is not likely to accumulate in the atmosphere. The small amount of methylene chloride which reaches the stratosphere, (about 1%), may undergo direct breakdown by sunlight; however, this is not expected to occur in the troposphere.

For Butane (Synonym: n-Butane): Log Kow: 2.89; Koc: 450-900; Henry s Law Constant: 0.95 atm-cu m/mole, Vapor Pressure: 1820 mm Hg; BCF: 1.9. Atmospheric Fate: Butane is expected to exist only as a gas in the ambient atmosphere. Gas-phase n-butane is degraded in the atmosphere by reaction with hydroxyl radicals; the half-life for this reaction in air is estimated to be 6.3 days, (@ 25 C). Butane is not expected to absorb UV light and probably will probably not be broken down directly by sunlight in the atmosphere. Nighttime reactions with radical species and nitrogen oxides may contribute to the atmospheric transformation of butane.

For Isobutene (Refrigerant Gas): Koc: 35, (estimated); Henry s Law Constant: 4.08 atm-cu m/mole; Vapor Pressure: 2611 mm Hg @ 25 deg C; BCF: 74, (estimated).

Atmospheric Fate: Isobutane is a gas at ordinary temperatures. The substance is highly flammable and explosive. It is degraded in the atmosphere by reactions with hydroxyl radicals; the half-life for this reaction in air is 6.9 days. The loss of these substances via wet/dry deposition is thought to be of minor importance. For Propane: Koc 460. log Kow 2.36.

Henry's Law constant of 7.07x10-1 atm-cu m/mole, derived from its vapour pressure, 7150 mm Hg, and water solubility, 62.4 mg/L. Estimated BCF: 13.1. Terrestrial Fate: Propane is expected to have moderate mobility in soil. Don't discharge into sewer or waterways.

12.2. Persistence and degradability

	Persistence: Water/Soil	Persistence: Air
Methylene chloride	Low (Half-life = 56 days)	High (Half-life = 191 days)
Ethyl acetate	Low (Half-life = 14 days)	Low (Half-life = 14.71 days)
Butane	Low	Low
Propane	Low	Low
Iso-butane	High	Low

12.3. Bio accumulative potential

Methylene chloride	Low (BCF = 40)
Ethyl acetate	High (BCF = 3300)
Butane	Low (LogKOW = 2.89)
Propane	Low (LogKOW = 2.36)

Iso-butane	Low (BCF = 1.97)

12.4. Mobility in soil

Methylene chloride	Low (Log KOC = 23.74)
Ethyl acetate	Low (Log KOC = 6.131)
Butane	Low (Log KOC = 43.79)
Propane	Low (Log KOC = 23.74)
Iso-butane	Low (Log KOC = 35.04)

12.5. Results of PBT and vPvB assessment

	P	B	T	PBT criteria fulfilled?	vP	vB	vPvB criteria fulifilled?
BA 708	No data available	No data available	No data available	No	No data available	No data available	No
Methylene chloride	✔	✘	✘	No	✔	✘	No
Ethyl acetate	No data available	No data available	No data available	No	No data available	No data available	No
Butane	✘	✘	✔	No	✘	✘	No
Propane	✔	✔	✔	Yes	✘	✘	No
Iso-butane	✘	✘	✔	No	✘	✘	No

12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

12.7. Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

SECTION 13: Disposal considerations

13.1. Waste treatments methods

Product / Packaging disposal	Don't allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal. In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority. Evaporate or incinerate residue at an approved site. Return empty containers to supplier. Ensure damaged or non-returnable cylinders are gas-free before disposal.

Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14: Transport information

14.1. Label element

Hazard pictogram	
Marine Pollutant	No
HAZCHEM	2YE

14.2. Land transport (ADR-RID)

UN number or ID number	3501	
UN proper shipping name	CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.	
Transport hazard class(es)	Class	2.1
	Subsidiary Hazard	Not Applicable
Packing group	Not Applicable	
Environmental hazard	Not Applicable	
Special precautions for user	Hazard identification (Kemler)	23
	Classification code	8F
	Hazard Label	2.1
	Special provisions	274 659
	Limited quantity	0
	Transport Category	2
	Tunnel Restriction Code	B/D

14.3. Air transport (ICAO-IATA/DGR)

UN number	3501	
UN proper shipping name	CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.	
Transport hazard class(es)	ICAO/IATA Class	2.1
	ICAO / IATA Subsidiary Hazard	Not Applicable
Packing group	Not Applicable	

Environmental hazard	Not Applicable	
Special precautions for user	Special provisions	A1 A187
	Cargo Only Packing Instructions	218
	Cargo Only Maximum Qty / Pack	75 kg
	Passenger and Cargo Packing Instructions	Forbidden
	Passenger and Cargo Maximum Qty / Pack	Forbidden
	Passenger and Cargo Limited Quantity Packing Instructions	Forbidden
	Passenger and Cargo Limited Maximum Qty / Pack	Forbidden

14.4. Sea transport (IMDG-Code/GGVSee)

UN number	3501	
UN proper shipping name	CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.	
Transport hazard class(es)	IMDG Class	2.1
	IMDG Subsidiary Hazard	Not Applicable
Packing group	Not Applicable	
Environmental hazard	Not Applicable	
Special precautions for user	EMS Number	F-D, S-U
	Special provisions	274 362
	Limited Quantities	0

14.5. Inland Waterways transport (ADN)

UN number	3501	
UN proper shipping name	CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.	
Transport hazard class(es)	2.1 Not applicable	
Packing group	Not Applicable	
Environmental hazard	Not Applicable	
Special precautions for user	Classification code	8F
	Special provisions	274; 659
	Limited quantity	0
	Equipment required	PP, EX, A
	Fire cones number	1

14.6. Maritime transport in bulk according to IMO instruments

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

Not applicable

14.6.2 Transport in bulk according with MARPOL annex V and the IMSBC code

Product name	Group
methylene chloride	Not Applicable
ethyl acetate	Not Applicable
butane	Not Applicable
propane	Not Applicable
iso-butane	Not Applicable

14.6.3 Transport in bulk according with IGC code

Product name	Ship
methylene chloride	Not Applicable
ethyl acetate	Not Applicable
butane	Not Applicable
propane	Not Applicable
iso-butane	Not Applicable

SECTION 15: Regulatory information

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

Methylene chloride is found on the following regulatory lists	Chemical Footprint Project - Chemicals of High Concern List Great Britain GB mandatory classification and labelling list (GB MCL List) International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans UK Workplace Exposure Limits (WELs).
Ethyl acetate is found on the following regulatory lists	Great Britain GB mandatory classification and labelling list (GB MCL List) UK Workplace Exposure Limits (WELs).
Butane is found on the following regulatory lists	Chemical Footprint Project - Chemicals of High Concern List Great Britain GB mandatory classification and labelling list (GB MCL List) UK Workplace Exposure Limits (WELs).
Propane is found on the following regulatory lists	Great Britain GB mandatory classification and labelling list (GB MCL List)
Iso-butane is found on the following regulatory lists	Chemical Footprint Project - Chemicals of High Concern List Great Britain GB mandatory classification and labelling list (GB MCL List)

15.2. Additional regulatory information

Not Applicable.

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

Information according to 2012/18/EU (Seveso III):

Seveso Category	P3b

15.3. Chemical safety assessment

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

15.4. National inventory status

Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (methylene chloride; ethyl acetate; butane; propane; iso-butane)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	All chemical substances in this product have been designated as TSCA Inventory 'Active'
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes
UAE - Control List (Banned/Restricted Substances)	No (methylene chloride; ethyl acetate; butane; propane; iso-butane)

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

No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16: Other information

Full text risk and hazard codes

EUH440	Accumulates in the environment and living organisms including in humans.
H220	Extremely flammable gas.
H225	Highly flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

SDS version summary

Version	0.2
Date of Update	19/01/2026
Sections Updated	Hazards identification - Classification, Composition / information on ingredients - Ingredients, Name
Other information	The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered. For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards: EN 166 Personal eye-protection EN 340 Protective clothing EN 374 Protective gloves against chemicals and micro-organisms EN 13832 Footwear protecting against chemicals EN 133 Respiratory protective devices
Abbreviations and acronyms	PC—TWA: Permissible Concentration-Time Weighted Average PC—STEL: Permissible Concentration-Short Term Exposure Limit IARC: International Agency for Research on Cancer ACGIH: American Conference of Governmental Industrial Hygienists STEL: Short Term Exposure Limit TEEL: Temporary Emergency Exposure Limit。 IDLH: Immediately Dangerous to Life or Health Concentrations ES: Exposure Standard OSF: Odor Safety Factor

	NOAEL: No Observed Adverse Effect Level LOAEL: Lowest Observed Adverse Effect Level TLV: Threshold Limit Value LOD: Limit Of Detection OTV: Odor Threshold Value BCF: Bioconcentration Factors BEI: Biological Exposure Index DNEL: Derived No-Effect Level PNEC: Predicted no-effect concentration MARPOL: International Convention for the Prevention of Pollution from Ships IMSBC: International Maritime Solid Bulk Cargoes Code IGC: International Gas Carrier Code IBC: International Bulk Chemical Code AIIC: Australian Inventory of Industrial Chemicals DSL: Domestic Substances List NDSL: Non-Domestic Substances List IECSC: Inventory of Existing Chemical Substance in China EINECS: European INventory of Existing Commercial chemical Substances ELINCS: European List of Notified Chemical Substances NLP: No-Longer Polymers ENCS: Existing and New Chemical Substances Inventory KECI: Korea Existing Chemicals Inventory NZIoC: New Zealand Inventory of Chemicals PICCS: Philippine Inventory of Chemicals and Chemical Substances TSCA: Toxic Substances Control Act TCSI: Taiwan Chemical Substance Inventory INSQ: Inventario Nacional de Sustancias Químicas

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