CRC (NZ) 2018 Lectra Clean (Aerosol)

CRC Industries (CRC Industries New Zealand)

Chemwatch Hazard Alert Code: **4**

Chemwatch: **4546-62**
Version No: **8.1.1.1**
Safety Data Sheet according to HSNO Regulations

Issue Date: **25/06/2018**
Print Date: **18/09/2019**
S.GHS.NZL.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	CRC (NZ) 2018 Lectra Clean (Aerosol)
Synonyms	Not Available
Proper shipping name	AEROSOLS
Other means of identification	Not Available

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

Relevant identified uses	Application is by spray atomisation from a hand held aerosol pack Cleaner and degreaser.

Details of the supplier of the safety data sheet

Registered company name	**CRC Industries (CRC Industries New Zealand)**
Address	10 Highbrook Drive East Tamaki Auckland New Zealand
Telephone	+64 9 272 2700
Fax	+64 9 274 9696
Website	www.crc.co.nz
Email	customerservices@crc.co.nz

Emergency telephone number

Association / Organisation	**CRC Industries (CRC Industries New Zealand)**
Emergency telephone numbers	NZ Poisons Centre 0800 POISON (0800 764 766)
Other emergency telephone numbers	111 (NZ Emergency Services)

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification [1]	Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Germ cell mutagenicity Category 1, Carcinogenicity Category 1, Reproductive Toxicity Category 1, Chronic Aquatic Hazard Category 2
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from CCID EPA NZ; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*
Determined by Chemwatch using GHS/HSNO criteria	6.3A, 6.4A, 6.6A, 6.7A, 6.8A, 9.1B

Label elements

Hazard pictogram(s)	
SIGNAL WORD	DANGER

Hazard statement(s)

H315	Causes skin irritation.

H319	Causes serious eye irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P273	Avoid release to the environment.

Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/ attention.
P321	Specific treatment (see advice on this label).
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

Precautionary statement(s) Storage

P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
79-01-6	>60	trichloroethylene
127-18-4	10-30	tetrachloroethylene
124-38-9	1-9	carbon dioxide
Not Available		NOTE: Manufacturer has supplied full ingredient
Not Available		information to allow CHEMWATCH assessment.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If aerosols come in contact with the eyes: ‣ Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes with fresh running water. ‣ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ‣ Transport to hospital or doctor without delay. ‣ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If solids or aerosol mists are deposited upon the skin: ‣ Flush skin and hair with running water (and soap if available). ‣ Remove any adhering solids with industrial skin cleansing cream. ‣ **DO NOT** use solvents. ‣ Seek medical attention in the event of irritation.
Inhalation	If aerosols, fumes or combustion products are inhaled: ‣ Remove to fresh air. ‣ 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. ‣ If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ‣ Transport to hospital, or doctor.
Ingestion	Not considered a normal route of entry. If poisoning occurs, contact a doctor or Poisons Information Centre. ‣ Avoid giving milk or oils. ‣ Avoid giving alcohol.

Indication of any immediate medical attention and special treatment needed

for intoxication due to Freons/ Halons;

A: 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 sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.
- Monitor the ECG for 4-6 hours

B: Specific drugs and antidotes:

- There is no specific antidote

C: Decontamination

- Inhalation; remove victim from exposure, and give supplemental oxygen if available.
- Ingestion; (a) Prehospital: Administer activated charcoal, if available. **DO NOT** 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)

D: Enhanced elimination:

- There is no documented efficacy for diuresis, haemodialysis, haemoperfusion, 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

Treat symptomatically.

DO NOT administer sympathomimetic drugs as they may cause ventricular arrhythmias.

For acute or short term repeated exposures to perchloroethylene:

- Tetrachloroethylene / perchloroethylene is well absorbed through the lungs with peak levels more important than duration in determining blood concentration. Lungs excrete most of the absorbed tetrachloroethylene in an unchanged state; about 3% is converted by the liver to form trichloracetic acid and subsequently excreted by the kidney. Exhaled material has a biological half-life of 65 hours.

INHALATION:

- The treatment of acute inhalation exposures is supportive with initial attention directed to evaluation / support of ventilation and circulation. As with all hydrocarbons care must be taken to reduce the risk of aspiration by proper positioning and medical observation.

INGESTION:

- The ingestion level at which emesis should be induced is difficult to predict in the absence of extensive human studies.
- The role of charcoal and cathartics remains uncertain.

[*Ellenhorn and Barceloux: Medical Toxicology*]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker who has been exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Perchloroethylene in end-exhaled air	10 ppm	Prior to last shift of work-week	
2. Perchloroethylene in blood	1 mg/L	Prior to last shift of work-week	
3. Trichloroacetic acid in urine	7 mg/L	End of work-week	NS, SQ

NS: Non-specific determinant; also seen after exposure to other materials

SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

Following acute or short-term continued exposures to trichloroethylene:

- Trichloroethylene concentration in expired air correlates with exposure. 8 hours exposure to 100 ppm produces levels of 25 ppm immediately and 1 ppm 16 hours after exposure.
- Most mild exposures respond to removal from the source and supportive care. Serious toxicity most often results from hypoxemia or cardiac dysrhythmias so that oxygen, intubation, intravenous lines and cardiac monitoring should be started initially as the clinical situation dictates.
- Ipecac syrup should be given to alert patients who ingest more than a minor amount and present within 2 hours.
- The efficacy of activated charcoal and cathartics is unclear.
- The metabolites, trichloracetic acid, trichloroethanol and to a lesser degree, chloral hydrate, may be detected in the urine up to 16 days postexposure.

[*Ellenhorn and Barceloux; Medical Toxicology*]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Trichloroacetic acid in urine	10 mg/gm creatinine	End of work-week	NS
2. Trichloroacetic acid AND Trichloroethanol in urine	300mg/mg creatinine	End of shift at end of work-week	NS
3. Free Trichlorethanol in blood	4 mg/L	End of shift at end of work-week	NS
4. Trichloroethylene in end-exhaled air			SQ
5. Trichloroethylene in blood			SQ

NS: Non-specific determinant; also seen after exposure to other materials

SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

SMALL FIRE:

- Water spray, dry chemical or CO2

LARGE FIRE:

- Water spray or fog.

Special hazards arising from the substrate or mixture

Fire Incompatibility	‣ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

Fire Fighting	‣ Alert Fire Brigade and tell them location and nature of hazard. ‣ May be violently or explosively reactive. ‣ Wear breathing apparatus plus protective gloves. ‣ Prevent, by any means available, spillage from entering drains or water course.
Fire/Explosion Hazard	‣ Non combustible. ‣ Not considered to be a significant fire risk. ‣ Heating may cause expansion or decomposition leading to violent rupture of containers. ‣ Aerosol cans may explode on exposure to naked flames. Decomposition may produce toxic fumes of: carbon monoxide (CO) Combustion products include: 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. ‣ Non flammable liquid. ‣ However vapour will burn when in contact with high temperature flame. ‣ Ignition ceases on removal of flame. ‣ May form a flammable / explosive mixture in an oxygen enriched atmosphere ‣ Heating may cause expansion/vapourisation with violent rupture of containers ‣ Decomposes on heating and produces corrosive fumes of hydrochloric acid, carbon monoxide and small amounts of toxic phosgene.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	‣ Clean up all spills immediately. ‣ Avoid breathing vapours and contact with skin and eyes. ‣ Wear protective clothing, impervious gloves and safety glasses. ‣ Shut off all possible sources of ignition and increase ventilation.
Major Spills	‣ **DO NOT** exert excessive pressure on valve; **DO NOT** attempt to operate damaged valve. ‣ Clear area of personnel and move upwind. ‣ Alert Fire Brigade and tell them location and nature of hazard. ‣ May be violently or explosively reactive. ‣ Wear breathing apparatus plus protective gloves. ‣ Remove leaking cylinders to a safe place if possible. ‣ Release pressure under safe, controlled conditions by opening the valve.

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

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	‣ Avoid all personal contact, including inhalation. ‣ Wear protective clothing when risk of exposure occurs. ‣ Use in a well-ventilated area. ‣ Prevent concentration in hollows and sumps.
Other information	‣ Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure may eject contents of can

Conditions for safe storage, including any incompatibilities

Suitable container	‣ **DO NOT** use aluminium or galvanised containers ‣ Aerosol dispenser. ‣ Check that containers are clearly labelled.
Storage incompatibility	‣ Haloalkenes are highly reactive. ‣ Some of the more lightly substituted lower members are highly flammable; many members of the group are peroxidisable and polymerisable.

- Avoid reaction or contact with potassium or its alloys - although apparently stable on contact with a wide rage of halocarbons, reaction products may be shock-sensitive and may explode with great violence on light impact. Severity generally increases with the degree of halocarbon substitution and potassium-sodium alloys give extremely sensitive mixtures.
- Haloacetylenes should be used with exceptional precautions.
- Explosions may occur during distillation when bath temperatures are too high or if air is admitted to a hot vacuum-distillation as evidenced by experience with bromoacetylenes.

BRETHERICK L.: Handbook of Reactive Chemical Hazards
Tetrachloroethylene:

- decomposes slowly in contact with water or moisture forming trichloroacetic acid and hydrochloric acid
- reacts violently with concentrated nitric acid (producing carbon dioxide), strong oxidisers, strong alkalis, powdered chemically active metals such as aluminium, barium, beryllium, lithium, zinc
- is incompatible with nitrogen tetroxide, finely divided metals
- decomposes in UV light, on contact with red-hot metals, and at temperatures above 150 C, releasing hydrogen chloride, carbon monoxide and phosgene
- corrodes metals in the presence of moisture
- can oxidise in presence of air and light.

The presence of 0.5% trichloroethylene as an impurity caused generation of dichloroacetylene during unheated drying over solid sodium hydroxide. Subsequent fractional distillation produced an explosion.
Trichloroethylene:

- reacts violently with caustics (e.g. lye, potassium hydroxide, sodium hydroxide, etc.)
- produces spontaneously explosive dichloroacetylene in presence of caustics, epichlorohydrin, epoxides
- forms an explosive mixture with nitrogen tetroxide
- reacts violently with finely divided chemically active metals
- may undergo self-accelerating polymerisation in presence of magnesium, titanium, aluminium
- may ignite on contact with alkaline metal earths
- reacts explosively with sodium, potassium, lithium
- my decompose with formation of chlorine gas, hydrogen chloride gas and phosgene at high temperatures, in contact with hot metals, open flame and high intensity UV light
- slowly decomposes in light, in the presence of moisture, forming hydrochloric acid
- reacts, possibly violently, with aluminium tripropyl, antimony triethyl, antimony trimethyl, dimethylformamide, liquid oxygen, ozone, potassium nitrate, trimethylaluminium
- attacks metals, coatings, and plastics in presence of moisture
- attacks natural rubber
- may accumulate static charge and cause ignition of vapors

Avoid storage with strong oxidisers (particularly oxygen in gas or liquid form and nitrogen dioxide), strong bases, acetone, sodium/sodium-potassium alloys, zinc.

- Avoid strong bases.
- 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

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

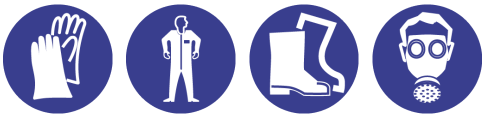
Source	Ingredient	Material name	TWA	STEL	Peak	Notes
New Zealand Workplace Exposure Standards (WES)	trichloroethylene	Trichloroethylene (2017)	10 ppm / 55 mg/m3	135 mg/m3 / 25 ppm	Not Available	Adopted in 2017; 6.7A - Confirmed carcinogen
New Zealand Workplace Exposure Standards (WES)	tetrachloroethylene	Perchloroethylene (Tetrachloroethylene)	20 ppm / 136 mg/m3	271 mg/m3 / 40 ppm	Not Available	* - Adopted in 2018; (skin) - Skin absorption; 6.7A - Confirmed carcinogen; (2018)
New Zealand Workplace Exposure Standards (WES)	carbon dioxide	Carbon dioxide	5000 ppm / 9000 mg/m3	54000 mg/m3 / 30000 ppm	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
trichloroethylene	Trichloroethylene	Not Available	Not Available	Not Available
tetrachloroethylene	Perchloroethylene; (Tetrachloroethylene)	Not Available	Not Available	Not Available
carbon dioxide	Carbon dioxide	30,000 ppm	40,000 ppm	50,000 ppm

Ingredient	Original IDLH	Revised IDLH
trichloroethylene	1,000 ppm	Not Available
tetrachloroethylene	150 ppm	Not Available
carbon dioxide	40,000 ppm	Not Available

Exposure controls

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.
Personal protection	
Eye and face protection	‣ Safety glasses with side shields. ‣ Chemical goggles. ‣ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	‣ Polyethylene gloves ‣ No special equipment needed when handling small quantities. ‣ **OTHERWISE:** ‣ For potentially moderate exposures: ‣ Wear general protective gloves, eg. light weight rubber gloves. ‣ For potentially heavy exposures: ‣ Wear chemical protective gloves, eg. PVC. and safety footwear.
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. No special equipment needed when handling small quantities. **OTHERWISE:** ‣ Overalls. ‣ Skin cleansing cream. ‣ Eyewash unit.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:

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Material	CPI
PE/EVAL/PE	A
PVA	A
TEFLON	B
VITON	B
BUTYL	C
CPE	C
HYPALON	C
NEOPRENE	C
NITRILE	C
NITRILE+PVC	C
PVC	C

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

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.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	A-AUS	-	A-PAPR-AUS / Class 1
up to 50 x ES	-	A-AUS / Class 1	-
up to 100 x ES	-	A-2	A-PAPR-2 ^

^ - Full-face

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)

SARANEX-23	C
SARANEX-23 2-PLY	C
VITON/CHLOROBUTYL	C
VITON/NEOPRENE	C
VITON/NITRILE	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.

- 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

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear liquid with an ethereal odour; partially miscible with water. Soluble with most organic solvents. Supplied as an aerosol pack. Contents under PRESSURE. Contains carbon dioxide propellant.

Physical state	Liquid	**Relative density (Water = 1)**	1.51
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Applicable	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	<0	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	86 initial	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Available	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Available	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	90	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	12.5	**Volatile Component (%vol)**	100
Vapour pressure (kPa)	6.4 @ 20C	**Gas group**	Not Available
Solubility in water	Immiscible	**pH as a solution (1%)**	Not Applicable
Vapour density (Air = 1)	>1	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	‣ Elevated temperatures. ‣ Presence of open flame. ‣ Product is considered stable. ‣ Hazardous polymerisation will not occur. ‣ Presence of elevated temperatures. ‣ Presence of heat source and ignition source
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	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. Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of toxic gases may cause: ‣ Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures; ‣ respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest; ‣ heart: collapse, irregular heartbeats and cardiac arrest; ‣ gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain. Inhalation hazard is increased at higher temperatures. 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. Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination. Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons. Inebriation and excitation, passing into narcosis, is a typical reaction. In severe acute exposures there is always a danger of death from respiratory failure or cardiac arrest due to a tendency to make the heart more susceptible to catecholamines (adrenalin) Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure. Symptoms of asphyxia (suffocation) may include headache, dizziness, shortness of breath, muscular weakness, drowsiness and ringing in the ears. If the asphyxia is allowed to progress, there may be nausea and vomiting, further physical weakness and unconsciousness and, finally, convulsions, coma and death. **WARNING**:Intentional misuse by concentrating/inhaling contents may be lethal. Exposure to high levels of tetrachloroethylene by oral or inhalation may cause dose dependent light-headedness, mood and behavioural changes, seizure, unconsciousness, abnormal bilirubin level, liver and kidney damage in workers. Sudden death may result from anaesthetic doses probably due to depression of the respiratory centre or heart dysfunction. Human studies showed dose dependent neurologic symptoms. It may cause irritation of the eyes, airways and skin. Anaesthetics and narcotic effects (with dulling of senses and odour fatigue) are a consequence of exposure to chlorinated solvents. Individual response varies widely; odour may not be considered objectionable at levels which quickly induce central nervous system effects. High vapour concentrations may give a feeling of euphoria. This may result in reduced responses, followed by rapid onset of unconsciousness, possible respiratory arrest and death.
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual. Not normally a hazard due to physical form of product. Considered an unlikely route of entry in commercial/industrial environments When tetrachloroethylene is used in the treatment of hookworm (4.5 to 6.5 gm orally) the only adverse effect is a drunken-like state. Transient liver toxicity in patients given single oral doses of up to 5 ml had been recorded. At sufficiently high doses the material may be hepatotoxic (i.e. poisonous to the liver). At sufficiently high doses the material may be nephrotoxic (i.e. poisonous to the kidney).
Skin Contact	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 characterised by redness, swelling and blistering. Repeated exposure may cause skin cracking, flaking or drying following normal handling and use. Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. Spray mist may produce discomfort Open cuts, abraded or irritated skin should not be exposed to this material Industrial experience shows that exposure to tetrachloroethylene produces localised skin irritation while prolonged skin contact can cause chemical burns and blistering. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation.
Eye	This 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. Not considered to be a risk because of the extreme volatility of the gas. Irritation of the eyes may produce a heavy secretion of tears (lachrymation). Exposure to high concentrations of tetrachloroethylene vapour causes mild to severe eye irritation, burning or stinging sensations depending on the dose and duration of exposure. Colour vision has equally being reported which is attributed to neurological rather than a direct effect on the eyes.
Chronic	Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. There is some evidence from animal testing that exposure to this material may result in reduced fertility. There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby. The reactivity of an epoxide intermediate may be the reason for the cancer-causing properties of halogenated oxiranes. It is reported that 1,1-dichloroethyne, vinyl chloride, trichloroethylene, tetrachloroethylene and chloroprene all cause cancer. Generally speaking, substances with one halogen substitution show higher potential to cause cancer compared to substances with two. Main route of exposure to the gas in the workplace is by inhalation.

	Exposure to tetrachloroethylene noted in dry cleaners causes menstrual disorder and miscarriage, liver dysfunction, headache and dizziness. Studies done showed high mortality rate resulting from cancers of the lung, cervix, gullet, kidney, skin, lymph/blood system, and colon in dry cleaners and laundry workers. Liver cancer was detected in females but none in male laundry and dry cleaners. However, there is not sufficient statistical data to make an absolute conclusion.

	TOXICITY	IRRITATION
CRC (NZ) 2018 Lectra Clean (Aerosol)	Not Available	Not Available
trichloroethylene	Dermal (rabbit) LD50: >20000 mg/kg[2]	Eye(rabbit): 20 mg/24h - SEVERE
	Inhalation (rat) LC50: 35.175 mg/l/1H[2]	Skin(rabbit): 500 mg/24h - SEVERE
	Oral (rat) LD50: =4290 mg/kg[2]	
tetrachloroethylene	Inhalation (mouse) LC50: 30.3 mg/l/6H[2]	Eye (rabbit): 162 mg -mild
	Oral (rat) LD50: =250 mg/kg[2]	Eye: adverse effect observed (irritating)[1]
		Skin (rabbit): 810 mg/24h -SEVERE
		Skin: adverse effect observed (irritating)[1]
		Skin: no adverse effect observed (not irritating)[1]
carbon dioxide	Inhalation (mouse) LC50: 180.5 mg/l/2H[2]	Not Available
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*	

TRICHLOROETHYLENE	**WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**. Tenth Annual Report on Carcinogens: Substance known to be Carcinogenic [*National Toxicology Program: U.S. Dep. of Health and Human Services 2002*]
TETRACHLOROETHYLENE	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. **WARNING:** This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
CRC (NZ) 2018 Lectra Clean (Aerosol) & TRICHLOROETHYLENE	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Overexposure to trichloroethylene fumes causes liver damage, irregular heartbeat, brain depression and death. Deaths due to this substances have been reported in the workplace, often in degreasing operations, and have been attributed mostly to irregularities in heart rhythm or depression of the central nervous system. Repeated oral intake produces appetite loss, nausea and vomiting. A rare disease of the small intestine, seen in Japanese lens cleaners and polishers were attributed to exposure in the workplace.
CRC (NZ) 2018 Lectra Clean (Aerosol) & TRICHLOROETHYLENE & TETRACHLOROETHYLENE	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.
TRICHLOROETHYLENE & TETRACHLOROETHYLENE	Disinfection byproducts (DBPs) are formed when disinfectants such as chlorine, chloramines and ozone react with organic and inorganic matter in water. Animal studies have shown that some DBPs cause cancer. To date, several hundred DBPs have been identified. Numerous haloalkanes and haloalkenes have been tested for cancer-causing and mutation-causing activities.

Acute Toxicity	✗	**Carcinogenicity**	✓
Skin Irritation/Corrosion	✓	**Reproductivity**	✓
Serious Eye Damage/Irritation	✓	**STOT - Single Exposure**	✗
Respiratory or Skin sensitisation	✗	**STOT - Repeated Exposure**	✗
Mutagenicity	✓	**Aspiration Hazard**	✗

Legend: ✗ *– Data either not available or does not fill the criteria for classification*
✓ *– Data available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
CRC (NZ) 2018 Lectra					

Clean (Aerosol)	Not Available	Not Available	Not Available	Not Available	Not Available
trichloroethylene	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	1.345mg/L	3
	EC50	48	Crustacea	=2.2mg/L	1
	EC50	96	Algae or other aquatic plants	11.596mg/L	3
	NOEC	504	Crustacea	0.15mg/L	2
tetrachloroethylene	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.797mg/L	3
	EC50	48	Crustacea	2.49mg/L	5
	EC50	72	Algae or other aquatic plants	~0.2mg/L	4
	BCF	240	Fish	350mg/L	4
	NOEC	168	Crustacea	0.33mg/L	5
carbon dioxide	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	53.413mg/L	3
	EC50	96	Algae or other aquatic plants	237.138mg/L	3
Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*				

Toxic 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 carbon dioxide:
Environmental Fate: Carbon dioxide in earth's atmosphere is considered a trace gas. There are seasonal fluctuations of atmospheric concentrations of carbon dioxide primarily due to CO2 absorbed during seasonal plant growth. Due to human activities such as the combustion of fossil fuels and deforestation, the concentration of atmospheric carbon dioxide has increased by about 35% since preindustrial times. Carbon dissolved in the oceans is about 50 times greater than CO2 found in the atmosphere.
Substances containing unsaturated carbons are ubiquitous in indoor environments. They result from many sources (see below). Most are reactive with environmental ozone and many produce stable products which are thought to adversely affect human health.The potential for surfaces in an enclosed space to facilitate reactions should be considered.
Source of unsaturated substances   Unsaturated substances (Reactive Emissions)   Major Stable Products produced following reaction with ozone.
For Haloalkanes:
Atmospheric Fate: Fully, or partially, fluorinated haloalkanes released to the air can restrict heat loss from the Earth's atmosphere by absorbing infrared emissions from the surface. The major fate of haloalkanes in the atmosphere is via breakdown by hydroxyl radicals. These substances react with atmospheric ozone and nitrates, which also causes them to change, (transform). Chlorofluorocarbons, (CFC), haloalkanes can break down into chlorine atoms in the air, which also contribute to ozone destruction.
For Tetrachloroethylene (Synonym: Perchloroethylene): log Koc: 2.38 - 2.9. 7; Koc: 209 – 1685; Half-life (hr) H2O surface water: 26.4-2664; Henry's atm m3 /mol: 1.49E-02; BOD 5: 0.06; COD: 0.39; BCF: 38.9-226; Log BCF: 1.59.
Atmospheric Fate: Long-range global transport of tetrachloroethylene is likely. Dry deposition does not appear to be a significant removal process, although substantial evaporation from dry surfaces can be predicted.
For Trichloroethylene:
log Kow: 2.2-3.3; log Koc: 2; log Koc: 2;
Henry's atm m3/mol: 0.0103;
BCF: 17-1160.
Drinking Water Standards: Trichloroethylene: 30 mg/l (UK max.); 70 mg/L. (WHO provisional guideline); Hydrocarbon total: 10 ug/l (UK max.); Soil Guidelines - Dutch Criteria: 0.001 mg/kg (target), 60 mg/kg (intervention); Air Quality Standards: 1 mg/m3, averaging time 24 hours (WHO Guideline).
Atmospheric Fate: Trichloroethylene reacts quickly in air, especially under smog conditions, with an atmospheric residence time of up to 5 days.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
trichloroethylene	HIGH (Half-life = 1653 days)	LOW (Half-life = 11.33 days)
tetrachloroethylene	HIGH (Half-life = 720 days)	MEDIUM (Half-life = 160.13 days)
carbon dioxide	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
trichloroethylene	HIGH (BCF = 5370)
tetrachloroethylene	LOW (BCF = 77.1)
carbon dioxide	LOW (LogKOW = 0.83)

Mobility in soil

Ingredient	Mobility
trichloroethylene	LOW (KOC = 67.7)
tetrachloroethylene	LOW (KOC = 106.8)
carbon dioxide	HIGH (KOC = 1.498)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	‣ **DO NOT** 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. ‣ Consult State Land Waste Management Authority for disposal. ‣ Discharge contents of damaged aerosol cans at an approved site. ‣ Allow small quantities to evaporate. ‣ **DO NOT** incinerate or puncture aerosol cans.

Ensure that the hazardous substance is disposed in accordance with the Hazardous Substances (Disposal) Notice 2017

Disposal Requirements

Packages that have been in direct contact with the hazardous substance must be only disposed if the hazardous substance was appropriately removed and cleaned out from the package. The package must be disposed according to the manufacturer's directions taking into account the material it is made of. Packages which hazardous content have been appropriately treated and removed may be recycled.
The hazardous substance must only be disposed if it has been treated by a method that changed the characteristics or composition of the substance and it is no longer hazardous.

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	
HAZCHEM	Not Applicable

Land transport (UN)

UN number	1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	Class 2.2 Subrisk Not Applicable
Packing group	Not Applicable
Environmental hazard	Environmentally hazardous
Special precautions for user	Special provisions 63; 190; 277; 327; 344; 381 Limited quantity 1000ml

Air transport (ICAO-IATA / DGR)

UN number	1950
UN proper shipping name	Aerosols, non-flammable
Transport hazard class(es)	ICAO/IATA Class 2.2 ICAO / IATA Subrisk Not Applicable ERG Code 2L

Sea transport (IMDG-Code / GGVSee)

UN number	1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	IMDG Class: 2.2 IMDG Subrisk: Not Applicable
Packing group	Not Applicable
Environmental hazard	Marine Pollutant
Special precautions for user	EMS Number: F-D , S-U Special provisions: 63 190 277 327 344 381 959 Limited Quantities: 1000 ml

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

This substance is to be managed using the conditions specified in an applicable Group Standard

HSR Number	Group Standard
HSR002679	Surface Coatings and Colourants (Toxic [6.7]) Group Standard 2017
HSR002560	Dental Products (Toxic [6.7]) Group Standard 2017
HSR002520	Aerosols (Toxic [6.7]) Group Standard 2017

TRICHLOROETHYLENE IS FOUND ON THE FOLLOWING REGULATORY LISTS

- GESAMP/EHS Composite List - GESAMP Hazard Profiles
- IMO IBC Code Chapter 17: Summary of minimum requirements
- IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk
- International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
- International Air Transport Association (IATA) Dangerous Goods Regulations
- International Maritime Dangerous Goods Requirements (IMDG Code)
- New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals
- New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data
- New Zealand Inventory of Chemicals (NZIoC)
- New Zealand Workplace Exposure Standards (WES)
- United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

TETRACHLOROETHYLENE IS FOUND ON THE FOLLOWING REGULATORY LISTS

- GESAMP/EHS Composite List - GESAMP Hazard Profiles
- IMO IBC Code Chapter 17: Summary of minimum requirements
- IMO MARPOL (Annex II) - List of Noxious Liquid Substances Carried in Bulk
- International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
- International Air Transport Association (IATA) Dangerous Goods Regulations
- International FOSFA List of Banned Immediate Previous Cargoes
- International Maritime Dangerous Goods Requirements (IMDG Code)
- New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals
- New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data
- New Zealand Inventory of Chemicals (NZIoC)
- New Zealand Workplace Exposure Standards (WES)
- United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

CARBON DIOXIDE IS FOUND ON THE FOLLOWING REGULATORY LISTS

- International Air Transport Association (IATA) Dangerous Goods Regulations
- International Maritime Dangerous Goods Requirements (IMDG Code)
- New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals
- New Zealand Inventory of Chemicals (NZIoC)
- New Zealand Workplace Exposure Standards (WES)
- United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

Hazardous Substance Location

Subject to the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Hazard Class	Quantity beyond which controls apply for closed containers	Quantity beyond which controls apply when use occurring in open containers
Not Applicable	Not Applicable	Not Applicable

Certified Handler

Subject to Part 4 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Class of substance	Quantities

6.7A	10 kg or more, if solid 10 L or more, if liquid

Refer Group Standards for further information

Tracking Requirements

Not Applicable

National Inventory Status

National Inventory	Status
Australia - AICS	Yes
Canada - DSL	Yes
Canada - NDSL	No (carbon dioxide; tetrachloroethylene; trichloroethylene)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - ARIPS	Yes
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Revision Date	25/06/2018
Initial Date	12/11/2001

SDS Version Summary

Version	Issue Date	Sections Updated
7.1.1.1	02/09/2017	Classification, Physical Properties, Supplier Information

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

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.

Definitions and abbreviations

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
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index