



SAFETY DATA SHEET

Tri-Form 60 EC

1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY/UNDERTAKING

PRODUCT IDENTIFIER: Tri-Form 60 EC SDS No.: 157-ZAF-TAF
 OTHER MEANS OF IDENTIFICATION: Chloropicrin and 1,3-Dichloropropene
 RECOMMENDED USE: Pesticide (Pre-Plant Soil Fumigant)

Distributor: Trical Crop Protection Africa (Pty) Ltd P.O. Box 46036 Durbanville, Cape Town, 7551 Republic of South Africa Telephone: +27 861 111 998 E-mail: sds@trical.com	FOR CHEMICAL EMERGENCY (Spill, Leak, Fire, Exposure, or Accident), Call CHEMTREC: 080-098-3611 (24 hours, within South Africa) +1 703-527-3887 (if outside South Africa)
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RESTRICTIONS ON USE: For use by registered pest control operators only. Use only in accordance with the product's pesticide end-use label. If the end-use labeling contains specific instructions or requirements that conflict with this Safety Data Sheet (SDS), **follow the instructions or requirements on the labeling.**

2. HAZARDS IDENTIFICATION

NOTE: Supplemental information is [bracketed] or noted as such in Section 2.

GHS Classification for Product 	H226 Flammable Liquids, Category 3 H330 Acute Toxicity - Inhalation, Category 1 H301 Acute Toxicity - Oral, Category 3 H311 Acute Toxicity - Dermal, Category 3 H314 Skin Corrosion, Category 1C H318 Serious Eye Damage, Category 1 [liquid contact] H319 Eye Irritation, Category 2A [vapour contact] H304 Skin Sensitisation, Category 1B H351 Carcinogenicity, Category 2 (oral route) H370 Specific Target Organ Toxicity, Single Exposure, Category 3 (respiratory system/hemal system) H372 Specific Target Organ Toxicity, Repeat Exposure, Category 1 (respiratory system/hemal system/liver) H304 Aspiration Hazard, Category 1 H400 Hazardous to the Aquatic Environment, Short Term (Acute) Hazard, Category 1 H410 Hazardous to the Aquatic Environment, Long Term (Chronic) Hazard, Category 1
Additional GHS Classification for Product When it is Under Pressure in Cylinder 	H283 Chemicals Under Pressure, Category 2
Signal Word	DANGER

GHS Hazard Statements	H226	Flammable liquid and vapour.
	H330	Fatal if inhaled.
	H301+H311	Toxic if swallowed or in contact with skin.
	H314+H318	Causes severe skin burns and eye damage.
	H319	Causes serious eye irritation. [vapour contact]
	H317	May cause an allergic skin reaction.
	H351	Suspected of causing cancer by the oral route.
	H370	Causes damage to the respiratory system and hemal system by inhalation.
	H372	Causes damage to respiratory system, hemal system, and liver through prolonged or repeated exposure.
H304	May be fatal if swallowed and enters airways.	
H400+H410	Very toxic to aquatic life and with long lasting effects.	
Additional GHS Hazard Statement When Product Under Pressure in Cylinder	H283	Flammable chemical under pressure: May explode if heated.

GHS PRECAUTIONARY STATEMENTS

<p>Prevention</p> <ul style="list-style-type: none"> • Obtain, read, and follow all safety instructions before use. • Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. • Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use non-sparking tools. Take action to prevent static discharges. • Do not breathe gas or vapours. • [Do not get in eyes, on skin, or on clothing.] • Wear protective gloves, protective clothing, eye protection, and respiratory protection. [See section 8 of SDS.] • Wash hands and face thoroughly after handling. Do not touch eyes. • Do not eat, drink, or smoke when using this product. • Use only outdoors or in a well-ventilated area. • Contaminated work clothing should not be allowed out of the workplace. • Avoid release to the environment, [except for authorised use]. <p>Response</p> <ul style="list-style-type: none"> • IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get emergency medical help immediately. Specific treatment is urgent (see Section 4 of SDS). • IF IN EYES: Immediately rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get emergency medical help immediately [for liquid contact]. [For vapour contact], if eye irritation persists, get medical help. • IF ON SKIN (or hair): Take off immediately all contaminated clothing. Immediately rinse with water for several minutes. Get emergency medical help immediately. Specific treatment (see Section 4 of SDS). Wash contaminated clothing before reuse. • IF SWALLOWED: Get emergency medical help immediately. [Dab material from mouth with dry cloth first, if possible.] Rinse mouth. Do NOT induce vomiting. • IF exposed or concerned: Get emergency medical help immediately. • If skin irritation or rash occurs: Get medical help. • Get medical help if you feel unwell. • In case of fire: Use dry chemical or alcohol-resistant foam to extinguish. <p>Storage [See Section 7 for additional information.]</p> <ul style="list-style-type: none"> • Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. <p>Disposal [See Section 13 for additional information.]</p> <ul style="list-style-type: none"> • Collect spillage. • Dispose of contents and container in accordance with government regulations. 	
Additional Precautionary Statements for Product When it is Under Pressure in Cylinder	<p>[Closed cylinders may rupture or burst if heated by fire.]</p> <ul style="list-style-type: none"> • Store away from combustible materials. • Do not spray on an open flame or other ignition source. • In case of leakage, eliminate all ignition sources. Stop leak if safe to do so. • In case of fire: Use dry chemical or alcohol-resistant foam to extinguish. [Evacuate area. Fight fire remotely due to the risk of cylinder rupture].

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Identity	Synonyms	CAS #	Concentration by weight %
Chloropicrin	Trichloronitromethane	76-06-2	57.0 ^{1, 2}
1,3-Dichloropropene (with stabilizer)	1,3-D	542-75-6	38.0
Surfactant ³	Emulsifier		5.0

¹ Product label will reflect nominal active ingredient percentages.

² For reporting imports and exports pursuant to Chemical Weapons Convention, use 57% Chloropicrin.

³ Surfactant identity withheld as a trade secret.

4. FIRST AID MEASURES

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Qualified persons should administer oxygen, if available. If breathing has stopped, give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not use mouth-to-mouth method if victim ingested the substance. Symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure. Immediately call an ambulance if any breathing difficulty persists after removal from exposure area. Call a physician or poison control center for further treatment advice.
Eyes	Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes; then continue rinsing eyes. Immediately call a physician or poison control center if liquid contact occurs. For vapour contact, if eye irritation persists, get medical advice or attention.
Skin	Remove and isolate contaminated clothing and shoes, and other items covering the skin. Rinse skin immediately with plenty of water for 15-20 minutes. Use soap and water for a final cleanse, if available. Call a physician or Poison Control Center for treatment advice. Chemical burns must be treated by a physician. Aerate and then wash any contaminated clothing or shoes separately before reuse. Dispose of heavily contaminated clothing and shoes.
Ingestion	Immediately call a Poison Control Center or physician. Have victim dab inside mouth with dry cloth or paper towel to remove as much product as possible, then thoroughly rinse with water with mouth lowered towards ground to prevent inadvertent swallowing. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from Poison Control Center or physician. If vomiting occurs, keep head low to minimize aspiration of stomach contents.
Most Important Symptoms/Effects, Acute and Delayed	Lachrymator. Early symptoms of exposure to eyes are stinging, tearing, redness, swelling, and blurred vision. Early inhalation symptoms may include throat and nose irritation, nausea or vomiting. May cause an allergic skin reaction, dermatitis or rash. Pulmonary edema and pulmonary symptoms may be delayed. Treat symptomatically. Prolonged exposure may cause chronic effects to skin and respiratory symptoms as noted above.
Indication of Immediate Medical Attention or Special Treatment.	Obtain medical assistance at once in case of illness or burn after exposure, or if irritation to eyes and respiratory tract persist. Do not allow conditions that could cause further exposure until recovery is complete. If aspirated into the lungs, material may cause rapid absorption through the lungs which may result in systemic effects. If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately. In case of ingestion, the decision of whether or not to induce vomiting should be made by the attending physician. Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Note to Physician: If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung toxicity must be weighed against toxicity when considering emptying the stomach.

General Advice	<p>Ensure that medical personnel are aware of the material involved, and that they take precautions to protect themselves from exposure to the product's vapour from victim's clothing or stomach contents.</p> <p>Take off immediately all contaminated clothing. Aerate contaminated clothing and other items such as wallets in a secure area downwind and away from people. Wash contaminated clothing before reuse. Discard any shoes or clothing items that cannot be decontaminated, after aerating.</p>
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5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	All conventional fire extinguishing media are suitable: water spray, dry chemical, carbon dioxide, alcohol-resistant foam.
Unsuitable Extinguishing Media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific Hazards Arising from the Chemical	<ul style="list-style-type: none"> • Vapours may form explosive mixtures with air. • Vapours may travel considerable distance to a source of ignition and flash back. • During fire, gases hazardous to health may be formed. • Closed cylinders may rupture or burst if heated by fire. • NOTE: Per transport regulations, cylinders containing Chloropicrin are not equipped with relief valves or fusible overpressure devices.
Hazardous Combustion Products	<ul style="list-style-type: none"> • Carbon monoxide, chlorine, hydrogen chloride, phosgene, nitrosyl chloride, and nitrogen oxides.
Special Protective Equipment	<ul style="list-style-type: none"> • Wear self-contained breathing apparatus and full turnout gear for fire situations.
Precautions for Fire Fighters	<ul style="list-style-type: none"> • Stay upwind. • In case of fire and/or explosion do not breathe smoke, gas or vapours. • DO NOT approach containers suspected to be hot. • Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. • Evacuate area at least 150 meters (500 feet), initially. • If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2-mile) in all directions; also consider initial evacuation for 800 meters (1/2-mile) in all directions. • Move containers from fire area if you can do it without risk. • Cool containers with flooding quantities of water until well after fire is out. • For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures	<ul style="list-style-type: none"> • Immediately evacuate personnel to safe areas and upwind of spill/leak. • For small spill, consider initial isolation for at least 30 meters (100 feet). For large spill, consider initial isolation for at least 60 meters (200 feet). • Keep unnecessary personnel away. • Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). • Avoid low places, ventilate closed spaces before entering, and work upwind if possible. • Avoid breathing vapours and contact with skin and eyes. • Do not touch damaged containers or spilled material unless wearing appropriate PPE as indicated in Section 8. • Do not permit entry into the spill or leak area by any person not wearing proper PPE until Chloropicrin is measured to be less than 0.15 ppm. • Move leaking or damaged cylinders outdoors or to an isolated location, observing strict safety precautions. • After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
Environmental Precautions	<ul style="list-style-type: none"> • Prevent entry into waterways, sewers, basements, or confined areas. • Contact local authorities in case of spillage to drain or aquatic environment.

Methods and Materials for Containment	<ul style="list-style-type: none"> Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do so without risk. Dike the spilled material where possible with sand, earth, or vermiculite.
Methods for Cleaning Up Small Liquid Spills 55 gallons or less	<ul style="list-style-type: none"> Protect persons downwind 0.1 km (0.1 mi) in daytime. 0.3 km (0.2 mi) in nighttime. Wear recommended PPE. Product readily vapourises so ensure area is well-ventilated. Move leaking or damaged cylinders outdoors to an isolated location, if safe to do so. Position cylinder or other packaging to minimise potential for liquid to leak out. Allow spilled fumigant to evaporate or cover spill with water, soil, or plastic tarp to reduce vapours. Absorb onto inert material such as vermiculite, dry sand, or dirt, and deposit spill into a sealable polyethylene or steel container that is labeled appropriately. Ventilate area before allowing re-entry and until the concentration of Chloropicrin is measured to be less than 0.15 ppm.
Methods for Cleaning Up Large Liquid Spills > 55 gallons	<ul style="list-style-type: none"> Protect persons downwind 0.6 km (0.4 mi) in daytime. 1.0 km (0.6 mi) in nighttime. Wear self-contained breathing apparatus (SCBA) and recommended PPE (see Section 8). Stop flow of material, if safe to do so. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. If not available, you can cover with plastic sheeting to reduce vapours. Use water spray to reduce vapours or divert vapour cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.
Other Information	<ul style="list-style-type: none"> Never return spills to original container for re-use. For disposal, see Section 13.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

This product is a highly hazardous material and must be handled with care only by those individuals experienced with its proper use. IF THIS PRODUCT IS BEING USED IN THE FIELD, AND THE INFORMATION IN THIS SDS DIFFERS FROM THAT ON THE END-USE LABELING FOR THIS PRODUCT, THE HANDLER MUST FOLLOW THE PRECAUTIONARY STATEMENTS ON THE END-USE LABELING.

- Do not handle until all safety precautions have been read and understood.
- Wear PPE in accordance with Section 8. Leather or other abrasion resistant gloves can be worn when handling or moving closed and capped cylinders.
- Do not drop, drag, slide or roll cylinders on their sides. Do not subject cylinders to rough handling or to abnormal mechanical shock.
- Ropes, slings, hooks, tongs, and similar handling devices should not be used for unloading cylinders. A suitable hand truck, fork truck, or similar device to which the cylinders can be firmly secured should be used for transporting the heavier cylinders.
- Valve protection caps must remain in place unless container is secured.
- Keep valves closed and secured with the valve cap, when the cylinder is not in use or is empty. Only hand-tighten valves and caps. Leaving an empty cylinder valve open can introduce moisture and increase potential for internal corrosion.
- Use an adjustable strap wrench to remove caps that are over-tightened or rusted. Never insert an object (e.g. wrench, screw driver) into cap openings.
- Open cylinder valve (slowly) in a well-ventilated area with the operator "upwind" from the container or provide ventilation to control airborne levels below the permissible exposure limit.
- Do not heat container by any means to increase the discharge rate of product from the container.
- Use only dry nitrogen gas to pressurise cylinders. Polyethylene or Teflon® tubing may be used to transfer this product at low pressures. Regulator must be operated with a secondary pressure relief valve. **DO NOT** use high-pressure hose connection (such as stainless-steel braided hose) between nitrogen supplying cylinder and this product's cylinder.

- Do not handle, store or open near an open flame, sources of heat, or sources of ignition.
- Take precautionary measures against static discharges.
- Use only outdoors or in a well-ventilated area.
- Do not breathe vapour. Do not get in eyes, on skin, on clothing. Avoid prolonged exposure.
- Always have adequate clean water available to wash the skin.
- If product splashes or spills on shoes or clothing, remove them at once. Vapours from contaminated area will be an intolerable source of irritation. If liquid contacts skin where rings or bandages are worn, remove them and wash exposed skin with soap and water. Air expose shoes or clothing outside and do not wear until free of all traces of fumigant. Keep and wash PPE and work clothing separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product.
- Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.
- Do not allow to spill.
- Avoid contact with incompatible materials. See Section 10 for specific materials to avoid.
- Containers should never be refilled by the consumer or used for any other product or purpose.
- Do not empty into drains. Avoid release to the environment [except for intended use].

CONDITIONS FOR SAFE STORAGE

- Store locked up.
- Store in original tightly closed container.
- Store in a cool, dry place, out of direct sunlight. Store at temperatures not exceeding 55 °C (131 °F).
- Keep away from heat, sparks and open flame.
- Prevent electrostatic charge build-up by using common bonding and grounding techniques.
- Keep flammable/combustible liquids, oxidisers, and combustible solid materials away from containers.
- Store away from incompatible materials (see Section 10 of the SDS).
- Post as a pesticide storage area.
- Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS: OCCUPATIONAL EXPOSURE LIMITS FOR CHLOROPICRIN (CAS 76-06-2)

SOURCE OF EXPOSURE LIMIT	TYPE	VALUE	
South Africa, Regulations for Hazardous Chemical Agents, 2021	OEL-RL	0,2 ppm	1,4 mg/m ³
US ACGIH, Threshold Limit Values (TLVs)	TWA	0.1 ppm	0.67 mg/m ³
US NIOSH, Documentation for Immediately Dangerous to Life or Health	IDLH	2.0 ppm	

OCCUPATIONAL EXPOSURE LIMITS FOR 1,3-DICHLOROPROPENE (CAS 542-75-6)

South Africa, Regulations for Hazardous Chemical Agents, 2021	OEL-RL Eight Hour TWA	2,0 ppm	10 mg/m ³
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BIOLOGICAL LIMIT VALUES

No biological exposure limits noted for the ingredients.

EXPOSURE GUIDELINES

South Africa - Regulations for Hazardous Chemical Agents, 2021 1,3-Dichloropropene (CAS 542-75-6) 1,3-Dichloropropene (CAS 542-75-6)	Can be absorbed through the skin. Carcinogenicity
US ACGIH Threshold Limit Values: Skin designation 1,3-Dichloropropene (CAS 542-75-6)	Can be absorbed through the skin.

ENGINEERING CONTROLS

General Hygiene:	<ul style="list-style-type: none"> • Wash hands and face before breaks and immediately after handling product. • Handle in accordance with good industrial hygiene and safety practice. • Use personal protective equipment as required. • Keep working clothes separate.
Equipment	Provide easy access to adequate water supply for eye flushing or skin decontamination in the work area. For field handling and application situations, refer to the pesticide end-use label for emergency water requirements.

Ventilation	For indoors, use explosion-proof general and local exhaust ventilation, process enclosures, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation (typically 10 air changes per hour) should be used. Lethal concentrations may exist in areas with poor ventilation.
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INDIVIDUAL PROTECTION MEASURES

NOTE: Pest control operators must follow the end-use pesticide label instructions for each of the task situations that require personal protective equipment.

Eyes/Face	To protect against splash and irritating mists during use or manual handling, wear: <ul style="list-style-type: none"> • Full face shield worn over safety glasses with side shields (consistent with EN 166 or equivalent), or • Full-facepiece respirator meeting standard EN 136 with organic vapour cartridge meeting standard EN 14387, or equivalent for either standard. <p>NOTE: Eye goggles are not to be worn when handling this product.</p>
Skin	Gloves: During handling or use tasks, use chemical-resistant gloves when contact with liquid product is likely. Butyl, Nitrile, Neoprene are acceptable for incidental contact (<10 minutes). Longer-term protection is provided by PPE constructed of Viton, Teflon, and EVAL barrier laminates (Silver Shield®). See standard EN374 for chemical resistant glove classifications.
Respiratory	Clothing: Wear appropriate splash-resistant clothing to prevent skin exposure. Examples include boots; apron or whole-body suits made of Tychem® and Saranex™.
Respiratory	If working in an environment where the eyes are stinging and watery due to exposure to this product, wear a full-facepiece respirator with an organic vapour cartridge meeting standard EN 14387 or equivalent.
Respiratory	For all pesticide handlers (including applicators): <ul style="list-style-type: none"> • Must wear a half-face air-purifying respirator equipped with an organic-vapour cartridge and a particulate pre-filter. • If sensory irritation (tearing, burning of the eyes or nose) is experienced and handlers remain in the application area, handlers must wear at a minimum either: an EN136 Class 2 certified full-facepiece air-purifying respirator equipped with an organic vapour cartridge and a particulate pre-filter, or a gas mask with a canister approved for organic vapour.
NOTE: Only respirators approved by the Minister of Employment and Labor may be used for Respiratory Protection.	Emergency or planned entry into unknown concentrations or IDLH conditions (greater than 2 ppm): <ul style="list-style-type: none"> • Any self-contained breathing apparatus that has a full-facepiece and is operated in a pressure-demand or other positive-pressure mode certified to EN136 Class 3.
	Escape: <ul style="list-style-type: none"> • Air-purifying respirator equipped with full-facepiece and an organic vapour cartridge. • Any air-purifying hood style CBRN escape-certified respirator certified to EN 403. • Air-purifying respirator with canisters that include the escape gas mask (canister) respirator, the gas mask (canister) respirator, and the filter self-rescuer. • Any self-contained breathing apparatus with hood or full-facepiece mask.
	Respirators certified “escape only” can only be used for escape purposes and CANNOT be used for responding to emergencies.
	When applying as a pesticide, follow end-use pesticide label instructions for respiratory protection.

Measurement	Air concentration can be measured with a direct reading detection device, such as a Sensidyne or Kitigawa pump, using its Chloropicrin detector tube. (#172S is tube number for Sensidyne).
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PERSONAL PROTECTION FOR SPILLS/EMERGENCY

Fire	If fire only, use normal fire-fighting equipment. If chemical releases and fire involved, wear recommended chemical protective clothing in conjunction with fire-fighting gear.
Spills	Minimum PPE: Full-facepiece air-purifying respirator with organic vapour cartridge and chemical-resistant gloves. Upgrade respiratory protection in accordance with the “Respiratory” section above.

Chemical Protective Clothing	<ul style="list-style-type: none"> • For small cleanup where liquid splash is unlikely, loose-fitting or well-ventilated long-sleeved shirt, long pants or coveralls, and socks with shoes may be worn. If contact occurs, remove contaminated clothing immediately to prevent skin irritation or burn. • For cleanup where liquid splash is likely, a liquid impervious chemical coverall with booties and head cover may be worn, for example, Tyvek® QC or Saranex™ SL. • In confined areas or areas where substantial vapour levels exist, wear a vapour-tight suit made of a material such as Tychem® TK or Kappler CPF 3. • Use a Dupont™ Responder® level suit or equivalent for use against permeation by product for periods greater than 8 hours. Teflon® withstands permeation from 4 to 8 hours.
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9. PHYSICAL AND CHEMICAL PROPERTIES

[NOTE: Information in this Section is based on the formulated Product unless otherwise indicated.]

Physical State	Liquid	
Colour	Pale clear yellow. Brown if in prolonged contact with metal packaging.	
Odour	Sweet, intensely irritating. Chloropicrin in product is readily identifiable by smell.	
Odour Threshold	700 ppb in 2-5 seconds [Chloropicrin]	
Melting Point	Not available.	
Freezing Point	Not available.	
Boiling Point, Initial	112 °C (233.6 °F) @ 757 mm Hg (100.925kPa) [Chloropicrin] 107 °C (225 °F) [1,3-Dichloropropene]	
Boiling Range	Not available.	
Flammability (solid, gas)	Flammable liquid.	
Flammability Limits in air, Upper % by volume	Not available.	
Flammability Limits in air, Lower % by volume	Not available.	
Flash Point	48.0 °C (118.4 °F) Seta Flash Closed Cup	
Autoignition Temperature	Not available.	
Decomposition Temperature	127 °C (261 °F) [for Chloropicrin] At its boiling point, Chloropicrin slowly decomposes.	
pH	4.02 in 1% v/v dispersion mixture in deionized water @ 22 °C (OPPTS guideline 830.7000)	
Viscosity (Kinematic)	1.577 mm ² /s (centistokes) @ 20 °C, Method: OECD 114	
Partition Coefficient (n-octanol/water)	1.82 1,3-Dichloropropene (CAS 542-75-6) 2.38 Chloropicrin (CAS 76-06-2)	
Solubility	Not available.	
Vapour Pressure	15.65 mm Hg @ 20 °C (68 °F) [Chloropicrin]	Volatile
Vapour Density	5.7 (air = 1) [Chloropicrin]	
Evaporation Rate	Fast.	
Relative Density (Specific Gravity)	1.389 @ 18 °C/18 °C (64.4 °F)	
Density	1.4152 kg/L or 1415.2 g/L @ 20 °C (68 °F) 11.81 lbs/gal	
Particle Characteristics	Not applicable for liquids	
% Volatile	100	
Specific Heat of Combustion	5.704 kJ/g (estimated)	
Flammable Components	39.25% (by mass)	
Corrosive to Metals	Not corrosive to carbon steel containers at 25 °C for one year.	

Conversion

To convert inhalation results for Chloropicrin:

$$\begin{array}{lll} \text{mg/m}^3 \text{ to ppm} & \times 0.14875 \text{ (NTP)} & \times 0.13628 \text{ (STP)} \\ \text{ppm to mg/m}^3 & \times 6.72 \text{ (NTP)} & \times 7.3380 \text{ (STP)} \end{array}$$

10. STABILITY AND REACTIVITY

Reactivity	<ul style="list-style-type: none"> • The product is stable and non-reactive under normal conditions of use, storage and transport. • Hazardous polymerization is not known to occur. • Cylinders containing Chloropicrin can rupture or burst when subjected to fire or temperatures above 60 °C (140 °F).
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Chemical Stability	<ul style="list-style-type: none"> Product is stable under normal temperatures and pressures.
Possibility of Hazardous Reactions	<ul style="list-style-type: none"> No dangerous reaction known under conditions of normal use. Chemical reaction may occur if mixed with or allowed to contact oxidizing agent. If heated under confinement, may develop accelerated decomposition.
Conditions to Avoid	<ul style="list-style-type: none"> Heat may cause the cylinders to rupture or burst. Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Avoid contact with incompatible materials. Contamination with water can lead to the generation of corrosive constituents over time. Unstable under fire conditions. Avoid temperatures above 60 °C (140 °F).
Incompatible Materials	<ul style="list-style-type: none"> Do not use with aluminum and its alloys, organic amines, aniline in presence of heat, sodium methoxide, magnesium and its alloys, alkali metals, strong oxidizing agents, copper, zinc, cadmium, magnesium, acids, bases. Degrades PVC, dissolves rubber compounds and fiberglass resin, and is mildly corrosive to carbon steel in presence of moisture. [Chloropicrin]
Hazardous Decomposition Products	<ul style="list-style-type: none"> Phosgene, hydrogen chloride, carbon monoxide, carbon dioxide, chlorine, nitrosyl chloride, and nitrogen oxides at high temperatures.

11. TOXICOLOGICAL INFORMATION

[NOTE: Information in this Section is based on the formulated Product unless otherwise indicated.]

Information on Possible Routes of Exposure	<ul style="list-style-type: none"> Eyes (primarily due to vapours in air) Respiratory tract (by inhalation of vapours) Skin (primarily by contact with liquid) Ingestion (causes digestive tract burns)
Signs & Symptoms of Exposure	<p>Early symptoms of low exposure are stinging/tearing of the eyes and irritation of the throat. May cause an allergic skin reaction. Nausea or vomiting may occur. Burning pain and severe corrosive skin damage and eye damage.</p> <p>Vapour Contact in order of increasing exposure levels:</p> <ul style="list-style-type: none"> Eye irritation, stinging, tearing, redness, swelling, and blurred vision at low exposure Throat irritation, coughing Dripping nasal mucous; Nausea, vomiting, abdominal pain, headache Dizziness, drowsiness, unconsciousness Breathing difficulty, cyanosis (bluish looking skin/lips) Pulmonary edema, and death due to pulmonary edema <p>Liquid Contact in order of increasing exposure levels:</p> <ul style="list-style-type: none"> Skin redness, blistering, rash, contact dermatitis Skin, eye, and portal tissue burns

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Toxicity	Fatal if inhaled. Toxic if swallowed or if in contact with skin.
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ACUTE TOXICOLOGY STUDIES:

Product - ATE_{mixture} (calculated)

LC ₅₀ , inhalation	0.216 mg/L, vapour
LD ₅₀ , oral	56.39 mg/kg
LD ₅₀ , dermal	569.25 mg/kg

Trichloronitromethane (Chloropicrin) [CAS 76-06-2]

LC ₅₀ , inhalation rat	18.9 ppm (0.127 mg/L) / 4-hour, vapour
LD ₅₀ , oral rat	37.5 mg/kg/bw, 14-day observation
LD ₅₀ , dermal rabbit	926 mg/kg, 4-hr, 14-day observation

1,3-Dichloropropene [CAS 542-75-6]

LC ₅₀ , inhalation rat	2.7 - 3.7 mg/L OECD 403 (1981), 4-hour, vapour
LD ₅₀ , oral rat	> 150 mg/kg OECD 401 (1981)
LD ₅₀ , dermal rabbit	> 333 mg/kg OECD 402 (1981)
Irritation (other route)	Irritating to respiratory system

Trichloronitromethane (Chloropicrin) [CAS 76-06-2] - Human Response Studies

> 2000 ppb / 10 minutes	Life-threatening effects including pulmonary edema can occur.
> 580 ppb / 8 hours	Life-threatening effects including pulmonary edema can occur.
> 300 ppb	Respiratory symptoms may increase in severity and include difficulty breathing.
> 150 ppb	Headache, nausea, and vomiting may occur. These symptoms are temporary and reversible following termination of exposure.
73 to 150 ppb	Mild irritant to eyes and throat.
73 ppb	Sensory irritation threshold (eye irritation).

SHORT TERM (ACUTE, IMMEDIATE), DELAYED, AND CHRONIC (LONG-TERM EFFECTS):

Skin Corrosion/Irritation	Brief contact may cause moderate skin irritation with local redness. May cause drying and flaking of the skin. Direct contact with liquid can cause irritation, blistering, or burns.
Serious Eye Damage/Irritation	Direct contact with liquid can cause serious eye damage such as burns and can result in permanent damage, such as blindness. Vapour may cause severe lacrimation (tears), eye irritation, redness, slight corneal injury, blurred vision experienced as mild discomfort that stops following termination of exposure.
Respiratory Sensitization	Not classified.
Skin Sensitization	May cause allergic contact dermatitis. 25% of test animals (guinea pigs) observed with skin sensitivity. (OECD 406)
Mutagenicity	Not classified. Chloropicrin: In vitro studies produced mixed and contradictory results for genetic toxicity and mutation. In vivo studies are negative for mutation, DNA damage and chromosome damage. 1,3-Dichloropropene: In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.
Carcinogenicity [Chloropicrin]	South African Regulations for Hazardous Chemical Agents 2021 Not listed. IARC - International Agency for Research on Cancer Not listed. NTP - National Toxicology Program Not listed. At least six long-term bioassays have been completed with Chloropicrin to evaluate the potential of this compound to cause chronic and/or carcinogenic effects. Neoplasms were not seen in Chloropicrin-treated animals at an incidence greater than concurrent or historic control animals.
Carcinogenicity [1,3-Dichloropropene]	South African Regulations for Hazardous Chemical Agents 2021 Suspected human carcinogen IARC - International Agency for Research on Cancer 2B - Possibly carcinogenic to humans NTP - National Toxicology Program Reasonably Anticipated to be a Human Carcinogen Has been shown to cause cancer in laboratory animals by the oral route. Inhalation exposure resulted in an increase in the normal occurrence of benign lung tumors in male mice.

Reproductive Toxicity	<p>Not classified.</p> <p>Chloropicrin: Inhalation exposure to Chloropicrin of male and female rats in a 2-generation reproductive function study produced an NOAEL of 1.0ppm for systemic toxicity and greater than 1.5ppm for developmental toxicity and reproductive parameters. These data indicate that reproduction fitness is not adversely affected by Chloropicrin inhalation even at systemically toxic levels.</p> <p>1,3-Dichloropropene: In animal studies, did not interfere with reproduction.</p>
Developmental Toxicity	<p>Not classified.</p> <p>Chloropicrin: Developmental toxicity studies in rats and rabbits conducted by the inhalation route of exposure showed that the NOAEL for maternal toxicity in rats was 0.4ppm and 1.2ppm for fetal toxicity. In rabbits NOAEL for maternal toxicity was 0.4ppm and 1.2ppm for fetal toxicity indicating that the developing fetus is not a target tissue for Chloropicrin toxicity.</p> <p>1,3-Dichloropropene: Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.</p>
Effects on or via Lactation	Not classified.
Specific Target Organ Toxicity (Single Exposure)	<p>Respiratory system irritation, lungs.</p> <p>Single exposure to high concentration can cause pulmonary edema and damage to bronchial epithelium.</p>
Specific Target Organ Toxicity (Repeated Exposure)	<p>Chloropicrin: Repeated-Dose Toxicity:</p> <p>Subchronic inhalations studies in mice and rats established that respiratory tissue is the target for Chloropicrin inhalation toxicity and that portal-of-entry effects occur in the upper respiratory tissue of animals inhaling Chloropicrin vapour for 90 days at concentrations at or above 0.1ppm (0.67mg/m³).</p> <p>Chloropicrin: Long-term Toxicity:</p> <p>Chronic inhalation studies in mice and rats established that the respiratory tissue is the target for Chloropicrin inhalation toxicity and that tissue of the entire respiratory is subject to inflammatory damage. The NOAEL for respiratory system changes in chronic inhalation bioassays is 0.1 ppm for rats and mice.</p> <p>1,3-Dichloropropene: In animals, effects have been reported on the following organs: Bladder, nasal tissue, liver, lung, gastrointestinal tract, respiratory tract, blood-forming organs (bone marrow & spleen).</p>
Aspiration Hazard	May be fatal if swallowed and enters airways.
Ingestion	Ingestion of liquid Chloropicrin can cause burns to and produce permanent damage to the mouth, throat, esophagus and stomach. Ingestion of large quantities of Chloropicrin liquid can be fatal.
Confirmation of Exposure	There is no biological indicator for exposure to Chloropicrin.

12. ECOLOGICAL INFORMATION

NOTE: There is no ecological information for the product. Information below is presented for each of the main components.

CHLOROPICRIN INFORMATION

Ecotoxicity	Very toxic to aquatic life.
Aquatic Toxicity	<p>Fish:</p> <ul style="list-style-type: none"> • LC₅₀ = 0.0048 mg/L, 96 hr, Oncorhynchus mykiss (rainbow trout), semi-static • NOEC = 0.0025 mg/L, 90 d growth, Oncorhynchus mykiss (rainbow trout): ELS flow through <p>Invertebrates:</p> <ul style="list-style-type: none"> • EC₅₀ = 0.15 mg/L, 48 hr, Daphnia magna (crustacean), acute, static • NOEC = 0.00427 mg/L, 21 d, Daphnia magna (crustacean): static, reproduction <p>Algae:</p> <ul style="list-style-type: none"> • E_rC₅₀ = 0.00016 mg/L, 72 hr, Selenastrum Capricornutum (algae), static, Growth rate • E_bC₅₀ = 0.00011 mg/L, 72 hr, Selenastrum Capricornutum (algae), static, Biomass <p>Plants:</p> <ul style="list-style-type: none"> • E_rC₅₀ = 0.0379 mg/L, 7 d, Lemna minor (higher plant), semi-static (Fronds EC₅₀)

Terrestrial Toxicity	<p>Bees</p> <ul style="list-style-type: none"> LD₅₀ = > 100 µg/L, 48 hr, Honeybee dermal <p>Birds</p> <ul style="list-style-type: none"> NOEC = 96 ppb, 4 hours per day for 5 days, Acute avian inhalation <p>Vegetation</p> <ul style="list-style-type: none"> NOEC = 100 µg/L air, Exposure 6 hours per day for two days, Terrestrial seedling emergence and vegetative vigor.
Persistence and Biodegradability (Environmental Fate)	<ul style="list-style-type: none"> Atmospheric half-life estimated to be 1 day. Initial photolysis products include phosgene, nitrosyl chloride, and chlorine; subsequently nitrogen dioxide and dinitrogen tetraoxide. Aquatic photolysis half-life = 1.3 days Aerobic soil metabolism half-life = 4.5-10 days; major degradate is carbon dioxide. Evaporation half-life of Chloropicrin in water (light) = 4.8-9.4 minutes; (dark) 4.1-15.7 minutes).
Bioaccumulative Potential	Due to low log K _{ow} (<5.0) Chloropicrin is not expected to bioaccumulate.
Mobility in Soil	Data not available.
Other Adverse Effects (i.e. ozone)	Data not available.
Partition Coefficient (n-octanol/water)	2.38 log K _{ow}
Results of PBT and vPvB Assessment	This ingredient contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

1,3-DICHLOROPROPENE INFORMATION

Ecotoxicity	Material is highly toxic to aquatic organisms on an acute basis.
Aquatic Toxicity	<p>Fish:</p> <ul style="list-style-type: none"> LC₅₀ = 2.78 mg/L, 96 hr, <i>Oncorhynchus mykiss</i> (Rainbow trout) LC₅₀ = 0.87 mg/L, 96 hr, <i>Cyprinodon variegatus</i> (Sheepshead minnow) LC₅₀ = 3.7 mg/L, 96 hr, <i>Lepomis macrochirus</i> (Bluegill sunfish) NOEC = 0.0318 mg/L, 33 d, <i>Pimephales promelas</i> (Fathead minnow), flow-through test <p>Invertebrates:</p> <ul style="list-style-type: none"> EC₅₀ = 3.58 mg/L, 48 hr, <i>Daphnia magna</i> (Water flea) EC₅₀ = 0.64 mg/L, 48 hr, Eastern oyster (<i>Crassostrea virginica</i>) NOEC = 0.0701 mg/L, 21 d, <i>Daphnia magna</i> (Water flea) <p>Algae:</p> <ul style="list-style-type: none"> EbC₅₀ = 14.9 mg/L, 72 hr, <i>Pseudokirchneriella subcapitata</i> (Green algae), static test, biomass <p>Plants:</p> <ul style="list-style-type: none"> EC₅₀ = 2.35 mg/L, 120 hr, diatom <i>Navicula</i> sp. EC₅₀ = 14.56 mg/L, 14 d, <i>Lemna gibba</i>
Terrestrial Toxicity	<p>Birds:</p> <ul style="list-style-type: none"> Moderately toxic to birds on an acute basis (LD₅₀ between 51 and 500 mg/kg). Practically non-toxic to birds on a dietary basis (LC₅₀ > 5000 ppm). Oral LD₅₀ = 139.8 mg/kg bodyweight, <i>Colinus virginianus</i> (Bobwhite quail), mortality Dietary LC₅₀ = >6243 mg/kg, <i>Anas platyrhynchos</i> (Mallard duck), diet <p>Soil Earthworms:</p> <ul style="list-style-type: none"> LC₅₀ = 55.6 mg/kg, 14 d, <i>Eisenia fetida</i>
Persistence and Biodegradability (Environmental Fate)	<p>Biodegradation may occur under aerobic conditions (oxygen present). 10-day Window: Fail</p> <p>Biodegradation: 4.9% Method: OECD Test Guideline 301D or Equivalent</p> <p>Theoretical Oxygen Demand 1.281 mg/mg</p> <p>Biological Oxygen Demand 0.148 mg/mg</p> <p>Stability in Water (1/2-life) 2.3 - 4.75 days</p> <p>Photodegradation 7 - 12 hr (Atmospheric 1/2-life)</p>
Bioaccumulative Potential	No data available for this product. For similar material(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Mobility in Soil	Data not available. For similar material(s): Potential for mobility in soil is very high (Koc between 0 and 50). Partition coefficient (Koc): 44.7 Measured
Other Adverse Effects (i.e. ozone)	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected.
Partition Coefficient (n-octanol/water)	1.82 - 2.1 log K _{ow} (Measured)
Results of PBT and vPvB Assessment	This ingredient contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher

SURFACTANT INFORMATION

Aquatic Toxicity	Acute LC ₅₀ = ca. 64 mg/L, 96 hr, <i>Oncorhynchus mykiss</i> (rainbow trout), static test
Toxicity to Microorganisms	IC10 (<i>Pseudomonas putida</i>): > 1,000 mg/l, 6 hours exposure, End point: Growth inhibition
Chronic Aquatic Toxicity	For component in Surfactant: Calcium alkylarylsuphonate: Harmful to aquatic life with long lasting effects.
Biodegradability	Biodegradation: 55%, 29 days, Method: OECD Test Guideline 301B
Other Adverse Effects (i.e. ozone)	The Surfactant does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Results of PBT and vPvB Assessment	This ingredient contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher

13. DISPOSAL CONSIDERATIONS

Cylinder Management	<ul style="list-style-type: none"> • Cylinders should be returned according to instructions on the cylinder. • Close the valve when the cylinder is empty and install the safety cap(s) and bonnet. • Do not ship cylinders without safety caps or valve protection bonnets. • When a cylinder is partially full and there is no further requirement for the product, contact the distributor for return instructions.
Safe Handling	<ul style="list-style-type: none"> • Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a national pollutant discharge elimination system (NPDES) permit. • Do not discharge effluent containing this product to sewer systems.
Container Reuse	<ul style="list-style-type: none"> • Do not refill this container with any other product and do not use this container for any purpose other than to transport and lawfully dispense this product.
Disposal of Product	<ul style="list-style-type: none"> • Follow approved label for Pesticide disposal directions. • Do not contaminate water, food, or feed by storage or disposal of the chemical or its container. Do not allow this material to drain into sewers/water supplies. Pesticide wastes are toxic. Improper disposal of excess pesticide or rinsate is a violation of national law. • If wastes cannot be disposed of by use according to label instructions, contact your Pesticide or Environmental Control Agency, or the product manufacturer or distributor for guidance.
Container Disposal	<ul style="list-style-type: none"> • Cylinders are the property of the registrant or distributor and must be returned promptly after use for refilling or for disposal. • Since emptied containers, such as drums, may retain product residue, follow pesticide use label instructions to clean container before final disposal, if instructions are provided. Otherwise, contact the product manufacturer or distributor for guidance.

14. TRANSPORT INFORMATION

US DOT, TDG, IMDG

UN Number	UN3489
Proper Shipping Name	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Chloropicrin; 1,3-Dichloropropene)
Transport Hazard Class(es)	6.1 (3, 8)
Packing Group	I
Toxic-Inhalation Hazard	Yes (relevant for transport in USA)
Hazard Zone	B (relevant for transport in USA)
Environmental Hazards	Aquatic
Marine Pollutant	Yes (Chloropicrin; 1,3-Dichloropropene)
Hazardous Substance (Reportable Quantity - RQ)	100 lbs (45.4 kgs) is RQ for 1, 3-Dichloropropene (relevant for transport in USA)
Transport in Bulk per MARPOL	Not applicable based on intended packaging sizes
Labels/Placards	US DOT: Class 6.1, Poison Inhalation Hazard Class 8 Corrosive IMDG, TDG, ADR, United Nations: Class 6.1, Toxic Substances Class 8 Corrosive
Air Transport (IATA / ICAO)	Forbidden for any amount
Emergency Guide	TREC (Transport Emergency Card) for UN3489 ERG 154 (Emergency Response Guide for USA)
IMDG EmS	F-E, S-D (General Fire Schedule, Spillage Schedule Toxic Substances)
Special Precautions	Packages must be secured against all movement during transport. Keep markings, labels or placards on package until cleaned and purged of residue including bulk and non-bulk packages. For cylinders, ensure valve is closed and safety cap(s) and valve protection are in place prior to transport.

15. REGULATORY INFORMATION

INTERNATIONAL

Chemical Weapons Convention:

Chloropicrin is listed as a Schedule 3 substance subject to declaration and reporting.

For reporting imports and exports of the Chloropicrin in this product, use 76% to calculate.

REPUBLIC OF SOUTH AFRICA

Regulations for Hazardous Chemical Agents on 29 March 2021, of the Occupational Health and Safety Act No. 85 of 1993

National Road Traffic Act No. 93 of 1996 as amended

Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act No. 36 of 1947 as amended

Globally Harmonized System of Classification and Labelling of Chemicals (GHS) [SANS 10234:2019 (edition-2)]

16. OTHER INFORMATION

This SDS prepared in accordance with Regulations for Hazardous Chemical Agents on 29 March 2021 and the U.N. Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 9th revised edition, 2021

HAZARD RATING SYSTEM (USA)

	NFPA 704*
Category	Chloropicrin
Health	4
Flammability	2
Reactivity	3



Hazard Key
4 - Severe
3 - Serious
2 - Moderate
1 - Slight
0 - Minimal

* NFPA 704 - Standard System for the Identification of the Hazards of Materials for Emergency Response

ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate per GHS classification guidelines
CAS	Chemical Abstracts Service
CBRN	Chemical, Biological, Radiological, and Nuclear
CFR	Code of Federal Regulations (United States)
CHEMTREC	Chemical Transportation Emergency Center
EC ₅₀	Half Maximal Effective Concentration: concentration of a material in water, a single dose which is expected to cause a biological effect on 50% of a group of test species.
GHS	Globally Harmonized System
IDLH	Immediately Dangerous to Life and Health: the maximum airborne concentration from which one could escape (within 30 minutes) without any escape-impairing symptoms or any irreversible health effects.
IMDG	International Maritime Dangerous Goods
LC ₅₀	Lethal Concentration: median dose at which 50% of test animals die from inhalation.
LD ₅₀	Lethal Dose: median dose at which 50% test animals die from oral or dermal exposure.
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health (USA)
NOAEL	No Observable Adverse Effect Level
NOEC	No Observed Effect Concentration
NTP	Normal Temperature and Pressure: 20 °C and 760 mmHg or 68 °F and 1 atm
OECD	Organisation for Economic Co-operation and Development
OEL-RL	Occupational Exposure Limit - Restricted Limit
ppb	Part(s) per billion
ppm	Part(s) per million
PPE	Personal Protective Equipment
STP	Standard Temperature and Pressure: 0 °C and 760 mmHg or 32 °F and 1 atm
TDG	Transport of Dangerous Goods (Canada)
TWA	Time Weighted Average: airborne concentration for a worker in an 8-hour day.
US DOT	United States Department of Transportation

KEY LITERATURE REFERENCES AND SOURCES OF DATA:

- Toxnet - Hazardous Substance Data Base (United States Center for Disease Control)
- OECD eChem portal
- ECHA database (European Chemicals Agency)
- Manufacturer data for US EPA
- Technical Chloropicrin SDS
- DD92® SDS
- Proprietary Surfactant SDS

VERSION 5 DATE: April 21, 2023

Revision History

02-19-16	Initial Version
04-11-16	Sections 3, 9: Revised ingredient information and physical properties
07-15-16	Section 3: Revised concentrations of ingredients to reflect w/w %
01-18-18	Section 8: Revised exposure limit type information
04-21-23	SDS: Revised to comply with Regulation for Hazardous Chemical Agents, 2021
	Section 2: Added Chemicals Under Pressure hazard category and relevant statements
	Section 2: Removed the Exclamation Mark pictogram
	Section 11: Revised LD ₅₀ acute dermal toxicity for Chloropicrin

WARRANTY

Notice: The information above is believed to be accurate and represents the best information currently available to us. Seller warrants that this product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.