

HEALT H	FIRE	REACT.	PPE
2	3	0	E

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product Name: CI Formula 27X
Product Use: Organic drain treatment; soap manufacturing additive; fragrance additive; cleaning solvent
Restrictions on Use: For industrial and commercial use. Not for personal cleansing.
Manufacturer / Distributor: Chem International (a division of Aliysha Enterprises Ltd.)
Address: 10770-180 Street NW, Edmonton, AB T5S 2S4
Phone: 1.800.665.7287 | 780.483.8827
Website: www.chemintonline.com
Emergency Number: CANUTEC: 1.888.226.8832

SECTION 2 — HAZARDS IDENTIFICATION

2.1 GHS / WHMIS 2015 Classification

Hazard Class	Category	Hazard Statement
Flammable Liquid	Category 3	H226 — Flammable liquid and vapour
Skin Corrosion/Irritation	Category 2	H315 — Causes skin irritation
Skin Sensitization	Category 1	H317 — May cause an allergic skin reaction
Aspiration Hazard	Category 1	H304 — May be fatal if swallowed and enters airways
Acute Aquatic Toxicity	Category 1	H400 — Very toxic to aquatic life
Chronic Aquatic Toxicity	Category 1	H410 — Very toxic to aquatic life with long lasting effects

2.2 Label Elements

Signal Word: DANGER
Hazard Pictograms: Flame (GHS02) · Exclamation Mark (GHS07) · Health Hazard (GHS08) · Environment (GHS09)

DANGER — PRECAUTIONARY STATEMENTS:

P210 — Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P233 — Keep container tightly closed.
P240 — Ground/bond container and receiving equipment.
P241 — Use explosion-proof electrical, ventilating, and lighting equipment.
P242 — Use only non-sparking tools.
P243 — Take precautionary measures against static discharge.
P261 — Avoid breathing mist, vapours, or spray.
P264 — Wash hands thoroughly after handling.
P272 — Contaminated work clothing must not leave the workplace.
P273 — Avoid release to the environment.
P280 — Wear protective gloves, protective clothing, eye protection, and face protection.
P301 + P310 — IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
P303 + P361 + P353 — IF ON SKIN (or hair): Remove/take off contaminated clothing immediately. Rinse skin with water.
P331 — Do NOT induce vomiting.
P333 + P313 — If skin irritation or rash occurs: Get medical advice/attention.
P362 — Take off contaminated clothing and wash before reuse.
P370 + P378 — In case of fire: Use CO₂, dry chemical, appropriate foam, water spray or fog.
P391 — Collect spillage.
P403 + P235 — Store in a well-ventilated place. Keep cool.
P405 — Store locked up.
P501 — Dispose of contents/container in accordance with all federal, provincial, and local regulations including CEPA.

2.3 Other Hazards

Combustible liquid and vapour. May cause eye irritation. May cause skin and respiratory tract irritation. May cause allergic skin reaction. Pre-existing disorders of the skin or lungs (e.g. asthma-like conditions) may be aggravated by exposure.

2.4 Unknown Acute Toxicity

Not applicable.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable — this product is a mixture.

3.2 Mixtures

Chemical Name	Weight %	CAS No.	Molecular Formula
d-Limonene (CI Formula 27X)	≤ 100%	5989-27-5	C $\blacksquare\blacksquare\blacksquare$ H $\blacksquare\blacksquare\blacksquare$

Note: CI Formula 27X is a concentrated d-Limonene-based formulation. Specific percentages of minor components withheld as trade secrets in accordance with applicable Canadian regulations.

SECTION 4 — FIRST AID MEASURES

4.1 Description of First Aid Measures

- Inhalation:** Remove person to fresh air immediately. Give artificial respiration only if breathing has stopped. If breathing is difficult, administer oxygen. Seek immediate medical attention. Symptoms may include irritation of the nose, throat, and airways; headache and dizziness.
- Skin Contact:** Remove contaminated clothing immediately. Wash affected area with soap and water for 15–20 minutes. If irritation persists, seek medical attention. Completely decontaminate clothing before reuse or discard.
- Eye Contact:** Immediately flush eye(s) with gently flowing lukewarm water for 30 minutes, holding eyelids open to ensure complete irrigation of eye tissue. If irritation persists, seek medical attention.
- Ingestion:** Seek medical attention immediately. If individual is drowsy or unconscious, do not give anything by mouth and do not induce vomiting. Place individual on left side with head down. Have individual rinse mouth thoroughly with water. Contact a physician or poison control centre for advice. Do not leave individual unattended. **Do NOT induce vomiting** — aspiration hazard.

4.2 Most Important Symptoms and Effects — Acute and Delayed

- Inhalation:** Irritation of nose, throat, and airways; headache; dizziness at elevated concentrations.
- Skin Contact:** Moderate skin irritant. Allergic skin reaction possible — caused by oxidation products of d-limonene formed upon air exposure.
- Eye Contact:** Very mild eye irritant.
- Ingestion:** Swallowing small amounts during normal handling not likely to cause harmful effects. Swallowing large amounts may be harmful. Aspiration into airways may cause severe lung damage or death.

4.3 Immediate Medical Attention and Special Treatment

Treat symptomatically. If ingestion occurs, evaluate aspiration risk before considering emesis. Show product label or this SDS to attending medical personnel.

SECTION 5 — FIREFIGHTING MEASURES

5.1 Extinguishing Media

- Suitable:** Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Multipurpose or alcohol-resistant foams recommended for flammable/combustible liquid fires.
- Unsuitable:** High-velocity water jets directed at burning liquid surface (may spread fire).

5.2 Special Hazards Arising from the Substance or Mixture

During a fire, CO, CO₂, and other irritating/toxic gases and fumes may be generated. Vapours from heated liquid can accumulate in confined spaces creating an explosion hazard — vapours are heavier than air and may travel along ground to distant ignition sources. Closed containers may rupture violently when heated. Never use welding or cutting torch on or near containers (even empty) — residual product can ignite explosively.

5.3 Advice for Firefighters

Protective Equipment: Wear NIOSH-approved self-contained breathing apparatus (SCBA) and full protective clothing. Do not enter fire area without proper respiratory protection.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

General: Wear appropriate PPE. Ventilate area. Only enter area with PPE. Eliminate all ignition sources (flares, flames, pilot lights, electrical sparks). Pay attention to spread of vapours at ground level (heavier than air) and wind direction. Persons not wearing PPE must be excluded from spill area until clean-up is complete.

Large Spills: Contact fire and emergency services and Chem International for advice.

6.2 Environmental Precautions

Prevent material from entering sewers, waterways, or confined spaces. Very toxic to aquatic life — notify local authorities if significant spillages cannot be contained.

6.3 Methods and Material for Containment and Cleaning Up

Containment: Do not touch spilled material. Stop or reduce leak if safe to do so. Contain spill with earth, sand, or non-reactive absorbent material.

Small Spills: Soak up with non-reactive absorbent material. Place in suitable, covered, labelled containers. Flush area with water. Contaminated absorbent material poses same hazards as spilled product.

Disposal: Dispose in accordance with all federal, provincial, and local regulations including CEPA.

SECTION 7 — HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Safe Handling: Use proper equipment for lifting and transporting all containers. Apply sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Keep away from heat, sparks, open flames, and hot surfaces.

7.2 Conditions for Safe Storage

Storage Conditions: Store in a cool, dry, dark, well-ventilated area. Storage temperature: 0°C to 10°C. Store in original packaging. Avoid partially filled containers. Shelf life: 6 months when stored in original packaging at stated conditions. Store locked up.

Incompatibilities: Air or oxygen, strong oxidizing agents, iodine pentafluoride, tetrafluoroethylene, sulphur, tert-butyl peroxybenzoate, Lewis acids, and Ziegler-Natta catalysts.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Limits

Component	Regulation	Type	Value
d-Limonene	WEEL	TWA	30 ppm

8.2 Engineering Controls

Ventilation: Mechanical ventilation (dilution or local exhaust), process or personnel enclosure, and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to compensate for exhaust systems.

Emergency Equipment: Emergency shower and eyewash must be available, tested regularly, and located in close proximity to work area.

8.3 Personal Protective Equipment

PPE Category	Requirement
Eyes / Face	Chemical goggles, full-face shield, or full-face respirator at all times when product is handled. Do not wear contact lenses — they may contribute to severe eye injury.
Hand Protection	Impervious chemically resistant gloves (rubber or PVC) at all times. Wash contaminated gloves and dry thoroughly before reuse.
Skin and Body	Chemical-resistant body suit, apron, and/or coveralls at all times. Impervious chemically resistant boots required.
Respiratory	NIOSH-approved air-purifying respirator with appropriate cartridge/filter where airborne concentrations may exceed exposure limits. Use positive-pressure air-supplied respirator for uncontrolled releases or unknown exposure levels.

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SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic Physical and Chemical Properties

Physical State	Liquid	Colour	Colourless
Odour	Characteristic fresh citrus-like odour	Odour Threshold	0.001 ppm
pH	Not available	Flash Point	45°C (closed cup)
Melting / Freezing Point	−96.9°C	Initial Boiling Point	175–176°C
Auto-ignition Temp.	237°C	Decomposition Temp.	450°C
Flammability	Flammable and combustible liquid	Upper Flammable Limit	6.1% (V)
Lower Flammable Limit	0.7% (V)	Vapour Pressure	1.6 mmHg at 20°C
Vapour Density (Air=1)	4.70 (heavier than air)	Specific Gravity (H ₂ O=1)	0.84
Solubility	Practically insoluble in water; soluble in ethanol and diethyl ether	Log POW (n-octanol/water)	4.57
Viscosity	1.10–1.11 cSt at 25°C	Molecular Formula	C ₁₀ H ₁₆
Molecular Weight	136.24 g/mol	Evaporation Rate	Not available

Explosive Properties Note: If product is heated above its flash point (45°C), it will produce vapours sufficient to support combustion. Vapours are heavier than air and may travel along ground to distant ignition sources including pilot lights, flames, and electrical sparks. Never use welding or cutting torch on or near containers (even empty) — residual product can ignite explosively.

SECTION 10 — STABILITY AND REACTIVITY

Reactivity: Limonenes are very sensitive to air or oxygen — react rapidly forming hydroperoxides. Oxidation products of d-limonene are responsible for allergic skin sensitization.

Chemical Stability: Normally stable under recommended storage conditions.

Possibility of Hazardous Reactions: Dipentene (d,l-limonene) polymerizes in the vapour phase at 175–550°C.

Conditions to Avoid: Open flames, sparks, electrostatic discharge, heat, elevated temperatures, other ignition sources, air, sunlight.

Incompatible Materials: Air or oxygen, strong oxidizing agents, iodine pentafluoride, tetrafluoroethylene, sulphur, tert-butyl peroxybenzoate, Lewis acids, and Ziegler-Natta catalysts.

Hazardous Decomposition Products: Carbon dioxide, carbon monoxide, hydrocarbons.

SECTION 11 — TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity Data — d-Limonene

Test	Species	Result
Oral LD50	Rat	4,400 mg/kg
Dermal LD50	Rabbit	> 5,000 mg/kg
Inhalation LC50	—	Not available

11.2 Toxicological Classification

Category	Classification
Skin Corrosion / Irritation	Moderate skin irritant
Serious Eye Damage / Irritation	Very mild eye irritant
Respiratory / Skin Sensitization	Positive results of skin sensitization in humans and animals. Allergic response caused by oxidation products of d-limonene formed upon air exposure.
Germ Cell Mutagenicity	Available information does not suggest mutagenicity
Carcinogenicity (IARC)	Group 3: Not classifiable as to carcinogenicity to humans
Reproductive Toxicity	Available information does not suggest developmental toxicity
STOT — Single Exposure	Not available
STOT — Repeated Exposure	Not available
Aspiration Hazard	May be fatal if swallowed and enters airways. Based on kinematic viscosity — similar to turpentine. Aspiration may cause severe lung irritation, lung tissue damage, or death.

Note on Synergistic Properties: d-Limonene enhances skin absorption and has been studied as a cancer therapy agent. In animal studies, d-limonene has shown inhibition of tumour formation when administered with or following treatment with known carcinogens (IARC Group 3).

SECTION 12 — ECOLOGICAL INFORMATION

12.1 Ecotoxicity — d-Limonene

Test	Organism	Result
Toxicity to Algae	Not available	—
LC50 Fish (96h)	Pimephales promelas (fathead minnow)	0.61–0.79 mg/L
LC50 Aquatic Invertebrates (48h)	Daphnia magna	0.577 mg/L

Aquatic Toxicity Warning: CI Formula 27X is very toxic to aquatic life with long lasting effects (H400 / H410). Prevent any release to waterways, storm drains, or sewers. Listed as a marine pollutant under Canadian TDG Regulations, Schedule III.

12.2 Persistence and Degradability

Readily biodegradable.

12.3 Bioaccumulative Potential

Estimated BCF of 660 — high potential for bioconcentration in aquatic organisms. Log POW = 4.57 (experimental).

12.4 Mobility in Soil

If released to soil, d-limonene is expected to have low mobility based on an estimated Koc of 1,300. Expected to adsorb to suspended solids and sediment in water.

SECTION 13 — DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Residues / Unused Product: Dispose in accordance with all federal, provincial, and local regulations including the Canadian Environmental Protection Act (CEPA).

Contaminated Packaging: Dispose in accordance with all federal, provincial, and local regulations including CEPA. Do not reuse containers for food or beverage purposes.

SECTION 14 — TRANSPORT INFORMATION

Parameter	TDG (Canada)	DOT (USA)	IMDG (Sea)	IATA (Air)
UN Number	UN 2052	UN 2052	UN 2052	UN 2052
Proper Shipping Name	DIPENTENE	DIPENTENE	DIPENTENE	DIPENTENE
Hazard Class	3	3	3	3
Packing Group	III	III	III	III
Marine Pollutant	Yes — Schedule III	—	Yes	—
Limited Qty. Index	5 L	—	—	—

TDG Note: Secure containers (full and/or empty) with suitable hold-down devices during shipment. Ensure all caps, valves, and closures are secured in the closed position. This product has been classified in accordance with Part 2 of the Transportation of Dangerous Goods Regulations.

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SECTION 15 — REGULATORY INFORMATION

15.1 Canadian Regulations

WHMIS 2015 Classification: Flammable Liquid Cat. 3 (H226); Skin Irrit. Cat. 2 (H315); Skin Sens. Cat. 1 (H317); Asp. Tox. Cat. 1 (H304); Acute Aquatic Tox. Cat. 1 (H400); Chronic Aquatic Tox. Cat. 1 (H410).

CEPA / DSL Status: This product has been classified in accordance with the Hazard Criteria of the Canadian Controlled Products Regulations. This SDS contains all information required by those regulations.

TDG Classification: Classified in accordance with Part 2 of the Transportation of Dangerous Goods Regulations (see Section 14). Listed as a marine pollutant under TDG Schedule III.

15.2 US Federal Regulations

TSCA Status: All components are listed or excluded from listing on the US EPA TSCA inventory.

SARA 313: This product does not contain chemical components in excess of applicable de minimis concentrations under SARA Title III, Section 313 / 40 CFR Part 372.

SECTION 16 — OTHER INFORMATION

Prepared By: Chem International Technical Services

Preparation Date: August 7, 2024

Version: 2.0

NFPA Ratings: Health: 2 — Intense or continued but not chronic exposure could cause temporary incapacitation or residual injury.
Fire: 3 — Liquids and solids that can be ignited under almost all ambient temperature conditions. Reactivity: 0 — Normally stable, even under fire conditions.

DISCLAIMER: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable laws and regulations. N/A = Not Applicable; N/D = Not Determined.