



Safety Data Sheet

AutoGen, Inc.
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Holliston, MA 01746
774.233.3000

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Emergency Telephone Number: 800.633.8253 (USA & Canada) 801.629.0667
International

Agent: PERS

Section 1 – Product and Company Information

Product Name: Plant Denaturing Solution B

Product Number: PL-R2

Company: AutoGen, Inc.

Address: 84 October Hill Rd.
Holliston, MA 01746

Phone: 774.233.3000

Fax: www.autogen.com

Section 2 – Hazard Identifications

Chemical name

Chloroform

CAS #

67-66-3

Pictogram:



Classification of the substance or mixture

GHS classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302 Acute toxicity, Inhalation (Category 3), H331 Skin irritation (Category 2), H315 Eye irritation (Category 2A), H319 Carcinogenicity (Category 2), H351 Reproductive toxicity (Category 2), H361 Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336 Specific target organ toxicity - repeated exposure, Oral (Category 1), Liver, Kidney, H372 Short-term (acute) aquatic hazard (Category 3), H402

Signal Word:

Danger

Hazard Statements:



H302 Harmful if swallowed. H315 Causes skin irritation. H319 Causes serious eye irritation. H331 Toxic if inhaled. H336 May cause drowsiness or dizziness. H351 Suspected of causing cancer. H361 Suspected of damaging fertility or the unborn child. H372 Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if swallowed. H402 Harmful to aquatic life.

Section 3 - Composition/ Information on Ingredients

<u>Component</u>	<u>CAS-NO</u>	<u>Weight by Percentage</u>
Chloroform	67-66-3	>99.5

Dangerous Components:

UN Number: 1888
Chemical: Chloroform
Class: 6.1, Toxic

Emergency overview

WARNING! HARMFUL IF INHALED OR SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, HEART, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA. SUSPECT CANCER HAZARD. MAY CAUSE CANCER.

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Do not ingest. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

Routes of Entry

Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Acute Health Affect

Eyes: Irritating to eyes.

Skin: Irritating to skin.

Inhalation: Toxic by inhalation. Irritating to respiratory system.

Ingestion: Toxic if swallowed.

Carcinogenic effects: May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenic effects: No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity: No known significant effects or critical hazards.



Medical conditions aggravated by over-exposure: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

NFPA Rating (0-4)

Flammability	0
Health	2
Instability	0

Section 4- First Aid Measures

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact:

Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation:

Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion:

Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of First-Aiders:

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or



self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5- Fire Fighting Measures

Flammability of the Product

No specific hazard.

Extinguishing Media

Suitable: Use an extinguishing agent suitable for the surrounding fire.

Not suitable: None known.

Special exposure hazards: Not available.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards: Emits very toxic fumes when heated to decomposition.

Section 6 – Accidental Release Measures

Personal Precautions

Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental Precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Method for Cleaning Up

If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7 – Handling and Storage

Handling:

Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8 – Exposure controls/Personal Protection

Product Name

Chloroform



Exposure Limits

ACGIH (United States, 1996).

TWA: 49 mg/m³

OSHA (United States, 1989).

TWA: 9.78 mg/m³

OSHA PEL (United States, 8/1997).

CEIL: 240 mg/m³ Form: All forms

CEIL: 50 ppm Form: All forms

OSHA PEL 1989 (United States, 3/1989).

TWA: 9.78 mg/m³ 8 hour/hours. Form: All forms

TWA: 2 ppm 8 hour/hours. Form: All forms

ACGIH TLV (United States, 1/2006). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. 1996 Adoption Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124):36338-33351, June 30, 1993, for revised OSHA PEL.

Refers to Appendix A -- Carcinogens.

TWA: 49 mg/m³ 8 hour/hours. Form: All forms

TWA: 10 ppm 8 hour/hours. Form: All forms

NIOSH REL (United States, 12/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen

STEL: 9.78 mg/m³ 60 minute/minutes. Form: All forms

STEL: 2 ppm 60 minute/minutes. Form: All forms

Consult local authorities for acceptable exposure limits.

Engineering Measures

Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal Protection

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Recommended: splash goggles

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Body: Recommended: Lab coat.

Respiratory: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Hygiene Measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash



contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9 – Physical and Chemical Properties

Odor: Pleasant. Ethereal.
Color: Colorless.

Appearance:

Physical State and Appearance: Liquid. (Colorless.)
Molecular Weight: 119.37 g/mole
Molecular Formula: C-H-Cl₃
Boiling/Condensation Point: 60.5°C (140.9°F)
Melting/Freezing Point: -63°C (-81.4°F)
Critical temperature: 263.3°C (505.9°F)
Relative density: 1.49 (Water = 1)
Vapor pressure: 22.3 kPa (167 mm Hg) (at 20°C)
Vapor density: 4.1 (Air = 1)
Volatility: 100% (v/v)
Odor threshold: 205 ppm
Evaporation rate: 10.2 compared with Butyl acetate.
VOC: 100 (%)

Section 10 – Stability and Reactivity

Stability/Reactivity

The product is stable.

Incompatibility with Various Substances

Reactive or incompatible with the following materials: oxidizing materials, metals and alkalis.

Hazardous Decomposition Products

Phosgene gas. carbon oxides (CO, CO₂)

Hazardous Polymerization

Will not occur.

Conditions of Reactivity

Emits very toxic fumes when heated to decomposition.

Section 11 – Toxicological Information

RTECS Number:
Chloroform: FS9100000

Toxicity data

United States

Product/ingredient name	Test	Result	Route	Species
Chloroform	LD50	695 mg/kg	Oral	Rat



LD50	1250 mg/kg		Oral	Rat
LD50	36 mg/kg		Oral	Mouse
LDLo	500 mg/kg	Oral		Rabbit
LDLo	2514 mg/kg	Oral		man
LC50	47702 mg/m3	Inhalation		Rat
	(4 hour/hours)			

Chronic Effects of Humans

CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animals.) by ACGIH, 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP. Causes damage to the following organs: kidneys, liver, heart, skin, central nervous system (CNS), eye, lens or cornea.

Other Toxic Effects on Humans

Very hazardous in case of eye contact (irritant), of ingestion, of inhalation.
Hazardous in case of skin contact (irritant).

Special Effects

Carcinogenic effects: May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenic effects: No known significant effects or critical hazards.

Teratogenicity / Reproductive Toxicity: No known significant effects or critical hazards.

Sensitization

Ingestion: No known significant effects or critical hazards.
Inhalation: Irritating to respiratory system.
Eyes: Irritating to eyes.
Skin: Irritating to skin.

Section 12 – Ecological Information

Ecotoxicity Data

United States

Product/ingredient name	Species	Period	Result
Chloroform	Scenedesmus subspicatus (EC50)	48 hour/hours	560 mg/l
	Scenedesmus subspicatus (EC50)	48 hour/hours	950 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	13.3 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	15.1 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	16.2 mg/l
Oncorhynchus mykiss (LC50)	96 hour/hours	17.1 mg/l	

Environmental Precautions

No known significant effects or critical hazards.

Products of Degradation



These products are carbon oxides (CO, CO₂) and water, halogenated compounds.

Toxicity of the Products of Biodegradation

The products of degradation are as toxic as the product itself.

Section 13 – Disposal Considerations

Waste Disposal

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14 – Transport Information

DOT Classification

Proper Shipping Name: Chloroform

UN number: 1888

Packing group: Packing group III

Hazard Class: 6.1

IMO/IMDG Classification

Not available

TDG Classification

Proper Shipping Name: Chloroform

UN number: 1888

Packing group: Packing group III

Hazard Class: 6.1

ICAO/IATA Classification

Proper Shipping Name: Chloroform

UN Number: 1888

Packing group: Packing group III

Hazard Class: 6.1



Section 15 – Regulatory Information

United States

HCS Classification: Toxic material

Irritating material

Carcinogen

Target organ effects

U.S. Federal Regulations:

TSCA 8(b) inventory: Listed

SARA 302/304/311/312 extremely hazardous substances: Chloroform

SARA 302/304 emergency planning and notification: Chloroform

SARA 302/304/311/312 hazardous chemicals: Chloroform

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:

Chloroform: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Chloroform

Clean Water Act (CWA) 311: Chloroform

Clean Air Act (CAA) 112 accidental release prevention: Chloroform

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: Chloroform

SARA 313

Product name CAS number

Form R - Reporting requirements:

Chloroform 67-66-3

Supplier notification:

Chloroform 67-66-3

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State Regulations:

Pennsylvania RTK: Chloroform: (special hazard, environmental hazard, generic environmental hazard)

Massachusetts RTK: Chloroform

New Jersey: Chloroform

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Ingredient Name

	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Chloroform	Yes	No	20 g/day (ingestion) 40 g/day (inhalation)	No

Canada

WHMIS (Canada): Class D-1A: Material causing immediate and serious toxic effects (Very toxic).

Class D-2A: Material causing other toxic effects (Very toxic).

CEPA DSL/CEPA NDSL: CEPA DSL: Chloroform



This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols:

Risk phrases: R40- Limited evidence of a carcinogenic effect.
R22- Harmful if swallowed.
R48/20/22- Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R38- Irritating to skin.

Safety phrases: S2- Keep out of the reach of children.
S36/37- Wear suitable protective clothing and gloves.

International regulations

International lists: Australia (NICNAS): Chloroform
China: Chloroform
Germany water class: Chloroform
Japan (METI): Chloroform
Korea (TCCL): Chloroform
Philippines (RA6969): Chloroform

Section 16 – Other Information

Label Requirements Warning:

HARMFUL IF INHALED OR SWALLOWED.
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, HEART, SKIN,
CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD.
MAY CAUSE CANCER.

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

National Fire Protection Association (U.S.A.):

Other Special Considerations:

Contains stabilizer. (<1% wt/wt)

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