

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

1 Identification

- **Product identifier**
- **Trade name:** CS Fogger Solution
- **Product code:** MP-FOG-CS
- **Recommended use and restriction on use**
- **Recommended use:** Incapacitating agent.
- **Restrictions on use:** Contact manufacturer
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
NonLethal Technologies, Inc.
9419 Rt 286 Hwy W
Homer City, PA 15748
USA
+1 724-479-5100
nlt@nonlethaltechnologies.com
- **Emergency telephone number:** 1-800-255-3924 (Intl.: +1 813-248-0585) (CHEMTEL # MIS9685256)

2 Hazard(s) identification

- **Classification of the substance or mixture**
- Flam. Liq. 4 H227 Combustible liquid.
- Acute Tox. 4 H302 Harmful if swallowed.
- Acute Tox. 3 H331 Toxic if inhaled.
- Skin Irrit. 2 H315 Causes skin irritation.
- Eye Dam. 1 H318 Causes serious eye damage.
- Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin Sens. 1 H317 May cause an allergic skin reaction.
- STOT SE 3 H335 May cause respiratory irritation.

· Label elements

· GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms:



GHS05 GHS06 GHS07 GHS08

· Signal word: Danger

· Hazard statements:

H227 Combustible liquid.
H302 Harmful if swallowed.
H331 Toxic if inhaled.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.

(Cont'd. on page 2)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 1)

H335 May cause respiratory irritation.







Precautionary statements:

- P210 Keep away from flames and hot surfaces. – No smoking.
- P284 In case of inadequate ventilation wear respiratory protection.
- P261 Avoid breathing mist/vapors/spray.
- P264 Wash thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing must not be allowed out of the workplace.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER/doctor.
- P370+P378 In case of fire: Use foam, powder, or carbon dioxide for extinction.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
- P330 Rinse mouth.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P405 Store locked up.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

Components:

108-94-1	cyclohexanone	40-60%
	<div>  Flam. Liq. 3, H226 </div> <div>  Eye Dam. 1, H318 </div> <div>  Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315 </div>	
2698-41-1	[(2-chlorophenyl)methylene]malononitrile	<10%
	<div>  Acute Tox. 3, H301; Acute Tox. 2, H330 </div> <div>  Resp. Sens. 1, H334 </div> <div>  Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335 </div>	

Additional information:

For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
For the wording of the listed Hazard Statements refer to section 16.

(Cont'd. on page 3)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 2)

4 First-aid measures

- **Description of first aid measures**

- **After inhalation:**

Supply fresh air.

Seek immediate medical advice.

Provide oxygen treatment if affected person has difficulty breathing.

If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

In case of unconsciousness place patient stably in side position for transportation.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation or rash occurs: Get medical advice/attention.

- **After eye contact:**

Protect unharmed eye.

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. Then consult a doctor.

- **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

- **Most important symptoms and effects, both acute and delayed:**

Asthma attacks

Breathing difficulty

Coughing

Dizziness

Allergic reactions

Irritant to skin and mucous membranes.

May cause respiratory irritation.

Strong irritant with the danger of severe eye injury.

- **Danger:**

Danger of impaired breathing.

Causes serious eye damage.

Harmful if swallowed.

Toxic if inhaled.

- **Indication of any immediate medical attention and special treatment needed:**

Severe allergic skin reaction, bronchial spasms and anaphylactic shock are possible.

Medical supervision for at least 48 hours.

If necessary oxygen respiration treatment.

Later observation for pneumonia and pulmonary edema.

Treat skin and mucous membrane with antihistamine and corticoid preparations.

Contains [(2-chlorophenyl)methylene]malononitrile. May produce an allergic reaction.

If medical advice is needed, have product container or label at hand.

In cases of irritation to the lungs, initial treatment with corticoid steroid inhalants.

5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:**

Foam

(Cont'd. on page 4)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 3)

Gaseous extinguishing agents

Carbon dioxide

Fire-extinguishing powder

Water fog / haze

· **For safety reasons unsuitable extinguishing agents:**

Water stream.

Water spray

· **Special hazards arising from the substance or mixture**

During heating or in case of fire poisonous gases are produced.

Combustible liquid.

· **Advice for firefighters**

· **Protective equipment:**

Wear self-contained respiratory protective device.

Do not inhale explosion gases or combustion gases.

Wear fully protective suit.

· **Additional information:** Evacuate area and fight fire from the upwind side.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**

Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation.

Keep away from ignition sources.

Isolate area and prevent access.

· **Environmental precautions:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· **Methods and material for containment and cleaning up:**

Absorb with non-combustible liquid-binding material (sand, diatomite, acid binders, universal binders).

Send for recovery or disposal in suitable receptacles.

· **Reference to other sections:**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

· **Handling**

· **Precautions for safe handling:**

Prevent formation of aerosols.

Avoid splashes or spray in enclosed areas.

Use only in well ventilated areas.

· **Information about protection against explosions and fires:**

Combustible liquid.

Keep ignition sources away - Do not smoke.

Keep respiratory protective device available.

(Cont'd. on page 5)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 4)

Flammable gas-air mixtures may be formed in empty containers/receptacles.

· **Conditions for safe storage, including any incompatibilities**

· **Storage**

· **Requirements to be met by storerooms and receptacles:**

Provide ventilation for receptacles.

Avoid storage near extreme heat, ignition sources or open flame.

· **Information about storage in one common storage facility:**

Store away from foodstuffs.

Do not store together with oxidizing and acidic materials.

· **Further information about storage conditions:**

Keep containers tightly sealed.

Store in a cool place.

· **Specific end use(s):** No relevant information available.

8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

108-94-1 cyclohexanone

PEL (USA)	Long-term value: 200 mg/m ³ , 50 ppm
REL (USA)	Long-term value: 100 mg/m ³ , 25 ppm Skin
TLV (USA)	Long-term value: 50 mg/m ³ , 20 ppm Skin
EL (Canada)	Short-term value: 50 ppm Long-term value: 20 ppm Skin
EV (Canada)	Short-term value: 50 ppm Long-term value: 20 ppm Skin
LMPE (Mexico)	Short-term value: 50 ppm Long-term value: 20 ppm A3, PIEL

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

PEL (USA)	Long-term value: 0.4 mg/m ³ , 0.05 ppm
REL (USA)	Ceiling limit value: 0.4 mg/m ³ , 0.05 ppm Skin
TLV (USA)	Ceiling limit value: 0.39 mg/m ³ , 0.05 ppm Skin
EL (Canada)	Ceiling limit value: 0.05 ppm Skin
EV (Canada)	Ceiling limit value: 0.4 mg/m ³ , 0.05 ppm Skin

(Cont'd. on page 6)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 5)

LMPE (Mexico)	Ceiling limit value: 0.05 ppm A4, PIEL
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· **Ingredients with biological limit values:**

108-94-1 cyclohexanone

BEI (USA)	80 mg/L Medium: urine Time: end of shift at end of workweek Parameter: 1.2-Cyclohexanediol with hydrolysis (nonspecific, semi-quantitative)
	8 mg/L Medium: urine Time: end of shift Parameter: Cyclohexanol with hydrolysis (nonspecific, semi-quantitative)

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

· **Engineering controls:** No relevant information available.

· **Breathing equipment:**



Combined Organic Vapor and Particulate Respirator is recommended for use during all processing activities.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· **Eye protection:**

Contact lenses should not be worn.



Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment**

No relevant information available.

(Cont'd. on page 7)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 6)

9 Physical and chemical properties

· Information on basic physical and chemical properties

· Appearance:

Form:	Liquid
Color:	Clear to straw color.
Odor:	Pungent
Odor threshold:	Not determined.

· pH-value: Not determined.

· Melting point/Melting range: Not determined.

· Boiling point/Boiling range: Not determined.

· Flash point: 61-94 °C (142-201 °F) (Estimate)

· Flammability (solid, gaseous): Not applicable.

· Auto-ignition temperature: >260 °C (>500 °F)

· Decomposition temperature: Not determined.

· Danger of explosion: Not determined.

· Explosion limits

Lower: Not determined.

Upper: Not determined.

· Oxidizing properties: Not determined.

· Vapor pressure: Not determined.

· Density:

Relative density: Not determined.

Vapor density: Not determined.

Evaporation rate: Not determined.

· Solubility in / Miscibility with

Water: Not miscible or difficult to mix.

· Partition coefficient (n-octanol/water): Not determined.

· Viscosity

Dynamic: Not determined.

Kinematic: Not determined.

· Other information: No relevant information available.

10 Stability and reactivity

· **Reactivity:** No relevant information available.

· **Chemical stability:** Stable under normal temperatures and pressures.

· Thermal decomposition / conditions to be avoided:

No decomposition if used and stored according to specifications.

· Possibility of hazardous reactions:

Toxic fumes may be released if heated above the decomposition point.

(Cont'd. on page 8)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 7)

Used empty containers may contain product gases which form explosive mixtures with air.
Can form explosive mixtures in air if heated above flash point and/or when sprayed or atomized.

· **Conditions to avoid:**

Keep ignition sources away - Do not smoke.
Store away from oxidizing agents.

· **Incompatible materials:** No relevant information available.

· **Hazardous decomposition products:**

Under fire conditions only:
Carbon monoxide and carbon dioxide
Chlorine compounds
Chlorine
Nitrogen oxides

11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

108-94-1 cyclohexanone

Oral	LD50	1535 mg/kg (rat)
Inhalative	LC50/4h	6.2 mg/l (rat)

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

Oral	LD50	178 mg/kg (rat)
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· **Primary irritant effect:**

- **On the skin:** Irritant to skin and mucous membranes.
- **On the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** May cause sensitisation by inhalation and skin contact.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer):**

None of the ingredients are listed.

· **NTP (National Toxicology Program):**

None of the ingredients are listed.

· **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

· **Probable route(s) of exposure:**

Ingestion.
Inhalation.
Eye contact.
Skin contact.

· **Acute effects (acute toxicity, irritation and corrosivity):**

Harmful if swallowed.
Causes serious eye damage.
Toxic if inhaled.
Irritating to skin.

(Cont'd. on page 9)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 8)

Irritating to respiratory system.

- **Repeated dose toxicity:** May cause sensitisation by inhalation and skin contact.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Based on available data, the classification criteria are not met.
- **Reproductive toxicity:** Based on available data, the classification criteria are not met.
- **STOT-single exposure:** May cause respiratory irritation.
- **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

· Toxicity

· Aquatic toxicity

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

EC50 | 0.2-0.3 mg/kg (Oncorhynchus mykiss)

- **Persistence and degradability** No relevant information available.
- **Bioaccumulative potential:** No relevant information available.
- **Mobility in soil:** No relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information**
- **General notes:**
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
- **Other adverse effects:** No relevant information available.

13 Disposal considerations

· Waste treatment methods

· Recommendation:

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. After prior treatment product has to be disposed of in an incinerator for hazardous waste adhering to the regulations pertaining to the disposal of particularly hazardous waste.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

· Uncleaned packagings

- **Recommendation:** Disposal must be made according to official regulations.

(Cont'd. on page 10)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)




Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 9)

14 Transport information

· UN-Number	UN1693
· DOT, ADR, IMDG, IATA	
· UN proper shipping name	TEAR GAS SUBSTANCE, LIQUID, N.O.S. ([2-chlorophenyl)methylene]malononitrile)
· DOT, ADR, IMDG, IATA	
· Transport hazard class(es)	
· DOT	
	
· Class	6.1 Toxic substances
· Label	6.1
· ADR	
	
· Class	6.1 (T1) Toxic substances
· Label	6.1
· IMDG, IATA	
	
· Class	6.1 Toxic substances
· Label	6.1
· Packing group	II
· DOT, ADR, IMDG, IATA	
· Environmental hazards	
· Marine pollutant:	No
· Special precautions for user	Warning: Toxic substances
· Poison inhalation hazard:	Yes
· Danger code (Kemler):	60
· EMS Number:	F-A,S-A
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.

(Cont'd. on page 11)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 10)

· Transport/Additional information:
· IATA


Cargo Aircraft Only.

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
· United States (USA)
· SARA
· Section 302 (extremely hazardous substances):

None of the ingredients are listed.

· Section 304 (emergency release notification):

None of the ingredients are listed.

· Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

· TSCA (Toxic Substances Control Act)

All ingredients are listed.

· Proposition 65 (California)
· Chemicals known to cause cancer:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

· Carcinogenic categories
· EPA (Environmental Protection Agency):

None of the ingredients are listed.

· IARC (International Agency for Research on Cancer):

None of the ingredients are listed.

(Cont'd. on page 12)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: CS Fogger Solution

(Cont'd. of page 11)

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 07/20/2016 / -

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

LDLo: Lowest Lethal Dose Observed

Flam. Liq. 3: Flammable liquids – Category 3

Flam. Liq. 4: Flammable liquids – Category 4

Acute Tox. 3: Acute toxicity – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Acute Tox. 2: Acute toxicity – Category 2

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

· **Sources**

Website, European Chemicals Agency (echa.europa.eu)

Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)

Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)

Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6

Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaassen, Curtis D., ed., ISBN: 978-0-07-176923-5.

Safety Data Sheets, Individual Manufacturers

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