CarbonClear™

Version: 1.2
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Fuelcare Limited encourages and expects you to read and understand the entire MSDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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

1.1 Product identifier

Product name: CarbonClear ™

1.2 Relevant identified uses of the substance or mixture and uses advised against Identified uses: Fuel detergent additive for the reduction of harmful emissions in middle distillate fuels such as diesel & gas oil.

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

Fuelcare Limited
Mercury House
Shrewsbury Business Park
Shrewsbury
SY2 6LG
UNITED KINGDOM

Customer Information Number: +44 (0)1743 360784
Customer Information Email: info@fuelcare.com

1.4 EMERGENCY TELEPHONE NUMBER

In Europe, Middle East, Africa and Asia Pacific 24 hour / 7 day emergency response for our products is provided by the NCEC CARECHEM 24 global network.

Country information	Emergency telephone number	Location
Europe, Middle East, Africa (all countries, English Language)	+44 1865 407333	London, UK
Asia Pacific (all countries, English Language)	+65 3165 2217	Singapore

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture: mixture

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]:

Carc. 2, H351
STOT SE 3, H336
Asp. Tox. 1, H304
Aquatic Chronic 2, H411
For the full text of the H-Statements mentioned in this Section, see Section 16.
For more detailed information on health effects and symptoms, see Section 11.

2.2 Label elements

Hazard pictograms

Signal word: DANGER

Hazard statements

H351	Suspected of causing cancer.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.

Supplemental Label Elements

Contains 3,6,9-triazaundecamethylenediamine. May produce an allergic reaction.

Precautionary statements

P201	Obtain special instructions before use.
P273	Avoid release to the environment.
P280	Wear protective gloves: > 8 hours (breakthrough time): Viton®; 1 – 4 hours (breakthrough time): nitrile rubber. Wear eye or face protection: Recommended: splash goggles. Wear protective clothing.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel unwell.
P301 + P310 + P331	IF SWALLOWED: Immediately call a POISON CENTRE or doctor. Do NOT induce vomiting.
P405	Store locked up.
P501	Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients Hydrocarbons C10, aromatics, >1% naphthalene, [Solvent naphtha (petroleum), heavy arom.]; naphthalene.

Special Packaging Requirements

Containers to be fitted with child Not Applicable

resistant fastenings
Tactile warning of danger Not Applicable

2.3 Other hazards

None known.

3.2 Mixtures

This product is a mixture.

Component	Identifiers	Concentration	Classification Regulation (EC) No. 1272/2008 [CLP]	Type
Hydrocarbons C10, aromatics, >1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	REACH #: 01-2119463588-24 EC: 919-284-0 CAS: 64742-94-5	≥50 - ≤75	STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 EUH066	[1] [2]
naphthalene	REACH #: Compliant EC: 202-049-5 CAS: 91-20-3 Index: 601-052-00-2	≤10	Acute Tox. 4, H302 Carc. 2, H351 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)	[1] [2]
1,2,4-trimethylbenzene	REACH #: Compliant EC: 202-436-9 CAS: 95-63-6 Index: 601-043-00-3	≤3	Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411	[1] [2]
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	REACH #: 01-2119463583-34 EC: 265-198-5, [918-811-1] CAS: 64742-94-5 Index: 649-424-00-3	≤3	STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 EUH066	[1] [2]

3,6,9-triazaundecamethylenediamine	REACH #: 01-2119487290-37 EC: 203-986-2 CAS: 112-57-2 Index: 612-060-00-0	≤0.3	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 2, H411	[1]

For the full text of the H-Statements mentioned in this Section, see Section 16.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

Our REACH (pre-) registrations DO NOT cover the following:

1. The manufacture of these products by our company outside the EU unless covered by the Only Representative provisions, and

2. The importation of these products into Europe by other companies. Re-importation by other companies is not covered by our (pre-) registrations

Customers and other third parties importing and/or re-importing our products into Europe will need either:

- Their own (pre-) registration for substances contained in the imported product, or constituent monomers (imported above 1 tonne per year and >2%

by weight) in the case of imported polymers, or

- In the case of importation only, to make use of the "Only Representative" provisions, if available.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. Get medical attention. If necessary, call a poison centre or doctor. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Ingestion: Get medical attention immediately. Call a poison centre or physician. Remove dentures if any. Wash out mouth with water. Stop if the exposed person feels sick as vomiting may be dangerous. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. 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.

4.2 Most important symptoms and effects, both acute and delayed:

Potential acute health effects

Eye contact: No known significant effects or critical hazards.

Inhalation: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact: No known significant effects or critical hazards.

Ingestion: Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact: No specific data.

Inhalation: Adverse symptoms may include the following: nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Skin contact: No specific data.

Ingestion: Adverse symptoms may include the following: nausea or vomiting.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use an extinguishing media appropriate for the surrounding fire.

Unsuitable extinguishing media: No data available

5.2 Special hazards arising from the substance or mixture: In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides.

5.3 Advice for firefighters

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for firefighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 Methods and materials for containment and cleaning up:

Small spill: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill: Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections: See Section 1 for emergency contact information. See Section 8 for information on appropriate

personal protective equipment. See Section 13 for additional waste treatment information.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

Protective measures: Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities:

Storage: Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s): No information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	Supplier/Manufacturer (Europe, 2015). EU HSPA (RCP Aromatic solvents 180 - 215): 151 mg/m^3 8 hours.
Hydrocarbons, C10, aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]	Supplier/Manufacturer (Europe, 2015). EU HSPA (RCP Aromatic solvents 180 - 215): 151 mg/m^3 8 hours.
1,2,4-trimethylbenzene	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 25 ppm, 0 times per shift, 8 hours. TWA: 125 mg/m^3, 0 times per shift, 8 hours.

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to

determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Component	Type	Exposure	Value/Notation	Population	Effects
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	DNEL	Long term Dermal	12.5 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	151 mg/m^3	Workers	Systemic
	DNEL	Long term Dermal	7.5 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	32 mg/m^3	Consumers	Systemic
	DNEL	Long term Oral	7.5 mg/kg bw/day	Consumers	Systemic
Hydrocarbons, C10, aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]	DNEL	Long term Dermal	12.5 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	151 mg/m^3	Workers	Systemic
	DNEL	Long term Dermal	7.5 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	32 mg/m^3	Consumers	Systemic
	DNEL	Long term Oral	7.5 mg/kg bw/day	Consumers	Systemic
1,2,4-trimethylbenzene	DNEL	Short term Inhalation	100 mg/m^3	Workers	Systemic
	DNEL	Short term Inhalation	100 mg/m^3	Workers	Local
	DNEL	Long term Dermal	16171 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	100 mg/m^3	Workers	Local
	DNEL	Long term Inhalation	100 mg/m^3	Workers	Systemic

	DNEL	Short term Inhalation	29.4 mg/m^3	Consumers	Systemic
	DNEL	Short term Inhalation	29.4 mg/m^3	Consumers	Local
	DNEL	Long term Dermal	9512 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	29.4 mg/m^3	Consumers	Systemic
	DNEL	Long term Oral	15 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	29.4 mg/m^3	Consumers	Local
naphthalene	DNEL	Long term Dermal	3.57 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	25 mg/m^3	Workers	Systemic
	DNEL	Long term Inhalation	25 mg/m^3	Workers	Local
3,6,9-triazaundecamethylenediamine	DNEL	Short term Inhalation	6940 mg/m^3	Workers	Systemic
	DNEL	Long term Dermal	0.74 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.29 mg/m^3	Workers	Systemic
	DNEL	Short term Dermal	10 mg/ kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	2071 mg/m^3	Consumers	Systemic
	DNEL	Short term Oral	26 mg/ kg bw/day	Consumers	Systemic
	DNEL	Short term Oral	1.29 mg/cm^2	Consumers	Local
	DNEL	Long term Dermal	0.32 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.38 mg/m^3	Consumers	Systemic
	DNEL	Long term Oral	0.53 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.56 mg/cm^2	Consumers	Local

PNECs

Product/ingredient name	Type	Compartment Detail	Value
1,2,4-trimethylbenzene	PNEC	Fresh water	0.12 mg/l
	PNEC	Marine	0.12 mg/l
	PNEC	Sewage treatment plant	2.41 mg/l
	PNEC	Fresh water sediment	13.56 mg/kg dwt
	PNEC	Marine water sediment	13.56 mg/kg dwt
	PNEC	Soil	2.34 mg/kg dwt
naphthalene	PNEC	Fresh water	2.4 µg/l
	PNEC	Marine	0.24 µg/l
	PNEC	Sewage treatment plant	2.9 mg/l
	PNEC	Fresh water sediment	67.2 µg/kg dwt
	PNEC	Marine water sediment	67.2 µg/kg dwt
	PNEC	Soil	53.3 µg/kg dwt
3,6,9-triazaundecamethylenediamine	PNEC	Fresh water	6.8 µg/l
	PNEC	Marine	0.68 µg/l
	PNEC	Sewage treatment plant	9.73 mg/l
	PNEC	Fresh water sediment	3.43 mg/kg dwt
	PNEC	Marine water sediment	0.343 mg/kg dwt
	PNEC	Soil	0.683 mg/kg dwt

8.2 Exposure controls

Engineering controls: Use only with adequate ventilation. Use process enclosures, local exhaust controls ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

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.

Eye/face protection: 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. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Recommended: splash goggles.

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be always worn when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): Viton® 1 - 4 hours (breakthrough time): nitrile rubber.

Body protection: 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.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being

performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: organic vapour filter (Type A).

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	Liquid
Colour	Amber
Odour	Aromatic. Hydrocarbon.
Odour Threshold	No data available
pH	No data available
Melting point/range	No data available
Freezing point	No data available
Initial boiling point and boiling range	Lowest known value: 168.01°C (334.4°F) (1,2,4-trimethylbenzene). Weighted average: 195.66°C (384.2°F)
Flash point	Closed cup: 63.5°C (146.3°F) [Pensky-Martens.]
Evaporation Rate	Highest known value: 0.05 (Solvent naphtha (petroleum), heavy arom.) Weighted average: 0.05 compared with butyl acetate
Flammability (solid, gas)	No data available
Upper/Lower explosion limit	Greatest known range: Lower: 0.6% Upper: 7% (Solvent naphtha (petroleum), heavy arom.)
Vapor Pressure	Highest known value: 0.1 kPa (0.8 mm Hg) (at 20°C) (Solvent naphtha (petroleum), heavy arom.). Weighted average: 0.06 kPa (0.45 mm Hg) (at 20°C)
Vapor Density	Highest known value: 4.6 to 5.5 (Air = 1) (Solvent naphtha (petroleum), heavy arom.). Weighted average: 5.02 (Air = 1)
Relative Density	No data available
Density	0.9 g/cm^3 [15°C (59°F)]
Solubility	Insoluble in the following materials: cold water, hot water.
Partition coefficient: n- octanol/water	No data available
Auto-ignition temperature	Lowest known value: 425°C (797°F) (Solvent naphtha (petroleum), heavy arom.).
Decomposition temperature	No data available
Viscosity	Kinematic (room temperature): 0.05 cm^2/s (5 cSt) Kinematic (40°C (104°F)): 0.04 cm^2/s (4 cSt)
Explosive properties	No data available

Oxidizing properties No data available

9.2 Other information

Pour Point <-39 °C

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability: The product is stable.

10.3 Possibility of hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid: No data available

10.5 Incompatible materials: No data available

10.6 Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Estimates (ATE)

Oral: 6135.8mg/kg

Inhalation: 532.7mg/l

Acute Toxicity

Product/Ingredient	Test	Species	Result Type	Dose
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	-	Rat	LC50 Inhalation Vapour	> 590 mg/m^3 4 hours
	-	Rabbit	LD50 Dermal	> 2mL/kg
	-	Rabbit	LD50 Dermal	2000 mg/kg
	-	Rat	LDLo Oral	5mL/kg
Hydrocarbons, C10, aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]	-	Rat	LC50 Inhalation Vapour	> 590 mg/m^3 4 hours
	-	Rabbit	LD50 Dermal	> 2mL/kg
	-	Rabbit	LD50 Dermal	2000mg/kg
	-	Rat	LDLo Oral	5 mL/kg
naphthalene	-	Rat	LC50 Inhalation Vapour	> 340 mg/m^3 1 hour
	-	Rabbit	LD50 Dermal	> 2000 mg/kg
	-	Rat	LD50 Dermal	> 2500 mg/kg
	-	Rat	LD50 Oral	490 mg/kg

3,6, 9-triazaundecamethylenediamine	-	Rat	LD50 Dermal	1260 mg/kg
	-	Rat	LD50 Oral	2100 to 3990 mg/kg

Irritation/Corrosion:

Product/Ingredient	Test	Species	Result
Hydrocarbons C10, -Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	-	Rabbit	Skin – mild irritant
	-	Mammal – species unspecified	Eyes – mild irritant
Hydrocarbons, C10, -aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]	-	Rabbit	Skin – mild irritant
	-	Mammal – species unspecified	Eyes – mild irritant
3,6, 9-triazaundecamethylenediamine	-	Rabbit	Eyes – moderate irritant
	-	Rabbit	Skin – severe irritant

Sensitisation

Product/Ingredient	Test	Species	Result
3,6, 9-triazaundecamethylenediamine	-	Guinea Pig	Sensitising

Potential chronic health effects

Product/Ingredient	Test	Species	Result	Dose
3,6, 9-triazaundecamethylenediamine	-	Rat	LOAEL	43 mg/kg
	-	Rabbit	LOAEL	50 mg/kg

Mutagenicity

Product/Ingredient	Test	Experiment	Result
3,6, 9-triazaundecamethylenediamine	-	Experiment: In vivo Subject: Mammalian-Animal	Negative

Reproductive toxicity

Product/Ingredient	Test	Species	Result	Dose
3,6, 9-triazaundecamethylenediamine	-	Mammal – species unspecified	-	Oral: 970 NOAEL
	-	Mammal – species unspecified	-	Dermal: 161 NOAEL

Information on likely routes of exposure: Not available.

Potential acute health effects

Eye contact: No known significant effects or critical hazards.

Inhalation: Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin Contact: No known significant effects or critical hazards.

Ingestion: Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: No specific data.

Inhalation: Adverse symptoms may include the following: nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness.

Skin Contact: No specific data.

Ingestion: Adverse symptoms may include the following: nausea or vomiting.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential Immediate Effects: Not available.

Potential Delayed Effects: Not available.

Long term exposure

Potential Immediate Effects: Not available.

Potential Delayed Effects: Not available.

General: No known significant effects or critical hazards.

Carcinogenicity: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental Effects: No known significant effects or critical hazards.

Fertility Effects: No known significant effects or critical hazards.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Product/Ingredient	Test	Species	Exposure	Result
Hydrocarbons C10, - Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	-	Algae	72 hours	Acute EC50 1 to 3 mg/l
	-	Daphnia	48 hours	Acute EC50 3 to 10 mg/l
	-	Fish	96 hours	Acute LC50 2 to 5 mg/l
Hydrocarbons, C10, -	-	Algae	72 hours	Acute EC50 1 to 3

aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]				mg/l
	-	Daphnia	48 hours	Acute EC50 3 to 10 mg/l
	-	Fish	96 hours	Acute LC50 2 to 5 mg/l
1,2,4-trimethylbenzene	-	Fish - Pimephales promelas	96 hours	Acute LC50 7.72 mg/l
naphthalene	-	Daphnia - Water flea - Daphnia magna	48 hours	Acute EC50 1.96 mg/l Fresh water
	-	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours	Acute LC50 2350 µg/l Marine water
	-	Fish - Oncorhynchus mykiss	96 hours	Acute LC50 1.6 mg/l
3,6, 9-triazaundecamethylenediamine	-	Algae	72 hours	Acute EC50 6.8 mg/l
	-	Daphnia	48 hours	Acute EC50 24.1mg/l
	-	Fish	96 hours	Acute LC50 420 mg/l
	-	Algae	-	Acute NOEC 0.5 mg/l

12.2 Persistence and degradability

Product/Ingredient	Aquatic half-life	Photolysis	Biodegradability
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	-	-	Inherent
Hydrocarbons, C10, aromatics, >1% naphthalene [Solvent naphtha (petroleum), heavy arom.]	-	-	Inherent
3,6, 9-triazaundecamethylenediamine	-3.16	-	Not readily

12.3 Bioaccumulative potential

Product/Ingredient	$LogP_{ow}$	BCF	Potential
Hydrocarbons C10, Aromatics, <1% Naphthalene, [Solvent naphtha (petroleum), heavy arom.]	2.8 to 6.5	<100	Low
Hydrocarbons, C10, aromatics,	-	<100	Low

>1% naphthalene [Solvent naphtha (petroleum), heavy arom.]			
1,2,4-trimethylbenzene	4.09	275	Low
naphthalene	3.3	>100	Low
3,6, 9-triazaundecamethylenediamine	-3.16	-	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}): Not available

Mobility: Not available

12.5 Results of PBT and vPvB assessment

PBT: Not applicable

vPvB: Not applicable

12.6 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Methods of disposal: The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non- recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous Waste: The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal: The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special Precautions: This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: TRANSPORT INFORMATION

Classification for ROAD and Rail transport (ADR/RID):

14.1 UN number	UN 3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Solvent naphtha (petroleum), heavy arom., naphthalene)
14.3 Transport hazard class(es)	9

14.4 Packing group	III
14.5 Environmental group	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4. 1.1.4 to 4.1.1.8.
14.6 Special precautions for user	Hazard identification number: 90 Limited quantity: 5 L Special provisions: 274, 335, 601, 375 Tunnel code: (E)

Classification for Inland Waterways transport (ADN):

14.1 UN number	UN 3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Solvent naphtha (petroleum), heavy arom., naphthalene)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental group	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4. 1.1.4 to 4.1.1.8.
14.6 Special precautions for user	Special provisions: 274, 335, 375, 601

Classification for Maritime transport (IMDG):

14.1 UN number	UN 3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Solvent naphtha (petroleum), heavy arom., naphthalene). Marine pollutant (Solvent naphtha (petroleum), heavy arom., naphthalene)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental group	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4. 1.1.4 to 4.1.1.8.
14.6 Special precautions for user	Emergency schedules: (EmS) F-A, S-F Special provisions: 274, 335, 969

Classification for AIR transport (IATA):

14.1 UN number	UN 3082
14.2 UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (Solvent naphtha (petroleum), heavy arom., naphthalene)
14.3 Transport hazard class(es)	9
14.4 Packing group	III

14.5 Environmental group Not applicable

14.6 Special precautions for user No data available

SECTION 15: REGULATORY INFORMATION

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

EU Regulation (EC) No 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Not applicable.

Other EU regulations

Seveso Directive - Reporting thresholds (in tonnes)

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
E2: Hazardous to the aquatic environment - Chronic 2	200	500
9ii: Toxic for the environment	200	500

Black List Chemicals: Not listed.

Priority List Chemicals: Not determined.

Industrial emissions (integrated pollution prevention and control) - Air: Not listed.

Industrial emissions (integrated pollution prevention and control) - Water: Not listed.

Product/Ingredient	Carcinogenic Effects	Mutagenic Effects	Developmental Effects	Fertility Effects
napthalene	Carc. 2, H351	-	-	-

Chemical Weapons Convention List Schedule I Chemicals: Not listed.

Chemical Weapons Convention List Schedule II Chemicals: Not listed.

Chemical Weapons Convention List Schedule III Chemicals: Not listed.

International Lists

Australia inventory (AICS): All components are listed or exempted.

Canada inventory: All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

EU inventory (EINECS/ELINCS/NLP): All components are listed or exempted.

Japan inventory (ENCS): All components are listed or exempted.

Japan inventory (ISHL): Not determined.

Korea inventory (KECI): All components are listed or exempted.

New Zealand inventory of Chemicals (NZIoC): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted.

Taiwan inventory (TCSI): All components are listed or exempted.

United States inventory (TSCA 8b): All components are listed or exempted.

15.2 Chemical safety assessment

This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

ATE = Acute Toxicity Estimate

CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]

DNEL = Derived No Effect Level

EUH statement = CLP-specific Hazard statement

PNEC = Predicted No Effect Concentration

RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Asp. Tox. 1, H304	Calculation method
Carc. 2, H351	Calculation method
STOT SE 3, H336	Calculation method
Aquatic Chronic 2, H411	Calculation method

Full text of abbreviated H statements

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H304 May be fatal if swallowed and enters airways.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H351 Suspected of causing cancer.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H411 Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Acute Tox. 4, H312	ACUTE TOXICITY (dermal) - Category 4
Acute Tox. 4, H332	ACUTE TOXICITY (inhalation) - Category 4
Aquatic Acute 1, H400	ACUTE AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM AQUATIC HAZARD - Category 1
Aquatic Chronic 2, H411	LONG-TERM AQUATIC HAZARD - Category 2
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 2, H351	CARCINOGENICITY - Category 2
EUH066	Repeated exposure may cause skin dryness or cracking.
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Flam. Liq. 3, H226	FLAMMABLE LIQUIDS - Category 3
Skin Corr. 1B, H314	SKIN CORROSION/IRRITATION - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1, H317	SKIN SENSITISATION - Category 1
STOT SE 3, H335	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3
STOT SE 3, H336	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3

Information Source and References

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