



# Safety Data Sheet

**HiTEC® 46200 Diesel Fuel Additive**

**SDS no.** H46200

## Section 1. Identification

**Product identifier** : HiTEC® 46200 Diesel Fuel Additive  
**Product use** : Petrochemical industry: Fuel additive.  
**Date of issue/Revisions** : 31 October 2022

### In case of emergency - Chemical

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+65-3158-1349 (Asia Pacific)  
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4001-204937 (China)  
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00-308-13-2549 (South Korea)  
+1-703-741-5979 (Spanish language)  
+44-870-8200418 (UK)  
1-800-424-9300 (US & Canada)

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## Section 2. Hazards identification

**Classification of the substance or mixture** : FLAMMABLE LIQUIDS - Category 4  
ACUTE TOXICITY (oral) - Category 4  
ACUTE TOXICITY (dermal) - Category 4  
ACUTE TOXICITY (inhalation) - Category 4  
SKIN CORROSION/IRRITATION - Category 3  
SKIN SENSITISATION - Category 1  
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1  
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1

### GHS label elements

**Hazard pictograms** :



**Signal word** :

Warning

**Hazard statements** :

Combustible liquid.  
Harmful if swallowed, in contact with skin or if inhaled.  
Causes mild skin irritation.  
May cause an allergic skin reaction.  
Very toxic to aquatic life with long lasting effects.

### Precautionary statements

**Prevention** :

Wear protective gloves, protective clothing and eye or face protection. Keep away from flames and hot surfaces. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapour. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

**Response** :

Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth. Take off contaminated clothing and wash it before reuse. IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. In case of fire, use water spray (fog), foam, dry chemical or CO<sub>2</sub>.

**Storage** :

Store in a well-ventilated place. Keep cool.

**Disposal** :

Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Other hazards which do not result in classification** :

When heated above 100°C may undergo a self-accelerating, exothermic reaction which causes a rapid rise in temperature and pressure. Rupture of storage vessels and fire should be anticipated in case of such temperature.

**Please note some GHS hazard classifications listed above may not be applicable in your country or region and are shown for informational purposes only.**

**For other GHS hazard classifications not listed above, the classification is not applicable in your region.**

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

Ingredient name	CAS number	%	GHS Classification	Type
2-ethylhexyl nitrate	27247-96-7	≥75 - ≤85	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 (M=1) LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 (M=1)	[1]
2-ethylhexan-1-ol	104-76-7	≥5 - ≤7.3	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 5 ACUTE TOXICITY (dermal) - Category 5 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 3	[1] [2]
Solvent naphtha (petroleum), heavy arom.	64742-94-5	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 4 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]
Long-chain alkenyl amido alkyl ammonio acetate	25054-76-6	≥1 - ≤2	SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 (M=1)	[1]
methyl-1H-benzotriazole	29385-43-1	≥0.3 - ≤0.5	ACUTE TOXICITY (oral) - Category 4 REPRODUCTIVE TOXICITY (Unborn child) - Category 2 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]
Amino long-chain alkyl amide	109-28-4	≥0.1 - ≤0.3	ACUTE TOXICITY (oral) - Category 5 SKIN CORROSION/IRRITATION -	[1]

## Section 3. Composition/information on ingredients

			Category 1B SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN SENSITISATION - Category 1A SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 (M=1) LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 (M=1)
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**There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

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

**Please note some GHS hazard classifications listed above may not be applicable in your country or region and are shown for informational purposes only.**

### Type

[1] Substance classified with a physical, health or environmental hazard

[2] Substance with a workplace exposure limit

## Section 4. First aid measures

### Description of necessary 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. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

#### Inhalation

: If inhaled, remove to fresh air. 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 adverse health effects persist or are severe. If necessary, call a poison center or physician. 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. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen.

#### Skin contact

: Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Get medical attention. If necessary, call a poison center or physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.

#### Ingestion

: Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get

## Section 4. First aid measures

medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Harmful if inhaled.
- Skin contact** : Harmful in contact with skin. Causes mild skin irritation. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
Inhalation of vapours may cause a sharp decrease in blood pressure with resulting loss of consciousness.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness  
Overexposure to organic nitrates by inhalation of vapor or skin contact may cause headache, dizziness, nausea, and decreased blood pressure.
- Ingestion** : No specific data.

### Indication of immediate medical attention and special treatment needed, if necessary

- 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.
- Specific treatments** : No specific treatment.
- 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

### See toxicological information (Section 11)

## Section 5. Firefighting measures

### Extinguishing media

- Suitable extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO<sub>2</sub>.
- Unsuitable extinguishing media** : Do not use water jet.

## Section 5. Firefighting measures

- Specific hazards arising from the chemical** : Combustible liquid. Risk of explosion if heated under confinement. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is very 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
- 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Fight fire from protected location or maximum possible distance.
- Do not fight fire when it reaches the material. Withdraw from fire and let it burn.**
- When heated above 100°C may undergo a self-accelerating, exothermic reaction which causes a rapid rise in temperature and pressure. Rupture of storage vessels and fire should be anticipated in case of such temperature. Spray storage vessels with water to maintain temperature below 100°C/212°F.
- 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.

## Section 6. Accidental release measures

### 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 spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. 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".
- Environmental precautions** : Avoid dispersal of spilled 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.

### Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.

## Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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 (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. 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. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

#### Do not heat the product.

**Product Transfer:** Prior to starting transfer pump, ensure all valves in the product discharge line are open and that the line is unobstructed. Immediately after starting the transfer pump, verify that the product is flowing. If product is not flowing, shut the pump off immediately. Operating the transfer pump in a dead-headed (blocked) condition without product flow can result in an explosion damaging equipment and causing personal injury. A pneumatic driven diaphragm pump or pumps of other designs equipped with high temperature (75°C) shut-off devices are recommended when pumps are provided at fixed locations.

**Refer to "Safety and Handling Manual for 2-Ethylhexyl Nitrate" for further information on safety and handling concerns and procedures (available from Afton Corporation).**

### 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.

### Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. 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. Do not heat the product. Warehouses equipped with fire suppression systems are recommended. This product should not be stored in the same area with tanks containing flammable liquids. Fire suppression systems should be adequate to keep product cool in the event of a fire.

## Section 7. Handling and storage

Refer to "Safety and Handling Manual for 2-Ethylhexyl Nitrate" for further information on safety and handling concerns and procedures (available from Afton Corporation).

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

2-ethylhexan-1-ol

Japan Society for Occupational Health  
(Japan, 9/2021).

OEL-M: 5.3 mg/m<sup>3</sup> 8 hours.

OEL-M: 1 ppm 8 hours.

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- 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.

### 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. Contaminated work clothing should not be allowed out of the workplace. 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: safety glasses with side-shields.

### Skin protection

**Hand protection** : Hand Protection: Wear chemical resistant gloves. Nitrile gloves of minimum thickness 0.4 mm have an expected breakthrough time of 480 minutes or less when in frequent contact with the product. Due to variable exposure conditions the user must consider that the practical use of a chemical-protective glove in practice may be much shorter than the permeation time above. Manufacturer's directions for use, especially about the minimum thickness and the minimum breakthrough time, must be observed. This information does not replace suitability tests by the end user since glove protection varies depending on the conditions under which the product is used.

**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.



## Section 9. Physical and chemical properties

<b>Physical state</b>	: Liquid.	
<b>Colour</b>	: Pale. Amber. [Light]	
<b>Odour</b>	: Characteristic. [Strong]	
<b>Odour threshold</b>	: Not available.	
<b>pH</b>	: Not applicable.	
<b>Melting point</b>	: Not available.	
<b>Boiling point</b>	: Not available.	
<b>Flash point</b>	: Closed cup: 61°C (141.8°F) [Pensky-Martens Minimum]	
<b>Evaporation rate</b>	: Not available.	
<b>Flammability (solid, gas)</b>	: Not available.	
<b>Lower and upper explosive (flammable) limits</b>	: Not available.	
<b>Vapour pressure</b>	: Not available.	
<b>Relative vapour density</b>	: Not available.	
<b>Vapour density</b>	: Not available.	
<b>Density</b>	: 0.96 g/cm <sup>3</sup> [59°F (15°C)]	
<b>Relative density</b>	: Not available.	
<b>Solubility(ies)</b>	: Not available.	
<b>Partition coefficient: n-octanol/water</b>	: Not applicable.	
<b>Auto-ignition temperature</b>	: Not available.	
<b>Decomposition temperature</b>	: Not available.	
<b>Viscosity</b>	: Kinematic (40°C): 2.8 mm <sup>2</sup> /s (2.8 cSt)	Minimum
<b>Explosive properties</b>	: Not available.	
<b>Oxidising properties</b>	: Not available.	
<b>Particle characteristics</b>		
<b>Median particle size</b>	: Not applicable.	

## Section 10. Stability and reactivity

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: Unstable at temperatures greater than 100°C/212°F.
<b>Possibility of hazardous reactions</b>	: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: heating under confinement Reactions may include the following: risk of explosion

## Section 10. Stability and reactivity

**Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

**Incompatible materials** : Reactive or incompatible with the following materials:  
oxidising materials

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

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks
2-ethylhexyl nitrate	None available.	LC50 Inhalation Vapour	Rat	>4.6 mg/l	1 hours	-
2-ethylhexan-1-ol	None available.	LD50 Dermal	Rabbit	>4800 mg/kg	-	-
	None available.	LD50 Oral	Rat	>9600 mg/kg	-	-
	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	1 to 5.3 mg/l	4 hours	-
	None available.	LC50 Inhalation Vapour	Rat	>0.89 mg/l	4 hours	-
Solvent naphtha (petroleum), heavy arom.	None available.	LD50 Dermal	Rat	1970 mg/kg	-	WOE does not support classification
	401 Acute Oral Toxicity	LD50 Oral	Rat	2047 mg/kg	-	-
	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	>4778 mg/m <sup>3</sup>	4 hours	Based on data for a similar substance.
	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	>4688 mg/m <sup>3</sup>	4 hours	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	401 Acute Oral Toxicity	LD50 Oral	Rat	6318 mg/kg	-	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	-
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>2000 mg/kg	-	-
methyl-1H-benzotriazole	None available.	LC50 Inhalation Vapour	Rat	>1730 mg/m <sup>3</sup>	1 hours	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	720 mg/kg	-	-

## Section 11. Toxicological information

Amino long-chain alkyl amide	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	-
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>2000 mg/kg	-	-

**Conclusion/Summary** : Harmful if swallowed, in contact with skin or if inhaled.

### Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
2-ethylhexyl nitrate	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
2-ethylhexan-1-ol	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
Solvent naphtha (petroleum), heavy arom.	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
methyl-1H-benzotriazole	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
Amino long-chain alkyl amide	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Visible necrosis	Based on data for a similar substance.

**Skin** : Causes mild skin irritation.

**Eyes** : Based on available data, the classification criteria are not met.

**Respiratory** : Based on available data, the classification criteria are not met.

### Sensitisation

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
2-ethylhexyl nitrate	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
Solvent naphtha (petroleum), heavy arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
methyl-1H-benzotriazole	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
Amino long-chain alkyl amide	406 Skin Sensitization	skin	Guinea pig	Sensitising	-

### Conclusion/Summary

**Skin** : May cause an allergic skin reaction.

## Section 11. Toxicological information

**Respiratory** : Based on available data, the classification criteria are not met.

### Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
2-ethylhexyl nitrate	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human	Negative	-
2-ethylhexan-1-ol	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
Solvent naphtha (petroleum), heavy arom.	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	475 Mammalian Bone Marrow Chromosomal Aberration Test	Experiment: In vivo Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human	Negative	Based on data for a similar substance.
methyl-1H-benzotriazole	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
Amino long-chain alkyl amide	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Remarks
2-ethylhexan-1-ol	451 Carcinogenicity Studies	Mouse	18 months; 5 days per week	Negative - Oral - NOAEL	-
	451 Carcinogenicity Studies	Rat	24 months; 5 days per week	Negative - Oral - NOAEL	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

## Section 11. Toxicological information

### Reproductive toxicity

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Developmental toxin	Remarks
2-ethylhexyl nitrate	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Positive	Negative	Negative	-
2-ethylhexan-1-ol	416 Two-Generation Reproduction Toxicity Study	Oral	Rat	Negative	Negative	Negative	-
Solvent naphtha (petroleum), heavy arom.	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Positive	Based on data for a similar substance. WOE does not support classification
Amino long-chain alkyl amide	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Equivocal	Negative	Negative	-

**Conclusion/Summary** : North America and South America GHS classification: Suspected of damaging the unborn child.  
For other regional GHS classifications: Not classified.

### Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
2-ethylhexyl nitrate	414 Prenatal Developmental Toxicity Study None available.	Rat Rat	Negative - Inhalation Negative - Oral	Based on data for a similar substance. Based on data for a similar substance.
2-ethylhexan-1-ol	None available.	Rat	Negative - Oral	Based on data for a similar substance.
2-ethylhexan-1-ol	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	-
2-ethylhexan-1-ol	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
2-ethylhexan-1-ol	414 Prenatal Developmental Toxicity Study	Mouse	Negative - Oral	-
Solvent naphtha (petroleum), heavy arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar substance.
methyl-1H-benzotriazole	414 Prenatal Developmental Toxicity Study	Rat	Positive - Oral	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Specific target organ toxicity (single exposure)

## Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
2-ethylhexan-1-ol	Category 3	-	Respiratory tract irritation
Solvent naphtha (petroleum), heavy arom.	Category 3	-	Narcotic effects

### Specific target organ toxicity (repeated exposure)

Based on available data, the classification criteria are not met.

### Aspiration hazard

Name	Result
Solvent naphtha (petroleum), heavy arom.	ASPIRATION HAZARD - Category 1

**Information on likely routes of exposure** : Skin, Eyes, Ingestion, and Inhalation

### Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Harmful if inhaled.
- Skin contact** : Harmful in contact with skin. Causes mild skin irritation. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed.

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
Inhalation of vapours may cause a sharp decrease in blood pressure with resulting loss of consciousness.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness  
Overexposure to organic nitrates by inhalation of vapor or skin contact may cause headache, dizziness, nausea, and decreased blood pressure.
- Ingestion** : No specific data.

### 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.

## Section 11. Toxicological information

**Potential delayed effects** : Not available.

### Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
2-ethylhexyl nitrate	None available.	Rabbit	500 mg/kg	-	Sub-acute NOAEL Dermal	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	863 mg/m <sup>3</sup>	90 days	Sub-chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
2-ethylhexan-1-ol	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	250 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	640 mg/m <sup>3</sup>	90 days	Sub-chronic NOAEL Inhalation Vapour	-
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic NOEL Oral	-
Solvent naphtha (petroleum), heavy arom.	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	300 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
	452 Chronic Toxicity Studies	Rat	900 mg/m <sup>3</sup>	12 months	Chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	0.38 mg/l	13 weeks	Sub-chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	300 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
methyl-1H-benzotriazole	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	150 mg/kg	-	Sub-acute NOAEL Oral	-
Amino long-chain alkyl amide	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	50 mg/kg	-	Sub-acute NOAEL Oral	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

**General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : No known significant effects or critical hazards.

**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

### Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
2-ethylhexyl nitrate	Acute EC50 >2.53 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 0.83 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 >1000 mg/l	Micro-organism	3 hours	-
	Acute LC50 2 mg/l	Fish - Danio rerio	96 hours	-
	Chronic EC10 2.22 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
2-ethylhexan-1-ol	Acute EC50 39 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 16.6 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute LC50 17.1 mg/l	Fish - Leuciscus idus melanotus	96 hours	-
	Chronic EL10 5.3 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
Solvent naphtha (petroleum), heavy arom.	Acute EL50 >1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 1.4 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 2 to 5 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEL 1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
Long-chain alkenyl amido alkyl ammonio acetate	Chronic NOEL 0.48 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
	Acute EC50 85.4 mg/l	Algae - Pseudokirchnerella subcapitata	72 hours	Based on data for a similar substance.
	Acute EC50 33.6 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute EL50 >100 mg/l	Micro-organism	3 hours	Based on data for a similar substance.
	Acute LC50 0.406 mg/l	Fish - Oncorhynchus mykiss	96 hours	Based on data for a similar substance.
methyl-1H-benzotriazole	Chronic NOEC 42.9 mg/l	Algae - Pseudokirchnerella subcapitata	72 hours	Based on data for a similar substance.
	Acute EL50 75 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar substance.
methyl-1H-benzotriazole	Acute EL50 8.58 mg/l Fresh water	Daphnia - Daphnia galeata	48 hours	Based on data for a similar substance.
	Acute EL50 1060 mg/l	Micro-organism	24 hours	Based on data for a similar substance.
	Acute LL50 180 mg/l Fresh water	Fish - Danio rerio	96 hours	Based on data for a similar substance.
	Chronic EL10 1.18 mg/l Fresh water	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar



## Section 12. Ecological information

Amino long-chain alkyl amide	Chronic EL10 0.4 mg/l l Fresh water	Daphnia - Daphnia galeata	21 days	substance. Based on data for a similar substance.
	Acute EC50 >0.96 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar substance.
	Acute EL50 0.28 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute EL50 480 mg/l Acute LL50 0.22 mg/l	Micro-organism Fish - Danio rerio	3 hours 96 hours	- -
	Chronic EC10 0.32 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar substance.
Chronic EL10 0.07 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.	

**Conclusion/Summary** : Very toxic to aquatic life with long lasting effects.

### Persistence and degradability

Product/ingredient name	Test	Result	Remarks
2-ethylhexyl nitrate	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	0 % - Not readily - 28 days	-
2-ethylhexan-1-ol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	100 % - Readily - 14 days	-
Solvent naphtha (petroleum), heavy arom.	OECD 301F Ready Biodegradability - Manometric Respirometry Test	58.6 % - Inherent - 28 days	Based on data for a similar substance.
Long-chain alkenyl amido alkyl ammonio acetate methyl-1H-benzotriazole	- OECD 301F Ready Biodegradability - Manometric Respirometry Test	77 % - Readily - 29 days 4 % - Not readily - 28 days	Based on data for a similar substance. -
Amino long-chain alkyl amide	OECD 301B Ready Biodegradability - CO2 Evolution Test	91 % - Readily - 28 days	-

### Bioaccumulative potential

## Section 12. Ecological information

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
2-ethylhexyl nitrate	5.24	1196	high
2-ethylhexan-1-ol	2.9	25.33	low
Solvent naphtha (petroleum), heavy arom.	2.8 to 6.5	99 to 5780	high
Long-chain alkenyl amido alkyl ammonio acetate	0.8	-	low
methyl-1H-benzotriazole	1.081	-	low
Amino long-chain alkyl amide	1.842	-	low

### Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

**Hazardous to the ozone layer** : Not applicable.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimised wherever possible. 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. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. 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. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	UN	ADG	IMDG	IATA
<b>14.1 UN number</b>	UN3082	UN3082	UN3082	UN3082
<b>14.2 UN proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s. (2-ethylhexyl nitrate)	Environmentally hazardous substance, liquid, n.o.s. (2-ethylhexyl nitrate)	Environmentally hazardous substance, liquid, n.o.s. (2-ethylhexyl nitrate) Marine pollutant	Environmentally hazardous substance, liquid, n.o.s. (2-ethylhexyl nitrate)
		9	9	9

## Section 14. Transport information

<b>14.3 Transport hazard class (es)</b>	9 			
<b>14.4 Packing group</b>	III	III	III	III
<b>14.5 Environmental hazards</b>	Yes.	Yes.	Yes.	Yes.

**14.6 Special precautions for user** : Do not heat the product.

**14.7 Transport in bulk according to IMO instruments** : Not available.

## Section 15. Regulatory information

### China

#### List of Goods banned for Importing

None of the components are listed.

#### List of Goods banned for Exporting

None of the components are listed.

#### List of Toxic Chemicals Severely Restricted for Importing & Exporting by China

None of the components are listed.

### Singapore

#### Singapore - hazardous chemicals under government control

None.

### Australia

#### Standard for the Uniform Scheduling of Medicines and Poisons

Not applicable.

#### Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

### Japan

#### Fire Service Law

Category	Substance name/Type	Danger category
Category IV	Class II petroleums	III

#### Industrial Safety and Health Act

#### Label Requirements and Chemicals Requiring Notification

## Section 15. Regulatory information

Ingredient name	%
None of the components are listed.	

### Chemical Substances Control Law (CSCL)

Ingredient name	%	Status	Reference number
[(3-Alkanamido(C=8,10,12,14,16,18, normal chain)propyl)(dimethyl)ammonio]acetate or (Z)-[[3-(octadec-9-enamido)propyl](dimethyl)ammonio]acetate	≥1.0 - ≤3.0	Priority assessment	174

### Poisonous and Deleterious Substances

Ingredient name	%	Status	Reference number
3,6,9-Triazaundecane-1,11-diamine and preparations containing it	≥0.10 - ≤0.30	Deleterious	2-1-72-3

### Pollutant Release and Transfer Registers (PRTR)

None of the components are listed.

### Japan - Water Pollution Control Law

Ingredient name
Nitrate compound

## Korea

### Regulation according to ISHA

**ISHA article 117** : None of the components are listed.

**(Harmful substances prohibited from manufacture)**

**ISHA article 118** : None of the components are listed.

**(Harmful substances requiring permission)**

### Regulation according to K-REACH/CCA

Chemical name	%	Remarks
<b>K-REACH/CCA Toxic chemicals</b> : Xylene	<0.01	Impurity

**K-REACH/CCA - Banned** : None of the components are listed.

**K-REACH/CCA - Restricted** : None of the components are listed.

**K-REACH/CCA Article - TRI** : None of the components are listed.

## Section 15. Regulatory information

**Dangerous Materials Act** : **Class:** Class 4 - Flammable Liquid  
**Safety Management Act** : **Item:** 4. Class 2 petroleum - Water-insoluble liquid  
**Act** : **Threshold:** 1000 L  
**Danger category:** III  
**Signal word:** Contact with sources of ignition prohibited

### International Inventory Status

**Australia** : All components are listed or exempted.  
**Canada** : All components are listed or exempted.  
**China** : All components are listed or exempted.  
**Europe** : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).  
**Japan** : At least one component is not listed.  
**Republic of Korea** : At least one component is not listed.  
**New Zealand** : All components are listed or exempted.  
**Philippines** : All components are listed or exempted.  
**Switzerland** : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).  
**Turkey** : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).  
**Taiwan** : All components are listed or exempted.  
**United Kingdom (UK)** : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).  
**United States Active** : All components are active or exempted.

## Section 16. Other information

### History

**Date of issue/Date of revision** : 10/31/2022

EHS Department (Tel: +1 804 788 5800)

### Key to abbreviations

: ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 LogPow = logarithm of the octanol/water partition coefficient  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 UN = United Nations  
 WOE = Weight of Evidence

### Procedure used to derive the classification

## Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 3 SKIN SENSITISATION - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method

 Indicates information that has changed from previously issued version.

### Notice to reader

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