



Safety Data Sheet

HiTEC® 350 Performance Additive

SDS no. H350

Date of issue/Date of revision 1/5/2023

Section 1. Identification

GHS product identifier : HiTEC® 350 Performance Additive
Product use : Petrochemical industry: Gear Additive Package

In case of emergency - Chemical

0800-70-77-022 (Brazil)
800-681-9531 (Mexico)
+1-703-527-3887 (International)
+1-703-741-5979 (Spanish language)
+1-800-424-9300 (US & Canada)

Manufacturer / Supplier

Afton Chemical Corporation
500 Spring St.
Richmond, VA 23219
USA

Afton Chemical Canada Corporation
5045 South Service Road
Suite 101
Burlington, ON L7L 5Y7
905-631-5470

Non-Emergency Telephone: +1-804-788-5800

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4

GHS label elements

Signal word : Warning

Hazard statements : Combustible liquid.

Precautionary statements

Prevention : Wear protective gloves, protective clothing and eye or face protection. Keep away from flames and hot surfaces. No smoking.

Response : In case of fire, use water spray (fog), foam, dry chemical or CO₂.

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.

Additional hazards : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Section 3. Composition/information on ingredients

Ingredient name	CAS number	Conc. (% w/w)	US GHS Classification
1-Propene, 2-methyl-, sulfurized	68511-50-2	≥55 - ≤65	FLAMMABLE LIQUIDS - Category 4
Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	≥10 - ≤15	Not classified.
Amines, C12-14-tert-alkyl	68955-53-3	≥5 - ≤10	FLAMMABLE LIQUIDS - Category 4
Alkyl phosphonate bis(2-ethylhexyl) hydrogen phosphate	Proprietary	≥3 - ≤5	ACUTE TOXICITY (oral) - Category 4
			ACUTE TOXICITY (dermal) - Category 3
			ACUTE TOXICITY (inhalation) - Category 2
			SKIN CORROSION - Category 1B
2-ethylhexyl dihydrogen phosphate	1070-03-7	≥1 - ≤3	SERIOUS EYE DAMAGE - Category 1
(Z)-octadec-9-enylamine	112-90-3	≥1 - ≤3	SKIN SENSITIZATION - Category 1A
			SKIN IRRITATION - Category 2
			EYE IRRITATION - Category 2A
			FLAMMABLE LIQUIDS - Category 4
			SKIN CORROSION - Category 1B
			SERIOUS EYE DAMAGE - Category 1
			FLAMMABLE LIQUIDS - Category 4
			SKIN CORROSION - Category 1B
			SERIOUS EYE DAMAGE - Category 1
			ACUTE TOXICITY (oral) - Category 4
			SKIN CORROSION - Category 1B
			SERIOUS EYE DAMAGE - Category 1
			SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
			SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, immune system, liver) - Category 2
			ASPIRATION HAZARD - Category 1

Proprietary HMIRA registration number:9938. Filing date: 11/4/2016

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

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

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. Get medical attention if irritation occurs.

Section 4. First aid measures

- Inhalation** : If inhaled, remove to fresh air. 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 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** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- 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 adverse health effects persist or are severe. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Unsuitable extinguishing media** : Do not use water jet.

Specific hazards arising from the chemical

- : Combustible liquid. 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. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides
metal oxide/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.
- 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 flares, smoking or flames in hazard area. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized 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.

Methods and materials 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.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach 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 spilled 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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

Section 7. Handling and storage

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 oxidizing 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Distillates (petroleum), hydrotreated heavy paraffinic	OSHA PEL (United States, 5/2018). [Oil mist, mineral] TWA: 5 mg/m ³ 8 hours. ACGIH TLV (United States, 1/2022). [Mineral Oil, pure, highly and severely refined] TWA: 5 mg/m ³ 8 hours. Form: Inhalable fraction

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, vapor 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. 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

Section 8. Exposure controls/personal 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

Appearance

- Physical state** : Liquid. [Clear.]
- Color** : Amber.
- Odor** : Pungent. [Slight]
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : Not available.
- Boiling point** : Not available.
- Flash point** : Closed cup: 83°C (181.4°F) [Pensky-Martens Minimum]
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Density** : 1.042 g/cm³ [60.1°F (15.6°C)]
- Relative density** : 1.044
- Solubility(ies)** :

Media	Result
cold water	Not soluble

- Partition coefficient: n-octanol/water** : Not applicable.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Kinematic (40°C (104°F)): 80 mm²/s (80 cSt) Minimum
9 cSt at 100°C
- Explosive properties** : Not available.
- Oxidizing properties** : Not available.

Section 10. Stability and reactivity

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

Chemical stability : The product is stable.

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

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

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing 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
1-Propene, 2-methyl-, sulfurized	None available.	LC50 Inhalation Vapor	Rat	>2 mg/l	6 hours	-
	None available.	LD50 Dermal	Rabbit	>7940 mg/kg	-	-
	None available.	LD50 Oral	Rat	9800 mg/kg	-	-
	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	>5.53 mg/l	4 hours	Based on data for a similar substance.
Distillates (petroleum), hydrotreated heavy paraffinic	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>5000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
						Based on data for a similar substance.
Amines, C12-14-tert-alkyl	403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat	1.19 mg/l	4 hours	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rat	251 mg/kg	-	-
	401 Acute Oral Toxicity	LD50 Oral	Rat	612 mg/kg	-	-
Alkyl phosphonate	433 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat	>22 mg/l	1 hours	-
	434 Acute Dermal Toxicity-Fixed Dose Procedure	LD50 Dermal	Rabbit	5000 mg/kg	-	-
	420 Acute Oral Toxicity - Fixed Dose Method	LD50 Oral	Rat	>3000 mg/kg	-	-
bis(2-ethylhexyl) hydrogen phosphate	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	-
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	2500 mg/kg	-	Based on data for a similar substance.
2-ethylhexyl dihydrogen	None available.	LD50 Dermal	Rabbit	>4640 mg/kg	-	-

Section 11. Toxicological information

phosphate	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	2500 mg/kg	-	Based on data for a similar substance.
(Z)-octadec-9-enylamine	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	-
	401 Acute Oral Toxicity	LD50 Oral	Rat	1689 mg/kg	-	-

Conclusion/Summary : Acute inhalation toxicity: Not classified. On basis of test data

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
1-Propene, 2-methyl-, sulfurized	None available.	Rabbit	Eyes - Not an Irritant	-
Distillates (petroleum), hydrotreated heavy paraffinic	None available.	Rabbit	Skin - Not an Irritant	-
	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.
Amines, C12-14-tert-alkyl	None available.	Rabbit	Eyes - Visible necrosis	-
	None available.	Rabbit	Skin - Visible necrosis	-
Alkyl phosphonate	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
bis(2-ethylhexyl) hydrogen phosphate	None available.	Rabbit	Eyes - Visible necrosis	-
	None available.	Rabbit	Skin - Visible necrosis	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Visible necrosis	Based on data for a similar substance.
2-ethylhexyl dihydrogen phosphate	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Visible necrosis	Based on data for a similar substance.
(Z)-octadec-9-enylamine	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Severe irritant	Based upon data for a similar product.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Visible necrosis	-

Conclusion/Summary

Skin : Non-irritating to the skin. Based on test data for this or similar products.

Eyes : Non-irritating to the eyes. Based on test data for this or similar products.

Respiratory : Not available.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
1-Propene, 2-methyl-, sulfurized	None available.	skin	Guinea pig	Not sensitizing	-
Distillates (petroleum), hydrotreated heavy paraffinic	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
Amines, C12-14-tert-alkyl	None available.	skin	Guinea pig	Sensitizing	-
(Z)-octadec-9-enylamine	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based upon data for a similar product.

Conclusion/Summary

Skin : Not classified as a skin sensitizer. Based on test data for this or similar products.

Respiratory : Not available.

Mutagenicity

Section 11. Toxicological information

Product/ingredient name	Test	Experiment	Result	Remarks
1-Propene, 2-methyl-, sulfurized	None available.	Experiment: In vitro Subject: Bacteria	Negative	-
	None available.	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
Distillates (petroleum), hydrotreated heavy paraffinic	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro 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.
Amines, C12-14-tert-alkyl	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
Alkyl phosphonate	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
bis(2-ethylhexyl) hydrogen phosphate	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
	487 <i>In vitro</i> Micronucleus Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human	Negative	Based on data for a similar substance.
2-ethylhexyl dihydrogen phosphate	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human	Negative	Based on data for a similar substance.
(Z)-octadec-9-enylamine	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	451 Carcinogenicity Studies	Mouse	78 weeks	Negative - Dermal - NOAEL	Based on data for a similar substance.
Alkyl phosphonate	None available.	Rat	2 years	Negative - Oral - NOAEL	-

Conclusion/Summary : Not available.

Classification

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Development toxin	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Negative	Negative	Negative	Based on data for a similar substance.
Amines, C12-14-tert-alkyl	415 One-Generation Reproduction Toxicity Study	Oral	Rat	Positive	Negative	Negative	-
Alkyl phosphonate	416 Two-Generation Reproduction Toxicity Study	Oral	Rat	Positive	Negative	Equivocal	Based on data for a similar substance. WOE does not support classification
bis(2-ethylhexyl) hydrogen phosphate	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Positive	Negative	Negative	Based on data for a similar substance.
2-ethylhexyl dihydrogen phosphate	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Negative	Negative	Negative	Based on data for a similar substance.
(Z)-octadec-9-enylamine	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Positive	Negative	Negative	Based on data for a similar substance.

Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	Based on data for a similar substance.
Amines, C12-14-tert-alkyl	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	-
Alkyl phosphonate	None available.	Rat	Negative - Oral	Based on data for a similar substance.
bis(2-ethylhexyl) hydrogen phosphate	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar substance.
(Z)-octadec-9-enylamine	None available.	Rat	Negative - Oral	-

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
(Z)-octadec-9-enylamine	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
(Z)-octadec-9-enylamine	Category 2	-	gastrointestinal tract, immune system, liver

Aspiration hazard

Name	Result
(Z)-octadec-9-enylamine	ASPIRATION HAZARD - Category 1

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

Potential acute health effects

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation. Ingestion may cause gastrointestinal irritation and diarrhea.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin.
Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
1-Propene, 2-methyl-, sulfurized Distillates (petroleum), hydrotreated heavy paraffinic	None available.	Rat	100 mg/kg	-	Sub-acute NOAEL Dermal	-
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic LOAEL Oral	Based on data for a similar substance.
	410 Repeated Dose Dermal Toxicity: 21/28-day Study	Rabbit	1000 mg/kg	-	Sub-acute NOAEL Dermal	Based on data for a similar substance.
	411 Subchronic Dermal Toxicity: 90-day Study	Rat	30 mg/kg	-	Sub-chronic NOAEL Dermal	Based on data for a similar substance.
	None available.	Rat	0.15 mg/l	13 weeks	Sub-chronic NOAEL Inhalation	Based on data for a similar substance.
	None available.	Rat	0.22 mg/l	4 weeks	Dusts and mists Sub-chronic NOAEL	Based on data for a similar

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Amines, C12-14-tert-alkyl	410 Repeated Dose Dermal Toxicity: 21/28-day Study	Rat	20 mg/kg	-	Inhalation Dusts and mists	substance.
	412 Repeated Dose Inhalation Toxicity: 28-day or 14-day Study	Rat	19 mg/m ³	4 weeks	Sub-acute NOAEL Dermal	-
Alkyl phosphonate	None available.	Rabbit	20 mg/kg	-	Sub-acute NOAEL Inhalation Vapor	-
	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat	250 mg/kg	-	Sub-acute NOAEL Dermal	Based on data for a similar substance.
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
bis(2-ethylhexyl) hydrogen phosphate	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	0.13 mg/l	12 months	Chronic NOEL Inhalation Dusts and mists	Based on data for a similar substance.
	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	150 mg/kg	-	Sub-acute NOAEL Oral	-
	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat	125 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
2-ethylhexyl dihydrogen phosphate	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat	125 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	250 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
(Z)-octadec-9-enylamine	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	3.25 mg/kg	-	Sub-acute NOAEL Oral	-

Conclusion/Summary

: Not available.

General

: No known significant effects or critical hazards.

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 11. Toxicological information

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
1-Propene, 2-methyl-, sulfurized	Acute EL50 >100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	No effects at saturation.
	Acute EL50 >1000 mg/l	Daphnia - Daphnia magna	48 hours	No effects at saturation.
	Acute LL50 10000 mg/l	Fish - Cyprinodon variegatus	96 hours	-
	Chronic NOEL 5 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	No effects at saturation.
Distillates (petroleum), hydrotreated heavy paraffinic	Acute EL50 >10000 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 >100 mg/l	Fish - Pimephales promelas	96 hours	Based on data for a similar substance.
	Chronic NOEL ≥100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar substance.
	Chronic NOEL 10 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
Amines, C12-14-tert-alkyl	Chronic NOEL 1000 mg/l	Fish - Oncorhynchus mykiss	14 days	QSAR result.
	Acute EL50 0.44 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 2.5 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 63.5 mg/l	Micro-organism	30 minutes	-
Alkyl phosphonate	Acute LL50 1.3 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEC 0.078 mg/l	Fish - Oncorhynchus mykiss	96 days	-
	Chronic NOEL 0.05 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 14.4 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
bis(2-ethylhexyl) hydrogen phosphate	Acute EL50 >10000 mg/l	Micro-organism	3 hours	Based on data for a similar substance.
	Acute IC50 20.8 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 63.4 mg/l	Fish - Danio rerio	96 hours	-
	Chronic EC10 5.1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
2-ethylhexyl dihydrogen phosphate	Chronic NOEL 4.1 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
	Acute EL50 >100 mg/l	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar substance.
	Acute EL50 890 mg/l	Micro-organism	3 hours	-
	Acute LL50 60.7 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LL50 20 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic EL10 76 mg/l	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar substance.
	Chronic NOEL 20.6 mg/l	Fish - Oncorhynchus mykiss	48 days	-
	Acute EL50 49 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar

Section 12. Ecological information

(Z)-octadec-9-enylamine	Acute EL50 >100 mg/l	Daphnia - Daphnia magna	48 hours	substance. Based on data for a similar substance.
	Acute EL50 420 mg/l	Micro-organism	3 hours	Based on data for a similar substance.
	Acute LL50 >100 mg/l	Fish - Oncorhynchus mykiss	96 hours	Based on data for a similar substance.
	Chronic NOEL 25 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	Based on data for a similar substance.
	Acute EL50 0.04 mg/l	Algae - Selenastrum capricornutum	96 hours	-
	Acute EL50 0.011 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 222.5 mg/l	Micro-organism	3 hours	Based on data for a similar substance.
	Acute LL50 0.06 mg/l Chronic NOEL 0.01 mg/l Chronic NOEL 0.013 mg/l	Fish - Pimephales promelas Algae - Selenastrum capricornutum Daphnia - Daphnia magna	96 hours 96 hours 21 days	- - -

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
1-Propene, 2-methyl-, sulfurized	OECD 301B Ready Biodegradability - CO ₂ Evolution Test	0.3 % - Not readily - 28 days	-
Distillates (petroleum), hydrotreated heavy paraffinic	OECD 301F Ready Biodegradability - Manometric Respirometry Test	31 % - Not readily - 28 days	Based on data for a similar substance.
Amines, C12-14-tert-alkyl	OECD 301D Ready Biodegradability - Closed Bottle Test	21.8 % - Not readily - 28 days	-
Alkyl phosphonate	OECD 301F Ready Biodegradability - Manometric Respirometry Test	89.8 % - Inherent - 28 days	Readily biodegradable but failing the 10-day window
bis(2-ethylhexyl) hydrogen phosphate	OECD 301F Ready Biodegradability - Manometric Respirometry Test	75 % - Readily - 28 days	-
2-ethylhexyl dihydrogen phosphate	OECD 301B Ready Biodegradability -	98 % - Readily - 28 days	Based on data for a similar substance.

Section 12. Ecological information

(Z)-octadec-9-enylamine	CO ₂ Evolution Test OECD 301B Ready Biodegradability - CO ₂ Evolution Test	66 % - Readily - 28 days	-
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Bioaccumulative potential







Product/ingredient name	LogP _{ow}	BCF	Potential
Amines, C12-14-tert-alkyl	2.9	-	low
Alkyl phosphonate	1.81	-	low
bis(2-ethylhexyl) hydrogen phosphate	2.67	2.7 to 6	low

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimized 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. Vapor 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	UN3082	UN3082	UN3082
UN proper shipping name	Combustible liquid, n. o.s. (Sulfurized olefins)	Environmentally hazardous substance, liquid, n.o.s. (Long-chain alkyl amine , Long-chain alkenyl amine). Marine pollutant	Environmentally hazardous substance, liquid, n.o.s. (Long-chain alkyl amine , Long-chain alkenyl amine) Marine pollutant.	Environmentally hazardous substance, liquid, n.o.s. (Long-chain alkyl amine , Long-chain alkenyl amine)
Transport hazard class(es)	Combustible liquid.	9  	9  	9  
Packing group	III	III	III	III
Environmental hazards	No.	Yes.	Yes.	Yes.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

Notice to reader : The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

Section 15. Regulatory information

U.S. Federal regulations

United States - TSCA Section 5

TSCA 5(a)2 final significant new use rules

None of the components are listed.

TSCA 5(a)2 proposed significant new use rules

None of the components are listed.

TSCA 5(e) substance consent order

None of the components are listed.

United States - TSCA Section 6

TSCA 6 final risk management

None of the components are listed.

United States - TSCA 12(b) - Chemical export notification

Name on list

Status

Ref. number

None of the components are listed.

SARA 302/304

Composition/information on ingredients

			SARA 302 TPQ		SARA 304 RQ	
Name	%	EHS	(lbs)	(gallons)	(lbs)	(gallons)
ethylene oxide	≤0.00001	Yes.	1000	-	10	-
propylene oxide	≤0.00001	Yes.	10000	1444.3	100	14.4

SARA 304 RQ : 800000000 lbs / 363200000 kg [92079932.1 gal / 348560460.7 L]

CERCLA : CERCLA: Hazardous substances.: butan-1-ol: 5000 lbs. (2270 kg); Phosphoric acid: 5000 lbs. (2270 kg); ethylene oxide: 10 lbs. (4.54 kg); propylene oxide: 100 lbs. (45.4 kg); 1,4-dioxane: 100 lbs. (45.4 kg); ethyl acrylate: 1000 lbs. (454 kg);

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 4

Composition/information on ingredients

Name	%	Classification
1-Propene, 2-methyl-, sulfurized Distillates (petroleum), hydrotreated heavy paraffinic Amines, C12-14-tert-alkyl	≥55 - ≤65 ≥10 - ≤15 ≥5 - ≤10	FLAMMABLE LIQUIDS - Category 4 HNOC - Static-accumulating flammable liquid FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 3 ACUTE TOXICITY (inhalation) - Category 2 SKIN CORROSION - Category 1B SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A
Alkyl phosphonate	≥3 - ≤5	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A
bis(2-ethylhexyl) hydrogen phosphate	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 4 SKIN CORROSION - Category 1B

Section 15. Regulatory information

2-ethylhexyl dihydrogen phosphate	≥1 - ≤3	SERIOUS EYE DAMAGE - Category 1 FLAMMABLE LIQUIDS - Category 4 SKIN CORROSION - Category 1B
(Z)-octadec-9-enylamine	≥1 - ≤3	SERIOUS EYE DAMAGE - Category 1 ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1B SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, immune system, liver) - Category 2 ASPIRATION HAZARD - Category 1

SARA 313

No SARA 313 chemicals are present above the reporting threshold.

State - California Prop. 65

⚠ WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
⚠ WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethyl acrylate	≤0.01	Yes.	No.	-	-
2-ethylhexyl acrylate	≤0.01	Yes.	No.	-	-
Ethylene oxide	≤0.00001	Yes.	Yes.	Yes.	Yes.
Propylene oxide	≤0.00001	Yes.	No.	-	-
1,4-Dioxane	≤0.00001	Yes.	No.	Yes.	-

www.P65Warnings.ca.gov.

Canadian regulations

Canada Significant New Activity Notice : None of the components are listed.
Canadian NPRI : The following components are listed: phosphorus (total)
CEPA Toxic substances : None of the components are listed.

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 : All components are listed or exempted.
Republic of Korea : All components are listed or exempted.
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 : 1/5/2023

Prepared by : 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

Toxicological and Ecotoxicological Test Data Summary(s) : AT_A1, ECO_A16, ECO_A2, SEN_A10, CORR_A34

▣ Indicates information that has changed from previously issued version.

Notice to reader

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. Afton makes no representation as to completeness or accuracy. In no event will Afton be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.