



Safety Data Sheet

HiTEC® 22520 Performance Additive

SDS no. H22520

Section 1. Identification

Product identifier : HiTEC® 22520 Performance Additive
Product use : Petrochemical industry: Lubricating Oil Additive.
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In case of emergency - Chemical

+1-703-527-3887 (International)
+65-3158-1349 (Asia Pacific)
+61-290372994 (Australia)
4001-204937 (China)
+81-345209637 (Japan)
00-308-13-2549 (South Korea)
+1-703-741-5979 (Spanish language)
+44-870-8200418 (UK)
1-800-424-9300 (US & Canada)

Manufacturer / Supplier

Afton Chemical Asia Pte. Ltd.
103 Penang Road
#09-01 Visioncrest Commercial
Singapore 238467
Telephone number: +65 6732 0822
Fax: +65 6737 4123

Afton Chemical (Suzhou) Co., Ltd.
No. 26 Pingsheng Road,
Suzhou Industrial Park, Suzhou
215126 China
Tel: +86-512-62605099

Afton Chemical (Beijing) Co., Ltd.
Room 707 China World Office 1
No. 1 Jian Guo Men Wai Avenue
Beijing 100004 China
Telephone number: +86 10 6535 0000

Afton Chemical Japan Corporation
Hirakawacho Mori Tower 7F, 2-16-1
Hirakawacho, Chiyoda-ku
Tokyo
Japan

Afton Chemical Asia Pacific Company
Level 12, 20 Berry Street
North Sydney, NSW 2060
Australia
Telephone number: +61 299785800
Business Hours: 9:00am - 5:00pm

Afton Chemical Korea Co., Ltd.
511 Yeongdong-daero, Gangnam-gu,
27th Floor Trade Tower
Seoul City 06164
Republic of Korea
Telephone number: +82- 2 -2191-4000

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

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

Section 2. Hazards identification

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 3
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 3
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes mild skin irritation.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment.

Response : If skin irritation occurs: Get medical advice or attention.

Storage : Store in a well-ventilated place.

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 90°C (194°F), thermal decomposition may occur producing CO, CO₂, phosphorus oxides, metal oxide/ oxides, hydrogen sulfide.

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
Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	≥10 - ≤15	Not classified.	[2]
zinc O,O',O',O'-tetrakis(1,3-dimethylbutyl) bis(phosphorodithioate)	2215-35-2	≥5 - ≤10	ACUTE TOXICITY (oral) - Category 5 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	≥5 - ≤10	ASPIRATION HAZARD - Category 1	[1] [2]
Distillates (petroleum), solvent-refined	64741-88-4	≥5 - ≤10	Not classified.	[2]

Section 3. Composition/information on ingredients

heavy paraffinic				
bis(nonylphenyl)amine	36878-20-3	≥5 - ≤10	SKIN CORROSION/IRRITATION - Category 3	[1]
zinc bis[O,O-bis(2-ethylhexyl)] bis (dithiophosphate)	4259-15-8	≥1 - ≤3	ACUTE TOXICITY (oral) - Category 5 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]

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 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 adverse health effects persist or are severe. 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 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

Section 4. First aid measures

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** : Causes mild skin irritation.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- 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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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 CO₂.
- Unsuitable extinguishing media** : Do not use water jet.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful 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
sulfur oxides
phosphorus oxides
metal oxide/oxides
Hydrogen sulphide

Section 5. Firefighting measures

- 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. Take precautions to limit storage vessel surface temperature to below 121°C (250°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 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".
- 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.

Methods and material 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 (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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. 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.

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 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. 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.
- The following information is provided for health and safety purposes. Please refer to individual product specification documents for quality-related storage and handling. Preferred storage temperature is between ambient and 70°C.
- Exposure to elevated temperatures will increase the rate of hydrogen sulfide (H₂S) and mercaptan generation.
- Temperatures above 90°C should be avoided unless an appropriate engineering review has been conducted on the process.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Distillates (petroleum), hydrotreated heavy paraffinic	Safe Work Australia (Australia, 12/2019). TWA: 5 mg/m ³ 8 hours. Form: Mist
Distillates (petroleum), solvent-dewaxed heavy paraffinic	Safe Work Australia (Australia, 12/2019). TWA: 5 mg/m ³ 8 hours. Form: Mist
Distillates (petroleum), solvent-refined heavy paraffinic	Safe Work Australia (Australia, 12/2019). TWA: 5 mg/m ³ 8 hours. Form: Mist

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

- 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

- Physical state** : Liquid. [Viscous]
- Colour** : Brown. [Dark]
- Odour** : Petroleum-like
- Odour threshold** : Not available.
- pH** : Not available.
- Melting point** : Not available.
- Boiling point** : Not available.
- Flash point** : Closed cup: 130°C (266°F) [Pensky-Martens Minimum]
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapour pressure** : Not available.
- Relative vapour density** : Not available.
- Vapour density** : Not available.
- Density** : 0.977 g/cm³ [59°F (15°C)]
- Relative density** : Not available.
- Solubility(ies)** : Not available.
- Partition coefficient: n-octanol/water** : Not applicable.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.

Section 9. Physical and chemical properties

Viscosity : Kinematic (40°C): 957 mm²/s (957 cSt) Minimum
67 cSt @ 100°C

Explosive properties : Not available.

Oxidising properties : Not available.

Particle characteristics

Median particle size : Not applicable.

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 : High temperatures, sparks, and open flames.

Incompatible materials : Strong oxidising and reducing agents.

Hazardous decomposition products : Hydrogen sulphide

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks	
Distillates (petroleum), hydrotreated heavy paraffinic	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	>5.53 mg/l	4 hours	Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance.	
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>5000 mg/kg	-		
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-		
zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	>2 mg/l	1 hours	Based on data for a similar substance.	
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>25000 mg/kg	-		-
	401 Acute Oral Toxicity	LD50 Oral	Rat	2230 mg/kg	-		-
Distillates (petroleum), solvent-dewaxed heavy paraffinic	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	>5.53 mg/l	4 hours	-	
	402 Acute	LD50 Dermal	Rabbit	>5000 mg/kg	-	-	

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Distillates (petroleum), solvent-refined heavy paraffinic	Dermal Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	-
	401 Acute Oral Toxicity	LC50 Inhalation Vapour	Rat	>5.53 mg/l	4 hours	Based on data for a similar substance.
bis(nonylphenyl)amine	403 Acute Inhalation Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	-
	None available.	LD50 Oral	Rat	>5000 mg/kg	-	-
	None available.	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	402 Acute Dermal Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Dermal	Rabbit	>5000 mg/kg	-	-
	401 Acute Oral Toxicity	LD50 Oral	Rat	3100 mg/kg	-	-

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

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	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.
zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	None available.	Rabbit	Eyes - Visible necrosis	Not H319 at <15%. On basis of test data.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Not H318 at <20%. On basis of test data.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Not H315 at <15%. On basis of test data.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
Distillates (petroleum), solvent-refined heavy paraffinic	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
bis(nonylphenyl)amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Mild irritant	Based on data for a similar substance.
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Visible necrosis	Not H319 at <50%. On basis of test data.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Visible necrosis	Not H318 at <80%. On basis of test data.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-

Skin : Causes mild skin irritation. Based on test data for this or similar products.

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

Section 11. Toxicological information

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

Sensitisation

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic zinc O,O',O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
Distillates (petroleum), solvent-dewaxed heavy paraffinic	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
Distillates (petroleum), solvent-refined heavy paraffinic	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
bis(nonylphenyl)amine	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-

Conclusion/Summary

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

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

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	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.
	476 In vitro 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.
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Positive	Based on data for a similar substance. WOE does not support classification
zinc O,O',O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	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.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	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.
Distillates (petroleum), solvent-refined heavy	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.

Section 11. Toxicological information

paraffinic	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
bis(nonylphenyl)amine	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.
	478 Genetic Toxicology: Rodent Dominant Lethal Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	None available.	Experiment: In vitro Subject: Mammalian-Animal	Positive	WOE does not support classification
	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo 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
Distillates (petroleum), hydrotreated heavy paraffinic	451 Carcinogenicity Studies	Mouse	78 weeks	Negative - Dermal - NOAEL	Based on data for a similar substance.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	451 Carcinogenicity Studies	Mouse	78 weeks	Negative - Dermal - NOAEL	Based on data for a similar substance.
Distillates (petroleum), solvent-refined heavy paraffinic	451 Carcinogenicity Studies	Mouse	78 weeks	Negative - Dermal - NOAEL	Based on data for a similar substance.

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

Reproductive toxicity

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Developmental 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.
zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	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.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	421 Reproduction/ Developmental Toxicity Screening Test	Dermal	Rat	Negative	Negative	Negative	Based on data for a similar substance.
	421 Reproduction/	Oral	Rat	Negative	Negative	Negative	Based on

Section 11. Toxicological information

Distillates (petroleum), solvent-refined heavy paraffinic	Developmental Toxicity Screening Test 421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Negative	Negative	Negative	data for a similar substance. Based on data for a similar substance.
zinc bis[O,O-bis (2-ethylhexyl)] bis (dithiophosphate)	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Negative	Negative	Negative	-

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

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.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	Based on data for a similar substance.
Distillates (petroleum), solvent-refined heavy paraffinic	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	Based on data for a similar substance.
bis(nonylphenyl)amine	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	-

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

Specific target organ toxicity (single exposure)

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

Specific target organ toxicity (repeated exposure)

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

Aspiration hazard

Name	Result
Distillates (petroleum), solvent-dewaxed heavy paraffinic	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 : No known significant effects or critical hazards.

Skin contact : Causes mild skin irritation.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

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- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- 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** : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. Ingestion may cause gastrointestinal irritation and diarrhoea.
- 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
Distillates (petroleum), hydrotreated heavy paraffinic	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 Dusts and mists	Based on data for a similar substance.
	None available.	Rat	0.22 mg/l	4 weeks	Sub-chronic NOAEL Inhalation Dusts and mists	Based on data for a similar substance.
zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat	160 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.

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Distillates (petroleum), solvent-dewaxed heavy paraffinic	410 Repeated Dose Dermal Toxicity: 21/28-day Study None available.	Rabbit	1000 mg/kg	-	Sub-acute NOAEL Dermal	Based on data for a similar substance.
		Rat	0.05 mg/l	13 weeks	Sub-chronic NOAEL Inhalation Vapour	-
Distillates (petroleum), solvent-refined heavy paraffinic	410 Repeated Dose Dermal Toxicity: 21/28-day Study None available.	Rabbit	1000 mg/kg	-	Sub-acute NOAEL Dermal	Based on data for a similar substance.
		Rat	0.15 mg/l	13 weeks	Sub-chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
	None available.	Rat	0.22 mg/l	28 days	Sub-acute NOAEL Inhalation Vapour	Based on data for a similar substance.
bis(nonylphenyl)amine	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	100 mg/kg	-	Sub-chronic LOAEL Oral	-
zinc bis[O,O-bis(2-ethylhexyl)]bis(dithiophosphate)	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-acute NOAEL Oral	-

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

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 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
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.
	Chronic NOEL 1000 mg/l	Fish - Oncorhynchus mykiss	14 days	QSAR result.

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zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	Acute EL50 24 mg/l	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance.
	Acute EL50 23 mg/l	Daphnia - Daphnia magna	48 hours	
	Acute EL50 >10000 mg/l	Micro-organism	3 hours	
	Acute LL50 4.5 mg/l	Fish - Oncorhynchus mykiss	96 hours	
	Chronic NOEL 10 mg/l	Algae - Desmodesmus subspicatus	72 hours	
	Chronic NOEL 0.4 mg/l	Daphnia - Daphnia magna	21 days	
Distillates (petroleum), solvent-dewaxed heavy paraffinic	Acute EL50 >10000 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance.
	Acute LL50 >100 mg/l	Fish - Pimephales promelas	96 hours	
	Chronic NOEL ≥100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	
	Chronic NOEL 10 mg/l	Daphnia - Daphnia magna	21 days	
	Chronic NOEL 1000 mg/l	Fish - Oncorhynchus mykiss	14 days	
	Distillates (petroleum), solvent-refined heavy paraffinic	Acute EL50 >10000 mg/l	Daphnia - Daphnia magna	
Acute LL50 >100 mg/l		Fish - Pimephales promelas	96 hours	
Chronic NOEL ≥100 mg/l		Algae - Pseudokirchneriella subcapitata	72 hours	
Chronic NOEL 10 mg/l		Daphnia - Daphnia magna	21 days	
Chronic NOEL 1000 mg/l		Fish - Oncorhynchus mykiss	14 days	
bis(nonylphenyl)amine		Acute EL50 >100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EL50 >100 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute IC50 >100 mg/l	Micro-organism	3 hours	Based on data for a similar substance.
	Acute LL50 >100 mg/l	Fish - Danio rerio	96 hours	Based on data for a similar substance.
	Chronic EL10 >100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Chronic EL10 4.12	Crustaceans - Daphnia magna	21 days	-

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zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	mg/l Fresh water Chronic NOEL 10	Fish - Danio rerio	34 days	-
	mg/l Fresh water Acute EL50 410 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EL50 75 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 380 mg/l	Micro-organism	16 hours	-
	Acute LL50 4.4 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEL 220 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
Chronic NOEL 0.4 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.	

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

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
Distillates (petroleum), hydrotreated heavy paraffinic	OECD 301F Ready Biodegradability - Manometric Respirometry Test	31 % - Not readily - 28 days	Based on data for a similar substance.
zinc O,O,O',O'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	OECD 301B Ready Biodegradability - CO2 Evolution Test	1.5 % - Not readily - 28 days	Based on data for a similar substance.
Distillates (petroleum), solvent-dewaxed heavy paraffinic	OECD 301F Ready Biodegradability - Manometric Respirometry Test	31 % - Not readily - 28 days	Based on data for a similar substance.
Distillates (petroleum), solvent-refined heavy paraffinic	OECD 301F Ready Biodegradability - Manometric Respirometry Test	31 % - Not readily - 28 days	Based on data for a similar substance.
bis(nonylphenyl)amine	OECD 301C Ready Biodegradability - Modified MITI Test (I)	24 % - Not readily - 28 days	-
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	OECD 301D Ready Biodegradability - Closed Bottle Test	<5 % - Not readily - 27 days	-

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Distillates (petroleum), solvent-refined heavy paraffinic	3.9 to 6	-	high
bis(nonylphenyl)amine	3.64 to 7.02	1730	high
zinc bis[O,O-bis(2-ethylhexyl)]bis(dithiophosphate)	3.59	-	low

Mobility in soil

- Soil/water partition coefficient (K_{oc})** : 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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	ADG	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-

Section 14. Transport information

14.5 Environmental hazards	No.	No.	No.	No.
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14.6 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.

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

Ingredient name	Status
Anionic surface active agent	Listed

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 III petroleum	III

Industrial Safety and Health Act

Label Requirements and Chemicals Requiring Notification

Ingredient name	%
Mineral oil	≥25 - ≤35
Molybdenum and its compounds	≥0.30 - ≤0.50

Chemical Substances Control Law (CSCL)

Section 15. Regulatory information

None of the components are listed.

Poisonous and Deleterious Substances

None of the components are listed.

Pollutant Release and Transfer Registers (PRTR)

None of the components are listed.

Japan - Water Pollution Control Law

Ingredient name

n-Hexane Extracts (mineral oil)
Zinc compounds
Boron compounds

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
K-REACH/CCA Toxic chemicals	: diphenylamine	<0.1	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 : The following components are listed: Boron compounds, Zinc and its compounds

Dangerous Materials Safety Management Act : **Class:** Class 4 - Flammable Liquid
Item: 5. Class 3 petroleums - Water-insoluble liquid
Threshold: 2000 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.

Section 15. Regulatory information

- 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 : 10/19/2022

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

Classification	Justification
SKIN CORROSION/IRRITATION - Category 3	Calculation method
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 3	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3	Calculation method

Toxicological and Ecotoxicological Test Data Summary(s) : CORR_A20

Data Summary(s)

▣ Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

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