

## SAFETY DATA SHEET

**1. PRODUCT AND COMPANY IDENTIFICATION**

Name of chemicals : **MOLYGREEN HYBRID OW-20 SP**  
 Product Code : 29-E-44  
 Recommended use and usage restrictions : Engine oil  
 Name of supplier's company : CAP STYLE CO., LTD.  
 The supplier's address : KYOWA-NANABANKAN 6F 1-11-5, OMORIKITA, OTA-KU, TOKYO, 143-0016, JAPAN  
 Supplier's phone number : +81-80-5933-3844  
 Supplier's fax number : +081-3-5765-2739  
 Emergency telephone number : +81-80-5933-3844

**2. Hazards identification**

GHS CLASSIFICATION  
 PHYSICAL/CHEMICAL HAZARDS : Not classified  
 HEALTH HAZARDS : Not classified  
 ENVIRONMENTAL HAZARDS : Not classified  
 GHS LABELING  
 Precautionary pictogram : Not applicable  
 Signal word : Not applicable  
 Hazard Statement : Not applicable  
 Precautionary Statements  
 Prevention : Not applicable  
 Response : Not applicable  
 Storage : Not applicable  
 Disposal : Not applicable

※ Even when there is no mentioning in the above instructions by GHS classification, please consider sufficiently to prevention/response/storage/disposal by making reference to after information.

**3. Composition/information on ingredients**

Distinction between chemical substances and mixtures : Mixture

Composition and component information	Composition	Cas No.	The law of chemical review	Concentration(mass%)
	Petroleum hydrocarbons *1)	64742-54-7	-	70-80
	Viscosity modifier *2)	(Mixture)	-	3-13
	Lubricating oil additive *3)	(Mixture)	-	3-13
	Polyalphaolefin	100172-11-1	-	1-9
	Fatty acid ester	27178-16-1	(2)-861	1-9
	Organic Molybdenum compound *4)	(Mixture)	-	<1

Hazardous substances (Ingredients in composition) : Japan Industrial Safety and Health Act

Ingredients	Cas No.	Cabinet Order No.	Concentration(mass%)
Mineral oil *1)	64742-54-7	Article 18, 1, Attached table 9-168 of Cabinet order(Labeling, etc)	70-80
Mineral oil *2)	-	Article 18, 1, Attached table 9-168 of Cabinet order(Labeling, etc)	1-10
Mineral oil *3)	64742-54-7	Article 18, 1, Attached table 9-168 of Cabinet order(Labeling, etc)	1-5
Molybdenum and its compounds *4)	-	Article 18, 1, Attached table 9-603 of Cabinet order(Labeling, etc)	<1 (as Molybdenum : <0.03)

**4. First-aid measures**

Inhalation  
 1 Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 2 Cover the body with blankets to keep warm and quiet. If you feel unwell, seek medical advice.

Skin Contact  
 1 Immediately take off the polluted clothes and flush skin with large amounts of water and soapy water.  
 2 Wash contaminated clothing before reuse.

Eye Contact  
 1 Rinse with clean water carefully for several minutes.  
 2 Remove contact lenses if present and if removal is easy, then continue rinsing.  
 3 Rinse for 15 minutes at a minimum and seek medical attention.

Ingestion  
 1 Do not induce vomiting. Call a physician or poison control center immediately.  
 2 When the inside of the mouth is polluted, it's washed with water enough.

**5. Fire-fighting measures**

Extinguishing Media : Mist of loaded liquid, dry chemicals, carbon dioxide, fire foam, and dry sand are effective.

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Extinguishing Media to Avoid	: Use of straight steam of water can cause a risk of spreading fire.
Specific hazards arising	: In some cases of fire, may release irritant gases.
Peculiar fire extinguishing method	1 Remove combustion source in fire. 2 Spray water to the surrounding facilities for cooling. 3 Keep unauthorized persons off the site of occurrence of fire and the surroundings.
Precautions for fire fighters	1 Fight fire from windward direction while wearing protective equipment. If contact with skin is expected, wear impervious protective equipment and gloves. 2 Use air-breathing apparatus and protective clothing whenever necessary.

**6. Accidental release measures**

Personal precautions	: Wear protective equipment when working.
Environmental precautions	1 Prevent spreading of oil spill with earth and sand, sandbags, or other proper materials and use care not to allow the oil spill to flow to street drains, sewer systems, and rivers. 2 At sea, install oil spill containment booms to prevent spreading of spills and absorb with absorption mat or other proper materials.
Methods and materials for containment and cleaning up	1 Make a person evacuate from a dangerous area. 2 Stretch a rope and prohibit person's entering around the dangerous area. 3 In case of spillage in small quantity, collect spillage by absorbing with earth, sand, sawdust, waste, or other proper materials. 4 In case of spillage in large quantity, enclose with embankment to prevent spreading of spillage and collect spillage in empty containers to the extent possible.
Prevention of second accident	1 In case of spillage, immediately inform the organizations concerned of the spillage to prevent possible accidents and spreading of spillage. 2 Remove nearby potential ignition sources immediately and make fire-extinguishing agents available. 3 Remove spillage completely, and ventilate and clean the site and the surroundings.

**7. Handling and storage**

Handling	
Technical measures	1 Keep away from any possible contact with sparks, open flames, and high-temperature materials, and do not allow release of vapor without justification. 2 Use personal protective equipment as required. 3 Use pumps or other proper equipment for taking out from containers. Do not siphon with your mouth using a tube. Do not drink. 4 When mist is generated, use respiratory equipment to prevent inhalation of mist.
Ventilation/Exhaust measure	1 Maintain adequate ventilation when handling indoors. 2 In case of vapor/mist dispersion, install a closed system, local ventilation system, and/or other proper equipment for the sources of vapor/mist generation.
Precautions	1 Wash hands and face thoroughly after handling. 2 Wear protective gloves when opening containers to eliminate a risk of hand injury. 3 Avoid rough handling of containers such as falling, dropping, exposing to shock, and dragging.
Storage	
Storage Conditions	1 Store in a well ventilated, cool, dry, dark place, protecting from direct sunlight. 2 Avoid every kind of potential ignition sources and high-temperature materials. 3 Keep containers tightly closed after use to prevent possible contamination with dust and moisture.
Precautions	1 Avoid contact and storage in the same place with Halogens, Strong acids, Alkalies and Oxidizers. 2 Empty containers may contain combustible product residues. Do not weld, solder, drill, cut or perform similar operations unless they have been properly cleaned.

**8. Exposure controls and personal protection**

Engineering controls	1 In case of mist generation, enclose the source of mist generation, or install a ventilation system. 2 Install eye cleaning and body cleaning equipment near the handling site.
Control parameters	: None established
Threshold Limit Values	Assessment Criteria of Working Environment (Ministry of Labor, Notification No.79 in 27-Mar-95) 1 Time Weighted Average $3\text{mg}/\text{m}^3$ (Mineral Oil Mist) (Japan Society for Occupational Health /2010 year editions) 2 Time Weighted Average $5\text{mg}/\text{m}^3$ (Mineral Oil Mist) (ACGIH /2010 year editions)
Protective Equipment	
Respiratory Protection	: Not needed under normal conditions, but wear a gas mask (against organic gases) whenever required.
Hand protection	: In case of prolonged or repeated exposure, wear oil-resistant hand protection.
Eye protection	: In case of exposure to splashes, wear ordinary type goggles.
Skin Protection	: In case of handling over a prolonged period of time or in case of exposure to oil, wear oil-resistant, long-sleeved work clothing.
Hygiene Measures	1 Take off contaminated clothing and wash thoroughly before reuse. 2 Wash hands thoroughly after handling.

**9. Physical and chemical properties**

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Physical state	: liquid	
Colour	: brown	
Odour	: hydrocarbon-like	
Odour Threshold	: not determined	
pH	: not determined	
Initial boiling point	: not determined	
boiling range	: not determined	
Pour point	: <-20.0 °C	JIS K 2269
Flash point	: >200 °C	JIS K 2265-4 (COC)
Auto-ignition temperature	: not determined	
Decomposition temperature	: not determined	
lower flammability limit	: not determined	
Upper flammability limit	: not determined	
Vapour pressure	: not determined	
Vapour density (Air = 1.0)	: not determined	
Density (15°C)	: 0.85 g/cm <sup>3</sup>	JIS K 2249
Viscosity, kinematic(40°C)	: 44 mm <sup>2</sup> /s	JIS K 2283
Water solubility	: insoluble	

**10. Stability and reactivity**

Chemical stability	: Stable when stored or preserved in a dark place at room temperature.
Possibility of hazardous reactions	: Keep away from any possible contact with strong oxidizing agents.
Conditions to avoid	1 Contact with incompatible hazard substances. 2 Prolonged heating, open flames, and ignition sources
Incompatible materials	: Use care to keep away from any possible contact with halogens, strong acids, alkalis, and Oxidizers.
Hazardous decomposition products	: When burnt, may release carbon monoxide and other gases.

**11. Toxicological information**

(The obtained information is based on a safety data sheet of each ingredient)

Product	
For mixtures, hazard category was identified based on the classification criteria for mixtures.	
Acute toxicity	: No data available
Skin corrosion /irritation	: No data available
Serious eye damage /irritation	: No data available
Respiratory sensitizer	: No data available
Skin sensitizer	: No data available
Germ Cell Mutagenicity	: No data available
Carcinogenicity	: No data available
Toxic to reproduction	: No data available
Specific target organ toxicity (Single exposure)	: Not determined
Specific target organ toxicity (Repeated exposure)	: Not determined
Aspiration Hazard	: As Kinematic viscosity at 40°C is 20.5 mm <sup>2</sup> /s and more .not applicable.
Ingredients(Petroleum hydrocarbons)	
Acute toxicity(oral)	: LD50: ≥ 5000 mg/kg[rat]
Acute toxicity(dermal)	: LD50: ≥ 5000 mg/kg[rat]
Acute toxicity (Inhalation)	: LC50(4h) >5.0 mg/L[rat] (Oil mist)
Serious eye damage	: Practically None [rabbit]
Respiratory sensitization	: Not applicable
Skin sensitization	: None Buehler method [guinea pig]
Mutagenicity	: None AMES method [guinea pig]
Carcinogenicity	: EU:Category 2 : R45 need not apply. (NOTE L is Applicable), IARC:3
Reproductive toxicity	: Negative
Specific target organ toxicity (Single exposure)	
Specific target organ toxicity (Repeated exposure)	
Aspiration hazard	: Not applicable
Ingredients(Viscosity modifier)	
Acute toxicity	: Based on available data, the classification criteria are not met.
Skin corrosion/irritation	: Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	: No eye irritation (This data is based on data of a similar chemical structure.)
Skin sensitization	: Not applicable
Respiratory sensitisation	: Based on available data, the classification criteria are not met.
Germ cell mutagenicity	: Based on available data, the classification criteria are not met.
Carcinogenicity	: Based on available data, the classification criteria are not met.
Reproductive toxicity	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (Single exposure)	

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

Other information

Information on likely routes of exposure

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 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  
: No 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  
: No available.

Potential chronic health effects

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.

Ingredient (Lubricating oil additive)

Information on toxicological effects

## Acute toxicity

Ingredient name	Test	Result	Species Dose Exposure	Remarks
Distillates (petroleum)	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat , >5.53 mg/l, 4hrs	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit , >5000 mg/kg, -	Based on data for a similar
	401 Acute Oral Toxicity	LD50 Oral	Rat , >2000 mg/kg, -	Based on data for a similar
bis(nonylphenyl) amine	402 Acute Dermal Toxicity	LD50 Oral	Rat , >5000 mg/kg, -	Based on data for a similar
	401 Acute Oral Toxicity	LD50 Dermal	Rat , >5000 mg/kg, -	Based on data for a similar
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat , >2 mg/l, 1hrs	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit , >3160 mg/kg, -	-
	401 Acute Oral Toxicity	LD50 Oral	Rat, 2000~5000 mg/kg	-
Long-chain olefin sulphides	402 Acute Dermal Toxicity	LD50 Dermal	Rat , >2000 mg/kg, -	-
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat , >2000 mg/kg, -	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit , >2000 mg/kg, -	-

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

## Irritation/Corrosion

Ingredient name	Test	Species	Result	Remarks
Distillates (petroleum)	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin-Not an Irritant	Based on data for a similar
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes-Not an Irritant	Based on data for a similar
bis(nonylphenyl) amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin-Not an Irritant	Based on data for a similar
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes-Not an Irritant	Based on data for a similar

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zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	Irritation/Corrosion 404 Acute Dermal	Rabbit	Skin-Mild irritant	a similar Not H315 at<15%. On basis of test data.
	Irritation/Corrosion None available.	Rabbit	Eyes-Visible necrosis	Not H319 at<15%. On basis of test data.
Long-chain olefin sulphides	404 Acute Dermal	Rabbit	Skin-Not an Irritant	-
	Irritation/Corrosion 405 Acute Eye	Rabbit	Eyes-Not an Irritant	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	Irritation/Corrosion 404 Acute Dermal	Rabbit	Skin-Not an Irritant	-
	Irritation/Corrosion 405 Acute Eye	Rabbit	Eyes-Not an Irritant	-

Skin : Causes mild skin irritation.

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

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

## Sensitisation

Ingredient name	Test	Route of exposure	Species	Result, Remarks
Distillates (petroleum)	406 Skin Sensitization	Skin	Guinea pig	Not sensitizing Based on data for a similar
bis(nonylphenyl) amine	406 Skin Sensitization	Skin	Guinea pig	Not sensitizing Based on data for a similar
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	406 Skin Sensitization	Skin	Guinea pig	Not sensitizing
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	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

Ingredient name	Test	Experiment	Result	Remarks
Distillates (petroleum)	471 Bacterial Reverse Mutation Test	Experiment:In vitro Subject:Bacteria	Negative	Based on data for a similar
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment:In vitro Subject:Mammalian -Animal	Negative	Based on data for a similar
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment:In vitro Subject:Mammalian -Animal	Negative	Based on data for a similar
	474 Mammalian Erythrocyte Micronucleus Test	Experiment:In vitro Subject:Mammalian -Animal	Negative	Based on data for a similar
bis(nonylphenyl) amine	471 Bacterial Reverse Mutation Test	Experiment:In vitro Subject: Bacteria	Negative	Based on data for a similar
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment:In vitro Subject:Mammalian -Animal	Negative	Based on data for a similar
	478 Genetic Toxicology: Rodent Dominant Lethal Test	Subject:Mammalian -Animal	Negative	Based on data for a similar
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	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	-
Long-chain olefin sulphides	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	-
	471 Bacterial Reverse Mutation Test	Experiment:In vitro Subject:Bacteria	Negative	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and	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	Negative	-
molybdenum oxide	473 In vitro Mammalian Chromosomal Aberration Test	Experiment:In vitro Subject:Mammalian	Negative	-

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

Carcinogenicity				
Ingredient name	Test	Species	Exposure	Result/Remarks
Distillates (petroleum)	451 Carcinogenicity Studies	Mouse	78 weeks	Negative Dermal-NOAEL Based on data for a similar

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

Reproductive toxicity				
Ingredient name	Test	Experiment ,Species	Maternal oxicity, Fertility, Developmental toxin	Remarks
Distillates (petroleum)	421 Reproduction/ Developmental Toxicity Screening	Oral Rat	Negative	Based on data for a similar
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Oral Rat	Negative	Based on data for a similar
Long-chain olefin sulphides	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Oral Rat	Negative	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	416 Two-Generation Reproduction Toxicity Study	Oral Rat	Negative	WOE does not support classification

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

Teratogenicity				
Ingredient name	Test	Species	Result	Remarks
Distillates (petroleum)	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	Based on data for a similar
bis(nonylphenyl)amine	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar

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

Specific target organ toxicity (single exposure)  
 Specific target organ toxicity (repeated exposure)  
 Based on available data, the classification criteria are not met.  
 Based on available data, the classification criteria are not met.

Aspiration hazard  
 Distillates (petroleum) : 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

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/edness  
 Ingestion : No specific data.

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

Short term exposure  
 Potential immediate : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. Ingestion may cause gastrointestinal irritation and diarrhoea.

Potential delayed effect: : 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 effect: : Not available.

Potential chronic health effects

Ingredient name	Test	Species Dose Exposure	Result	Remarks
Distillates (petroleum)	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat, 125mg/kg, -	Sub-chronic LOAEL Oral	Based on data for a similar
	411 Subchronic Dermal	Rat, 30mg/kg, -	Sub-chronic NOAEL Dermal	Based on data for a similar

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	Toxicity:90-day Study 410 Repeated Dose Dermal Toxicity:21/28-day Study None available.	Rabbit,1000mg/kg Rat,0.22mg/l, 4weeks	Sub-acute NOAEL Dermal Sub-chronic NOAEL Inhalation Dusts and misst	Based on data for a similar Based on data for a similar
	None available.	Rat,0.15mg/l, 4weeks	Sub-chronic NOAEL Inhalation Dusts and misst	Based on data for a similar
bis(nonylphenyl)amine	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat, 100mg/kg, -	Sub-chronic LOAEL Oral	-
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	422 Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test	Rat, 160mg/kg, -	Sub-acute NOAEL Oral	Based on data for a similar
Long-chain olefin sulphides	422 Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test	Rat, 1000mg/kg, -	Sub-acute NOAEL Oral	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat, 150mg/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.

## Ingredients (Polyalphaolefin)

Acute toxicity(oral)	: LD50: $\geq$ 2000 mg/kg[rat] The toxicity is very low. This data is based on data of a similar chemical structure.
Acute toxicity(dermal)	: LD50: $\geq$ 2000 mg/kg[rat] The toxicity is very low. This data is based on data of a similar chemical structure.
Acute toxicity(Inhalation)	: LC50(4h) >5000 mg/m3 (Oil mist) The toxicity is very low. This data is based on data of a similar chemical structure.
Aspiration hazard	: The toxicity is very low. (In room temperature) This data is based on data of a similar chemical structure.
Skin corrosion/irritation	: The toxicity is very low. (In room temperature) This data is based on data of a similar chemical structure.
Serious eye damage/irritation	: There is a fear that the unpleasant feeling which is short time's slighness is exerted on eyes. This data is based on data of a similar chemical structure.
Sensitization	: Practically None
Chronic toxicity	: The important influence to health is identical or is estimated not to cause it under
Long-term toxicity	the usual conditions for use according to a study at a laboratory by a substance of resemblance.
Mutagenicity	: Not determined
Carcinogenicity	: Not applicable (IARC, NTP, Japan Society for Occupational Health)
Reproductive toxicity	: Not determined
Teratogenesis	: Not determined

## Ingredients (Fatty acid ester)

Acute toxicity(oral)	: Rat LD50=20,500mg/kg <sup>1,2)</sup> Rat LD50>5,000mg/kg <sup>2)</sup> Guinea pig LD50>5,000mg/kg <sup>2)</sup>	
Acute toxicity(dermal)	: Rat LD50>5,000mg/kg <sup>2)</sup>	
Acute toxicity(Inhalation)	: Not determined	
Skin corrosion/irritation	: Rat None <sup>2)</sup>	
Serious eye damage/irritation	: Rabbit None <sup>2)</sup>	
Respiratory sensitization	: Not determined	Adipic acid diisodesyl ester
Skin sensitization	: None <sup>2)</sup>	
Mutagenicity	: Not determined	
Carcinogenicity	: Not determined	
Reproductive toxicity	: Not determined	
Specific target organ toxicity (Single exposure)	: Not determined	
Specific target organ toxicity (Repeated exposure)	: Not determined	
Aspiration hazard	: Not determined	

1) Registry of Toxic Effects of Chemical substances 1997

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2) International Uniform Chemical Information Database data Set 2000

Ingredients(Organic Molybdenum compound)  
 Acute toxicity (Oral) : Rat LD50 >2000mg/kg  
 Acute toxicity (Dermal) : Rat LD50 >2001mg/kg  
 Skin Corrosion/Irritation : Not determined  
 Serious Eye Damage/Eye Irritation : Not determined  
 Respiratory sensitizer : Not determined  
 Skin sensitizer : Not determined  
 Germ Cell Mutagenicity : Not determined  
 Carcinogenicity : Not determined  
 Toxic to reproduction : Not determined  
 Specific Target Organ : Not determined  
 Toxicity - Single Exposure  
 Specific Target Organ : Not determined  
 Toxicity - Repeated Exposure

**12. Ecological information**

(The obtained information is based on a safety data sheet of each ingredient)

**Product**

For mixtures, hazard category was identified based on the classification criteria for mixtures.

Ecotoxicity : No data available  
 Bioaccumulative potential : No data available  
 Mobility : No data available  
 Other adverse effect : No data available

**Ingredients(Petroleum hydrocarbons)**

Ecotoxicity  
 Acute toxicity : Hydrobios is polluted because dissolve in no water.  
 LC 50 (Fathead Minnow, 4 d): > 100 mg/l  
 EC 50 (Water flea (Daphnia magna), 2 d): > 10,000 mg/l  
 NOEL (Green algae (selenastrum capricomutum)): >100mg  
 Since putting it in the above test for water-insolubility, adjusted WAF (for water applicability picture) is being used as a sample.  
 From the above test outcome, without aquatic environment acute harmful effects.  
 Chronic toxicity : Hydrobios is polluted because dissolve in no water.  
 NOEL (Fathead Minnow, 14 d): > 100 mg/l  
 NOEL (Water flea (Daphnia magna), 21 d): > 10 mg/l  
 Since putting it in the above test for water-insolubility, adjusted WAF (for water applicability picture) is being used as a sample.  
 From the above test outcome, without aquatic environment acute harmful effects.  
 Biological decomposition test outcome is 31% (28 days). There is biodegradability basically, but it isn't biodegradability easily.  
 Bioaccumulative potential : There is no useful information.  
 Mobility : Log KOC of resemblance group oil is guessed at with more than 3. It's difficult to think that the oil which leaked at the surface of the earth flows to groundwater by being absorbed in ground.  
 Other adverse effect : There is no useful information.

**Ingredients(Viscosity modifier)**

Ecotoxicity : Harmful to aquatic organisms by long-term influence.  
 Biodegradation : Based on available data, the classification criteria are not met.

**Ingredient (Lubricating oil additive)**

**Toxicity**

Ingredient name	Test	Species	Exposure	Remarks
Distillates (petroleum)	Acute EL50 >10000 mg/l	Daphnia-Daphnia magna	48 hours	Based on data for a similar
	Acute LL50 >100 mg/l	Fish-Pimephales promelas	96 hours	Based on data for a similar
	Chronic NOEL ≥100 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	Based on data for a similar
	Chronic NOEL 10 mg/l	Daphnia-Daphnia magna	21 days	Based on data for a similar
bis(nonylphenyl) amine	Chronic NOEL 1000 mg/l	Fish-Pimephales promelas	14 days	Based on data for a similar
	Acute EL50 >100 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	a similar
	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
zinc 0, 0, 0', 0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	Acute LL50 >100 mg/l	Fish-Pimephales promelas	96 hours	Based on data for a similar
	Acute EL50 24 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	a similar
	Acute EL50 23 mg/l	Daphnia-Daphnia magna	48 hours	Based on data for a similar
	Acute EL50 >10000 mg/l	Micro-organism	3 hours	Based on data for a similar
	Acute LL50 4.5 mg/l	Fish-Pimephales promelas	96 hours	Based on data for

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Long-chain olefin sulphides	Chronic NOEL 10 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	a similar
	Chronic NOEL 0.4 mg/l	Daphnia-Daphnia magna	21 days	Based on data for a similar
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	Acute EL50 >100 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 >100 mg/l	Daphnia-Daphnia magna	48 hours	-
	Acute LL50 >100 mg/l	Fish-Pimephales promelas	96 hours	-
	Chronic NOEL 100 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 4 mg/l	catus	72 hours	-
	Acute EL50 1.5 mg/l	Daphnia-Daphnia magna	48 hours	-
	Acute LL50 >10 mg/l	Fish-Pimephales promelas	96 hours	-
	Chronic NOEL 0.625 mg/l	Algae-Pseudokirchneriella subcapitata	72 hours	-
	Chronic NOEL 0.47 mg/l	Daphnia-Daphnia magna	21 days	-

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

**Persistence and degradability**

Ingredient name	Test	Result	Remarks
Distillates (petroleum) bis(nonylphenyl)amine	OECD 301F Ready Biodegradability-Manometric	31%-Not readily-28days	Based on data for a similar
	OECD 301C Ready Biodegradability-MITI Test (I)	24%-Not readily-28days	
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	OECD 301B Ready Biodegradability-CO <sub>2</sub> Evolution Test	1.5%-Not readily -28days	Based on data for a similar
	OECD 301D Ready Biodegradability-Closed Bottle Test	<5 %-Not readily -27days	Based on data for a similar
Long-chain olefin sulphides	OECD 301B Ready Biodegradability-CO <sub>2</sub> Evolution Test	45%-Inherent-28days	-
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	-	57 to 98%-Readily -28days	-

**Bioaccumulative potential**

Ingredient name	LogPow	BCF	Potencial
bis(nonylphenyl)amine	3.64 to 7.02	1730	high
zinc 0,0,0',0'-tetrakis (1,3-dimethylbutyl) bis (phosphorodithioate)	3.59	-	low
Amides, coco, N,N-bis (hydroxyethyl)-, reaction products with coco monoglycerides and molybdenum oxide	-	<84	low

**Ingredients (Polyalphaolefin)**

- Ecotoxicity : It isn't estimated by hydrobios to be harmful.
- Bioaccumulative potential : It's predicted that there is biodegradability essentially.
- Mobility : There is no useful information.
- Other adverse effect : Important influence and toxicity aren't reported.

**Ingredients (Fatty acid ester)**

- Ecotoxicity(Acute toxicit) : Not determined
- Ecotoxicity(Chronic toxic) : Not determined
- Biodegradation : Microbial degradation /Initial concentration 8.4ppm /Decomposition rate 7days 100%
- Bioaccumulative potential : Not determined
- Mobility : Not determined
- Harmful to the ozone laye: : Not determined

**Ingredients (Organic Molybdenum compound)**

- Ecotoxicity : LC50 (96H) Fish =400mg/L  
EC50 (48H) Crustaceans (Daphnia) =15mg/L  
ErC50 (72or96H) Algae (Selenastrum sp.) =3.4mg/L
- Biodegradation : Not determined
- Bioaccumulative potential : Not determined
- Mobility : Not determined
- Other adverse effect : Not determined

**13. Disposal considerations**

- Disposal methods
- 1 Dispose of contents/container in accordance with local/regional/national/international regulations.
  - 2 Don't throw away.
  - 3 Every customer/user of the product should dispose of industrial waste on its own responsibility, otherwise it must rely on a company authorized by prefectural governor for treating industrial waste or a local public body involved in the disposal of industrial waste for proper disposal.
  - 4 Before disposal of used container, remove contents completely.

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**14. Transport information**

UN classification : Not applicable  
LAND - Precautionary Transportation Measures & Conditions : Do not co-load together with dangerous substances categorized in Fire Cat. 1 and/or 6, and/or High Pressure Gases.  
NOTE: Comply with applicable laws and regulations.  
SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code  
Marine Pollutant : No  
AIR (IATA) : Not Regulated for Air Transport  
Specific security precaution and condition of transportation : Transport containers without causing any significant friction or shaking.

**15. Regulatory information**

National Laws and Regulations  
Fire Service Law : Category 4, Flammable Liquids, Class III (#4 Petroleum)  
Industrial Safety and Health Act : Notified Substances  
Pollutant Release and Transfer Register (PRTR) : Not Regulated  
Water Pollution Control Act : Regulations on emissions  
Sewerage Act : Regulations on emissions  
Marine Pollution Prevention Law : Regulations on emissions  
Waste Management and Public Cleaning Law : Industrial waste treatment regulation

**16. Other information**

(references)  
Globally Harmonized System of Classification and Labelling of Chemicals(GHS) (2015 year editions)  
The National Institute of Technology and Evaluation (NITE) /GHS relevant information  
Japan Personnel management & Safety information /GHS relevant information  
The others; Additionally the information a literature search gave.

We would like every customer/user of the product to refer to the information and understand the necessity of taking appropriate measures for the actual handling conditions on their own responsibilities for optimum practical application of the product of interest.  
Consequently, the Safety Data Sheet is not intended to guarantee the safety of the product referenced to herein.