

2048 FULLY SYNTHETIC GEAR OIL, 1L

Liqui Moly GmbH

Chemwatch Hazard Alert Code: 1

Chemwatch: 48-0411

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Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	2048 FULLY SYNTHETIC GEAR OIL, 1L
Synonyms	Item No. 2048
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses	Use according to manufacturer's directions. Gear lubricant.
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	Liqui Moly GmbH
Address	Jerg-Wieland-Strasse 4 Ulm D-89081 Germany
Telephone	+49 731 1420 0
Fax	+49 731 1420 82
Website	Not Available
Email	Not Available

Emergency phone number

Association / Organisation	INFOTRAC
Emergency telephone numbers	+1800 535 5053 (US & Canada)
Other emergency telephone numbers	+1 352 323 3500 (International)

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	1	
Toxicity	0	
Body Contact	0	
Reactivity	1	
Chronic	1	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification	Not Applicable
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Label elements

GHS label elements	Not Applicable
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SIGNAL WORD	NOT APPLICABLE
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Hazard statement(s)

Not Applicable

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
157707-86-3	40-60	1-decene, trimers, hydrogenated
64742-55-8	5-15	paraffinic distillate, light, hydrotreated (severe)
64742-54-7		paraffinic distillate, heavy, hydrotreated (severe)
64741-88-4		paraffinic distillate, heavy, solvent-refined (severe)
64742-65-0		paraffinic distillate, heavy, solvent-dewaxed (severe)
68937-96-2		di-tert-butyl polysulfides
Not Available	1-<2.5	Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14 alkyl (branched)
Not Available	1-2.5	base oil

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 FIRST-AID MEASURES

Description of first aid measures

Eye Contact	<p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with water. ▶ If irritation continues, seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▶ Other measures are usually unnecessary.
Ingestion	<ul style="list-style-type: none"> ▶ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. ▶ If swallowed do NOT induce vomiting. ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▶ Observe the patient carefully. ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▶ Seek medical advice. ▶ Avoid giving milk or oils. ▶ Avoid giving alcohol.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- ▶ Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- ▶ Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO₂ 50 mm Hg) should be intubated.
- ▶ Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- ▶ A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- ▶ Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- ▶ Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing media

- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	<ul style="list-style-type: none"> Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Special protective equipment and precautions for fire-fighters

Fire Fighting	<ul style="list-style-type: none"> Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Use water delivered as a fine spray to control fire and cool adjacent area.
Fire/Explosion Hazard	<ul style="list-style-type: none"> Combustible. Slight fire hazard when exposed to heat or flame. Heating may cause expansion or decomposition leading to violent rupture of containers. On combustion, may emit toxic fumes of carbon monoxide (CO). Combustion products include: carbon dioxide (CO ₂) other pyrolysis products typical of burning organic material. May emit corrosive fumes.

SECTION 6 ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	<ul style="list-style-type: none"> Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment.
Major Spills	Moderate hazard. <ul style="list-style-type: none"> Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE**Precautions for safe handling**

Safe handling	<ul style="list-style-type: none"> DO NOT allow clothing wet with material to stay in contact with skin Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps.
Other information	<ul style="list-style-type: none"> Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> Metal can or drum Packaging as recommended by manufacturer. Check all containers are clearly labelled and free from leaks.
Storage incompatibility	<ul style="list-style-type: none"> Avoid reaction with oxidising agents

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**Control parameters****OCCUPATIONAL EXPOSURE LIMITS (OEL)****INGREDIENT DATA**

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US OSHA Permissible Exposure Levels (PELs) - Table Z1	paraffinic distillate, light, hydrotreated (severe)	Oil mist, mineral	5 mg/m ³	Not Available	Not Available	Not Available
US ACGIH Threshold Limit Values (TLV)	paraffinic distillate, light, hydrotreated (severe)	Mineral oil, excluding metal working fluids - Pure, highly and severely refined / Mineral oil, excluding metal working fluids - Poorly and mildly refined	5 mg/m ³	Not Available	Not Available	TLV® Basis: URT irr
US NIOSH Recommended Exposure Limits (RELs)	paraffinic distillate, light, hydrotreated (severe)	Heavy mineral oil mist, Paraffin oil mist, White mineral oil mist	5 mg/m ³	10 mg/m ³	Not Available	Not Available

Continued...


US OSHA Permissible Exposure Levels (PELs) - Table Z1	paraffinic distillate, heavy, hydrotreated (severe)	Oil mist, mineral	5 mg/m3	Not Available	Not Available	Not Available
US ACGIH Threshold Limit Values (TLV)	paraffinic distillate, heavy, hydrotreated (severe)	Mineral oil, excluding metal working fluids - Pure, highly and severely refined / Mineral oil, excluding metal working fluids - Poorly and mildly refined	5 mg/m3	Not Available	Not Available	TLV® Basis: URT irr
US NIOSH Recommended Exposure Limits (RELs)	paraffinic distillate, heavy, hydrotreated (severe)	Heavy mineral oil mist, Paraffin oil mist, White mineral oil mist	5 mg/m3	10 mg/m3	Not Available	Not Available
US OSHA Permissible Exposure Levels (PELs) - Table Z1	paraffinic distillate, heavy, solvent-dewaxed (severe)	Oil mist, mineral	5 mg/m3	Not Available	Not Available	Not Available
US ACGIH Threshold Limit Values (TLV)	paraffinic distillate, heavy, solvent-dewaxed (severe)	Mineral oil, excluding metal working fluids - Pure, highly and severely refined / Mineral oil, excluding metal working fluids - Poorly and mildly refined	5 mg/m3	Not Available	Not Available	TLV® Basis: URT irr
US NIOSH Recommended Exposure Limits (RELs)	paraffinic distillate, heavy, solvent-dewaxed (severe)	Heavy mineral oil mist, Paraffin oil mist, White mineral oil mist	5 mg/m3	10 mg/m3	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
paraffinic distillate, heavy, hydrotreated (severe)	Hydrotreated (mild & severe) heavy paraffinic distillates	45 mg/m3	500 mg/m3	3000 mg/m3
paraffinic distillate, heavy, solvent-refined (severe)	Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic	15 mg/m3	170 mg/m3	990 mg/m3
paraffinic distillate, heavy, solvent-dewaxed (severe)	Pump oil	15 mg/m3	170 mg/m3	990 mg/m3

Ingredient	Original IDLH	Revised IDLH
1-decene, trimers, hydrogenated	Not Available	Not Available
paraffinic distillate, light, hydrotreated (severe)	Not Available	Not Available
paraffinic distillate, heavy, hydrotreated (severe)	Not Available	Not Available
paraffinic distillate, heavy, solvent-refined (severe)	Not Available	Not Available
paraffinic distillate, heavy, solvent-dewaxed (severe)	Not Available	Not Available
di-tert-butyl polysulfides	Not Available	Not Available
Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with	Not Available	Not Available
base oil	Not Available	Not Available

Exposure controls

Appropriate engineering controls	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p>
Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ▶ Safety glasses with side shields. ▶ Chemical goggles. ▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	<ul style="list-style-type: none"> ▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber <p>NOTE:</p> <ul style="list-style-type: none"> ▶ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care.</p>
Body protection	See Other protection below

Other protection	<ul style="list-style-type: none"> ▶ Overalls. ▶ P.V.C. apron. ▶ Barrier cream.
Thermal hazards	Not Available

Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	A-AUS P2	-	A-PAPR-AUS / Class 1 P2
up to 50 x ES	-	A-AUS / Class 1 P2	-
up to 100 x ES	-	A-2 P2	A-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Yellow colour liquid with characteristic odour; not miscible with water.		
Physical state	Liquid	Relative density (Water = 1)	0.865-0.87
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Applicable	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	82
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	184-190	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
Ingestion	The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.

2048 FULLY SYNTHETIC GEAR OIL, 1L




Skin Contact	<p>The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives . Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p>	
Eye	<p>Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).</p>	
Chronic	<p>There is limited evidence that, skin contact with this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p>	
2048 FULLY SYNTHETIC GEAR OIL, 1L	<p>TOXICITY Not Available</p>	<p>IRRITATION Not Available</p>
1-decene, trimers, hydrogenated	<p>TOXICITY dermal (rat) LD50: >2000 mg/kg^[1] Inhalation (rat) LC50: 0.9 mg/l/4hr^[1] Inhalation (rat) LC50: 1.4 mg/l/4hr^[1] Oral (rat) LD50: >2000 mg/kg^[1]</p>	<p>IRRITATION Not Available</p>
paraffinic distillate, light, hydrotreated (severe)	<p>TOXICITY Dermal (rabbit) LD50: >2000 mg/kg^[1] Inhalation (rat) LC50: 3.9 mg/L/4hr^[2] Oral (rat) LD50: >2000 mg/kg^[1]</p>	<p>IRRITATION Not Available</p>
paraffinic distillate, heavy, hydrotreated (severe)	<p>TOXICITY Dermal (rabbit) LD50: >2000 mg/kg^[1] Inhalation (rat) LC50: >3.9 mg/l/4hr^[1] Inhalation (rat) LC50: >4.7 mg/l/4hr^[1] Inhalation (rat) LC50: >5 mg/l/4hr^[1] Inhalation (rat) LC50: >5.2 mg/l/4hr^[1] Inhalation (rat) LC50: >5.3 mg/l/4hr^[1] Inhalation (rat) LC50: 10.5 mg/l/4hr^[1] Inhalation (rat) LC50: 5.7 mg/l/4hr^[1] Inhalation (rat) LC50: 9.6 mg/l/4hr^[1] Oral (rat) LD50: >2000 mg/kg^[1]</p>	<p>IRRITATION Not Available</p>
paraffinic distillate, heavy, solvent-refined (severe)	<p>TOXICITY Dermal (rabbit) LD50: >2000 mg/kg^[1] Inhalation (rat) LC50: >3.9 mg/l/4hr^[1] Inhalation (rat) LC50: >4.7 mg/l/4hr^[1] Inhalation (rat) LC50: >5 mg/l/4hr^[1] Inhalation (rat) LC50: >5.2 mg/l/4hr^[1] Inhalation (rat) LC50: >5.3 mg/l/4hr^[1] Inhalation (rat) LC50: 10.5 mg/l/4hr^[1] Inhalation (rat) LC50: 5.7 mg/l/4hr^[1] Inhalation (rat) LC50: 9.6 mg/l/4hr^[1] Oral (rat) LD50: >2000 mg/kg^[1]</p>	<p>IRRITATION Not Available</p>
paraffinic distillate, heavy, solvent-dewaxed (severe)	<p>TOXICITY Dermal (rabbit) LD50: >2000 mg/kg^[1] Inhalation (rat) LC50: >3.9 mg/l/4hr^[1] Inhalation (rat) LC50: >4.7 mg/l/4hr^[1] Inhalation (rat) LC50: >5.2 mg/l/4hr^[1] Inhalation (rat) LC50: >5.3 mg/l/4hr^[1] Inhalation (rat) LC50: 10.5 mg/l/4hr^[1] Inhalation (rat) LC50: 5.7 mg/l/4hr^[1]</p>	<p>IRRITATION Not Available</p>

	Inhalation (rat) LC50: 9.6 mg/l/4hr ^[1]	
	Oral (rat) LD50: >2000 mg/kg ^[1]	
di-tert-butyl polysulfides	TOXICITY	IRRITATION
	Oral (rat) LD50: 6500 mg/kg ^[1]	Eye (rabbit): slight;y irritating Skin (rabbit): slight;y irritating

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE)	* Q8 MSDS
DI-TERT-BUTYL POLYSULFIDES	<p>The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.</p> <p>For di-tertiary-(C9-12) alkyl polysulfides: existing information shows that these substances show a low level of toxicity to toxicity. They have not been shown to cause genetic damage or developmental toxicity.</p> <p>Guinea pig maximization test: not sensitising The material seems to be a sensitiser at challenge but not at rechallenge Ames test: negative with and without metabolic activation * IUCLID Data</p>
1-DECENE, TRIMERS, HYDROGENATED & PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-DEWAXED (SEVERE)	No significant acute toxicological data identified in literature search.
PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-DEWAXED (SEVERE)	<p>The materials included in the Lubricating Base Oils category are related from both process and physical-chemical perspectives; The potential toxicity of a specific distillate base oil is inversely related to the severity or extent of processing the oil has undergone, since:</p> <ul style="list-style-type: none"> ▶ The adverse effects of these materials are associated with undesirable components, and ▶ The levels of the undesirable components are inversely related to the degree of processing; ▶ Distillate base oils receiving the same degree or extent of processing will have similar toxicities; ▶ The potential toxicity of <i>residual base oils</i> is independent of the degree of processing the oil receives. ▶ The reproductive and developmental toxicity of the distillate base oils is inversely related to the degree of processing. <p>Unrefined & mildly refined distillate base oils contain the highest levels of undesirable components, have the largest variation of hydrocarbon molecules and have shown the highest potential carcinogenic and mutagenic activities. Highly and severely refined distillate base oils are produced from unrefined and mildly refined oils by removing or transforming undesirable components.</p>
PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-DEWAXED (SEVERE)	<p>For highly and severely refined distillate base oils:</p> <p>In animal studies, the acute, oral, semilethal dose is >5g/kg body weight and the semilethal dose by skin contact is >2g/kg body weight. The semilethal concentration for inhalation is 2.18 to >4 mg/L. The materials have varied from "non-irritating" to "moderately irritating" when tested for skin and eye irritation. Testing for sensitisation has been negative.</p>
PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE) & PARAFFINIC DISTILLATE, HEAVY, SOLVENT-DEWAXED (SEVERE)	<p>The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.</p>

Acute Toxicity	☐	Carcinogenicity	☐
Skin Irritation/Corrosion	☐	Reproductivity	☐
Serious Eye Damage/Irritation	☐	STOT - Single Exposure	☐
Respiratory or Skin sensitisation	☐	STOT - Repeated Exposure	☐
Mutagenicity	☐	Aspiration Hazard	☐

Legend:  - Data available but does not meet the criteria for classification
 - Data required to make classification available
 - Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
1-decene, trimers, hydrogenated	LC50	96	Fish	0.00297mg/L	3
paraffinic distillate, light, hydrotreated (severe)	EC50	48	Crustacea	>1000mg/L	1
paraffinic distillate, light, hydrotreated (severe)	EC50	48	Crustacea	>10000mg/L	1
paraffinic distillate, light, hydrotreated (severe)	NOEC	504	Crustacea	>1mg/L	1
paraffinic distillate, heavy, hydrotreated (severe)	EC50	48	Crustacea	>1000mg/L	1
paraffinic distillate, heavy, hydrotreated (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, hydrotreated (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, hydrotreated (severe)	NOEC	504	Crustacea	>1mg/L	1
paraffinic distillate, heavy, solvent-refined (severe)	EC50	48	Crustacea	>1000mg/L	1
paraffinic distillate, heavy, solvent-refined (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, solvent-refined (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, solvent-refined (severe)	NOEC	504	Crustacea	>1mg/L	1
paraffinic distillate, heavy, solvent-dewaxed (severe)	EC50	48	Crustacea	>1000mg/L	1
paraffinic distillate, heavy, solvent-dewaxed (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, solvent-dewaxed (severe)	EC50	96	Algae or other aquatic plants	>1000mg/L	1
paraffinic distillate, heavy, solvent-dewaxed (severe)	NOEC	504	Crustacea	>1mg/L	1
di-tert-butyl polysulfides	LC50	96	Fish	>0.088mg/L	2
di-tert-butyl polysulfides	EC50	48	Crustacea	>1000mg/L	1
di-tert-butyl polysulfides	EC50	72	Algae or other aquatic plants	0.299mg/L	2
di-tert-butyl polysulfides	EC50	72	Algae or other aquatic plants	0.304mg/L	2
di-tert-butyl polysulfides	NOEC	96	Fish	>=0.088mg/L	2

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
1-decene, trimers, hydrogenated	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
1-decene, trimers, hydrogenated	LOW (LogKOW = 15.0744)

Mobility in soil

Ingredient	Mobility
1-decene, trimers, hydrogenated	LOW (KOC = 357700000)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▶ Where in doubt contact the responsible authority. ▶ Recycle wherever possible or consult manufacturer for recycling options. ▶ Consult State Land Waste Authority for disposal. ▶ Bury or incinerate residue at an approved site. ▶ Recycle containers if possible, or dispose of in an authorised landfill.
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SECTION 14 TRANSPORT INFORMATION**Labels Required**

Marine Pollutant	NO
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Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

SECTION 15 REGULATORY INFORMATION**Safety, health and environmental regulations / legislation specific for the substance or mixture****1-DECENE, TRIMERS, HYDROGENATED(157707-86-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

PARAFFINIC DISTILLATE, LIGHT, HYDROTREATED (SEVERE)(64742-55-8.) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs	US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Alaska Limits for Air Contaminants	US - Washington Permissible exposure limits of air contaminants
US - California Permissible Exposure Limits for Chemical Contaminants	US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US - California Proposition 65 - Carcinogens	US ACGIH Threshold Limit Values (TLV)
US - Hawaii Air Contaminant Limits	US ACGIH Threshold Limit Values (TLV) - Carcinogens
US - Idaho - Limits for Air Contaminants	US National Toxicology Program (NTP) 13th Report Part A Known to be Human Carcinogens
US - Michigan Exposure Limits for Air Contaminants	US NIOSH Recommended Exposure Limits (RELs)
US - Minnesota Permissible Exposure Limits (PELs)	US OSHA Permissible Exposure Levels (PELs) - Table Z1
US - Oregon Permissible Exposure Limits (Z-1)	US Priority List for the Development of Proposition 65 Safe Harbor Levels - No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	

PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE)(64742-54-7.) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs	US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Alaska Limits for Air Contaminants	US - Washington Permissible exposure limits of air contaminants
US - California Permissible Exposure Limits for Chemical Contaminants	US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US - California Proposition 65 - Carcinogens	US ACGIH Threshold Limit Values (TLV)
US - Hawaii Air Contaminant Limits	US ACGIH Threshold Limit Values (TLV) - Carcinogens
US - Idaho - Limits for Air Contaminants	US National Toxicology Program (NTP) 13th Report Part A Known to be Human Carcinogens
US - Michigan Exposure Limits for Air Contaminants	US NIOSH Recommended Exposure Limits (RELs)
US - Minnesota Permissible Exposure Limits (PELs)	US OSHA Permissible Exposure Levels (PELs) - Table Z1
US - Oregon Permissible Exposure Limits (Z-1)	US Priority List for the Development of Proposition 65 Safe Harbor Levels - No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	

PARAFFINIC DISTILLATE, HEAVY, SOLVENT-REFINED (SEVERE)(64741-88-4.) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

PARAFFINIC DISTILLATE, HEAVY, SOLVENT-DEWAXED (SEVERE)(64742-65-0.) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs	US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Alaska Limits for Air Contaminants	US - Washington Permissible exposure limits of air contaminants
US - California Permissible Exposure Limits for Chemical Contaminants	US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US - California Proposition 65 - Carcinogens	US ACGIH Threshold Limit Values (TLV)
US - Hawaii Air Contaminant Limits	US ACGIH Threshold Limit Values (TLV) - Carcinogens
US - Idaho - Limits for Air Contaminants	US National Toxicology Program (NTP) 13th Report Part A Known to be Human Carcinogens
US - Michigan Exposure Limits for Air Contaminants	US NIOSH Recommended Exposure Limits (RELs)
US - Minnesota Permissible Exposure Limits (PELs)	US OSHA Permissible Exposure Levels (PELs) - Table Z1
US - Oregon Permissible Exposure Limits (Z-1)	US Priority List for the Development of Proposition 65 Safe Harbor Levels - No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	

DI-TERT-BUTYL POLYSULFIDES(68937-96-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES

Immediate (acute) health hazard	No
Delayed (chronic) health hazard	No
Fire hazard	No
Pressure hazard	No
Reactivity hazard	No

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

None Reported

State Regulations

US. CALIFORNIA PROPOSITION 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm

US - CALIFORNIA PREPOSITION 65 - CARCINOGENS & REPRODUCTIVE TOXICITY (CRT): LISTED SUBSTANCE

Soots, tars, and mineral oils (untreated and mildly treated oils and used engine oils) Listed

National Inventory	Status
Australia - AICS	N (1-decene, trimers, hydrogenated)
Canada - DSL	N (1-decene, trimers, hydrogenated)
Canada - NDSL	N (paraffinic distillate, heavy, hydrotreated (severe); paraffinic distillate, heavy, solvent-dewaxed (severe); di-tert-butyl polysulfides; paraffinic distillate, heavy, solvent-refined (severe); paraffinic distillate, light, hydrotreated (severe))
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (paraffinic distillate, heavy, solvent-dewaxed (severe); 1-decene, trimers, hydrogenated; paraffinic distillate, heavy, solvent-refined (severe))
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	N (1-decene, trimers, hydrogenated)
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

Name	CAS No
1-decene, trimers, hydrogenated	157707-86-3, 638-68-6
di-tert-butyl polysulfides	68937-96-2, 1021171-50-5

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit,
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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