



20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Liqui Moly GmbH

Chemwatch Hazard Alert Code: 2

Chemwatch: 52-9731
Version No: 2.1.1.1
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: **17/08/2015** Print Date: **29/11/2016** S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L
Synonyms	Item No: 20042
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses

Use according to manufacturer's directions. Synthetic oil. Gear lubricant.

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability	1		
Toxicity	0		
Body Contact	1		
Reactivity	1		
Chronic	2		





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

Eye Irritation Category 2B, Skin Sensitizer Category 1

Label elements

GHS label elements



SIGNAL WORD

WARNING

Hazard statement(s)

nazara statement(s)	
H320	Causes eye irritation
H317	May cause an allergic skin reaction.

Hazard(s) not otherwise specified

Not Applicable

 Chemwatch: 52-9731
 Page 2 of 8
 Issue Date: 17/08/2015

Version No: 2.1.1.1

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Print Date: 29/11/2016

Precautionary statement(s) Prevention

P280	Wear protective gloves/protective clothing/eye protection/face protection.	
P261	Avoid breathing mist/vapours/spray.	
P272	Contaminated work clothing should not be allowed out of the workplace.	

Precautionary statement(s) Response

P363	Wash contaminated clothing before reuse.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

P501

Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name	
68037-01-4	20-30	1-decene homopolymer, hydrogenated	
68937-96-2	1-5	di-tert-butyl polysulfides	
		reaction product of bis(4-methylpentan-2-yl)dithiophosphoric acid with	
		phosphorus oxide, propylene oxide and amines, C12-14-alkyl	
Not Available	1-<2.5	(branched)	
		reaction product of alcohols, C14-18,C18 unsat., esterified with phosphorus	
Not Available	1-2.5	pentoxide and salted with amines, C12-14-tert-alkyl	

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	If this product comes in contact with the eyes: Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: 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	 If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
Ingestion	 Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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

▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Version No: 2.1.1.1

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Issue Date: 17/08/2015 Print Date: 29/11/2016

Special protective equipment and precautions for fire-fighters

Fire Fighting

- ▶ 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.

- 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).

Fire/Explosion Hazard

Combustion products include: carbon dioxide (CO2) nitrogen oxides (NOx) phosphorus oxides (POx) sulfur oxides (SOx)

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

- ▶ 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.

- ▶ 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

- ▶ 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

- ▶ 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

- ► Metal can or drum
- Packaging as recommended by manufacturer. ▶ Check all containers are clearly labelled and free from leaks.

Storage incompatibility

► Avoid reaction with oxidising agents

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
1-decene homopolymer, hydrogenated	Decene, 1-, homopolymer, hydrogenated	30 mg/m3	330 mg/m3	2000 mg/m3
Ingredient	Original IDLH	Revised IDLH		
1-decene homopolymer, hydrogenated	Not Available	Not Available		
di-tert-butyl polysulfides	Not Available	Not Available		
(branched)	Not Available	Not Available		

Version No: **2.1.1.1**

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Issue Date: 17/08/2015 Print Date: 29/11/2016

pentoxide and salted with amines, C12-14-tert-alkyl

Not Available

Not Available

Exposure controls

Appropriate engineering controls

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.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

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.

Personal protection









Eye and face protection

- · 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

- ► Wear chemical protective gloves, e.g. PVC.
- ▶ Wear safety footwear or safety gumboots, e.g. Rubber

Hands/feet protection

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.

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.

Personal hygiene is a key element of effective hand care.

Body protection See Other protection below

Other protection

- 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	Amber colour liquid with mild odour; not miscible with water.		
Physical state	Liquid	Relative density (Water = 1)	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)	185 (40C), 25.3 (100C)
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	136	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available

Chemwatch: 52-9731 Page 5 of 8

Issue Date: 17/08/2015 Version No: 2.1.1.1 Print Date: 29/11/2016 20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

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	 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.		
Skin Contact	There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons. 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.		
Eye	There is some evidence to suggest that this material can cause eye irritation and damage in some persons.		
Chronic	Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.		
20042 FULLY SYNTHETIC	TOXICITY	IRRITATION	
HYPOID GEAR OIL 1L	Not Available	Not Available	
	тохісіту	IRRITATION	
1-decene homopolymer,	dermal (rat) LD50: >2000 mg/kg ^[1]	Eye*(rabbit):0-4/110.0-nonirritant	
hydrogenated	Inhalation (rat) LC50: >2.5 mg/L/4hr ^[2]	Skin**(rabbit)-0.5/8.0-nonirritant	
	Oral (rat) LD50: >4000 mg/kg ^[1]		
di-tert-butyl polysulfides	тохісіту	IRRITATION	
	Oral (rat) LD50: 6500 mg/kg ^[1]	Eye (rabbit): slight;y irritating	
		Skin (rabbit): slight;y irritating	
Legend:	Value obtained from Europe ECHA Registered Substances extracted from RTECS - Register of Toxic Effect of chemical S	- Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data	

extracted from RTECS - Register of Toxic Effect of chemical Substances

PAOs are highly branched isoparaffinic chemicals produced by oligomerisation of 1-octene, 1-decene, and/or 1-dodecene. The crude polyalphaolefin mixture is then distilled into appropriate product fractions to meet specific viscosity specifications and hydrogenated.

Read across data exist for health effects endpoints from the following similar hydrogenated long chain branched alkanes derived from a C8, C10, and/or C12 alpha olefins:

1-DECENE HOMOPOLYMER, HYDROGENATED

- ▶ Decene homopolymer
- ► Decene/dodecene copolymer
- ► Octene/decene/dodecene copolymer
- ▶ Dodecene trimer

The data for these structural analogs demonstrated no evidence of health effects. In addition, there is evidence in the literature that alkanes with 30 or more carbon atoms are unlikely to be absorbed when administered orally.

(estimated) * Evidence of conjunctival changes ** No evidence of tissue damage [Inland Vacuum Industries] ^ US EPA HPV Challenge program October 2002

DI-TERT-BUTYL **POLYSULFIDES**

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

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.

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

Chemwatch: 52-9731 Page 6 of 8

Version No: 2.1.1.1

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Issue Date: 17/08/2015 Print Date: 29/11/2016

	metabolic activation * IUCLID Data		
Acute Toxicity	0	Carcinogenicity	0
Skin Irritation/Corrosion	0	Reproductivity	0
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	0
Respiratory or Skin sensitisation	✓	STOT - Repeated Exposure	0
Mutagenicity	0	Aspiration Hazard	0

Legend:

★ – Data available but does not fill the criteria for classification

✓ – Data required to make classification available

O - Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
1-decene homopolymer, hydrogenated	LC50	96	Fish	0.121mg/L	3
1-decene homopolymer, hydrogenated	EC50	96	Algae or other aquatic plants	0.121mg/L	3
1-decene homopolymer, hydrogenated	EC50	384	Crustacea	0.032mg/L	3
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 homopolymer, hydrogenated	LOW	LOW

Bioaccumulative potential

Ingredient	Bioaccumulation
1-decene homopolymer, hydrogenated	HIGH (LogKOW = 5.116)

Mobility in soil

Ingredient	Mobility
1-decene homopolymer, hydrogenated	LOW (KOC = 1724)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal

- ▶ 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.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant

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

Version No: 2.1.1.1

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

Issue Date: 17/08/2015 Print Date: 29/11/2016

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 HOMOPOLYMER, HYDROGENATED(68037-01-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS

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

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	Yes
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

None Reported

National Inventory	Status
Australia - AICS	Υ
Canada - DSL	Υ
Canada - NDSL	N (1-decene homopolymer, hydrogenated; di-tert-butyl polysulfides)
China - IECSC	Υ
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Υ
Korea - KECI	Y
New Zealand - NZIoC	Υ
Philippines - PICCS	Y
USA - TSCA	Υ
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
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.

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

Chemwatch: 52-9731 Page 8 of 8 Issue Date: 17/08/2015 Version No: 2.1.1.1 Print Date: 29/11/2016

20042 FULLY SYNTHETIC HYPOID GEAR OIL 1L

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