












MATERIAL SAFETY DATA SHEET

Revision date : 01 Jan 2015

MSDS No. : M1201

General Overview																						
Product Name	High Performance Gear Oil API GL-4																					
Product Grade	90 140																					
Physical State	Liquid																					
Colour	Amber																					
Odour	Mild petroleum odour																					
Caution	<p>Protect eyes from misting or spraying materials. Protect skin from repeated or prolonged exposures. Do not store materials in open or unmarked containers. Spills may create spilling hazards.</p> <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="3">Hazard Rankings</th> </tr> <tr> <th></th> <th>HMIS</th> <th>NFPA</th> </tr> </thead> <tbody> <tr> <td>Health</td> <td>1</td> <td>0</td> </tr> <tr> <td>Fire Hazard</td> <td>1</td> <td>1</td> </tr> <tr> <td>Reactivity</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>* = Chronic Health Hazard</p> <table border="1" style="margin: 10px auto;"> <thead> <tr> <th colspan="2">Protective Equipment</th> </tr> </thead> <tbody> <tr> <td colspan="2">Minimum Recommended See Section 8 for Details</td> </tr> <tr> <td align="center">    </td> <td></td> </tr> </tbody> </table>	Hazard Rankings				HMIS	NFPA	Health	1	0	Fire Hazard	1	1	Reactivity	0	0	Protective Equipment		Minimum Recommended See Section 8 for Details		  	
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Section 1 Identification																						
SAE Grade	SAE 90 SAE 140																					
Product Code	U7515XP U7516XP																					
Product Type	Automotive Gear Oil																					
UN Number	Not regulated																					
CAS Number	None (mixture)																					
Supplier	Bardahl Asia Pacific Pte Ltd 33 Ubi Avenue 3 #07-51 Vertex Singapore 408868																					
Telephone	65-6634 0600																					
Fax	65-6634 0900																					
Section 2 Composition and Ingredients																						
Components	CAS No Approx. %																					
Petroleum distillates	May include some or all of these: 64741-88-4, 64741-89-5, 64742-01-4, 64742-54-7, 64742-65-0, 64742-94-5 70 - 90																					
Proprietary ingredients	Mixtures 4 - 30																					
Residue oils, petroleum	May include some or all of these: 64742-01-4, 64741-95-3 0 - 5																					
	The chemical identity of some or all of the above ingredients is confidential information and may be withheld as permitted under 29CFR 1910.1200.																					

	All the components of this material are listed on the TSCA Chemical Substances Inventory.
Section 3	Hazards Identification
Major route(s) of entry	Skin contact.
Inhalation	No significant adverse health effects are expected to occur upon short-term exposure. At elevated temperatures, and/or in enclosed spaces, product mist or vapors may irritate the mucous membranes of the nose, throat, bronchi and lungs.
Skin contact	This material can cause skin irritation from prolonged or repeated contact. Injection under the skin can cause inflammation and swelling. Injection of pressurised hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor. Injection of petroleum hydrocarbons requires immediate medical attention.
Eye contact	This product can cause transient mild eye irritation with short-term contact with liquid sprays or mists. Symptoms include stinging, watering, redness and swelling.
Ingestion	If swallowed, large volumes of material can cause generalized depression, headache, drowsiness, nausea, vomiting and diarrhea. Smaller doses can cause a laxative effect. If aspirated into the lungs, liquid can cause lung damage.
Chronic Health Effects Summary	This product contains a petroleum-based mineral oil. Prolonged or repeated skin contact can cause mild irritation and inflammation characterized by drying, cracking, (dermatitis) or oil acne. Repeated or prolonged inhalation of petroleum-based mineral oil mists at concentration above applicable workplace exposure levels can cause respiratory irritation or other pulmonary effects.
Conditions aggravated by Exposure	Disorders of the following organs or organ systems that may be aggravated by significant exposure to this material or its components include:
Target Organs	This material may cause damage to the following organs:
Carcinogen	This product is not known to contain any component at concentration above 0.1% which are considered carcinogenic by OSHA, IARC or NTP.
Section 4	First Aid Measures
Eyes	Check for and remove contact lenses. Flush eyes immediately with fresh water for several minutes while holding the eyelids open. If irritation persists, see a doctor.
Skin	If burned by hot material, cool skin by quenching with large amount of cold water. shoes and clothing. Wipe off excess material. Wash exposed skin with mild soap and water. Seek medical attention if tissue appears damaged or pain/irritation persists. Thoroughly clean contaminated clothing before reuse. Discard contaminated leather goods. If material is injected under the skin, seek medical attention immediately.
Ingestion	Do not induce vomiting except on advice of medical personnel. Do not give anything to drink unless directed by a physician. Never give anything by mouth to a person who is not fully conscious. If significant amounts are swallowed or irritation or discomfort occurs, seek medical help immediately.
Inhalation	Vaporization is not expected at ambient temperatures. This material is not expected to cause inhalation-related disorders under anticipated conditions of use. In case of overexposure, move the person to fresh air.
Notes to Physician	Treatment should be controlled by symptoms and clinical conditions. Emesis maybe induced under medical supervision. In general, emesis induction is unnecessary in such high viscosity, low volatility product. SKIN: In the event of injection in underlying tissue, immediate treatment should include extensive incision, debridement, and saline irrigation.

	Inadequate treatment can result in ischemia and gangrene. Early symptoms maybe minimal.
Section 5	Fire Fighting Measures
Flammability Classification	NFPA Class-IIIB combustible material
Auto Ignition Temp.	Not available
Flammable limits	Not determined
Flash Point, °C	> 200°C (COC)
Extinguishing Media	Use water fog, dry chemical, foam or carbon dioxide type. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a spill or leak has not ignited, use water spray to disperse the vapour and provide protection to personnel attempting to stop the leak.
Explosion / Fire Hazards	For fires involving this material, do not enter any enclosed or confined space without self-contained breathing apparatus to protect against the hazardous effects of combustion products or oxygen deficiency.
Hazardous Combustion Products	Carbon dioxide, carbon monoxide, smoke, fumes, unburned hydrocarbons and trace oxides of sulphur and/or nitrogen.
Section 6	Accidental Release Measures
In case of Spill	Stop the source of leak or release and contain spill if possible. Ventilate the area. Use respirator and protective clothing as discussed in this MSDS. Collect with absorbent material and place in appropriate, labeled containers for disposal, or if permitted, flush spilled area with water.
Section 7	Handling and Storage
Handling	Avoid contamination and extreme temperatures to minimize product degradation. Empty containers may contain product residues that can ignite with explosive force. Do not pressurize, cut, weld, braze, solder, drill or grind containers. Do not expose product containers to flames, spark, heat or other potential ignition sources.
Storage	Keep containers closed. Do not store with strong oxidizing agents. Do not store at elevated temperatures. Avoid storing in direct sunlight for extended periods of time. Consult appropriate federal, state or local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.
Section 8	Exposure Controls / Personal Protection
Ventilation	Use general ventilation or local exhaust as required to maintain exposures below the occupational exposure limits.
Eyes	Avoid eye contact. The wearing of chemical safety goggles or face shield is recommended. Have suitable ear wash water available.
Skin	Exposed personnel should exercise reasonable personal cleanliness; this includes cleansing exposed area several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly. Safety shower is recommended near the work station.
Inhalation	Respiratory protection is normally not required. However, if operating conditions create airborne concentrations, which exceed the recommended exposure standard(s), the use of an approved respirator is recommended.
Hand Protection	Use gloves of chemical resistant materials such as neoprene or heavy nitrile rubber or appropriate barrier cream with prolonged or repeated contact. If the product is processed or handled at elevated temperatures, protect against thermal burns by using heat-resistant (insulated) gloves. Do not wear gloves or loose fitting clothing around rotating or moving equipment.
Clothing	Long sleeve shirt is recommended. Wear a chemically protective apron if

Recommendations	available. Do not wear rings, watches, or similar apparel that could entrap the material and cause a skin reaction.
Exposure limits	Oil mist, mineral ACGIH TLV (USA) TWA: 5 mg/m ³ 8 hrs STEL: 10 mg/m ³ 15 minutes OSHA PEL (USA) TWA: 5 mg/m ³ 8 hrs
Section 9 Physical and Chemical Properties (Typical)	
SAE Grade	90 140
Flash Point, °C	226 250
Density @ 15°C, kg/l	0.862 0.910
Viscosity@40°C, cSt	186 456
Viscosity@100°C cSt	16.8 30.1
Appearance	Amber
Odour	Mild petroleum odour
Boiling Range	Not determined
Vapour Pressure	< 0.1 mmHg @ 25 deg C
pH	Not determined
Solubility in water	Insoluble
Percent volatile	Negligible
Evaporation	Not determined
Section 10 Stability and Reactivity	
Stability	Stable
Conditions to avoid	Avoid heating to decomposition
Incompatibility	Normally unreactive, however, avoid strong bases at high temperatures, strong acids, strong oxidising agents and materials reactive with hydroxyl compounds.
Hazardous Decomposition products	No additional hazardous decomposition products were identified other than the combustion products identified in Section 5.
Hazardous polymerization	Will not occur
Section 11 Toxicity Information	
Toxicity Data	Distillates, residue oils, petroleum light and heavy paraffinic: ORAL (LD50) Acute: > 5000 mg/kg [Rat] DERMAL (LD50) Acute: > 2000 mg/kg [Rabbit] Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposure to high concentration of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposure to lower concentration of mineral oil mists at or near current workplace exposure levels produced no significant toxicological effects. In long term studies (up to 2 years) no carcinogenic effects have been reported on any animal species tested.
Section 12 Ecology Information	
Ecotoxicity	Analysis on ecological effects has not been conducted on this product. However, if spilled, this product and any contaminated soil or water may be harmful to human, animal and aquatic life. Also the coating action associated

	with petroleum and petroleum products can be harmful or fatal to aquatic life and waterfowl.
Environmental Fate	An environmental fate analysis has not been conducted on this specific product. Plants and animals may experience harmful or fatal effects when coated with petroleum-based products. Petroleum-based (mineral) lube oils will normally float on water. In stagnant or slow flowing waterways, an oil layer can cover a large surface area. As a result, this oil layer might limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in waterway can result in a loss of marine life or create an anaerobic environment.
Section 13 Disposal Information	
Waste disposal	Check governmental regulations and local authorities for approved disposal. Under RCRA, it is the responsibility of the user of the material to determine at the time of disposal whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc may effect the classification.
Section 14 Transport Information	
US DOT Hazard Classification	Proper Shipping Name: None UN Number: None Labels Required: None This product is not subjected to DOT regulations under 49 CFR Parts 171-180.
DOT Marine Pollutants	This product does not contain Marine Pollutants as defined in 49 CFR 171.8.
IMDG Code Shipping Classification	Description: not regulated IMDG Class: not classified
IMDG Marine Pollutant	No
ADR/RID Class	Not Classified
IATA Class	Not Restricted
Section 15 Regulatory Information	
TSCA Inventory	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) Inventory.
Labelling information	None needed
EC Annex 1 Class	N/A
R Phrases	N/A
SARA 302 / 304 Emergency Planning and Notification	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to emergency planning and notification information based on Threshold Planning Quantity (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.
SARA 311 / 312 Hazard Identification	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this Subpart to submit aggregated information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material is classified under the following hazard categories: No SARA 311/312 hazard categories identified.
SARA 313 Toxic Chemical Notification and	This product may contain the following components in concentrations above de minimis levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA:

Release Reporting	No components were identified.
CERCLA	The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning the release of quantities of "hazardous substances" equal to or greater than the Reportable Quantities (RQs) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. Chemical substances present in this product or refinery stream that may be subjected to this statute are: No components were identified.
WHMIS (Canada)	Not regulated
Canadian DSL	All components are listed
RCRA Hazardous Class	Non hazardous
Section 16	Other Information
None specified for this product.	

While the data contained herein are believed to be factual, and the opinions expressed are those of qualified experts regarding the results of tests conducted, the data are not to be taken as a warranty or representation for which we assume responsibility. They are offered for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.