MATERIAL SAFETY DATA SHEET

DATE OF ISSUE Nov. 28. 2013
MSDS No **YUB300(ENG)**

1. IDENTIFICATION

Product Name	: **YUBASE 3**
ChemicalFamily Description	: Petroleum Hydrocarbons
REACH Registration Number	: 01-2119487077-29-0022
Intended Use	: Mineral Base Oil
Company	: SK Lubricants Co. Ltd.
Address	: 99 Seorin-dong, Jongro-gu, Seoul 110-110, Korea
Telephone	: +82-2-2121-6684
Fax	: +82-2-2121-7755
Emergency Telephone No	: Above or Local Representative

2. HAZARDS IDENTIFICATION

Classification

Physical-Chemical Hazards

Not classified

Health and Environmental Hazards

Aspiration Hazard : 1

Labeling

Signal Word

Warning

Hazard Pictogram

GHS08 : Health Hazard

Hazard Statement

H304 : May be harmful if swallowed and enters airways

Precautionary Statements

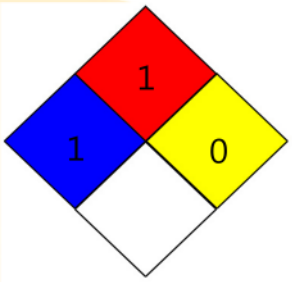
P301+P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

P331 : Do NOT induce vomiting.

P405 : Store locked up.

P501 : Dispose of contents/container to (in accordance with local/regional/national/international regulation).

NFPA HAZARD ID: Health : 1 Flammability : 1 Reactivity : 0



3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	WT%	CAS No	EINECS No.	ECL Serial No
Distillates (petroleum) hydrotreated light paraffinic	100	64742-55-8	265-158-7	KE-12553

4. FIRST AID MEASURES

Inhalation

Inhalation at ambient temperature is unlikely because of the low vapour pressure of the substance.
Symptoms: irritation of the respiratory tract due to excess fume, mists or vapour exposure.
In case of symptoms arising from inhalation of fumes, mists or vapour: Remove casualty to a quiet and well ventilated place if safe to do so
If the casualty is unconscious and:

- Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.
- Breathing: place in recovery position. Administer oxygen if necessary. Obtain medical assistance if breathing remains difficult.

Skin Contact

Symptoms: dry skin, irritation may arise in case of repeated or prolonged exposure.

May cause burn in case of contact with product at high temperature
Remove contaminated clothing and footwear, and dispose of safely.
Wash affected area with soap and water.
Seek medical attention if skin irritation, swelling or redness develops and persists.
(if applicable) When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop.
For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.
Do not put ice on the burn; Remove non-sticking garments carefully. DO NOT attempt to remove portions of clothing glued to burnt skin but cut round them.
Seek medical attention in all cases of serious burns

Eye Contact

Symptoms: slight irritation (unspecific). May cause burn in case of contact with product at high temperature
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing
If irritation, blurred vision or swelling occurs and persists, obtain medical attention.
If hot product is splashed into the eye, it should be cooled immediately to dissipate heat, under cold running water. Immediately obtain specialist medical assessment and treatment for the casualty.

Ingestion

Symptoms: few or no symptoms expected. If any, nausea and diarrhea might occur.
(if applicable) Always assume that aspiration has occurred. Seek professional medical attention or send the casualty to a hospital. Do not wait for symptoms to develop.
Do not induce vomiting as there is a risk of aspiration.
Do not give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

- Foam (Specifically trained personnel only)
- Water fog (Specifically trained personnel only)
- Dry chemical powder
- Carbon dioxide
- Other inert gases (subject to regulations)
- Sand or earth

Unsuitable Extinguishing Media

Do not use direct water jets on the burning product; they could cause splattering and spread the fire.
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Combustion Products

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

Protective Equipment for Firefighters	In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

General Information	Stop or contain leak at the source if safe to do so. Avoid direct contact with released material. Stay upwind. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. It is recommended to eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). If required, notify relevant authorities according to all applicable regulations..
Personal Protection Equipment for Emergency Responders	Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material. Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Note: gloves made of PVA are not water-resistant, and are not suitable for emergency use. Work helmet. Antistatic non-skid safety shoes or boots. Goggles or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection will be necessary only in special cases (e.g. formation of mists). A half or full-face respirator with combined dust/organic vapour filter(s), or a Self-Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.
Land Spillage	Prevent product from entering sewers, rivers, waterways or other bodies of water If necessary dike the product with dry earth, sand or similar non-combustible materials. Large spillages may be cautiously covered with foam, if available, to limit fire risk. Do not use direct jets When inside buildings or confined space, ensure adequate ventilation Absorb spilled product with suitable non-combustible materials. Collect free product with suitable means. Transfer collected product and other contaminated materials to suitable tanks or containers for recycle, recovery or safe disposal. In case of soil contamination, remove contaminated soil for remediation or disposal according to local regulations.
Spillages in Water or at Sea	In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. If this not possible, control the spreading of the spillage, and collect the product by skimming or other suitable mechanical means. The use of dispersants should be advised by an expert, and, if required, approved

by local authorities.
Collect recovered product and other contaminated materials in suitable tanks or containers for recovery or safe disposal.

Additional Information

Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

7. HANDLING AND STORAGE

General Information

Ensure that all relevant regulations regarding handling and storage facilities of combustible products are followed.
It is recommended to keep away from sparks/open flames/hot surfaces. – No smoking.
Use and store only outdoors or in a well-ventilated area.
Avoid contact with the product.
Avoid release to the environment.

Handling

Take precautionary measures against static electricity.
Avoid splash filling of bulk volumes when handling hot liquid product.
Avoid contact with skin. Avoid breathing fume/mist.
Prevent the risk of slipping.
Use personal protective equipment as required.
For more information regarding protective equipment and operational conditions for a substance which is classified according to classification notes, see exposure scenarios. These risk management measures represent a worst case. For a non-classified substance proportionate information may be found in the Safety Data Sheet.

Storage

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation.
Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.
Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.
Store separately from oxidizing agents.

Recommended and Unsuitable Materials for Storage

Recommended materials: For containers, or container linings use mild steel, stainless steel.
Unsuitable materials: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

Container Advice

If the product is supplied in containers:
- Keep only in the original container or in a suitable container for this kind of product.
- Keep containers tightly closed and properly labeled.

- Empty containers may contain combustible product residues. Do not weld, solder, drill, cut or perform similar operations unless they have been properly cleaned.

Hygiene Measures

Ensure that proper housekeeping measures are in place.
Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets.
Keep away from food and beverages.
Do not eat, drink or smoke when using this product.
Wash the hands thoroughly after handling.
Change contaminated clothes at the end of working shift.

Load/Unload Temperature, ℃ Ambient
Storage Temperature, ℃ Ambient

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limit

TLV/TWA	TLV/STEL
5mg/m^3 mist	10mg/m^3 mist

Engineering Controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.
Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Respiratory Protection

No special respiratory protection is normally required.
Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Eye protection

Normal industrial eye protection practices should be employed.

Skin Protection

Wear suitable gloves to avoid direct skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Water white liquid
Odor	Characteristic, mineral oil
Odor Threshold	Not established
pH	Not applicable
Melting Point / Freezing Point	Not established
Initial Boiling Point and Boiling Range	290~440 ℃
Flash Point	200 ℃ (COC)
Evaporation Rate	Not established
Flammability	Not applicable
Upper/Lower Flammability or Explosive Limits	Not established
Vapor Pressure@ 20℃	<0.01 kPa

Vapor Density	>5 (air = 1)
Relative Density@ 15℃	0.830 (water = 1)
Solubility in Water	Negligible
Partition Coefficient : n-Octanol/Water	Expected to be >7
Auto-ignition Temperature	> 290 ℃
Decomposition Temperature	Not established
Viscosity	12 cSt @ 40℃

10. STABILITY AND REACTIVITY

Stability (Thermal, Light, etc)	Stable under normal temperature & pressure
Condition to Avoid	Extreme heat
Incompatibility (Materials to avoid)	Strong oxidizers
Hazardous Decomposition Products	Carbon monoxide
Hazardous polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	LD_{50} >5000 mg/kg Practically non-toxic.
Acute Dermal Toxicity	LD_{50} >2000 mg/kg Practically non-toxic.
Acute Inhalation Toxicity	LC_{50} >5.0 mg/L Practically non-toxic.
Skin Irritation	Either only weakly irritating or not irritating to the skin of rabbits and humans
Eye Irritation	Practically non-irritating.
Corrosivity	No corrosive action of this substance is expected
Skin Sensitization	This substance is not considered to be dermal sensitizer.
Respiratory Sensitization	This substance is not expected to cause respiratory sensitization
Repeat Dose Toxicity	Sub-chronic repeat dose dermal : NOAEL 1000 mg/kg Sub-chronic repeat dose inhalation : NOAEL (local effects) > 220 mg/m^3 and NOAEL (systemic effects) > 980 mg/m^3 This substance is not classified for repeat-dose toxicity
Mutagenicity	This substance was found to be non-mutagenic.
Carcinogenicity	The DMSO extract by IP 346 of this substance is less than 3%.(Typical 0.2% with Maximum 0.5%). Consequently it is not classified as a carcinogen.
Toxicity for Reproduction	Reproductive toxicity dermal NOAEL (development) > 2000 mg/kg This substance showed no effects on reproductive parameters

12. ECOLOGICAL INFORMATION

Ecotoxicity	Acute aquatic invertebrate EL_{50} > 10,000mg/l
	Acute aquatic algae NOEL > 100mg/l
	Acute fish LL_{50} > 100 mg/l
	Long-term invertebrate NOEL 10mg/l
	Long-term fish NOEL 10mg/l
Environmental Fates	This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

This product is a controlled waste. Collect and dispose of waste product at an authorized facility, in conformance with national and local regulations, and in accordance with EEC Directives on the disposal of waste oil.

14. TRANSPORT INFORMATION

Land transport (ADR/RID/) ,Inland waterway transport (AND(R)), Marine transport (IMDG), Air transport ICAO/IATA

UN Number	Not applicable. Not classified as dangerous for transport.
Proper Shipping Name and Description	Not applicable. Not classified as dangerous for transport.
Chemical Name	Not applicable. Not classified as dangerous for transport.
Class	Not applicable. Not classified as dangerous for transport.
Classification Code	Not applicable. Not classified as dangerous for transport.
Packaging Group	Not applicable. Not classified as dangerous for transport.
EmS Number	Not applicable. Not classified as dangerous for transport.
Labels	Not applicable. Not classified as dangerous for transport.
Marine Pollutant	No
Remarks	None

15. REGULATORY INFORMATION

GOVERNMENTAL INVENTORY STATUS

YUBASE(Distillate, Hydrotreated light/heavy Paraffines) is listed on the following inventories:

EINECS (European Inventory of Existing Commercial Chemical Substances), June 15, 1991

TSCA (US, Toxic Substances Control Act), December, 2006

AICS (Australian Inventory of Chemical Substances), June, 1996

DSL (Canadian Domestic Substances List), January 26, 1991

IECSC (Chinese Chemical Inventory)

ENCS (Japanese Existing and New Chemical Substances)

ECL (Korean Existing Chemical Number), January, 1997

PICCS (Philippine Inventory of chemicals and Chemical Substances), 2000

NZIoC (New Zealand Inventory of Chemicals), 2006

SWISS (Swiss Giftliste 1 and Inventory of Notified New Substances)

US EPA SARA TITLE III

Hazardous Components (Chemical Name)	Cas #	Sec.302	Sec. 313	Sec. 110
Distillates (petroleum) hydrotreated light paraffinic	64742-55-8	No	No	No

**** SARA (Superfund Amendments and Reauthorization Act of 1986)**

Sec.302: EPA SARA Title III Section 302 Extremely Hazardous Chemical.

Sec.313: EPA SARA Title III Section 313 Toxic Release Inventory.

Sec.110: EPA SARA 110 Superfund Site Priority Contaminant List

US EPA CAA, CWA

Hazardous Components (Chemical Name)	Cas #	EPA CAA	EPA CWA NPDES	CA PROP 65
Distillates (petroleum) hydrotreated light paraffinic	64742-55-8	No	No	No

****Other Important Lists:**

CWA NPDES: EPA Clean Water Act NPDES Permit Chemical

CAA HAP: EPA Clean Air Act Hazardous Air Pollutant

CAA ODC: EPA Clean Air Act Ozone Depleting Chemical

CA PROP 65: California Proposition 65

16. OTHER INFORMATION

USE : Base stock

SOURCE OF KEY DATA : The recommendations presented in this Material Safety Data Sheet were complied from actual test data when available, comparison with similar products, component information from suppliers and from recognized codes of good practice.

The data and recommendation presented herein are based on our research and the research of others, and are believed to be accurate. No guarantee of their accuracy is made; however, and the products discussed are distributed without warranty, express or implied, and the person receiving them small make his own determination of the suitability thereof for his particular purpose.