Safety Data Sheet

Effective Date: May 15, 2018

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : NSK GREASE LG2
Recommended Use : Lubricating grease
Restricted Use : Other than those above.
Manufacturer/Supplier : NSK Ltd.
Nissei Bldg., 1-6-3, Ohsaki, Shinagawa-ku, Tokyo, 141-8560, Japan
Telephone/Fax : Japan : +81-3-3779-7227/+81-3-3779-7433, USA : +1-734-913-7761/+1-734-913-7510
Emergency Telephone Number : Japan : +81-3-3779-7227
USA : +1-734-913-7761

2. HAZARDS IDENTIFICATION

Classification : This material is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA HCS Label Elements
Symbol(s) : No symbol
Signal Words : No signal word
Hazard Statement : Not classified under OSHA/HCS2012 criteria.

GHS Classification : NOT HAZARDOUS
GHS Label Elements
Symbol(s) : No symbol
Signal Words : No signal word
Hazard Statement : Not classified under GHS criteria.
GHS Precautionary Statements
Prevention : No precautionary phrases.
Response : No precautionary phrases.
Storage : No precautionary phrases.
Disposal : No precautionary phrases.

Unclassified Hazard Information : Please see Section 4 - 8 before use for Prevention/Response/Storage/Disposal.
Used oil may contain harmful impurities.
Unknown Toxicity : 7.7% of this product is of unknown acute toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Mixture : Mixture
Chemical Description : Lubricating grease
Component Information : Lubricant base oil 70-75%
Grease thickner (Lithium soap) 20-25%
Additives ≦5%
Chemical Formula : Not possible to define.
CAS registry number : Trade secret
Additional Information : The highly refined mineral oil contains <3% DMSO-extract, according to IP346.
Classification of components according to GHS : [Chemical Identity/CAS No./Hazard Class (category)/Hazard Statement/Conc.]
Zinc naphthenate/12001-85-3/Skin Irrit. 2, Eye Irrit. 2, Aquatic Acute 1, Aquatic Chronic 1/H315,H319,H400,H410/<0.24%

The specific chemical identities and percentages of composition have been withheld as trade secrets.

4. FIRST AID MEASURES

General Information : Not expected to be a health hazard when used under normal conditions.
Inhalation : Remove casualty to fresh air and keep at rest in a position comfortable for breathing. Cover with blanket to keep warm and rest in a quiet surrounding. Seek immediate medical advice and attention.
Skin Contact : Wash skin with large amount of water using soap.
Eye Contact : Rinse cautiously with clean water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing. After rinsing for a minimum of 15 minutes, seek medical advice and attention.
Ingestion : Without inducing vomiting, call a doctor for treatment. If mouth has been dirtied, clean with water.
Most Important Symptoms/Effects, Acute & Delayed : If swallowed, may irritate mucous membrane of stomach and induce vomiting. Inhalation if mist may cause feeling ill. Skin contact and eye contact may cause irritation.
Immediate Medical Attention, Special Treatment : Treat symptomatically. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Suitable Extinguishing Media	:	Concentrated strong liquid in mist and powder forms, carbon dioxide and foam. Use powder and carbon dioxide may be used small fires only. Effective to use foam to shutdown the air in a large fires.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
Specific Hazards Arising from Chemicals	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds
Fire fighting instructions	:	Water the surrounding equipment to cool them down. Cordon off the affected place and its vicinity to all, except the concerned parties.
Protective Equipment & Precautions for Fighters	:	Ensure to wear protective equipment and approach from windward.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Section 8 of this SDS. See Section 13 for information on disposal. Observe the relevant local and international regulations.

Personal Precautions, Protective Equipment and Emergency Procedures	:	Avoid contact with skin and eyes. Prepare suitable equipment and materials.
Environmental Precautions	:	Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. In event of entering in the sea, extend oil fences to prevent from spreading, and sop up with absorbent materials. Use chemicals and/or detergents, they must satisfy technical standards as set by the Ministry of Land, Infrastructure and Transport / Ministry of the Environment.
Methods and Material for Containment and Clean Up	:	Promptly remove all ignition sources and stop leakages. In a small leakage, absorb and recover by use of soil, sand, sawdust and waste clothes. In a large leakage, cordon off the danger zone, prevent from entering and enclose it with sand bank and stop outflow. Cover liquid surface with foam, and recover liquid into containers.
Additional Advice	:	Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

HANDLING

Technical Measures	:	In handling this material over the allocated volume, ensure approval to meet requires of the laws. Keep away from heat, sparks, open flames, hot objects. No smoking. Take measures against static discharge. Ensure to wear clothing and shoes made of conductive materials. When fixing or processing machine, it carries out after removing dangerous objects completely. NEVER suck up (siphoning) this material by mouth. Wear suitable protect equipment if skin or eye contact may cause. Seal containers hermetically without handling in violent such as falling, dropping, or jolting.
Ventilation Precautions	:	see Section 8
Precautions for Safe Handling	:	Use under normal temperature. Prevent from mixing water and impurity. Avoid contact with halogens, strong acids, alkali and oxidizing materials.

STORAGE

Conditions for Safe Storage	:	Keep containers tightly closed and in a cool, well-ventilated place away from direct sunlight. It is recommended to lock up storage area. Use properly labelled and closeable containers. Avoid heat, sparks, open flame and static accumulation.
Technical Measures	:	All electrical appliances shall be explosion-proof types, and they all must be earthed.
Precautions for Safe Storage	:	Avoid contact and storage in same place with halogens, strong acids, alkali and oxidizing materials.
Recommended Materials	:	Storage in original containers. Do not pressurize empty containers. May cause rupture. Do not weld, heat up, drill or cut containers. May ignite the residue and cause explosion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Equipment	:	Seal or install ventilations for mist occurs. Install eye shower and body shower near working site.
Standard Concentration Control	:	Not specified
OSHA, Permissible Exposure Limits (PEL)	:	5mg/m^3 (Oil mist, mineral)

Occupational Exposure Limits	: Japan Society for Occupational Health(2012)[1]	3mg/m^3 (Oil mist, mineral)
	ACGIH(2012) TWA[Inhalable fraction.][2]	5mg/m^3 (Oil mist, mineral)
Protective Equipment	: Skin protection not ordinarily required beyond standard issue work clothes.	
Respiratory Protection	: No respiratory protection is ordinarily required under normal conditions of use. Use appropriate equipment in response to the circumstances.	
Hand Protection	: Use oil-proof protective hand gloves under prolonged or repeated skin contact.	
Eye Protection	: Wear safety glasses or full face shield if splashes are likely to occur.	
Skin and Body Protection	: Use oil-proof/long sleeved clothing under prolonged usage.	
Appropriate Sanitary Measures:	: Remove immediately all contaminated clothing. Contaminated clothing must be laundered before reuse.	

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Semi-solid.
Colour	: Gray white
Odour	: Characteristic mineral oil
Odour threshold	: Data not available.
pH	: Not applicable.
Initial Boiling Point	: Expected >200°C
Pour point	: Data not available
Flash point	: ≥ 200°C (SETA)
Flammability (solid, gas)	: Not applicable.
Upper / lower Flammability or Explosion limits	: Typical 1 - 7 %(V) (based on mineral oil)
Auto-ignition temperature	: Data not available. Expected >320 °C
Density	: Approx. 0.9g/cm^3 (15°C)
Solubility	: **Water**: Negligible.
Decomposition Temperature	: Data not available
Vapour pressure	: Data not available
Vapour density	: Data not available. Expected >1
n-octanol/water partition coefficient (log Pow)	: Data not available
Evaporation rate	: Data not available
Kinetic viscosity	: Data not available. (This product is solid.)

10. STABILITY AND REACTIVITY

Chemical Stability	: Stable under normal condition.
Hazardous Reactivity	: Avoid contact with strong oxidizing agent.
Conditions to Avoid	: Avoid contact with halogens, strong acids, alkalis, and oxidizing materials.
Incompatible Materials	: Data not available.
Hazardous Decomposition Products	: Hazardous decomposition products are not expected to form during normal storage. Generates smoke, carbon monoxide, sulfurous acid gas etc. during combustion.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment: Information given is based on data on the components and the toxicology of similar products.
Unless indicated otherwise, the data presented is representative of the main component of a whole product, rather than for individual component(s). Individual components contained above cut-off value is described on Section 3.

Acute Toxicity

1	Oral	Expected to be of low toxicity: LD_{50} > 5,000 mg/kg , Rat[3]
2	Dermal	Expected to be of low toxicity: LD_{50} > 5,000 mg/kg , Rabbit[3]
3	Inhalation(Vapor)	Data not available
4	Inhalation(Mist)	Low toxicity: LC_{50} > 5 mg/l , 4h, Rat[3]

Skin Corrosion/Irritation	: Not classified as a skin irritation (rabbit test).[3] Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Serious Eye Damage/Irritation	: Not classified as an eye irritation (rabbit test).[3]
Respiratory or Skin Sensitisation	: No data available concerning respiratory sensitisation. Not classified as a skin sensitisation (Buehler test; guinea pig).[3]
Germ Cell Mutagenicity	: The mutagenic potential of the product category 'other lubricant base oils' has been extensively studied in a range of "in vivo" and "in vitro" assays. The majority of the studies showed no evidence of mutagenic activity.[3]
Carcinogenicity	: Product contains mineral oils of types shown to be noncarcinogenic in animal skin-painting studies.[3] Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC monographs: Group 3)[4], ACGIH[5] and EU Directives.[6]
Reproductive and Developmental Toxicity	: Results of developmental and reproductive toxicity studies showed no evidence of developmental or reproductive toxicity in rats.[3]

Specific target organ toxicity - single exposure : Acute studies do not indicate any specific organ toxicity following single exposure.(3)

Specific target organ toxicity - repeated exposure : The repeat dose toxicity has been investigated by dermal and inhalation routes for periods between 4 weeks and up to 2 years. No systemic effects showed.(3)

Aspiration Hazard : Not classified as a hydrocarbon with kinetic viscosity ≤ 20.5mm^2/s measured at 40°C. Not considered an aspiration hazard.

12. ECOLOGICAL INFORMATION

Basis for Assessment Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.
Unless indicated otherwise, the data presented is representative of the main component of a whole product, rather than for individual component(s). Individual components contained above cut-off value is described on Section 3.

Caution : Poorly soluble mixture. May cause physical fouling of aquatic organisms.
The Water Accommodated Fraction (WAF) is applied following tests..

Toxicity

:	Fish(Fathead minnow, 96h)	LL_{50}	>100mg/L(3)
:	Fish(Fathead minnow, 14d)	NOEL	>100mg/L(3)
:	Crustacea (Daphnia magna, 48h)	EL_{50}/NOEL	>10,000mg/L(3)
:	Crustacea (Daphnia magna, 21d)	NOEL	>10mg/L(3)
:	Algae(Pseudokirchneriella subcapitata)	NOEL	>100mg/L(3)

: In a static 4-day microorganism luminescence inhibition study, no significant luminescence inhibition was observed.(3)

Acute Aquatic Toxicity : Not expected to be a hazard.

Chronic Aquatic Toxicity : Not expected to be a hazard.

Mobility : Generally floats on water.

: Lubricating oil components have estimated log Koc >3, indicating these components are likely to be adsorbed onto soil and sediment and are not likely to leach to ground water.

Persistence/degradability : Another lubricant base oil was determined to be inherently biodegradable but not readily biodegradable, with a mean degradation of 31% by day 28.

Bioaccumulative Potential : Not available as highly refined base oil.

Hazardous to ozone layer : Not classified because this product not contained substances listed on Montreal Protocol and Ozone Layer Protection Law.

13. DISPOSAL CONSIDERATIONS

Material Disposal

1 Waste disposal yourself or entrust the industrial waste treatment company who obtained the prefectural governor's permission or municipal corporation. Disposal should be in accordance with applicable regional, national, and local laws and regulations.
2 Do not dispose into the environment, in drains or in water courses.
3 For landfill disposal, destroy by fire and confirm cinders agreed to Waste Disposal Law.
4 In event of burning this material, ensure to carryout work in safe place with guards in position, and select a method that would not cause any harm or damage to others during combustion or explosion.

Container Disposal : Purify and recycle or performs suitable disposal in accordance with the standard of related laws and regulations. Disposal with remove content completely.

14. TRANSPORT INFORMATION

International Restriction

UN Class, Shipping Name : Not Dangerous Goods.

UN Number : Not applicable.

Marine Pollutant : Yes.

Specific safety measures and conditions for transportation

1 Caution: Flammable.
2 Transport remarkably with containers may not cause friction or agitation.
3 Display signage on vehicle and provide with fire fighting equipment, if and when required to transport more than the specified quantity. Total piled height of vehicle shall be less than 3 meters.
4 Abide by other laws and regulations that are applicable.

15. REGULATORY INFORMATION

International Information

EINECS/ELINCS (EC) : All components listed or polymer exempt.

TSCA(USA) : All components listed or in compliance.

METI(JAPAN)	:	All components listed or in compliance.
Domestic Information		
SARA 304 EHS RQ		This material does not contain any components with a section 304 EHS RQ.
SARA 302		No chemicals in this product are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313		This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
California Prop 65		This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

- Subscribe "%" in this document means weight percentage.

[Quotation]

1. Recommendation of Occupational Exposure Limits (2012), Japanese Society of Occupational Health
2. Thresholds limit values for chemical substances and physical agents and biological exposure indices, ACGIH (2012)
3. ECHA (European Chemicals Agency), website "ECHA CHEM", Information on Registered Substances (2011). SDS of EU suppliers (2011)
4. IARC Monographs Programme on the Evaluation of Carcinogenic Risk to Humans (2006)
5. ACGIH documentation (2006)
6. EC Directive 67/548/EEC Annex I, EU CLP Regulation(EC) No.1272/2008 Annex VI Table3.1,Table3.2

[Reference]

- Globally Harmonized System of Classification and Labelling of Chemicals (GHS) 4th revised edition, UNITED NATIONS(2011)
- Japanese Standards Association (JSA), JIS Z 7253:2012, JIS Z 7252:2014
- National Institute of Technology and Evaluation (nite) "GHS Information"
- Ministry of Economy, Trade and Industry, Chemical Management site.
- Ministry of Health, Labour and Welfare, “Label and SDS information for GHS model”

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