Safety Data Sheet

Effective Date: May 29, 2017

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

Material Name : NSK GREASE NF2
Recommended Use : Lubricating grease
Manufacturer/Supplier : NSK Ltd.
Nissei Bldg., 1-6-3, Ohsaki, Shinagawa-ku, Tokyo, 141-8560, Japan
Telephone/Fax : +81-3-3779-7230 / +81-3-3779-7433
Emergency Telephone Number : +81-3-3779-7230

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 : Hazardous to the aquatic environment, acute toxicity: Category 3

GHS Label Elements
Symbol(s) : No symbol
Signal Words : No signal word
Hazard Statement : H402: Harmful to aquatic life

GHS Precautionary Statements
Prevention : P273: Avoid release to the environment.
Response : No precautionary phrases.
Storage : No precautionary phrases.
Disposal : P501: Dispose of contents/container to appropriate waste site or reclaimer in accordance with local and national regulations.

Unclassified Hazards Information : Please see Section 4 - 8 before use for Prevention/Response/Storage/Disposal. Used oil may contain harmful impurities.
Unknown Toxicity : 12.09% of this product is of unknown acute toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Mixture : Mixture
Chemical Description : Lubricating grease
Component Information : Base oil 70-80%
Grease thickner (Urea compound) 10-20%
Additives 10-20%
Chemical Formula : Not possible to define.
CAS registry number : Trade secret
Additional Information : If product contained highly refined mineral oil, it contains <3% DMSO-extract, according to IP346.
Classification of components according to GHS : [Chemical Identity/CAS No./Hazard Class (category)/Hazard Statement/Conc.]
Alkylated diphenyl ethers/(410-450-3(EC No.)/Aquatic Chronic 4/H413/<5%
Sodium nitrite/7632-00-0/Ox. Sol. 2, Acute Tox. 3, Eye Irrit. 2A, Aquatic Acute1/H272,H301,H319,H400/<2%
Zinc dialkyl dithiophosphate/68649-42-3/Skin Irrt. 2, Eye Irrit. 2A/H315, H319/<2%

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 (as Oil mist, mineral)

Occupational Exposure Limits	: Japan Society for Occupational Health(2012)[1]	3mg/m^3 (as Oil mist, mineral)
	ACGIH(2012) TWA[Inhalable fraction.][2]	5mg/m^3 (as 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	: Amber.
Odour	: Slight odour.
Odour threshold	: Data not available.
pH	: Not applicable.
Melting Point	: Not applicable.
Dropping Point	＞250°C
Flash point	: ≥ 200°C (SETA)
Flammability of the product	: Flammable.
Upper / lower Flammability or Explosion limits	: Typical 1 - 7 %(V) (estimated)
Auto-ignition temperature	: Data not available.
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.
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 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).
12.09% of this product is of unknown acute toxicity.

Acute Toxicity

1	Oral	Expected low toxicity: LD_{50} > 5000 mg/kg (estimated)[3]
2	Dermal	Expected low toxicity: LD_{50} > 5000 mg/kg (estimated)[3]
3	Inhalation(Vapour)	Data not available
4	Inhalation(Mist)	Expected Low toxicity: LC_{50} > 5 mg/l , 4h (estimated)[3]

Skin Corrosion/Irritation	: Expected not classified as a skin irritation.[3] Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Serious Eye Damage/Irritation	: Expected not classified as an eye irritation.[3] Capable of slightly irritating.
Respiratory or Skin Sensitization	: No data available concerning respiratory sensitization. Not expected to be a skin sensitizer.[3]
Germ Cell Mutagenicity	: Not considered a mutagenic hazard.[3]
Carcinogenicity	: Components are not known to be associated with carcinogenic effects.[3]
Reproductive and Developmental Toxicity	: Not expected to be a hazard.[3]
Specific target organ toxicity	: Not expected to be a hazard.[3]

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).

Caution : Poorly soluble mixture. May cause physical fouling of aquatic organisms.
Toxicity : Expected to be of low toxicity: Practically non toxic: LC/LL/EL/IL_{50} >100mg/L[(3)]
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 : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable.
Bioaccumulative Potential : Not expected to be a hazard. It may contains components with the potential to bioaccumulate[(3)].
Hazardous to ozone layer : Not classified because this product is 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.
Domestic Restriction Since domestic laws and regulations shown below are applicable, containers and Transportation methods shall be required to follow each and every regulation.
Land Fire Service Law Not considered as dangerous goods.
Container If product classified as dangerous goods, use containers (other than tanker, tank car and tank truck) for transportation usage, shall meet the Clause 2, Notice Attachment 3, concerning dangerous materials.
Sea : Ship Safety Law: Not Dangerous Goods.
Air : Civil Aeronautics Act: Not Dangerous Goods.
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 Consolidation of this material with dangerous goods belonging to the 1st and 6th Classification is prohibited.
5 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.
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 product contain
Sodium nitrite (CAS No.7632-00-0) 0.70-1.40%.
Zinc Compounds (CAS No. 68649-42-3) 1.62-1.71%.
California Prop 65 : This product contain Silica, crystalline (CAS No.14808-60-7) as impurities. Concentration may be estimated less than 0.1%

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. SDS of EU suppliers (2010-2012)

[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 MSDS information for GHS model”