

| | | | | |
|---------------|--------------|-------------------------------|-----------|------------|
| REVISION DATE | 2003. 8. 20. | MATERIAL SAFETY DATA SHEET of | SHEET No. | MSDS – 040 |
| SERIAL No. | 2 | EM 100, 150, 300, 350 | PAGE No. | 1/4 |

1. COMPOSITION/ INFORMATION ON INGREDIENTS

| <u>INGREDIENT</u> | <u>CAS No.</u> | <u>CONTENT (wt%)</u> |
|------------------------|----------------|----------------------|
| Mineral Oil | 64742-54-7 | 99~99.9 |
| Demulsifier / Defoamer | NA | 0.1~1.0 |

2. HAZARD IDENTIFICATION

This product consists of mineral base oil with additives. It is of low oral dermal toxicity and under normal conditions of use should present no significant health hazards. However, in common with most mineral oils, prolonged and repeated skin contact may cause dermatitis. Handling precautions should be strictly observed.

3. FIRST AID

INHALATION :

At ambient / normal handling temperatures, inhalation of vapors is normally not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing is irregular or has stopped. Get prompt medical attention.

SKIN CONTACT :

Wash thoroughly with plenty of water, using soap if available. Remove contaminated clothing. If irritation persists, get medical attention.

EYE CONTACT :

Rinse immediately with plenty of water until irritation subsides. If irritation persists, obtain medical advice.

INGESTION :

If swallowed, DO NOT induce vomiting : keep at rest and call a physician.

4. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA :

Foam, dry chemical powder, carbon dioxide.

FIRE AND EXPLOSION HAZARDS :

Combustible material, low hazard. The product can form flammable mixtures or can burn only on heating above the flash point. However, minor contamination by hydrocarbons of higher volatility may increase the hazard.

| | | | | |
|---------------|--------------|-------------------------------|-----------|------------|
| REVISION DATE | 2003. 8. 20. | MATERIAL SAFETY DATA SHEET of | SHEET No. | MSDS – 040 |
| SERIAL No. | 2 | EM 100, 150, 300, 350 | PAGE No. | 2/4 |

SPECIAL FIRE-FIGHTING PROCEDURES :

Water fog or spray, to cool fire-exposed surfaces (e.g. containers) and to protect personnel, should only be used by personnel trained in fire fighting.

Cut off “fuel” ; depending on circumstances, either allow the fire to burn out under controlled conditions or use foam or dry chemical powder to extinguish the fire.

Respiratory and eye protection required for fire fighting personnel exposed to fumes or smoke.

HAZARDOUS COMBUSTION PRODUCTS :

Smoke, and carbon monoxide may be formed in the event of incomplete combustion.

5. ACCIDENTAL RELEASE MEASURE

PERSONAL PRECAUTIONS : See section 8.

LAND SPILL :

Shut off source taking normal safety precautions. Prevent liquid from entering sewers, water courses or low lying areas : advise the relevant authorities if it has, or if it contaminates soil / vegetation. Take measure minimize the effects on ground water. Recover by skimming or pumping using explosion-proof equipment, or contain spilled liquid with booms, sand, or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.

WATER SPILL :

Confine the spill immediately with booms. Warn other shipping. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. Disperse the residue in confined waters, if permitted by local authorities and environmental agencies.

6. HANDLING AND STORAGE

Store the product in cool, well ventilated surroundings, well away from sources of ignition. Provide suitable mechanical equipment for the safe handling of drums and heavy packages. Electrical equipment and fittings must comply with local regulations regarding fire prevention with this class of product.

LOAD / UNLOAD TEMPERATURE deg. : Ambient to max. 60

STORAGE TEMPERATURE deg. : Ambient to max. 60

SPECIAL PRECAUTIONS :

Take extreme care to avoid contamination by other products and materials. Keep containers closed when not in use. Prevent small spills and leakage to avoid slip hazard.

| | | | | |
|---------------|--------------|-------------------------------|-----------|------------|
| REVISION DATE | 2000. 2. 14. | MATERIAL SAFETY DATA SHEET of | SHEET No. | MSDS – 040 |
| SERIAL No. | 2 | EM 100, 150, 300, 350 | PAGE No. | 3/4 |

7. PERSONAL PROTECTION

In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves. Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin / eye contact is avoided. When concentrations in air may exceed the occupational exposure limit, and where engineering, work practices, or other means of exposure reduction are not adequate, approved respirators may be required.

8. PHYSICAL AND CHEMICAL PROPERTIES

Appearance / Odor : Clear liquid, mild petroleum odor.

Specific Gravity : 0.83 ~ 0.89 @15/4

Viscosity : 46, 68, 100, 150 cSt @40

Solubility in water : Negligible @20

pH : Not applicable

Flash point : > 220 (COC Method)

9. STABILITY AND REACTIVITY

Stability (Thermal, Light, etc) : Stable

CONDITION TO AVOID :

Keep away from heat sources, open flames and other sources of ignition.

INCOMPATIBLE MATERIALS :

Avoid contact with strong oxidants such as liquid chlorine and concentrated oxygen.

HAZARDOUS DECOMPOSITION PRODUCTS :

Product does not decompose at ambient temperature.

10. TOXICOLOGICAL INFORMATION

EFFECTS OF OVER EXPOSURE :

INHALATION :

Negligible hazard at ambient / normal handling temperatures. Elevated temperatures or mechanical action may form vapors, mists, or fumes which may be irritating to the eyes, nose, throat, and lungs. Avoid breathing vapors, mists, or fumes.

SKIN CONTACT :

Low order of acute toxicity. Prolonged or repeated contact may lead to mild skin irritation.

EYE CONTACT :

Slightly irritating, but does not injure eye tissue.

INGESTION :

Low order of acute / systemic toxicity.

| | | | | |
|---------------|--------------|-------------------------------|-----------|------------|
| REVISION DATE | 2003. 8. 20. | MATERIAL SAFETY DATA SHEET of | SHEET No. | MSDS – 040 |
| SERIAL No. | 2 | EM 100, 150, 300, 350 | PAGE No. | 4/4 |

11. ECOLOGICAL INFORMATION

In the absence of specific environmental data for this product, this assessment is based on information for general hydrocarbon components found in lubricant mineral oils. Lubricant mineral oils, immediately following a release into the environment, will remain largely on the soil surface, and in water, will remain largely on the water surface. Based on chemical / physical information from the literature for this product category, no harmful effects to terrestrial or aquatic habitats would be expected. This product is expected to be resistant to biodegradation and to persist in the environment. This product may contain additives for which no environmental data is available. Hence, the above assessment concerns the base oil(s) only.

12. DISPOSAL CONSIDERATIONS

Collect and dispose of waste product at an authorized disposal facility, in conformance with national and local regulations on the disposal of waste oil.

13. TRANSPORT INFORMATION

USUAL SHIPPING CONTAINERS :

Tank trucks, Drums, Pails, Cans

TRANSPORT TEMPERATURE deg. : Ambient to max. 50

14. REGULATORY INFORMATION

Refer to national and local regulations regarding the prevention and extinction of fires.

15. OTHER INFORMATION

PRODUCT TYPE / USES : Industrial machine and vacuum pump oil

The information and recommendations contained herein are, to the best of IDEUK's knowledge and belief, accurate and reliable as of the date issued, but are offered without guarantee or warranty. They relate to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Conditions of use of the material are under the control of the user ; therefore, it is the user's responsibility to satisfy himself as to the suitability and completeness of such information his own particular use.

16. EMERGENCY CALL

ADDRESS : IDEUK CO. Ltd, 380-7, Kyochon-ri, Ja in-myun, Kyungsan-city, Kyung-buk 712-850, Korea

TEL : 82-53-857-5900~4

FAX : 82-53-857-5905