RM Number: 8507 (Renewals)
MSDS Number: 8507
RM Name: Moisture in Transformer Oil
Issued: March, 1992

MATERIAL SAFETY DATA SHEET

National Institute of Standards and Technology
Standard Reference Materials Program
Gaithersburg, Maryland 20899
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Moisture in Transformer Oil

Description/ Other Designations: Moisture in **Petroleum Lubricating Oil** (***CORAY 22*)

Chemical Formula: A mixture of hydrotreated **light** and **heavy** naphthenic distillate with petroleum.

CAS Reg. Nos.: **64742-53-6
**64742-52-5

DOT Classification: Not hazardous by DOT regulations.

Manufacturer/ Supplier: Available from a number of suppliers.

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration	Limits and Toxicity Data
Transformer Oil	~ 100	ACGIH TLV-TWA 5mg/m^3 for oil mist in air Rat, Oral: LD_{50}: greater than 5 g/kg body weight Rabbit, Acute Dermal: LD_{50}: greater than 3.16 g/kg body weight

***Exxon Trade Name*
**CAS numbers for components

SECTION III. PHYSICAL/ CHEMICAL CHARACTERISTICS

Transformer Oil

Appearance and Odor: A clear liquid with a mild, bland petroleum odor.
Molecular Weight: ca 310
Specific Gravity (15.8 °C/15.8 °C): 0.90
Boiling Point: ca 241 °C (by ASTM D 2887)
Pour, (Congealing or Melting Point): -18 °C
Viscosity (at 40 °C): 20 cSt
Vapor Pressure (at 20 °C): Less than 0.01 mmHg
Vapor Density (Air=1): Greater than 5.
Evaporation Rate (n-Butyl Acetate=1): Less than 0.01
pH: Essentially neutral.
Solubility in Water (vol/vol at 0 °C): Negligible.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: 157 °C

(Method Used): ASTM D 92 (Cleveland Open Cup)

Autoignition Temperature: Greater than 204 °C

(Method Used): ASTM E 659

Flammability Limits in Air (Volume %): **UPPER:** 7
LOWER: 0.9

Extinguishing Media: Use foam, dry chemical or carbon dioxide. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialties.

Special Fire Procedures: Fire-fighters should wear self-contained breathing apparatus and full protective clothing when fighting fires involving this material.

Unusual Fire and Explosion Hazards: No unusual fire or explosion hazards are associated with this product.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** ____ **Unstable**

Conditions to Avoid: Avoid excessive temperatures and conditions which promote oxidation.

Incompatibility (Materials to Avoid): Keep this material from strong oxidizing agents.

Hazardous Decomposition or Byproducts: Fumes, smoke, carbon monoxide, sulfur oxides and aldehydes along with other decomposition products can be produced in incomplete combustion.

Hazardous Polymerization: _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: __X__ **Inhalation** __X__ **Skin** __X__ **Ingestion**

Health Hazards (Acute and Chronic): The vapor pressure of this material is very low therefore, vapor inhalation under ambient conditions is normally not a problem. However, health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

Prolonged or repeated skin contact with this product may remove skin oils possibly leading to irritation and *dermatitis*; contact with the eyes may cause eye irritation. This product has a low order of oral toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

Signs and Symptoms of Exposure: Headache, nausea, vomiting, eye and/or skin irritation are symptoms of over exposure.

Medical Conditions Generally Aggravated by Exposure: N/A

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	____	X
In the International Agency for Research (IARC) Monographs	____	X
By the Occupational Safety and Health Administration (OSHA)	____	X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Contact medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Contact medical assistance if necessary.

Inhalation: If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration. Contact medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. **DO NOT** induce vomiting. Contact medical assistance if necessary.

TARGET ORGAN(S) OF ATTACK: Skin and upper respiratory tract.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in Case Material is Released or Spilled: Notify safety personnel of major spills and/or leaks. Remove sources of ignition. Ventilate area and recover free product with sand, earth or other suitable absorbent. Keep product out of sewers and watercourses by diking or impounding.

Waste Disposal: Follow all Federal, state and local regulations.

> **Note:** Empty containers retain residue (liquid and/or vapor) and can be dangerous. **DO NOT** pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity or other sources of ignition. **DO NOT** attempt to clean and re-use containers. Containers should be completely drained and disposed of in a environmentally safe manner.

Handling and Storage: Provide adequate ventilation where operating conditions may create excessive vapors and mists. Use explosion-proff equipment. Provide approved respiratory apparatus for nonroutine or emergency use. Use an approved filter and vapor respirator when vapor/mist concentrations are high. Wear protective rubber gloves and chemical safety glasses when contact with liquid or high mist concentrations may occur. Additional protective clothing may be required depending on working conditions. An eye wash station and washing facilities are to be readily available. Avoid prolonged skin contact and breathing of vapors and mists. Follow good hygiene practice; wash exposed skin areas several times a day with soap and water. Launder soiled clothes before reuse.

> **Note:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the lab.

Store material in a cool, dry, well ventilated area away from sources of open flame, heat, strong oxidizing agents and sources of ignition. Protect containers from physical damage. Use non-sparking tools and explosion proof electrical equipment.

SECTION VIII. SOURCE DATA/ OTHER COMMENTS

Sources: Exxon Company USA, MSDS *CORAY 22*, June 1, 1989.
Hawley's Condensed Chemical Dictionary, 11th ed., 1987.

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Note: Physical and chemical data contained in this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however NIST does not certify the data on the MSDS. The certified values for this material are given only on the NIST Certificate of Analysis.