Date of Issue:
26 May 2015

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

RM Number: 8504
RM Name: Transformer Oil
Other Means of Identification: Not Applicable.

Recommended Use of This Material and Restrictions of Use

This Reference Material (RM) is a transformer oil intended to be used as a diluent oil with Standard Reference Materials (SRMs) 3075, *Aroclor 1016 in Transformer Oil*, 3076, *Aroclor 1232 in Transformer Oil*, 3077, *Aroclor 1242 in Transformer Oil*, 3078, *Aroclor 1248 in Transformer Oil*, 3079, *Aroclor 1254 in Transformer Oil*, 3080, *Aroclor 1260 in Transformer Oil*, and/or SRM 3090, *Aroclors in Transformer Oil* when developing and validating methods for the determination of polychlorinated biphenyls (PCBs) as Aroclors in transformer oil or similar matrices. A unit of RM 8504 consists of one bottle containing approximately 100 mL of transformer oil.

Company Information

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200
FAX: 301-948-3730
E-mail: SRMMSDS@nist.gov
Website: http://www.nist.gov/srm

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

2. HAZARDS IDENTIFICATION

Classification

Physical Hazard: Not classified.
Health Hazard: Aspiration Hazard: Category 1

Label Elements

Symbol

Signal Word

DANGER

Hazard Statement(s)

H304 May be fatal if swallowed and enters airways.

Precautionary Statement(s):

P301 + P310 If swallowed: Immediately call a doctor.
P331 Do NOT induce vomiting.

P405 Store locked up.

P501 Dispose of contents and container in accordance to local regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Transformer oil.

Other Designations: Hydrotreated light naphthenic distillate (petroleum); hydraulic petroleum oil, distillates.

Components are listed in compliance with OSHA 29 CFR 1910.1200; for the actual value see the NIST Report of Investigation.

Hazardous Components	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Transformer oil	64742-53-6	265-156-6	>99.9

4. FIRST AID MEASURES

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash exposed skin with soap and water for at least 15 minutes. Seek medical attention if needed.

Eye Contact: Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: Aspiration hazard. Do not induce vomiting. If vomiting occurs, keep head lower than hips to prevent aspiration. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

Most Important Symptoms/Effects, Acute and Delayed: Irritation, dizziness, nausea, coughing, and aspiration.

Indication of any immediate medical attention and special treatment needed, if necessary: Not applicable.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Regular dry chemical, carbon dioxide, regular foam.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 0 Fire = 1 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Absorb spilled material with sand or non-combustible material and collect in appropriate container for disposal.

7. HANDLING AND STORAGE

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

Storage: Store and handle in accordance with all current regulations and standards. The storage floor must be impermeable and form a collecting basin so that, in the event of an accident spillage, the liquid cannot spread beyond the storage area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: No exposure limits established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection Measures: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear splash resistant safety goggles with a face shield. An eye wash station should be readily available near areas of use.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties:

Appearance (physical state, color, etc.):	clear, yellow liquid
Molecular Formula:	not applicable
Molar Mass (g/mol):	not applicable
Odor:	not available
Odor threshold:	not available
pH:	not available
Evaporation rate:	not available
Melting point/freezing point:	not available
Pour point	–40 °C (–40 °F)
Density:	0.88 kg/m^3 at 15 °C
Vapor Pressure:	0.1 mmHg 20 °C
Vapor Density:	>5 as 101 kPa
Kinematic Viscosity (@ 40 °C):	12 cSt (12mm^2/s) at 40 °C
Solubility(ies):	insoluble in water
Partition coefficient (n-octanol/water):	>6.5
Particle Size	not applicable

Thermal Stability Properties:

Autoignition Temperature:	>315 °C(599 °F)[(a)]
Thermal Decomposition	not available
Initial boiling point and boiling range:	260 °C to 371 °C (500 °F to 700 °F)
Explosive Limits, LEL:	not available
Explosive Limits, UEL:	not available
Flash Point:	>145 °C (293 °F)[(a)]
Flammability (solid, gas):	not applicable

[(a)]Vendor supplied property.

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid excessive heat; high energy ignition sources.

Incompatible Materials: Oxidizers.

Fire/Explosion Information: See Section 5, “Fire Fighting Measures”.

Hazardous Decomposition: Oxides of carbon, sulfur oxides, aldehydes.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Dizziness, nausea, coughing.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: Acute exposure to high levels of vapor may cause central nervous system depression, headache, dizziness, nausea, vomiting, anorexia, incoordination and unconsciousness. Prolonged or repeated exposure may cause irritation.

Skin Contact: Acute exposure may cause redness. Chronic skin exposure may cause defatting and drying of the skin resulting in irritation and dermatitis.

Eye Contact: Acute exposure of liquid or vapor may cause irritation.

Ingestion: May cause lung damage if aspirated into the lungs and may be fatal. Symptoms may include coughing, difficulty breathing, cyanosis and pulmonary edema. Acute exposure by ingestion may cause nausea, vomiting, cramping, and symptoms of the central nervous system depression.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.
Rat, Oral LD50: >5000 mg/kg
Rat, Inhalation LC50: 2180 mg/m^3 (4 h)
Rabbit, Skin LD50: >2000 mg/kg

Skin Corrosion/Irritation: Not classified.
Rabbit, skin: 0.5 mL/24 h, moderate

Serious Eye Damage/Irritation: Not classified.
Rabbit, eye: 0.1 mL, mild

Respiratory Sensitization: Not Classified. No data available.

Skin Sensitization: Not classified. No data available.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Not classified.
Listed as a Carcinogen/Potential Carcinogen ____ Yes X No
Transformer oil is not listed by NTP, IARC, or OSHA as a carcinogen/potential carcinogen.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity, Single Exposure: Not classified.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration Hazard: Category 1.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: This product must not be allowed to run into drains or waterways.
Fish, LC50: Rainbow Trout (*Oncorhynchus mykiss*), >5000 mg/L
Invertebrate, EC50: Water flea (*Daphnia magna*), >1000 mg/L IUCLID

Persistence and Degradability: Expected to be biodegradable

Bioaccumulative Potential: No data available

Mobility in Soil: Expected to migrate from land to water and vice versa.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: This material is not regulated by IATA or DOT.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	Yes.
CHRONIC HEALTH:	No.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	No.

State Regulations:

California Proposition 65: Not listed.

U.S. TSCA Inventory: Listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations:

WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 26 May 2015

Sources: ChemADVISOR, Inc., SDS, *Transformer Oil*, 21 March 2014.

Vendor MSDS, Exxon Mobile Corporation, MSDS, UNIVOLT N 61 B, 20 March 2007.

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	RM	Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Limit
LD50	Median Lethal Dose or Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
NIST	National Institute of Standards and Technology	WHMIS	Workplace Hazardous Materials Information System

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Report of Investigation.

Users of this RM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at http://www.nist.gov/srm.