MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

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

SRM Number: 3075
MSDS Number: 3075
SRM Name: Aroclor 1060 in Transformer Oil

Date of Issue: 20 September 2011

MSDS Coordinator: Mario Cellarosi
Telephone: 301-975-2200
FAX: 301-926-4751
E-mail: SRMMSDS@nist.gov

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

Description: This Standard Reference Material (SRM) is a solution of Aroclor 1060 (Chemical Abstracts Registry Number 12674-11-2) in transformer oil. This SRM is intended primarily for calibrating chromatographic instrumentation and methods of analysis used for the determination of Aroclor 1060 and polychlorinated biphenyls (PCBs) in transformer oil. A unit of SRM 3075 consists of five 2 mL ampoules, each containing approximately 1.2 mL of transformer oil.

Substance: Transformer Oil, Aroclor 1060

Other Designations:
Transformer Oil (hydrotreated light naphthenic distillates [petroleum]; distillates, petroleum, hydrotreated light naphthenic; hydraulic petroleum oil; mineral oil, petroleum distillates, hydrotreated light naphthenic; petroleum electrical insulating oil).

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 1 Reactivity = 0

NOTE: The health and safety information included in this MSDS is for transformer oil, the main component of this SRM. The concentration of Aroclor 1060 in this NIST SRM is below the reportable limits for hazardous components (1 %) and/or carcinogens (0.1 %), as required by OSHA, 29 CFR 1910.1200 (g)(2)(i)(C)(1), for MSDS information.

Major Health Hazards: Irritation (eye, respiratory tract, and skin), aspiration hazard, and cancer.

Physical Hazards: Not Applicable.

Potential Health Effects (Acute and Chronic):

Inhalation: There is no specific information for acute or chronic inhalation effects for transformer oil.

Skin Contact: Short-term and long-term contact with transformer oil material may cause skin irritation and dermatitis.[(a)]

Eye Contact: Short-term and long-term exposure to transformer oil may cause irritation.

Ingestion: Acute ingestion of transformer oil may cause abdominal pain, nausea, and vomiting. Small amounts of oil aspirated during ingestion or vomiting may cause lung damage; no information available for long-term exposure to transformer oil.

Listed as a Carcinogen/Potential Carcinogen

Component: Transformer Oil[(a)]	**Yes**	**No**
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

[(a)]European Commission (EC) states transformer oil may cause cancer (see Sections 3 and 15).

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Mass Concentration
Transformer Oil	64742-53-6	265-156-6	99.99

This material contains organic and inorganic compounds incorporated in transformer oil (PCBs, PAHs, or other contaminants), which have been reported to have toxic, mutagenic, and/or carcinogenic properties, and should be handled with care. The concentrations of these compounds that are not listed above are below the reportable limit: hazardous components (1 %); carcinogens (0.1 %), required by OSHA, 29 CFR 1910.1200 (g)(2)(i)(C)(1), for MSDS information.

Components: Transformer Oil

EC Classification: T (Carc. Cat. 2)

EC Risk (R No.): 45

EC Safety (S No.): 45; 53

EC Classification Risk/Safety Phrases: Refer to Section 15, "Regulatory Information".

4. FIRST AID MEASURES

Inhalation: Move the person to fresh air immediately. If not breathing, qualified medical personnel may give artificial respiration or oxygen if necessary. Seek medical aid at once, and bring the container or label.

Skin Contact: Remove contaminated clothing and shoes. Flush affected skin with water for at least 15 minutes, and then wash thoroughly with soap or mild detergent and water. If skin irritation persists, seek medical aid and bring the container or label. Wash contaminated clothing before reusing.

Eye Contact: Do not allow victim to rub eyes or keep eyes closed. Flush eyes with large amounts of running water for at least 15 minutes, keeping eyelids open and raising lids to remove all chemical. Seek medical aid at once, and bring the container or label.

Ingestion: Contact a poison control center immediately for instructions. **Do not** induce vomiting. If vomiting occurs, keep head lower than hips to reduce risk of aspiration. Seek medical aid at once, and bring the container or label.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight fire hazard.

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire.

Fire Fighting: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): 146 (295 °F)

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

Autoignition Temp. (°C): Not available.

Flammability Limits in Air

UPPER (Volume %): Not applicable.

LOWER (Volume %): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Collect spilled liquid with sand or other non-combustible material and place in appropriate container for proper disposal.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards.

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

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

Component: Transformer Oil

No occupational limits established.

Ventilation: Use local or general exhaust to keep employee from exposures. Local exhaust ventilation is preferred because it can control contaminant emissions at the source, preventing dispersion into the general work area. Refer to the ACGIH document *Industrial Ventilation, a Manual of Recommended Practices*.

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

Eye Protection: Use chemical safety goggles where splashing of solutions may occur. Provide an emergency eye wash fountain and safety shower in the immediate work area.

Personal Protection: Wear appropriate gloves and protective clothing to prevent contact with skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Transformer Oil

Appearance and Odor: Clear, bright liquid.

Molecular Formula: Complex hydrocarbon mixture.

Molar Mass (g/mol): Not applicable.

Specific Gravity (water = 1): 0.889

Boiling Point (°C): >154 (>309 ˚F)

Melting Point: Not applicable.

Water Solubility: Insoluble.

Solvent Solubility: Not applicable.

10. STABILITY AND REACTIVITY

Stability: X Stable _____ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, and ignition sources. Avoid contact with incompatible materials.

Incompatible Materials: Oxidizing agents.

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

Hazardous Decomposition: Oxides of carbon.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation X Skin X Ingestion

Toxicity Data

Component: Transformer Oil

LD_{50} (Rat-oral): >5 g/kg

LC_{50} (Rat-inhalation): 2.2 g/m^3 (4 h)

Health Effects: See Section 2: "Hazards Identification" for potential health effects.

Target Organs: Skin and upper respiratory tract.

Medical Conditions Aggravated by Exposure: Respiratory disorders, skin disorders and allergies.

Mutagen/Teratogen:

Component: Transformer Oil

Transformer oil has been investigated as a possible tumorigenic effector. The following endpoint is listed in the Registry of Toxic Effects of Chemical Substances (RTECS) for tumorigenic effects:

Mouse, Skin, TDLo: 480 g/kg (80 week).

12. ECOLOGICAL INFORMATION

Ecotoxicity Data

Component: Transformer oil

Aquatic Toxicity

Fish: rainbow trout (*Oncorhynchus mykiss*), >5000 mg/L (LC_{50}/96 hrs).

Invertebrate: freshwater water flea (*daphnia magna*), >1000 mg/L (EC_{50}/48 hrs).

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with federal, state, and local requirements, which vary according to location. Keep out of water supplies and sewers.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT and IATA.

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:	Yes
FIRE:	No
REACTIVE:	No
PRESSURE:	No

STATE REGULATIONS

California Proposition 65: Not regulated.

CANADIAN REGULATIONS

WHMIS Classification: Not provided for this material.

EUROPEAN REGULATIONS

Component: Transformer Oil

EC Classification:

T – Toxic (Carc. Cat. 2).

EC Risk Phrases:

R45 - May cause cancer.

EC Safety Phrases:

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S53 - Avoid exposure – obtain special instructions before use.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Transformer oil listed.

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

16. OTHER INFORMATION

Sources: ChemAdvisor, MSDS *Transformer oil*, 06 April 2011.

Disclaimer: Physical and chemical data contained in this MSDS are provided only 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 in the MSDS. The certified values for this material are given in the NIST Report of Investigation.