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: 3091
MSDS Number: 3091
SRM Name: Aroclors in Methanol

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Description: This Standard Reference Material (SRM) is a set of six different solutions of individual Aroclors in methanol. These solutions are 99.9 % Methanol. A unit of SRM 3091 consist of six 2-mL ampoules, each containing approximately 1.2 mL of each of the following SRM solutions: SRM 3081 Aroclor 1016 in Methanol; SRM 3082 Aroclor 1232 in Methanol; SRM 3083 Aroclor 1242 in Methanol; SRM 3084 Aroclor 1248 in Methanol; SRM 3085 Aroclor 1254 in Methanol; and SRM 3086 Aroclor 1260 in Methanol. This SRM is intended primarily for calibrating chromatographic instrumentation and methods of analysis used for the determination of Aroclors and polychlorinated byphenyls (PCBs) in water.

Substance: Methanol.

Other Designations: Wood alcohol; wood spirit; methyl hydroxide; methyl alcohol.

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 2 Fire = 3 Reactivity = 0

NOTE: The health and safety information included in this MSDS is for methanol, the main component of this SRM. The concentration of Aroclors 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: Skin and eye irritation, central nervous system depression, and nerve damage.

Physical Hazards: Flammable liquid and vapor. Vapor may cause flash fire.

Potential Health Effects

Inhalation: Exposure may cause irritation of the mucous membranes, coughing, tracheitis, bronchitis, tinnitus, unsteady gait, twitching, constipation, nystagmus, and blepharospams. Repeated exposure may result in recurrent headaches, diminution of vision, enlargement of the liver, and allergic reactions.

Skin Contact: Exposure may cause irritation. Skin absorption may occur and cause metabolic acidosis and effect on the eyes and central nervous system. Repeated or long-term exposure may lead to defatting of the skin resulting in erythema, scaling, and eczematoid dermatitis.

Eye Contact: Vapors may cause irritation. High concentrations have been reported to cause violent inflammation of the conjunctiva and epithelial defects on the cornea. Repeated or prolonged contact may cause conjunctivitis.

Ingestion: Ingestion may result in mild and transient inebriation and subsequent drowsiness followed by an asymptomatic period lasting 8-48 hours. Following the delay, coughing, dyspnea, headache, dullness, weakness, nausea, vomiting, violent pain in the back, abdomen, and extremities, apathy or delirium may occur. Rapid shallow respiration due to metabolic acidosis, hypotension, cyanosis, convulsions, cardiac depression, cerebral and pulmonary edema, unconsciousness, and coma may occur. Liver, kidney, heart, stomach, intestine and pancreatic damage may also occur. Death may occur due to respiratory failure. As little as 15 mL has caused blindness; the usual fatal dose is 60–240 mL.

Listed as a Carcinogen/Potential Carcinogen

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

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component[(a)]	CAS Registry	EC Number (EINECS)	Nominal Concentration
Methanol	67-56-1	200-659-6	>99.9 %

[(a)] This material is a complex mixture that has not been tested as a whole. The material contains organic compounds (see Certificate of Analysis), which have been reported to have toxic, mutagenic, and/or carcinogenic properties, and should be handled with care. Components are listed in accordance with OSHA, 29 CFR 1910.1200 (g)(2)(i)(C)(1) which requires identification of hazardous components at concentrations greater than 1 % and carcinogens at concentrations greater than 0.1 %.

EC Classification: T, F
EC Risk (R No.): 11, 39/23/24/25
EC Safety (S No.): 7, 16, 36/37, 45

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

Note: EC information is based on the concentration of methanol in solution. The listed EC information is for a methanol solution of 10 % or greater.

4. 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.

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

Skin Contact: Rinse affected area with copious amounts of water followed by washing with soap and water for at least 15 minutes while removing contaminated clothing. Seek medical attention, if needed.

Ingestion: Contact a poison control center immediately for instructions. Give water to rinse out mouth. Never give liquids to a person with reduced awareness or becoming unconscious. If vomiting occurs, keep head lower than hips to prevent aspiration. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. OSHA Class IB flammable liquid.

Extinguishing Media: Alcohol-resistant foam, carbon dioxide, regular dry chemical, water.

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

Flash Point: 11 ºC (52 ºF)
Method Used: Closed Cup

Autoignition Temp: 385 ºC (725 ºF)

Flammability Limits in Air
UPPER (Volume %): 36
LOWER (Volume %): 6

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Absorb small spills with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

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

7. HANDLING AND STORAGE

Handling and Storage: Store and handle in accordance with all current regulations and standards. Ampoules should be stored at room temperature. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

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

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

ACGIH (TWA): 200 ppm
ACGIH (STEL): 250 ppm
ACGIH: Skin – potential significant contribution to overall exposure by the cutaneous route
OSHA (TWA): 200 ppm, 260 mg/m^3
NIOSH (TWA): 200 ppm; 260 mg/m^3
NIOSH (STEL): 250 ppm; 325 mg/m^3
NIOSH (IDLH): 6000 ppm
NIOSH: Potential for dermal absorption.

Ventilation: Use local exhaust ventilation system. Ensure compliance with applicable exposure limits. 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: Wear chemical safety goggles. An eyewash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Colorless liquid, alcohol odor

Odor Threshold: 100 ppm

Molar Mass (g/mol): 32.04

Molecular Formula: CH_3OH

Melting Point: –94 ºC (–137 ºF)

Boiling Point: 65 ºC (149 ºF)

Vapor Pressure: 97.25 mmHg at 20 ºC

Vapor Density (air = 1): 1.11

Specific Gravity (water = 1): 0.7914

Water Solubility: Soluble

10. STABILITY AND REACTIVITY

Stability: X Stable _____ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition.

Incompatible Materials: Halogens, oxidizing materials, combustible materials, metals, bases, and acids.

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

Hazardous Decomposition: Oxides of carbon and miscellaneous decomposition products.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation X Skin X Ingestion

Toxicity Data:

Rat, Oral LC_{50}: 5628 mg/kg
Rat, Inhalation LC_{50}: 83.2 mg/L (4 h)
Rabbit, Skin LD_{50}: 5600 mg/kg
Rabbit, Eyes (Irritation): 100 mg/24 hours, moderate.

Target Organ(s): Nervous system. May cause blindness

Health Effects (Acute and Chronic): See Section 2, "Hazards Identification" for potential health effects.

Medical Conditions Aggravated by Exposure: Eye disorders, skin disorders, and kidney disorders.

Mutagenic, Reproductive, and Tumorigenic Toxic Effects: The components of this material have been reviewed and the Registry of Toxic Effects of Chemical Substances (RTECS) publishes the following endpoints.

Tumorigenic: No data available.
Mutagenic: Rat, Oral: 10 µmol/kg (DNA damage)
Human, lymphocyte: 300 mmol/L (DNA inhibition)
Reproductive: Rat, Inhalation TCLo: 20 000 ppm/7 h (pregnant, 1–22 d, Specific developmental abnormalities: musculoskeletal, cardiovascular, and urogenital system.)

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: Fish Toxicity: Fathead minnow (*Pimephales promelas*) LC_{50} (static): >100 mg/L (96 h)
Fish Toxicity: Steelhead trout (*Oncorhynchus mykiss*) LC_{50} (static): 18–20 mL/L (96 h)

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local requirements. Subject to disposal regulations: U.S. EPA 40CFR 262.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Methanol, Hazard Class 3 (6.1), UN1230, Packing Group II, Excepted Qty: Yes, E2.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): 5000 lb (2270 kg) final RQ.
SARA Title III Section 302 (40 CFR 355.30): Not regulated for this material.
SARA Title III Section 304 (40 CFR 355.40): Not regulated for this material.
SARA Title III Section 313 (40 CFR 372.65): 0.1 % de minimis concentration.
OSHA Process Safety (29 CFR 1910.119): Not regulated for this material.
SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes
CHRONIC:	Yes
FIRE:	Yes
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Not listed.

CANADIAN REGULATIONS

WHMIS Classification: Not provided for this material.

EUROPEAN REGULATIONS

EC Classification:

F: Flammable
T: Toxic

EC Risk Phrases:

R11 – Highly flammable.
R39/23/24/25 – Toxic: Danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

EC Safety Phrases:

S7 – Keep container tightly closed.
S16 – Keep away from sources of ignition – No smoking.
S36/37 – Wear suitable protective clothing and gloves.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed.

TSCA 12(b)

Export Notification: Not listed.

16. OTHER INFORMATION

Sources: ChemAdvisor, Inc., MSDS *Methyl Alcohol*, 20 December 2011.

EC; European Chemical Substance Information System (ESIS), *Methanol*, CAS No. 67-56-1; available at http://esis.jrc.ec.europa.eu/ (accessed Jan 2012).

NIOSH Registry of Toxic Effects of Chemical Substances (RTECS), *Methanol, No. PC1400000, CAS No. 67-56-1*; May 2009; available at http://www.cdc.gov/niosh-rtecs/PC155CC0.html (accessed Jan 2012).