Thiophosphoric Acid Tris(p-isocyanatophenyl Ester) Dichloromethane Solution

Section 1: Chemical Product and Company Identification

- Chemical Name: Thiophosphoric Acid Tris(p-isocyanatophenyl Ester) Dichloromethane Solution

- Supplier Name: Shandong Johnson Fine Chemical Co., Ltd.

- Supplier Address: No. 06933 Huanghexi Street Binhai Economic – Technological Development Area Weifang City, Shandong, China

- Postal Code: 262737

- Supplier Phone: 0536-5319217

- Email: sdcsxcl778@163.com

- Supplier Fax: 0536-5319217

- Emergency Contact Number: 0536-5319217

- Chemical Emergency Consultation Hotline: 0536-5319217

- Product Use: Solvent for resin and plastic industry.

Section 2: Hazard Identification

- Emergency Overview: Harmful if swallowed, causes skin irritation, may cause drowsiness or dizziness.

- GHS Classification:

  - Skin Corrosion/Irritation - Category 2

  - Serious Eye Damage/Eye Irritation - Category 2A

  - Carcinogenicity - Category 2

  - Specific Target Organ Toxicity (Single Exposure) - Category 1

  - Specific Target Organ Toxicity (Single Exposure) - Category 3 (Narcotic Effects)

  - Specific Target Organ Toxicity (Repeated Exposure) - Category 1

- Label Elements:

- Pictograms: 

- Signal Word: Danger

- Hazard Statements:

- H315: Causes skin irritation

- H319: Causes serious eye irritation

- H351: Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

- H370: Causes damage to organs (state the organ if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

- H336: May cause drowsiness or dizziness

- H372: Causes damage to organs (state the organ if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

- Precautionary Statements:

- Prevention:

- P264: Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Contaminated work clothing should not be taken out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

- P280: Wear protective gloves/protective clothing/eye protection/face protection.

- P201: Obtain special instructions before use.

- P202: Do not handle until all safety precautions have been read and understood.

- P260: Do not breathe dust/fume/gas/mist/vapors/spray.

- P270: Do not eat, drink or smoke when using this product.

- P271: Use only outdoors or in a well-ventilated area.

- Response:

  - P302+P352: If on skin: Wash with plenty of soap and water.

  - P332+P313: If skin irritation occurs: Get medical advice/attention.

  - P362+P364: Take off contaminated clothing and wash it before reuse.

  - P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

  - P337+P313: If eye irritation persists: Get medical advice/attention.

  - P308+P313: If exposed or concerned: Get medical advice/attention.

  - P308+P311: If exposed or feeling unwell: Call a poison center or doctor/physician.

  - P304+P340: If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

  - P312: Call a poison center or doctor/physician if you feel unwell.

  - P314: Get medical advice/attention if you feel unwell.

- Storage:

  - P405: Store locked up.

  - P403+P233: Store in a well-ventilated place. Keep container tightly closed.

- Disposal:

  - P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

- Physical and Chemical Hazards: Flammable, vapor can form explosive mixtures with air.

- Health Hazards: Narcotic effects, primarily affecting the central nervous and respiratory systems. Acute toxicity includes dizziness, headache, vomiting, and mucous membrane irritation. Severe cases may lead to bronchitis, coma, and lung edema. Chronic exposure can cause central nervous system depression, liver and kidney damage, and skin issues like dryness and cracking.

- Environmental Hazards: Harmful to aquatic life.

- Other Hazards: No data available.

Section 3: Composition/Information on Ingredients

- Substance: Mixture

- Hazardous Components:

  - Methylene Chloride: 79-81%, CAS No. 75-09-2

  - Thiophosphoric Acid Tris(p-isocyanatophenyl Ester): 19-21%, CAS No. 4151-51-3

  - Chlorobenzene: Max 0.05%, CAS No. 108-90-7

Section 4: First Aid Measures

- Skin Contact: Remove contaminated clothing and wash skin thoroughly with running water. Seek medical attention.

- Eye Contact: Rinse eyes with running water or saline for several minutes, seek medical attention.

- Ingestion: Rinse mouth, drink water, and seek medical attention.

- Inhalation: Move to fresh air, maintain an open airway, provide oxygen if breathing is difficult. If breathing stops, perform CPR and seek medical attention.

- Advice for Rescuers: Use personal protective equipment as required.

- Special Notes for Physicians: Symptomatic treatment.

Section 5: Firefighting Measures

- Extinguishing Media: Use water spray, foam, carbon dioxide, or sand.

- Specific Hazards: Produces toxic phosgene on contact with fire or hot objects. Hydrolyzes in humid air to produce hydrogen chloride, which can cause metal corrosion.

- Protective Equipment for Firefighters: Wear self-contained breathing apparatus and full protective gear. Cool containers with water spray and remove containers from the fire area if possible.

Section 6: Accidental Release Measures

- Personal Precautions: Evacuate personnel to safe areas. Wear appropriate protective equipment.

- Environmental Precautions: Prevent entry into waterways, sewers, basements, or confined areas.

- Methods for Cleanup: Absorb small spills with non-combustible materials like sand. For large spills, build dikes to contain the spill, cover with foam to reduce evaporation, and use sand or inert materials to absorb. Transfer to containers for disposal.

- Preventive measures to prevent secondary hazards: No data available.

Section 7: Handling and Storage

- Precautions for Operation: Operate in a closed system with local exhaust ventilation. Operators must undergo specialized training and strictly adhere to operational procedures. It is recommended that operators wear a direct-type gas mask (half facepiece), chemical safety goggles, chemical-resistant protective clothing, and chemical-resistant gloves. Keep away from fire and heat sources. Smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment. Prevent vapor leakage into the workplace air. Avoid contact with alkali metals. Handle with care during transport to prevent damage to packaging and containers. Equip with appropriate types and quantities of firefighting and emergency spill response equipment. Empty containers may retain harmful substances.

- Storage Precautions: Store in a cool, ventilated warehouse. Keep away from fire and heat sources. Storage temperature should not exceed 32°C, and relative humidity should not exceed 80%. Keep containers tightly sealed. Store separately from alkali metals and edible chemicals; avoid mixed storage. Equip with appropriate types and quantities of firefighting equipment. The storage area should have emergency spill response equipment and suitable containment materials.

Section 8: Exposure Controls/Personal Protection

- Occupational Exposure Limits:

  - China: PC-TWA: 200 mg/m^3[G2B]

  - USA (ACGIH): TLV-TWA: 50 ppm

  - USA (IDLH): 2,300 ppm; 2019 Occupational Exposure Limits for Hazardous Factors in the Workplace: PC-TWA: 200 mg/m^3; (G2A); carboxyhemoglobinemia, peripheral nervous system damage.

Biological Limit Value: No data available

Monitoring Methods:

- Determination of toxic substances in air: Direct injection - Gas chromatography

- Biological monitoring test method: No data

- Engineering Controls: Use enclosed systems and local exhaust ventilation.

- Personal Protective Equipment:

  - Respiratory Protection: Wear a respirator if concentration exceeds exposure limits.

  - Eye Protection: Safety goggles.

  - Skin and Body Protection: Wear protective clothing.

  - Hand Protection: Chemical-resistant gloves.

  - Other Protection: No data available.

Section 9: Physical and Chemical Properties

- Appearance: Colorless transparent liquid with an aromatic odor.

pH Value (specified concentration): No data

Melting/Freezing Point (℃): -95

Boiling Point, Initial Boiling Point, and Boiling Range (℃): 39.8

Density: No data

Relative Vapor Density (air=1): 2.93

Relative Density (water=1): 1.33

Heat of Combustion (kJ/mol): 604.9

Saturated Vapor Pressure (kPa): 46.5 (20℃)

Critical Pressure (MPa): 6.08

Critical Temperature (℃): 237

Flash Point (℃): No data

n-Octanol/Water Partition Coefficient: 1.25

Decomposition Temperature (℃): No data

Auto-ignition Temperature (℃): 556

Explosion Limits [%(V/V)]: Lower: 14, Upper: 22

Flammability: Flammable, its vapor can form explosive mixtures with air.

Kinematic Viscosity: 0.43 (20℃)

Solubility: Slightly soluble in water, soluble in ethanol and ether.

Section 10: Stability and Reactivity

- Stability: Stable under normal conditions.

- Incompatible Materials: Strong oxidizers, water, alcohols, amines, acids, strong bases.

- Conditions to Avoid: Light, humid air.

- Hazardous Reactions: Risk of fire and explosion upon contact with strong oxidizers, water, alcohols, amines, acids, and strong bases.

- Hazardous Decomposition Products: Hydrogen chloride, phosgene.

Section 11: Toxicological Information

- Acute Toxicity:

    - LD50: 1600-2000 mg/kg (oral, rat)

    - LC50: 88000 mg/m^3 (inhalation, rat, 1/2h)

- Skin Irritation or Corrosion: Severe irritation in rabbits: 810 mg (24h)

- Eye Irritation or Corrosion: Moderate irritation in rabbits: 162 mg

- Respiratory or Skin Sensitization: No data available.

- Germ Cell Mutagenicity:

    - Microbial mutagenicity: Salmonella typhimurium 5700 ppm

- DNA inhibition: Human fibroblasts 5000 ppm (1h) (continuous)

- DNA damage: Hamster ovary 3000 ppm

- Sister chromatid exchange: Hamster lung 5000 ppm (1h) (continuous)

- Carcinogenicity: IARC Carcinogenicity Review: Group 2A, possibly carcinogenic to humans

- Reproductive Toxicity: Rats, inhalation exposure on days 6-15 of pregnancy at the lowest toxic dose (TCLo) of 1250 ppm (7h), caused developmental abnormalities in the musculoskeletal and genitourinary systems. Rats, inhalation at the lowest toxic concentration (TCLo) of 1250 ppm (7h) on days 6-15 of pregnancy, caused musculoskeletal and genitourinary system abnormalities

- Specific Target Organ Toxicity - Single Exposure: No data available

- Specific Target Organ Toxicity - Repeated Exposure: Rats, inhalation of 4.69 g/m^3, 8h/day for 75 days, showed no pathological changes. With increased exposure time, mild liver atrophy, fatty degeneration, and cell infiltration were observed

- Aspiration Hazard: No data available

Section 12: Ecological Information

- Ecotoxicity:

- LC50: 193 mg/L (96h) (Fathead Minnow, flow-through)

- LC50: 310 mg/L (96h) (Fathead Minnow, static)

- LC50: 200-250 mg/L (96h) (Bluegill Sunfish, static)

- LC50: 224 mg/L (48h) (Daphnia)

- LC50: 256 mg/L (96h) (Grass Shrimp)

- EC50: 27 mg/L (48h) (Daphnia)

-Persistence and Degradability:

- Biodegradability: Rapidly biodegradable

- Non-biodegradability:

- Maximum photolysis absorption wavelength range (nm): 220-250

- Atmospheric photooxidation half-life (h): 458-4584

- Primary hydrolysis half-life (h): 704a

- Bioaccumulative Potential: Based on the Kow value, the substance is predicted to have low bioaccumulation potential.

- Mobility in Soil: Based on the Koc value, the substance is predicted to be highly mobile.

- Other Adverse Effects: No data available.

Section 13: Disposal Considerations

- Disposal Methods: Incinerate in a suitable facility. Return empty containers to the manufacturer or dispose of in accordance with local regulations.

- Contaminated packaging: Return containers to the manufacturer or dispose of them according to national and local regulations.

- Disposal considerations: Return empty containers to the manufacturer or bury them in designated locations.

Section 14: Transport Information

- UN Number: 1593

- UN Proper Shipping Name: Methylene Chloride Solution

- UN Hazard Class: 6.1

- Packing Group: III

- Packaging marking: 

- Packaging method: 200L galvanized drum

- Marine Pollutant: No

- Special Precautions: Before transportation, it is necessary to inspect whether the packaging containers are intact and sealed. During transportation, ensure that the containers do not leak, collapse, fall, or get

damaged. Mixing with acids, oxidizers, food, and food additives during transportation is strictly prohibited. Transport vehicles should be equipped with corresponding types and quantities of fire-fighting equipment and emergency leakage handling devices during transportation. During transportation, prevent exposure to sunlight, rain, and high temperatures. When transporting by road, follow the designated route.

Section 15: Regulatory Information

- Regulations:

  - China: Listed in the Inventory of Hazardous Chemicals.

| Chemical Name | Listed in Directory |

| Catalog of Hazardous Chemicals (2015 Edition) | Yes |

| Catalog of Explosive Hazardous Chemicals (2017 Edition) | No |

| List of Key Supervised Hazardous Chemicals | No |

| Catalog of Highly Toxic Substances (2003 Edition) | No |

| Classification and Varieties Catalog of Precursor Chemicals for Drugs Production | No |

Series of Standards for Chemical Classification and Labeling (GB 30000.2-2013 to GB30000.29-2013)

Regulation on the Safe Management of Hazardous Chemicals (State Council Decree No. 591) |

Section 16: Other Information

- Latest revised version date: July 1, 2023

- Revision notes: This SDS is compiled in accordance with the standard "Technical Specification for Safety Data Sheet for Chemical Products - Content and Order of Sections" (GB/T16483-2008); the GHS classification of chemicals in this SDS is carried out by the enterprise according to the series of standards for chemical classification and labeling (GB 30000.2-2013 to GB30000.29-2013).

- Abbreviation explanations:

MAC: Maximum allowable concentration of a toxic substance in the workplace at any time during a working day.

PC-TWA: Permissible exposure concentration averaged over an 8-hour working day or a 40-hour working week.

PC-STEL: Short-term exposure limit permissible before the PC-TWA, for a period of 15 minutes.

TLV-C: Ceiling value that should not be exceeded at any time, particularly for substances with acute effects or irritant gases.

TLV-TWA: Time-weighted average concentration for an 8-hour working day or a 40-hour working week, below which nearly all workers may be repeatedly exposed without adverse effects.

TLV-STEL: Maximum concentration permitted for a continuous exposure of 15 minutes, not to be exceeded more than 4 times per workday with at least 60 minutes between exposures, as a supplement to TLV-TWA.

IARC: International Agency for Research on Cancer

RTECS: Registry of Toxic Effects of Chemical Substances, maintained by the National Institute for Occupational Safety and Health (NIOSH) in the United States.

HSDB: Hazardous Substances Data Bank, maintained by the National Library of Medicine in the United States.

ACGIH: American Conference of Governmental Industrial Hygienists

- Disclaimer: The Chemical Registration Center of the Ministry of Emergency Management provides comprehensive and truthful information in this SDS, but we cannot guarantee its absolute completeness and accuracy. This SDS is intended only to provide relevant safety information to personnel who have received appropriate professional training and use the product. Individuals obtaining this SDS must independently assess its applicability under specific conditions of use. The Chemical Registration Center will not be liable for any damages resulting from the use of this SDS under special circumstances.

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