

TEDIA**Material Safety Data Sheet**Tedia Company, Inc.
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Fairfield, OH 45014 USA24 Hour Emergency Number (CHEMTREC)
USA: 800-424-9300 • International: 703-527-3887

All non-emergency questions should be directed to Customer Service: 800-PURITY-1 for assistance

Oxidation Solution (.05M Iodine in Pyridine and Water)

Date Revised: 01/01/2006

MSDS No. M0220

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Oxidation Solution (.05M Iodine in Pyridine/Water)

Product Catalog Number(s): OB-3994

Synonym(s): Oxidation Solution, Oxidizing Solution, Oxidizer

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
Pyridine	110-86-1	87.7
Water	7732-18-5	10
Iodine	7553-56-2	1.3

3. HAZARDS IDENTIFICATION**WARNING! FLAMMABLE. CAUSES SKIN, EYE AND RESPIRATORY TRACT IRRITATION. OVER EXPOSURE MAY CAUSE DIZZINESS, NAUSEA AND CENTRAL NERVOUS SYSTEM DEPRESSION.**

Estimated NFPA Ratings: Health -2, Flammability – 3, Reactivity - 0

Potential Health Effects

Eye: Liquid and high vapor concentration will cause irritation and possible corneal damage.

Skin: Prolonged or repeated skin contact will cause moderate to severe irritation and dermatitis through defatting of the skin. Material is readily absorbed through the skin to cause systemic effects similar to inhalation.

Ingestion : Can cause nausea, abdominal pain, diarrhea, headache, dizziness, depression of the central nervous system and systemic effects to the liver and kidneys.

Inhalation: Exposure can cause irritation of the respiratory tract and an unpleasant taste in the mouth, headache, dizziness, nausea and depression of the central nervous system.

Delayed Effects: Chronic exposure may cause liver and kidney damage.

4. FIRST AID MEASURES

Eyes: Flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Skin: Flush affected area with plenty of water for at least 15 minutes while removing contaminated clothing. Get medical attention.

Ingestion: If person is conscious, rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention. Activated charcoal may be administered as a slurry (240 ml water/ 30 g charcoal) in the following doses: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old. Do not give anything by mouth to an individual who is not fully conscious.

Inhalation: Remove victim to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available. Get immediate medical attention.

Note to Physicians: Gastric lavage may be of benefit in potentially life threatening ingestions if it can be performed within 60 minutes of ingestion. Otherwise, treatment is supportive based on symptoms present.

5. FIRE FIGHTING MEASURES

Flash Point: 20°C. Based on 100% pyridine
Explosive Limit: (for product) Lower 1.8 Upper .0 %
Autoignition Temperature: 900°F (482°C). Based on 100% pyridine
Upper flame value (volume % in air): 12.4 Based on 100% pyridine
Lower flame value (volume % in air): 1.8 Based on 100% pyridine
Flame propagation rate (solids): Not applicable
OSHA Flammability Class: 1C Flammable Liquid

Hazardous Products of Combustion May form: Hydrogen Cyanide.

Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Unusual Fire and Explosion Hazards: Flammable liquid and vapor. Vapors may form explosive mixtures with air. Vapors may travel to a source of ignition and flash back.

Extinguishing Media: alcohol foam, carbon dioxide, dry chemical.

Fire Fighting Instructions: Wear a self-contained breathing apparatus with a full face piece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS. Water will not be effective in extinguishing a fire. Use water spray to cool fire-exposed containers and to reduce rate of burning, taking care not to spread the fire. Heat will build pressure and rupture closed storage containers. Vapors can travel to distant ignition source and flash back. Do not release runoff from fire control measures into waterways or sewers.

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Isolate the spill area. Absorb liquid on vermiculite, floor absorbent, or other absorbent material and transfer to hood. Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks.

Large Spill: Isolate the spill area. Stop spill at source. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Use non-sparking tools and equipment. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop leak in a safe and practical manner. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Contain and recover liquid when possible. Absorb small spills with inert, non-combustible material and place in an approved chemical waste container. Dike large spills with inert material and transfer liquid into same container. Do not allow to enter into sewers or waterways.

7. HANDLING AND STORAGE

Handling : Use with adequate explosion proof ventilation. Ground containers for transfer of contents. Keep away from heat, sparks, open flames and sources of ignition. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke in the work area. Keep containers closed when not in use. Wash thoroughly after handling. Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Storage: Store in an area designed for storage of flammable liquids. (OSHA 29 CFR 1910.106) Protect from temperature extremes and sunlight and store away from incompatible substances. Keep containers upright and closed. Protect containers from physical damage. Empty containers may contain product residue and/or vapors. Label warnings apply to empty containers that have not been cleaned.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

Skin Protection: Wear resistant gloves such as: neoprene, To prevent repeated or prolonged skin contact, wear chemically protective gloves (butyl rubber, viton), boots and aprons.

Respiratory Protections: If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Exposure Guidelines

Component

PYRIDINE (110-86-1)

OSHA VPEL 5.000 ppm – TWA

ACGIH TLV 5.000 ppm – TWA

NIOSH: REL: 5 ppm 10 hr day/40 hr week; IDLH: 1000 ppm

Component
IODINE (7553-56-2)
OSHA: 0.1 ppm ceiling
ACGIH: 0.1 ppm ceiling
NIOSH: 0.1 ppm ceiling; IDLH: 2 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless to slightly yellow liquid
Physical state: Liquid
Odor: Sharp, pungent odor
Specific Gravity (water = 1.0): 0.983 @ 68°F (20°C) based on 100% pyridine
Solubility in water (weight %): Complete
pH: Not applicable
Boiling Point: (for product) 240 F (115°C) @ 760 mmHg based on 100% pyridine.
Melting/Freezing point: -44 F (-42.2°C) based on 100% pyridine.
Vapor Pressure: (@ 20 C): 16 mm Hg. based on 100% pyridine
Vapor Density (air = 1.0): 2.7 based on 100% pyridine
Evaporation Rate: ~8 based on 100% pyridine COMPARED TO: Butyl Acetate = 1
Flash Point: 80.6°F (27°C)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of use and storage.
Incompatibility: Avoid contact with heat, ignition sources, oxidizing agents and strong acids.
Hazardous Polymerization: Product will not undergo hazardous polymerization.
Hazardous Decomposition May form: Hydrogen Cyanide, Nitrogen Oxide, Ammonia and other toxic vapors.

11. TOXICOLOGICAL INFORMATION

Pyridine:

Oral LD₅₀ (rat): 891 mg - 1580 mg/Kg; Oral LD₅₀ (mouse): 1500 mg/Kg; Inhalation LC₅₀ (rat): 9000 ppm/1 hr; 4000 ppm/4 hr; Skin LD₅₀ (rabbit): 1121 mg/Kg; Skin (rabbit): mild irritant (10 mg/24h open); Eye (rabbit): severe irritant causing corneal opacity.

Inhalation (rats): repeated exposure to pyridine vapor for 7 hr/day, 5d/wk for 6 months to either 10 or 50 ppm caused liver effects. Oral (rats): 0.1% (50 mg/kg) in the diet caused death with liver and kidney injury; 1 mg/kg/day was NOEL.

Genetic Toxicology:

Ames Assay - negative.

Cell Transformation Test - negative.

Chinese Hamster Ovary Cell Test for Chromosomal Aberrations - negative.

Iodine:

Oral LD₅₀ (rat): 14 gm/kg; Oral LD₅₀ (mouse): 22 gm/kg; Oral LD₅₀ (rabbit): 10 gm/kg.

Inhalation: Animal studies demonstrated that iodine vapor is intensely irritating to mucous membranes and adversely

affects both upper and lower portions of the pulmonary tract. In dogs, large (but unspecified) concentrations of vapor

caused pulmonary edema.

Chronic Exposure (humans): Iodine concentrates in thyroid, and can cause metabolic disturbances. Chronic iodine

poisoning (iodism) can result in rapid heartbeat, tremor, weight loss, diarrhea, insomnia, eye irritation, bronchitis, gastric irritation, and skin rash. Persons hypersensitive to iodine can develop allergic skin rashes or occupational asthma.

Developmental Toxicity:

Oral Developmental Toxicity (rat): TD_{Lo} value of 1100 mg/kg for effects on newborn viability index and TD_{Lo} value of 2750 mg/kg for effects on newborn growth statistics (e.g., reduced weight gain); females dosed during days 1 to 22 of pregnancy. Oral Developmental Toxicity (rabbit): TD_{Lo} value of 15 mg/kg for effects on newborn viability index and for effects on newborn growth statistics (e.g., reduced weight gain); females dosed during days 30 to 31 of pregnancy.

-----\Cancer Lists\

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Pyridine (110-86-1)	No	No	3 - Not classifiable as to carcinogenicity in humans.

12. ECOLOGICAL INFORMATION

Pyridine:

LC₅₀ (Fathead minnow): 106 mg/L/96 hr. (flow-through)

EC₅₀ (Fathead minnow): 85.6 mg/L/96 hr. (flow-through) - loss of equilibrium

13. DISPOSAL CONSIDERATION

RCRA hazardous waste (ID #: Pyridine - U196, D038)

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an approved RCRA waste facility. Dispose of container and unused contents in accordance with all applicable local, state, and federal regulations. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)

Proper Shipping Name: Flammable Liquid N.O.S. (Pyridine)

Hazard Class: 3

UN/NA: UN1993

Packing Group: III

Reportable Quantity (RQ): Pyridine = 1000 lbs (454 kg)

Label(s) Required: Class 3, Flammable Liquid

Emergency Response Guidebook (2000 Edition): Guide No. 127

International (Water, I.M.O.)

Proper Shipping Name: Flammable Liquid N.O.S. (Pyridine)

Hazard Class: 3

UN/NA: UN1993

Packing Group: III

15. REGULATORY INFORMATION

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Pyridine (110-86-1)	Yes	Yes	Yes	Yes
Iodine (7553-56-2)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Pyridine (110-86-1)	Yes	Yes	No	Yes
Iodine (7553-56-2)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Pyridine (110-86-1)	No	No	Yes	No
Iodine (7553-56-2)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	-RCRA-		-TSCA-	
	CERCLA	261.33	8(d)	
Pyridine (110-86-1)	1000	U196	No	
Iodine (7553-56-2)	No	No	No	

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: No (Mixture/Liquid)

WARNING: THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

16. OTHER INFORMATION

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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