

# pyridine hydrofluoride

sc-355952

## Material Safety Data Sheet

Hazard Alert Code  
Key:

EXTREME

HIGH

MODERATE

LOW

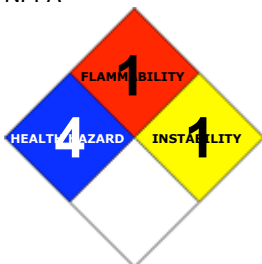
### Section 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME  
pyridine hydrofluoride

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



### SUPPLIER

Santa Cruz Biotechnology, Inc.  
2145 Delaware Avenue  
Santa Cruz, California 95060  
800.457.3801 or 831.457.3800

### EMERGENCY

ChemWatch  
Within the US & Canada: 877-715-9305  
Outside the US & Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### SYNONYMS

C5-H5-N(HF)x, HF-pyridine, "pyridine hydrofluoride", "pyridinium poly(hydrogen fluoride)", "Olah' s Reagent"

### Section 2 – HAZARDS IDENTIFICATION

#### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	4	
Body Contact:	4	
Reactivity:	2	
Chronic:	2	

Min/Nil=0  
Low=1  
Moderate=2  
High=3  
Extreme=4



#### CANADIAN WHMIS SYMBOLS



#### EMERGENCY OVERVIEW

##### RISK

Causes severe burns.

Risk of serious damage to eyes.  
Very toxic by inhalation, in contact with skin and if swallowed.

#### POTENTIAL HEALTH EFFECTS

##### ACUTE HEALTH EFFECTS

###### SWALLOWED

- The material can produce severe chemical burns within the oral cavity and gastrointestinal tract following ingestion.
- Severely toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 5 gram may be fatal or may produce serious damage to the health of the individual.
- Ingestion of acidic corrosives may produce burns around and in the mouth.  
the throat and esophagus.
- Fluoride causes severe loss of calcium in the blood, with symptoms appearing several hours later including painful and rigid muscle contractions of the limbs.  
Cardiovascular collapse can occur and may cause death with increased heart rate and other heart rhythm irregularities.
- fatal if swallowed unless immediate treatment is applied.

###### EYE

- The material can produce severe chemical burns to the eye following direct contact. Vapors or mists may be extremely irritating.
- If applied to the eyes, this material causes severe eye damage.
- The vapour when concentrated has pronounced eye irritation effects and this gives some warning of high vapour concentrations.  
If eye irritation occurs seek to reduce exposure with available control measures, or evacuate area.
- Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns.  
Mild burns of the epithelia generally recover rapidly and completely.
- Experiments in which a 20-percent aqueous solution of hydrofluoric acid (hydrogen fluoride) was instilled into the eyes of rabbits caused immediate damage in the form of total corneal opacification and conjunctival ischemia; within an hour, corneal stroma edema occurred, followed by necrosis of anterior ocular structures.

###### SKIN

- The material can produce severe chemical burns following direct contact with the skin.
- Skin contact with the material may produce severely toxic effects; systemic effects may result following absorption and these may be fatal.
- Fluorides are easily absorbed through the skin and cause death of soft tissue and erode bone.  
Healing is delayed and death of tissue may continue to spread beneath skin.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Solutions of hydrofluoric acid, as dilute as 2%, may cause severe skinburns.
- Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.
- Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.  
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

###### INHALED

- Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severely toxic effects.  
Relatively small amounts absorbed from the lungs may prove fatal.
- The material can cause respiratory irritation in some persons.  
The body's response to such irritation can cause further lung damage.
- Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage.  
There may be dizziness, headache, nausea and weakness.
- Acute effects of fluoride inhalation include irritation of nose and throat, coughing and chest discomfort.  
A single acute over-exposure may even cause nose bleed.
- Acute inhalation exposures to hydrogen fluoride (hydrofluoric acid) vapours produce severe eye, nose, and throat irritation; delayed fever, cyanosis, and pulmonary edema; and may cause death.  
Even fairly low airborne concentrations of hydrogen fluoride produce rapid onset of eye, nose, and throat irritation.

###### CHRONIC HEALTH EFFECTS

- Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.  
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.  
Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and or ulceration of mouth lining.  
Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs.  
Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discoloration, nausea and vomiting, loss of appetite, diarrhea or constipation, weight loss, anemia, weakness and general unwellness. There may also be frequent urination and thirst.  
Hydrogen fluoride easily penetrates the skin and causes destruction and corrosion of the bone and underlying tissue.  
Ingestion causes severe pains and burns in the mouth and throat and blood calcium levels are dangerously reduced.

#### Section 3 – COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
hydrogen fluoride/ pyridine	32001-55-1	> 99.9

decompose in water to give

[hydrogen fluoride](#)

7664-39-3

[pyridine](#)

110-86-1

## Section 4 – FIRST AID MEASURES

### SWALLOWED



- For advice, contact a Poisons Information Center or a doctor at once.
- Urgent hospital treatment is likely to be needed.

If patient is conscious, give six calcium gluconate or calcium carbonate tablets dissolved in water, by mouth.

### EYE

■ If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

### SKIN

■ If skin or hair contact occurs:

- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.

### INHALED



- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.

Inhalation of vapors or aerosols (mists, fumes) may cause lung edema. Corrosive substances may cause lung damage (e.g.

### NOTES TO PHYSICIAN

■ For acute or short term repeated exposures to fluorides:

- Fluoride absorption from gastro-intestinal tract may be retarded by calcium salts, milk or antacids.
- Fluoride particulates or fume may be absorbed through the respiratory tract with 20–30% deposited at alveolar level.

Following acute or short term repeated exposure to hydrofluoric acid:

- Subcutaneous injections of Calcium Gluconate may be necessary around the burnt area. Continued application of Calcium Gluconate Gel or subcutaneous Calcium Gluconate should then continue for 3–4 days at a frequency of 4–6 times per day. If a "burning" sensation recurs, apply more frequently.
- Systemic effects of extensive hydrofluoric acid burns include renal damage, hypocalcemia and consequent cardiac arrhythmias. Monitor hematological, respiratory, renal, cardiac and electrolyte status at least daily. Tests should include FBE, blood gases, chest X-ray, creatinine and electrolytes, urine output, Ca ions, Mg ions and phosphate ions. Continuous ECG monitoring may be required.

## Section 5 – FIRE FIGHTING MEASURES

Vapour Pressure (mmHG): Not available

Upper Explosive Limit (%): Not available

Specific Gravity (water=1): Not available

Lower Explosive Limit (%): Not available

### EXTINGUISHING MEDIA



- DO NOT use water.

May react violently with water, generating steam, scattering acid.

### FIRE FIGHTING



- Alert Emergency Responders and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.

When any large container (including road and rail tankers) is involved in a fire,

consider evacuation by 800 metres in all directions.

#### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS



- Combustible.
- Slight fire hazard when exposed to heat or flame.

Combustion products include: carbon dioxide (CO<sub>2</sub>), hydrogen fluoride, nitrogen oxides (NO<sub>x</sub>), other pyrolysis products typical of burning organic material.

May emit corrosive fumes.

#### FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

#### PERSONAL PROTECTION

Glasses:

Chemical goggles.

Full face- shield.

Gloves:

Respirator:

Type ABK-P Filter of sufficient capacity

### Section 6 – ACCIDENTAL RELEASE MEASURES

#### MINOR SPILLS



- Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
- Check regularly for spills and leaks.
- Clean up all spills immediately.
- Avoid breathing vapors and contact with skin and eyes.

#### MAJOR SPILLS



- DO NOT touch the spill material
- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.

### Section 7 – HANDLING AND STORAGE

#### PROCEDURE FOR HANDLING



- DO NOT allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

#### RECOMMENDED STORAGE METHODS



- DO NOT use aluminium, galvanised or tin-plated containers
- DO NOT use unlined steel containers
- Lined metal can, Lined metal pail/drum
- Plastic pail

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.
- Material is corrosive to most metals, glass and other siliceous materials.

#### STORAGE REQUIREMENTS



- Store in original containers.
- Keep containers securely sealed.

Section 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
US – Minnesota Permissible Exposure Limits (PELs)	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)	hydrogen fluoride (HYDROGEN FLUORIDE)	0.02							
Canada – British Columbia Occupational Exposure Limits	hydrogen fluoride (Hydrogen fluoride, as F)					2			
US ACGIH Threshold Limit Values (TLV)	hydrogen fluoride (Hydrogen fluoride)	0.5				2			Measured as F. TLV Basis: upper and lower respiratory tract, skin & eye irritation; fluorosis
US NIOSH Recommended Exposure Limits (RELs)	hydrogen fluoride (Hydrogen fluoride)	3	2.5			6	5		(Ceiling ([15-minute]))
Canada – Alberta Occupational Exposure Limits	hydrogen fluoride (Hydrogen fluoride, as F)	0.5	0.4			2	1.6		
US – Tennessee Occupational Exposure Limits – Limits For Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
US – Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))		See Table Z-2						
US – Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
US – Idaho – Acceptable Maximum Peak Concentrations	hydrogen fluoride (Hydrogen Fluoride (Z37.26–1969))	3							
US – California Permissible Exposure Limits for Chemical Contaminants	hydrogen fluoride (Hydrogen fluoride, as F)	3	2.5	6					
US – Idaho – Limits for Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))		[2]						
US – Alaska Limits for Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
US – Michigan Exposure Limits for Air Contaminants	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
US – Hawaii Air Contaminant Limits	hydrogen fluoride (Hydrogen fluoride (as F))	3		6					
Canada – Yukon Permissible Concentrations for Airborne Contaminant Substances	hydrogen fluoride (Hydrogen fluoride)	3	2	3	2				

US – Washington Permissible exposure limits of air contaminants	hydrogen fluoride (Hydrogen fluoride)					3	
Canada – Saskatchewan Occupational Health and Safety Regulations – Contamination Limits	hydrogen fluoride (Hydrogen fluoride, (as F))	0.5					
Canada – Northwest Territories Occupational Exposure Limits (English)	hydrogen fluoride (Hydrogen fluoride (as F))	3	2.5	6	4.9		
US – Wyoming Toxic and Hazardous Substances Table Z-2 Acceptable ceiling concentration, Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	hydrogen fluoride (Hydrogen fluoride (Z37.28–1969))	3					
Canada – Quebec Permissible Exposure Values for Airborne Contaminants (English)	hydrogen fluoride (Hydrogen fluoride (as F))					3	2.6
US – Oregon Permissible Exposure Limits (Z-2)	hydrogen fluoride (Hydrogen fluoride (Z37.28–1969))	3					
Canada – Nova Scotia Occupational Exposure Limits	hydrogen fluoride (Hydrogen fluoride)	0.5				2	Measured as F. TLV Basis: upper and lower respiratory tract, skin & eye irritation; fluorosis
Canada – Prince Edward Island Occupational Exposure Limits	hydrogen fluoride (Hydrogen fluoride)	0.5				2	Measured as F. TLV Basis: upper and lower respiratory tract, skin & eye irritation; fluorosis
Canada – Alberta Occupational Exposure Limits	pyridine (Pyridine)	1	3.2				
Canada – British Columbia Occupational Exposure Limits	pyridine (Pyridine Revised 2004)	1					
US NIOSH Recommended Exposure Limits (RELs)	pyridine (Pyridine)	5	15				
US OSHA Permissible Exposure Levels (PELs) – Table Z1	pyridine (Pyridine)	5	15				
US ACGIH Threshold Limit Values (TLV)	pyridine (Pyridine)	1					TLV Basis: skin irritation; liver & kidney damage
US – Minnesota Permissible Exposure Limits (PELs)	pyridine (Pyridine)	5	15				
US – Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	pyridine (Pyridine)	5	15				
US – Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	pyridine (Pyridine)	5	15				

US – Tennessee Occupational Exposure Limits – Limits For Air Contaminants	pyridine (Pyridine)	5	15		
US – California Permissible Exposure Limits for Chemical Contaminants	pyridine (Pyridine)	5	15		
US – Idaho – Limits for Air Contaminants	pyridine (Pyridine)	5	15		
Canada – Quebec Permissible Exposure Values for Airborne Contaminants (English)	pyridine (Pyridine)	5	16		
US – Hawaii Air Contaminant Limits	pyridine (Pyridine)	5	15	10	30
US – Alaska Limits for Air Contaminants	pyridine (Pyridine)	5	15		
Canada – Saskatchewan Occupational Health and Safety Regulations – Contamination Limits	pyridine (Pyridine)	1		3	
Canada – Yukon Permissible Concentrations for Airborne Contaminant Substances	pyridine (Pyridine)	5	15	10	30
US – Washington Permissible exposure limits of air contaminants	pyridine (Pyridine)	5		10	
US – Michigan Exposure Limits for Air Contaminants	pyridine (Pyridine)	5	15		
Canada – Prince Edward Island Occupational Exposure Limits	pyridine (Pyridine)	1			TLV Basis: skin irritation; liver & kidney damage
US – Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	pyridine (Pyridine)	5	15		
Canada – Nova Scotia Occupational Exposure Limits	pyridine (Pyridine)	1			TLV Basis: skin irritation; liver & kidney damage
US – Oregon Permissible Exposure Limits (Z-1)	pyridine (Pyridine)	5	15		
Canada – Northwest Territories Occupational Exposure Limits (English)	pyridine (Pyridine)	5	16	10	32

The following materials had no OELs on our records

- hydrogen fluoride/ pyridine: CAS:32001–55–1 CAS:62778–11–4

**PERSONAL PROTECTION**



**RESPIRATOR**

- type abk-p filter of sufficient capacity.
- Consult your EHS staff for recommendations

**EYE**



- Chemical goggles.
- Full face shield.

#### HANDS/FEET

##### ■ Elbow length PVC gloves.

- When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Neoprene rubber gloves

#### OTHER



- Overalls.
- PVC Apron.

#### ENGINEERING CONTROLS

■ Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator.

### Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

#### PHYSICAL PROPERTIES

Corrosive.

Acid.

Toxic or noxious vapours/gas.

State	LIQUID	Molecular Weight	Not applicable
Melting Range (°F)	Not available	Viscosity	Not Available
Boiling Range (°F)	122 (1 mm Hg)	Solubility in water (g/L)	Reacts
Flash Point (°F)	Not Available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not available
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Not available
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not available
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

#### APPEARANCE

Amber liquid; decomposes in water.

log Kow 0.64–1.04

Material	Value
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### Section 10 – CHEMICAL STABILITY

#### CONDITIONS CONTRIBUTING TO INSTABILITY



- Presence of heat source
- Presence of incompatible materials.



- Product is considered stable.

#### STORAGE INCOMPATIBILITY



- Contact with moisture or water may generate heat

Reacts with mild steel, galvanized steel / zinc producing hydrogen gas which may form an explosive mixture with air.  
Hydrogen fluoride:

- reacts violently with strong oxidisers, acetic anhydride, alkalis, 2-aminoethanol, arsenic trioxide (with generation of heat), bismuthic acid, calcium oxide, chlorosulfonic acid, cyanogen fluoride, ethylenediamine, ethyleneimine, fluorine (fluorine gas reacts vigorously with a 50% hydrofluoric acid solution and may burst into flame), nitrogen trifluoride, N-phenylazopiperidine, oleum, oxygen difluoride, phosphorus pentoxide, potassium permanganate, potassium tetrafluorosilicate(2-), beta-propiolactone, propylene oxide, sodium, sodium tetrafluorosilicate, sulfuric acid, vinyl acetate
- reacts (possibly violently) with aliphatic amines, alcohols, alkanolamines, alkylene oxides, aromatic amines, amides, ammonia, ammonium hydroxide, epichlorohydrin, isocyanates, metal acetylides, metal silicides, methanesulfonic acid, nitrogen compounds, organic anhydrides, oxides, silicon compounds, vinylidene fluoride
- attacks glass and siliceous materials, concrete, ceramics, metals (flammable hydrogen gas may be produced), metal alloys, some plastics, rubber coatings, leather, and most other materials with the exception of lead, platinum, polyethylene, wax.

Segregate from alcohol, water.

- Avoid strong bases.

Avoid reaction with oxidizing agents.

- NOTE: May develop pressure in containers; open carefully. Vent periodically.
- Dangerous goods of other classes.

In the presence of water, material is corrosive to most metals, glass.

For incompatible materials – refer to Section 7 – Handling and Storage.

### Section 11 – TOXICOLOGICAL INFORMATION

hydrogen fluoride/ pyridine

#### TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS – Register of Toxic Effects of Chemical Substances.

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

#### HYDROGEN FLUORIDE:

##### HYDROGEN FLUORIDE/ PYRIDINE:

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

##### HYDROGEN FLUORIDE/ PYRIDINE:

■ The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

#### HYDROGEN FLUORIDE:

TOXICITY	IRRITATION
Inhalation (human) LCLo: 50 ppm/30 m	Eye (human): 50 mg – SEVERE
Inhalation (man) TCLo: 100 mg/m <sup>3</sup> /1 m	
Inhalation (rat) LC50: 1276 ppm/1 h	

TOXICITY	IRRITATION
PYRIDINE:	

Oral (Rat) LD50: 891 mg/kg

Skin (rabbit): 10 mg/24 h (open)Mild

Inhalation (Rat) LCLo: 4000 ppm/4h      Skin (rabbit): 500 mg/24h-Mild

Dermal (Rabbit) LD50: 1121 mg/kg

Eye (rabbit): 2 mg (open) SEVERE

■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Flaccid paralysis, ptosis, general anaesthesia, sleep, somnolence, tremor, ataxia, coma, dyspnae, respiratory depression recorded.

**CARCINOGEN**

	US – Rhode Island Hazardous Substance List	IARC
PYRIDINE	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s) P65
PYRIDINE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s) P65
VPVB_(VERY~	US – Maine Chemicals of High Concern List	Carcinogen CA Prop 65
VPVB_(VERY~	US – Maine Chemicals of High Concern List	Carcinogen IARC

**Section 12 – ECOLOGICAL INFORMATION**

This material and its container must be disposed of as hazardous waste.

Ecotoxicity Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
p-cresol	LOW	LOW	LOW	MED

**Section 13 – DISPOSAL CONSIDERATIONS**

**US EPA Waste Number & Descriptions**

**A. General Product Information**

Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)

Toxicity characteristic: use EPA hazardous waste number D025 (waste code E) if this substance, in a solid waste, produces an extract containing greater than 200 mg/L of p-Cresol.

**B. Component Waste Numbers**

When p-cresol is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number U052 (waste code T).

**Disposal Instructions**

All waste must be handled in accordance with local, state and federal regulations.

! Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common – the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 – TRANSPORTATION INFORMATION



DOT:

Symbols:	None	Hazard class or Division:	6.1
Identification Numbers:	UN3455	PG:	II
Label Codes:	6.1, 8	Special provisions:	IB8, IP2, IP4, T3, TP33
Packaging: Exceptions:	153	Packaging: Non-bulk:	212
Packaging: Exceptions:	153	Quantity limitations: Passenger aircraft/rail:	15 kg
Quantity Limitations: Cargo aircraft only:	50 kg	Vessel stowage: Location:	B
Vessel stowage: Other:	None		

Hazardous materials descriptions and proper shipping names:

Cresols, solid

Air Transport IATA:

ICAO/IATA Class:	6.1 (8)	ICAO/IATA Subrisk:	None
UN/ID Number:	3455	Packing Group:	II
Special provisions:	None		

Cargo Only

Packing Instructions:	50 kg	Maximum Qty/Pack:	15 kg
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	675	Maximum Qty/Pack:	668
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	1 kg	Maximum Qty/Pack:	Y644

Shipping Name: CRESOLS, SOLID

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	8
UN Number:	3455	Packing Group:	II
EMS Number:	F-A, S-B	Special provisions:	None

Limited Quantities: 500 g

Shipping Name: CRESOLS, SOLID

Section 15 – REGULATORY INFORMATION

p-cresol (CAS: 106–44–5) is found on the following regulatory lists;

"Canada – Alberta Occupational Exposure Limits", "Canada – Nova Scotia Occupational Exposure Limits", "Canada – Prince Edward Island Occupational Exposure Limits", "Canada – Prince Edward Island Occupational Exposure Limits – Carcinogens", "Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88–64)", "Canada Toxicological Index Service – Workplace Hazardous Materials Information System – WHMIS (English)", "International Council of Chemical Associations (ICCA) – High Production Volume List", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals", "US – California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified", "US – California Code of Regulation; Identification and Listing of Hazardous Waste, Table 1 – Maximum Concentrations for the Toxicity Characteristics", "US – California OEHHA/ARB – Chronic Reference Exposure Levels and Target Organs (CRELs)", "US – California Toxic Air Contaminant List Category V", "US – Massachusetts Oil & Hazardous Material List", "US – Pennsylvania – Hazardous Substance List", "US – Vermont Hazardous Waste – Maximum Contaminant Concentration for Toxicity", "US ACGIH Threshold Limit Values (TLV)", "US ACGIH Threshold Limit Values (TLV) – Carcinogens", "US CAA (Clean Air Act) – HON Rule – Organic HAPs (Hazardous Air Pollutants)", "US CERCLA Priority List of Hazardous Substances", "US Clean Air Act – Hazardous Air Pollutants", "US Cosmetic Ingredient Review (CIR) Cosmetic ingredients with insufficient data to support safety", "US CWA (Clean Water Act) – List of Hazardous Substances", "US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities – Hazardous Substances Other Than Radionuclides", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US EPA Carcinogens Listing", "US EPA High Production Volume Program Chemical List", "US EPA Master Testing List – Index I Chemicals Listed", "US EPA Master Testing List – Index II Chemicals Removed", "US EPA National Priorities List – Superfund Chemical Data Matrix (SCDM) – Hazard Ranking System – Hazardous Substance Benchmarks", "US EPCRA Section

313 Chemical List", "US Food Additive Database", "US List of Lists – Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act", "US NIOSH Recommended Exposure Limits (RELs)", "US RCRA (Resource Conservation & Recovery Act) – Appendix IX to Part 264 Ground-Water Monitoring List 1", "US RCRA (Resource Conservation & Recovery Act) – List of Hazardous Inorganic and Organic Constituents 1", "US RCRA (Resource Conservation & Recovery Act) – Phase 4 LDR Rule – Universal Treatment Standards", "US Toxic Substances Control Act (TSCA) – Inventory", "US TSCA Section 4/12 (b) – Sunset Date/Status", "US TSCA Section 8 (d) – Health and Safety Data Reporting"

## Section 16 – OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/references).

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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