

# Piloty's Acid

sc-205436



The Power is Question

## Material Safety Data Sheet

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

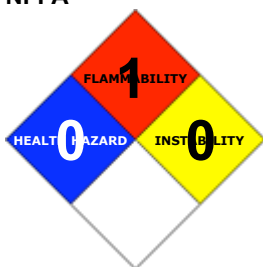
### PRODUCT NAME

Piloty's Acid

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Company: Santa Cruz Biotechnology, Inc.

Address:

2145 Delaware Ave

Santa Cruz, CA 95060

Telephone: 800.457.3801 or 831.457.3800

Emergency Tel: CHEMWATCH: From within the US and Canada:  
877-715-9305

Emergency Tel: From outside the US and Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### PRODUCT USE

Intermediate.

### SYNONYMS

C6-H7-N-O3-S, C6-H7-N-O3-S, C6H5SO2NHOH, "hydroxamic acid, benzosulfo-", "benzenesulphhydroxamic acid", "benzulfhydroxamic acid", N-hydroxybenzenesulphonamide, N-hydroxybenzenesulphonamide, "N-hydroxybenzene sulfonamide", "N-hydroxybenzene sulfonamide", N-hydroxybenzene-sulfanilamide, N-hydroxybenzene-sulfanilamide

## Section 2 - HAZARDS IDENTIFICATION

### CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

#### RISK

#### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

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## SWALLOWED

■ Although ingestion is not thought to produce harmful effects, the material may still be damaging to the health of the individual following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality (death) rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

■ Ingestion may result in nausea, abdominal irritation, pain and vomiting.

## EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

■ The dust may produce eye discomfort causing smarting, pain and redness.

## SKIN

■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

■ Open cuts, abraded or irritated skin should not be exposed to this material.

## INHALED

■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

## CHRONIC HEALTH EFFECTS

■ Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.

Prolonged oral treatment with sulfonamides has caused nausea, vomiting, diarrhea, abdominal pain, loss of appetite, inflammation of the mouth cavity, impaired folic acid absorption, exacerbation of porphyria, acidosis, liver damage with impaired blood clotting, jaundice and inflammation of the pancreas. Effects on the kidney include blood and crystals in the urine, painful and frequent urination or lack of urine with nitrogen retention. Nervous system symptoms include headache, drowsiness, trouble sleeping, dizziness, ringing in the ears, hearing loss, depression, hallucinations, inco-ordination, paralysis of muscles, numbness in the extremities, spinal cord damage and inflammation, convulsions and unconsciousness. Effects on the blood includes a change in blood cell distribution with loss of white blood cells and platelets, and anemia, which Africans seem to be more prone to developing than Europeans. Cyanosis can occur owing to complexes being formed by hemoglobin. Eye effects include inflamed cornea and conjunctiva with eyelid swelling and in severe cases, fear of the light. Allergies and cross-sensitivity is common, and can cause itches, wheals and sometimes a severe red rash with blisters that is often fatal. This class of drugs can scar the cornea and conjunctiva, swelling around the eyes, painful and inflamed joints, reduced sperm counts, pneumonia, fever, chills, hair loss, inflammation of vessels, lupus, reduced lung function, infertility, hypothyroidism and goiter, and increased urinary output. More seriously, the lungs may become permanently scarred and there may be irreversible damage to the nervous system and muscles. Inflammation of the skin has occurred after the drug is ingested and has traveled through the bloodstream. Skin effects often occur when there has been exposure in conjunction with UV light. Clothed areas are initially less likely to be affected but may be in later stages. Rarely there may be persistence of inflammation on light contact even after the drug has been removed.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

### HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	1	
Body Contact:	1	
Reactivity:	0	
Chronic:	3	

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

NAME	CAS RN	%
N-hydroxybenzenesulfonamide	599-71-3	>98

## Section 4 - FIRST AID MEASURES

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## SWALLOWED

- 
- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

## EYE

- If this product comes in contact with the eyes:
  - Wash out immediately with fresh 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.
  - If pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

## SKIN

- If skin contact occurs:
  - Immediately remove all contaminated clothing, including footwear
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

## INHALED

- 
- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

## NOTES TO PHYSICIAN

■ In cases of recent sulfonamide overdose the stomach should be emptied by aspiration and lavage. If kidney function is adequate, a saline purgative, such as sodium sulfate, 30 g in 250 ml water, may be given to promote peristalsis and elimination of sulfonamide in the urine may be assisted by giving alkalis, such as sodium bicarbonate and increasing fluid intake. Severe crystalluria may require ureteric catheterization and irrigation with warm 2.5% sodium bicarbonate solution. Treatment should be continued until it can be assumed that the sulfonamide has been eliminated. The majority of sulfonamides are metabolized to acetylated derivatives which retain the toxicity of the parent compound and thus may indicate more active removal when adverse effects are very severe. Active measures may include forced diuresis, peritoneal dialysis and charcoal hemoperfusion. [Martindale: The Extra Pharmacopoeia, 28th Ed.].

## Section 5 - FIRE FIGHTING MEASURES

Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not applicable
Relative Vapor Density (air=1):	Not applicable.

## EXTINGUISHING MEDIA

- 
- Water spray or fog.
- Alcohol stable foam.
- Dry chemical powder.
- Carbon dioxide.

## FIRE FIGHTING

- 
- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

## GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

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- 
- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

Decomposes on heating and produces toxic fumes of sulfur oxides (SOx) and nitrogen oxides (NOx).

## FIRE INCOMPATIBILITY

- Avoid contamination with strong oxidizing agents as ignition may result.

## PERSONAL PROTECTION

Glasses:

Safety Glasses.

Gloves:

Respirator:

Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- 
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste disposal.

### MAJOR SPILLS

- Moderate hazard.
- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources. Increase ventilation.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labeled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labeled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

## ACUTE EXPOSURE GUIDELINE LEVELS (AEG) (in ppm)

AEG 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

AEG 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEG 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

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**Section 7 - HANDLING AND STORAGE**

**PROCEDURE FOR HANDLING**

- 
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

**RECOMMENDED STORAGE METHODS**

- Multi-ply woven plastic or paper bag with sealed plastic liner
- NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Polyethylene or polypropylene container.
- Metal can or drum
  - Packing as recommended by manufacturer.
  - Check all containers are clearly labeled and free from leaks.

**STORAGE REQUIREMENTS**

- 
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

**SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS**



X: Must not be stored together  
 O: May be stored together with specific preventions  
 +: May be stored together

**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
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US - Oregon Permissible Exposure Limits (Z3)	N-hydroxybenzenesulfonamide (Inert or Nuisance Dust: (d) Total dust)			10	*
US OSHA Permissible Exposure Levels (PELs) - Table Z3	N-hydroxybenzenesulfonamide (Inert or Nuisance Dust: (d) Respirable fraction)			5	
US OSHA Permissible Exposure Levels (PELs) - Table Z3	N-hydroxybenzenesulfonamide (Inert or Nuisance Dust: (d) Total dust)			15	
US - Hawaii Air Contaminant Limits	N-hydroxybenzenesulfonamide (Particulates not otherwise regulated - Total dust)			10	
US - Hawaii Air Contaminant Limits	N-hydroxybenzenesulfonamide (Particulates not otherwise regulated - Respirable fraction)			5	
US - Oregon Permissible Exposure Limits (Z3)	N-hydroxybenzenesulfonamide (Inert or Nuisance Dust: (d) Respirable fraction)			5	*
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	N-hydroxybenzenesulfonamide (Particulates not otherwise regulated Respirable fraction)			5	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	N-hydroxybenzenesulfonamide (Particulates not otherwise regulated (PNOR)(f)-Respirable fraction)			5	
US - Michigan Exposure Limits for Air Contaminants	N-hydroxybenzenesulfonamide (Particulates not otherwise regulated, Respirable dust)			5	

**MATERIAL DATA**

**N-HYDROXYBENZENESULFONAMIDE:**

■ These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics:

- the architecture of the air spaces remain intact,
- scar tissue (collagen) is not synthesised to any degree,
- tissue reaction is potentially reversible.

Extensive concentrations of P.N.O.C.s may:

- seriously reduce visibility,
- cause unpleasant deposits in the eyes, ears and nasal passages,
- contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]

This limit does not apply:

- to brief exposures to higher concentrations
- nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined.

This exposure standard applies to particles which

- are insoluble or poorly soluble\* in water or, preferably, in aqueous lung fluid (if data is available) and
- have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lung tissue, and do not emit ionizing radiation, cause immune sensitization, or cause toxic effects other than by inflammation or by a mechanism of lung overload)

**PERSONAL PROTECTION**

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Consult your EHS staff for recommendations

**EYE**

- 
- Safety glasses.
- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

**HANDS/FEET**

- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear.

**OTHER**

- - Eyewash unit.
- Ensure there is ready access to a safety shower.  
Rubber apron.
- Impervious apron

**RESPIRATOR**

Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
10 x PEL	P1 Air-line*	-	PAPR-P1
50 x PEL	Air-line**	P2	PAPR-P2
100 x PEL	-	P3 Air-line*	-
100+ x PEL	-	Air-line**	PAPR-P3

\* - Negative pressure demand \*\* - Continuous flow

Explanation of Respirator Codes:

Class 1 low to medium absorption capacity filters.

Class 2 medium absorption capacity filters.

Class 3 high absorption capacity filters.

PAPR Powered Air Purifying Respirator (positive pressure) cartridge.

Type A for use against certain organic gases and vapors.

Type AX for use against low boiling point organic compounds (less than 65°C).

Type B for use against certain inorganic gases and other acid gases and vapors.

Type E for use against sulfur dioxide and other acid gases and vapors.

Type K for use against ammonia and organic ammonia derivatives

Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, silica.

Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.

Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

**ENGINEERING CONTROLS**

- General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear an approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

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Type of Contaminant: Air Speed:  
solvent, vapors, degreasing etc., evaporating from tank (in still air) 0.25-0.5 m/s (50-100 f/min)

aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) 0.5-1 m/s (100-200 f/min.)

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) 1-2.5 m/s (200-500 f/min)

grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion). 2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range Upper end of the range

1: Room air currents minimal or favorable to capture 1: Disturbing room air currents

2: Contaminants of low toxicity or of nuisance value only 2: Contaminants of high toxicity

3: Intermittent, low production. 3: High production, heavy use

4: Large hood or large air mass in motion 4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	173.19
Melting Range (°F)	251.6- 257	Boiling Range (°F)	Not available.
Solubility in water (g/L)	Partly miscible	Flash Point (°F)	Not applicable
pH (1% solution)	Not available.	Decomposition Temp (°F)	Not available.
pH (as supplied)	Not applicable	Autoignition Temp (°F)	Not available.
Vapour Pressure (mmHG)	Not applicable.	Upper Explosive Limit (%)	Not applicable
Specific Gravity (water=1)	Not available	Lower Explosive Limit (%)	Not applicable
Relative Vapor Density (air=1)	Not applicable.	Volatile Component (%vol)	Not applicable.
Evaporation Rate	Not applicable		

### APPEARANCE

White crystalline powder; does not mixwell with water.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.



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- Hazardous polymerization will not occur.

### STORAGE INCOMPATIBILITY

- Avoid reaction with oxidizing agents.

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

## Section 11 - TOXICOLOGICAL INFORMATION

N-hydroxybenzenesulfonamide

### TOXICITY AND IRRITATION

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

TOXICITY	IRRITATION
Subcutaneous (mouse) LDLo: 1000 mg/kg	Nil Reported

## Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

N-HYDROXYBENZENESULFONAMIDE:

### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
N-hydroxybenzenesulfonamide	HIGH		LOW	MED

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

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

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult Waste Management Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorized landfill.

## Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**N-hydroxybenzenesulfonamide (CAS: 599-71-3) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Limited evidence of a carcinogenic effect\*.
- May affect fertility\*.
- May possibly be harmful to the fetus/ embryo\*.

\* (limited evidence).

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■ Classification of the mixture 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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