# **SAFETY DATA SHEET**

# **1. Material Identification**

 Product Name
 : Ammonium picrate

 Catalog Number
 : io-1720

 CAS Number
 : 131-74-8

 Identified uses
 : Laboratory chemicals, manufacture of chemical compounds

 Company
 : lonz

# >> R&D Use only

# 2. Hazards Identification

# **GHS Classification:**

Flammable liquid ( category 2 ) Acute toxicity, oral (Category 3) Acute toxicity, dermal (Category 3) Acute toxicity, inhalation (Category 3) Specific target organ toxicity, single exposure (Category 1)

#### Pictogram(s)



#### **GHS Hazard Statements**

- >> H2O1: (Deleted) Explosive; mass explosion hazard [Danger Explosives]
- >> H315: Causes skin irritation [Warning Skin corrosion/irritation]
- >> H317: May cause an allergic skin reaction [Warning Sensitization, Skin]
- >> H319: Causes serious eye irritation [Warning Serious eye damage/eye irritation]
- >> H402: Harmful to aquatic life [Hazardous to the aquatic environment, acute hazard]
- >> H412: Harmful to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]

#### **Precautionary Statement Codes**

>> P210, P230, P240, P250, P261, P264, P264+P265, P272, P273, P280, P302+P352, P305+P351+P338, P321, P332+P317, P333+P317, P337+P317, P362+P364, P370+P380, P372, P373, P401, and P501

# **Health Hazards:**

>> An allergen. Irritating to eyes, skin and mucous membranes. Toxic via inhalation, ingestion and percutaneous absorption. Repeated low grade exposures may cause headache, pruritis, skin eruptions, yellowing of skin and conjunctiva, vomiting, diarrhea, and oliguria. Severe human poisonings, resulting from ingestion of one or two grams of material, may be characterized by gastroenteritis, hemorrhagic nephritis with anuria, acute hepatitis, progressive stupor, coma, and death. (USCG, 1999)

#### ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> Some are toxic and may be fatal if inhaled, ingested or absorbed through skin. Specifically, Dinitrophenol, wetted (UN1320); Dinitrophenolates, wetted (UN1321), Sodium dinitro-o-cresolate, wetted (UN1348); and Barium azide, wetted (UN1571) are known to be toxic.
- >> Contact may cause burns to skin and eyes.
- >> Fire may produce irritating, corrosive and/or toxic gases.

- >> Runoff from fire control or dilution water may cause environmental contamination.
- >> Special Hazards of Combustion Products: Contain highly toxic NOx fumes.
- >> Behavior in Fire: Flammable solid. UNCONFINED material burns without detonation when ignited. Confined material will explode upon heating to its ignition temperature. (USCG, 1999)

## ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> Flammable/combustible material.
- >> May be ignited by heat, sparks or flames.
- >> DRIED OUT material may explode if exposed to heat, flame, friction or shock; treat as an explosive (GUIDE 112).
- >> Keep material wet with water or treat as an explosive (GUIDE 112).
- >> Runoff to sewer may create fire or explosion hazard.
- >> Combustible. Gives off irritating or toxic fumes (or gases) in a fire. Many reactions may cause fire or explosion. Risk of explosion on shock or on friction. Risk of explosion on contact with reducing agents.

# 3. Composition/Information On Ingredients

Chemical name: Ammonium picrateCAS Number: 131-74-8Molecular Formula: C6H6N4O7Molecular Weight: 246.1300 g/mol

# 4. First Aid Measures

# **First Aid:**

- >> INHALATION: Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.
- >> EYES OR SKIN: Immediately flush affected area with running water for at least 15 minutes; hold eyelids open if appropriate. Wash skin with soap or mild detergent. Remove and isolate contaminated clothing and shoes at the site.
- >> INGESTION: Immediately give victim large quantities of water and have him induce vomiting by touching a finger to the back of the throat. If victim is unconscious or having convulsions, do nothing except keep victim quiet and maintain normal body temperature. (USCG, 1999)

#### ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> General First Aid:
- >> Call 911 or emergency medical service.
- >> Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.
- >> Move victim to fresh air if it can be done safely.
- >> Administer oxygen if breathing is difficult.
- >> If victim is not breathing:
- >> DO NOT perform mouth-to-mouth resuscitation; the victim may have ingestedor inhaled the substance.
- >> If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).
- >> If no pulse detected or no respiratory medical device available, provide continuouscompressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.
- >> Remove and isolate contaminated clothing and shoes.
- >> For minor skin contact, avoid spreading material on unaffected skin.
- >> In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.
- >> For severe burns, immediate medical attention is required.

- >> Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.
- >> Keep victim calm and warm.
- >> Keep victim under observation.
- >> For further assistance, contact your local Poison Control Center.
- >> Note: Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.
- >> In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

# **First Aid Measures**

#### Inhalation First Aid

>> Fresh air, rest.

### Skin First Aid

>> Remove contaminated clothes. Rinse and then wash skin with water and soap.

# Eye First Aid

>> Rinse with plenty of water for several minutes (remove contact lenses if easily possible). Refer for medical attention.

## **Ingestion First Aid**

>> Rinse mouth. Give one or two glasses of water to drink.

# **5. Fire Fighting Measures**

- >> The primary hazard is from blast effect where the entire load can explode instantaneously and not from flying projectiles and fragments. /Ammonium picrate, dry/
- >> Excerpt from ERG Guide 113 [Flammable Materials (Wet / Desensitized Explosive)]:
- >> CARGO FIRE: DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE! Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn. Do not move cargo or vehicle if cargo has been exposed to heat.
- >> TIRE OR VEHICLE FIRE: Use plenty of water FLOOD it! If water is not available, use CO2, dry chemical or dirt. If possible, and WITHOUT RISK, use unmanned master stream devices or monitor nozzles from maximum distance to prevent fire from spreading to cargo area. Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition. (ERG, 2024)
- >> Excerpt from ERG Guide 112 [Explosives Division 1.1, 1.2, 1.3 or 1.5]:
- >> CARGO FIRE: DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE! Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn. Do not move cargo or vehicle if cargo has been exposed to heat.
- >> TIRE OR VEHICLE FIRE: Use plenty of water FLOOD it! If water is not available, use CO2, dry chemical or dirt. If possible, and WITHOUT RISK, use unmanned master stream devices or monitor nozzles from maximum distance to prevent fire from spreading to cargo area. Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition. (ERG, 2024)
- >> Use water in large amounts, water spray, powder, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

# 6. Accidental Release Measures

# **Isolation and Evacuation:**

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

- >> Excerpt from ERG Guide 113 [Flammable Materials (Wet / Desensitized Explosive)]:
- >> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- >> LARGE SPILL: Consider initial evacuation for 500 meters (1/3 mile) in all directions.
- >> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

## Evacuation: ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> Immediate precautionary measure
- >> Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.
- >> Large Spill
- >> Consider initial evacuation for 500 meters (1/3 mile) in all directions.
- >> Fire
- >> If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

# **Spillage Disposal:**

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Consult an expert! Evacuate danger area! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment.

#### **Accidental Release Measures**

Public Safety: ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- >> Keep unauthorized personnel away.
- >> Stay upwind, uphill and/or upstream.
- >> Ventilate closed spaces before entering, but only if properly trained and equipped.

### Spill or Leak: ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- >> All equipment used when handling the product must be grounded.
- >> Do not touch or walk through spilled material.
- >> Small Spill
- >> Flush area with large amounts of water.
- >> Large Spill
- >> Wet down with water and dike for later disposal.
- >> KEEP "WETTED" PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER.

# 7. Handling And Storage

## Safe Storage:

>> Separated from incompatible materials. See Chemical Dangers. Store in an area without drain or sewer access.

## **Storage Conditions:**

>> Incompatible with strong oxidizers, strong bases. Contact with air causes substance to give off corrosive anhydrous ammonia fumes. Outside, detached storage is recommended. Store to avoid heat, shock, or the presence of reducing materials. Use only non-sparking tools and equipment, especially when opening and closing containers of this chemical. Sources of ignition, such as smoking and open flames, are prohibited where this chemical is used, handled, or stored in a matter that could create a potential fire or explosion hazard.

# 8. Exposure Control/Personal Protection

Emergency Response: ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

- >> CARGO Fire
- >> DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!

- >> Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- >> Do not move cargo or vehicle if cargo has been exposed to heat.
- >> TIRE or VEHICLE Fire
- >> Use plenty of water FLOOD it! If water is not available, use CO2, dry chemical or dirt.
- >> If possible, and WITHOUT RISK, use unmanned master stream devices or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- >> Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition.

# **Inhalation Risk:**

>> A harmful concentration of airborne particles can be reached quickly when dispersed.

## **Effects of Short Term Exposure:**

>> The substance is irritating to the skin and eyes. The substance may cause effects on the blood. This may result in destruction of blood cells and acidosis.

# **Effects of Long Term Exposure:**

>> Repeated or prolonged contact with skin may cause dermatitis.

#### **Fire Prevention**

>> NO open flames. Do NOT expose to friction or shock.

# **Exposure Prevention**

>> PREVENT DISPERSION OF DUST!

# Inhalation Prevention

>> Use ventilation (not if powder), local exhaust or breathing protection.

#### **Skin Prevention**

>> Protective gloves.

### **Eye Prevention**

>> Wear safety goggles.

### **Ingestion Prevention**

>> Do not eat, drink, or smoke during work.

#### **Exposure Control and Personal Protection**

Protective Clothing: ERG 2024, Guide 113 (Ammonium picrate, wetted with not less than 10% water)

>> Wear positive pressure self-contained breathing apparatus (SCBA).

>> Structural firefighters' protective clothing provides thermal protection but only limited chemical protection.

# 9. Physical And Chemical Properties

#### **Molecular Weight:**

>> 246.13

### Exact Mass:

>> 246.02364854

#### **Physical Description:**

>> Ammonium picrate, wetted with not less than 10% water appears as a slurry or sludge of yellow crystals in water. Will burn, although may be difficult to ignite. Produces toxic oxides of nitrogen during combustion.

>> RED OR YELLOW CRYSTALS.

# Color/Form:

>> Bright yellow scales or orthorhombic crystals; "red modification" is not a distinct polymorph, but a slightly contaminated form of the yellow salt.

# Taste:

The sensation of flavor perceived in the mouth and throat on contact with a substance.

>> Bitter

#### **Melting Point:**

>> Decomposes

#### Solubility:

>> Slightly soluble in alcohol

>> Solubility in water, g/100ml at 20 °C: 1.1

### Density:

>> 1.719 at 68 °F (USCG, 1999) - Denser than water; will sink

#### >> 1.72 g/cm<sup>3</sup>

# LogP:

>> -1.4

## **Decomposition:**

>> When heated to decomposition it emits highly toxic fumes of /nitroxides/.

>> 265 °C

# **10. Stability And Reactivity**

>> No rapid reaction with air. No rapid reaction with water.

>> Explosive

# **11. Toxicological Information**

## **Toxicity Summary:**

>> IDENTIFICATION AND USE: Ammonium picrate is found as bright yellow scales or orthorhombic crystals. The red form is not a distinct polymorph, but a slightly contaminated form of the yellow salt. It has a bitter taste. It is used in explosives, in fireworks and rocket propellants. It is used in pyrotechnics and explosive compositions. HUMAN EXPOSURE AND TOXICITY: Ammonium picrate can pass through the skin. This chemical is moderately irritating to skin, eyes, and mucous membranes. This chemical can irritate the eyes, and skin and is an allergen. Ingestion can cause a bitter taste, nausea, diarrhea, vomiting, abdominal pain, skin eruptions, stupor, and possible death. Breathing high levels can damage the kidneys, liver, and red blood cells. Urine may become reddish, scant, or even stop; there may be drowsiness, coma, and even death. Long Term Exposure: Repeated exposure can cause the skin and eyes to turn yellow, skin allergy, liver, kidney, and blood cell damage. The most common occupational health problem was dermatitis, which was thought to be due to sensitization and not primary irritation by the picrate. Upper respiratory disease was negligible and systemic toxicity was not recognized among the workers. The cutaneous lesions appeared usually on the exposed parts of the upper extremities. Persons least exposed seemed more liable to acquire dermatitis, which did not develop in those engaged in operations where there was the heaviest exposure. Ammonium picrate can produce nausea, vomiting, diarrhea, staining of the skin, dermatitis, circular eruptions of the skin, coma, and seizures. ANIMAL STUDIES: Ammonium picrate was examined for mutagenic activity in a series of in vitro microbial assays employing Salmonella typhimurium and Saccharomyces cerevisiae indicator organisms. The compound was tested over a series of concentration such that there was either quantitative or qualitative evidence of some chemically induced physiological effects at the high dose. The results of the mutagenicity tests were all negative. Ammonium nitrate is harmful to aquatic organisms.

## EPA Provisional Peer-Reviewed Toxicity Values:

This section provides the EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs) and links of related assessment documents.

#### **Chemical Substance**

>> Ammonium Picrate

Reference Dose (RfD), Chronic

>> 2 x 10^-3 mg/kg-day

## Reference Dose (RfD), Subchronic

>> 6 x 10^-3 mg/kg-day

## PPRTV Assessment

>> PDF Document

### Weight-Of-Evidence (WOE)

>> Inadequate information to assess carcinogenic potential

## Last Revision

>> 2020

## Exposure Routes:

>> The substance can be absorbed into the body by inhalation and by ingestion.

#### Inhalation Exposure

>> Burning sensation. Cough. See Ingestion.

#### **Skin Exposure**

>> Redness. Roughness.

#### Eye Exposure

>> Redness. Pain. Blurred vision.

#### **Ingestion Exposure**

>> Abdominal pain. Diarrhoea. Headache. Dizziness. Nausea. Vomiting. Weakness. Red urine.

### Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

- >> Occupational hepatotoxin Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.
- >> Skin Sensitizer An agent that can induce an allergic reaction in the skin.

## Antidote and Emergency Treatment:

>> Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Inorganic acids and related compounds/

## Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ Short Term Exposure: Ammonium picrate can pass through the skin. This chemical can irritate the eyes and skin and is an allergen. Ingestion can cause a bitter taste, nausea, diarrhea, vomiting, abdominal pain, skin eruptions, stupor, and possible death. Breathing high levels can damage the kidneys, liver, and red blood cells. Urine may become reddish, scant, or even stop; there may be drowsiness, coma, and even death. Long Term Exposure: Repeated exposure can cause the skin and eyes to turn yellow, skin allergy, liver, kidney, and blood cell damage.

## Non-Human Toxicity Excerpts:

>> /GENOTOXICITY/ Ammonium picrate was examined for mutagenic activity in a series of in vitro microbial assays employing Salmonella and Saccharomyces indicator organisms. The compound was tested over a series of concn such that there was either quantitative or qualitative evidence of some chemically-induced physiological effects at the high dose (1000 ug/plate). The results of the mutagenicity tests were all negative.

# 12. Ecological Information

# Resident Soil (mg/kg)

>> 1.30e+02

Industrial Soil (mg/kg)
>> 1.60e+03
Tapwater (ug/L)
>> 4.00e+01
MCL (ug/L)
>> 4.00e+00
Risk-based SSL (mg/kg)
>> 1.90e-01
Chronic Oral Reference Dose (mg/kg-day)
>> 2.00e-03
Volatile
>> Volatile
Mutagen
>> Mutagen
Fraction of Contaminant Absorbed in Gastrointestinal Tract
>>1
Fraction of Contaminant Absorbed Dermally from Soil
>> 0.1
ICSC Environmental Data:
>> The substance is harmful to aquatic organisms.

# 13. Disposal Considerations

## Spillage Disposal

>> Consult an expert! Evacuate danger area! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment.

## **Disposal Methods**

- >> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number POO9, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.
- >> A potential candidate for rotary kiln incineration at a temperature range of 820 to 1,600 °C and residence times of seconds for liquids and gases, and hours for solids. A potential candidate for fluidized bed incineration at a temperature range of 450 to 980 °C and residence times of seconds for liquids and gases, and longer for solids.
- >> May be poured onto soda ash, packaged in paper, and burned. May also be mixed with flammable solvent and sprayed into an incinerator equipped with afterburner and scrubber.

# 14. Transport Information

DOT		
Ammonium picrate 1		
Reportable Quantity of 10 lb or 4		
ΙΑΤΑ		
Ammonium picrate		
1,		

# **15. Regulatory Information**

# DHS Chemicals of Interest (COI):

This section provides the Department of Homeland Security (DHS) Chemicals of Interest (COI) and related information (Ref: 6 eCFR part 27 – https://www.ecfr.gov/current/title-6/chapter-I/part-27).

# Chemicals of Interest(COI)

>> Ammonium picrate

# Release: Minimum Concentration (%)

>> A Commercial Grade

# Release: Screening Threshold Quantities (in pounds)

>> 5000

Theft: Minimum Concentration (%)

>> A Commercial Grade

Theft: Screening Threshold Quantities (in pounds unless otherwise noted)

>> 400

Security Issue: Release - Explosives

>> Explosive chemical that can be released at a facility.

# Security Issue: Theft - EXP/IEDP

>> Explosive/Improvised Explosive Device Precursor material that, if stolen or diverted, can be converted into weapons using simple chemistry, equipment, or techniques.

# **Regulatory Information**

# New Zealand EPA Inventory of Chemical Status

>> Ammonium picrate: Does not have an individual approval but may be used as a component in a product covered by a group standard. It is not approved for use as a chemical in its own right.

# 16. Other Information

# **Toxic Combustion Products:**

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> Poisonous gases are produced in fire, including ammonia and nitrogen oxides.

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."