Chemical Safety Data Sheet MSDS / SDS

Picric acid SDS

Revision Date:2024-04-25 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Picric acid

CAS: 88-89-1

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Explosives, Division 1.1
Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal
Acute toxicity - Category 3, Inhalation

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H201 Explosive; mass explosion hazard
H301 Toxic if swallowed
H311 Toxic in contact with skin
H331 Toxic if inhaled

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P230 Keep wetted with ...
P234 Keep only in original packaging.
P240 Ground and bond container and receiving equipment.
P250 Do not subject to grinding/shock/friction/....
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

P370+P372+P380+P373 In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage

P401 Store in accordance with...
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal

P503 Refer to manufacturer/supplier... for information on disposal/recovery/recycling.
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Picric acid
Common names and synonyms:	Picric acid
CAS number:	88-89-1
EC number:	201-865-9
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Rinse and then wash skin with water and soap. Seek medical attention if you feel unwell.

Following eye contact

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

Following ingestion

Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Irritation eyes, skin; sensitization dermatitis; yellow-stained hair, skin; lassitude (weakness, exhaustion), myalgia, anuria, polyuria; bitter taste, gastrointestinal disturbance; hepatitis, hematuria (blood in the urine), albuminuria, nephritis Target Organs: Eyes, skin, kidneys, liver, blood (NIOSH, 2016)
Excerpt from ERG Guide 113 [Flammable Solids - Toxic (Wet/Desensitized Explosive)]: Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin. 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 pollution. (ERG, 2016)
Excerpt from ERG Guide 113 [Flammable Solids - Toxic (Wet/Desensitized Explosive)]: Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin. 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 pollution. (ERG, 2016)

Indication of immediate medical attention and special treatment needed, if necessary

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. Dinitrophenol and Related Compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

This chemical is a flammable solid. Use flooding quantities of water, applied from a distance More powerful than TNT, picric acid explodes above 572 deg F (300 deg C). Use dry chemical, carbon dioxide, water spray, or alcohol foam extinguishers ... If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. Containers may explode. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors or shows any signs of deforming), withdraw immediately to a secure position ... The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full facepieces and are operated in a pressure-demand or other positive-pressure mode.

Specific hazards arising from the chemical

Excerpt from ERG Guide 112 [Explosives* - Division 1.1, 1.2, 1.3 or 1.5]: MAY EXPLODE AND THROW FRAGMENTS 1600 METERS (1 MILE) OR MORE IF FIRE REACHES CARGO. For information on "Compatibility Group" letters, refer to Glossary section. (ERG, 2016)
Excerpt from ERG Guide 113 [Flammable Solids - Toxic (Wet/Desensitized Explosive)]: 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, refer to ERG Guide 112. Keep material wet with water or treat as an explosive, refer to ERG Guide 112. Runoff to sewer may create fire or explosion hazard. (ERG, 2016)
Excerpt from ERG Guide 113 [Flammable Solids - Toxic (Wet/Desensitized Explosive)]: 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, refer to ERG Guide 112. Keep material wet with water or treat as an explosive, refer to ERG Guide 112. Runoff to sewer may create fire or explosion hazard. (ERG, 2016)

Special protective actions for fire-fighters

Use water in large amounts. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

Environmental precautions

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

Spill handling: evacuate persons not wearing protective equipment from area of spill or leak until clean-up is complete. Remove all ignition sources. Dampen spilled material with alcohol to avoid dust, then transfer material to a suitable container for eventual disposal. Collect powdered material in the the mose convenient and safe manner and deposit in sealed containers. Ventilate area after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or

contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Do NOT expose to friction or shock. Use non-sparking handtools. Prevent deposition of dust. Closed system, dust explosion-proof electrical equipment and lighting. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Cool. Substance should be kept wet. Separated from strong oxidants, metals and reducing agents. Store in an area without drain or sewer access.Store in an explosion-proof refrigerator away from oxidizers, reducing agents, and metals. Where possible, automatically pump liquid from drums or other storage containers. Sources of ignition, such as smoking and open flames, are prohibited where this chemical is handled, used, or stored. Metal containers involving the transfer of 5 gallons or more of this chemical should be grounded and bonded. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters. Use only non-sparking tools and equipment, especially when opening or closing containers of this chemical. Wherever this chemical is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.1 mg/m3, as TWA.EU-OEL: 0.1 mg/m3 as TWA.MAK: skin absorption (H); sensitization of skin (SH); carcinogen category: 3B

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles.

Skin protection

Protective gloves.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Picric acid, [dry] is a yellow crystals. An explosive. Specific gravity 1.767. Melting point 251.2°F (121.8°C). Explodes at 572°F. Toxic by ingestion.
Colour:	Pale yellow crystals
Odour:	Odorless
Melting point/freezing point:	122-123°C
Boiling point or initial boiling point and boiling range:	303.6°C at 760 mmHg
Flammability:	Combustible Solid
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	133.9°C
Auto-ignition temperature:	572° F (NTP, 1992)

Decomposition temperature:	300°C
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	1 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 1.44
Vapour pressure:	1 mm Hg (195 °C)
Density and/or relative density:	1.856 g/cm3
Relative vapour density:	7.9 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

May decompose on shock, friction or concussion. May explode on heating. Mixtures with copper, lead, mercury, zinc and other metals are shock-sensitive. On combustion, forms toxic carbon and nitrogen oxides. Reacts with oxidants and reducing agents.

Chemical stability

Very unstable.

Possibility of hazardous reactions

Flammable solid.As a result of flow, agitation, etc., electrostatic charges can be generated. Dust explosion possible if in powder or granular form, mixed with air.PICRIC ACID, [DRY] undergoes vigorous reactions with both oxidizing or reducing agents. Apt to explode when shocked or exposed to heat. Very unstable. Readily forms salts on contact with many metals (including copper, lead, mercury, zinc, nickel, iron) that are more sensitive explosives than picric acid itself when subjected to heat, friction, or impact. Contact with concrete floors may form the friction-sensitive calcium picrate [Urbanski, 1964, vol. 1, p. 518]. Contact with metallic zinc or lead can cause detonation. Salts with ammonia, amines and complexes with hydrocarbons are less sensitive [Kirk-Othmer,

1965, vol. 8, p. 617]. Sufficiently pure samples of picric acid have the same order of stability as TNT [Chem. Eng. News, 1979, 57(41), p. 51]. Impure samples are less stable. Mixtures with aluminum and water will ignite after a delay period [Hajek, V. et al., Research, 1951, 4, p. 186].

Conditions to avoid

no data available

Incompatible materials

Anhydrous material is shock-, friction-, and heat-sensitive. Highly unstable in crystalline form.

Hazardous decomposition products

Air or oxygen is not required for decomposition ... May explosively decompose from heat, shock, friction, or concussion.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 200 mg/kg

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is mildly irritating to the eyes.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Ingestion may cause effects on the gastrointestinal tract, kidneys, liver and blood.

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 Lepomis macrochirus (bluegill) 193 mg/L/24 hr, static bioassay

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Mixed cultures of phenol adapted microorganisms exhibited little or no oxygen uptake in the presence of picric acid(2,3), suggesting that picric acid is resistant to degradation under aerobic conditions. It is reported that nitrophenols can inhibit aerobic microbial growth by uncoupling the metabolic process of oxidative phosphorylation(1). Based upon information pertaining to 2,4-dinitrophenol, possible biotransformation processes of picric acid are: reduction of the nitro group, hydroxylation of the aromatic ring, and displacement of the nitro group by a hydroxyl group(4). Picric acid, present at 100 mg/L, reached 23% of its Theoretical

BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(5).

Bioaccumulative potential

BCF values of <0.24 and <2.2 were measured in carp (Cyprinus carpio) exposed to 500 ug/L and 50 ug/L of picric acid, respectively, over a 6 week exposure period(1). According to a classification scheme(2), these BCF values suggest that bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of picric acid is estimated as 180(SRC), using a log Kow of 1.44(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that picric acid is expected to have moderate mobility in soil. The pKa of picric acid is 0.42(4), indicating that this compound will almost entirely exist in anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(5).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1344 (For reference only, please check.)
IMDG: UN1344 (For reference only, please check.)

IATA: UN1344 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: TRINITROPHENOL (PICRIC ACID), WETTED with not less than 30% water, by mass (For reference only, please check.)
IMDG: TRINITROPHENOL (PICRIC ACID), WETTED with not less than 30% water, by mass (For reference only, please check.)
IATA: TRINITROPHENOL (PICRIC ACID), WETTED with not less than 30% water, by mass (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 4.1 (For reference only, please check.)
IMDG: 4.1 (For reference only, please check.)
IATA: 4.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)
IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Do NOT take working clothes home.Rinse contaminated clothing with plenty of water because of fire hazard.UN number 0154 refers to picric acid, dry or moistened with less than 30% water by mass.For safety transportation, 30% water or more is usually added.Other UN number is 1344, with not less than 30% water by mass, hazard class 4.1, packing group I.UN 3364 Trinitrophenol(picric acid), wetted with not less than 10% water, by mass; Hazard class: 4.1, Packing Group I