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## Material Safety Data Sheet

### SECTION 1:CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: PNPP

Company: Suzhou YACOO Science Co., Ltd.

Address: No.128,FangZhou Road,Suzhou Industrial Park,China

Tel: 0512-87182055

Fax: 0512-87182056

### SECTION 2: Hazards identification

#### Summary of emergency

liquid May be corrosive to metals., May be harmful if swallowed or in contact with skin., Causes severe skin burns and eye damage., Suspected of damaging fertility or the unborn child., May cause damage to organs through prolonged or repeated exposure., Harmful to aquatic life. Show this material safety data sheet to the doctor in attendance. After inhalation: fresh air. Call in physician. In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower., Consult a physician. After eye contact: rinse out with plenty of water., Immediately call in ophthalmologist., Remove contact lenses. After swallowing: immediately make victim drink water (two glasses at most)., Consult a physician. Not combustible. Ambient fire may liberate hazardous vapours. Violent reactions possible with: The generally known reaction partners of water.

#### 2.1GHS Classification

Corrosive to Metals (Category 1), H290

Acute toxicity, Oral (Category 5), H303

Acute toxicity, Dermal (Category 5), H313

Skin corrosion/irritation (Category 1B), H314

Serious eye damage/eye irritation (Category 1), H318


Reproductive toxicity (Category 2), H361

Specific target organ toxicity - repeated exposure (Category 2), H373

Short-term (acute) aquatic hazard (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

#### 2.2GHS Label elements, including precautionary statements

Pictogram 

Signal word Danger

Hazard statement(s)

H290 May be corrosive to metals.

H303 + H313

May be harmful if swallowed or in contact with skin. H314Causes severe skin burns and eye damage.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

H402 Harmful to aquatic life. Precautionary statement(s)

#### Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P234 Keep only in original container.

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P310

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 + P310

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P312 Call a POISON CENTER/ doctor if you feel unwell.

P363 Wash contaminated clothing before reuse.

P390 Absorb spillage to prevent material damage.

#### Storage

P405 Store locked up.

P406 Store in corrosive resistant container with a resistant inner liner.

#### Disposal

P501 Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Physical and chemical hazards

H290 May be corrosive to metals.

### 2.4 Health hazards

H303 May be harmful if swallowed.

H313 May be harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

### 2.5 Environmental hazards

H402 Harmful to aquatic life.

### 2.6 Other hazards - none

## SECTION 3: Composition/information on ingredients

Substance / Mixture: Mixture

### 3.2 Mixtures

Synonyms: 4-Nitrophenyl phosphate disodium salt solution pNPP

Molecular weight: 263.05 g/mol

Hazardous ingredients

Component	Classification	Concentration
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<b>Diethanolamine</b>		
CAS-No. 11-42-2 EC-No. 203-868-0 Index-No. 603-071-00-1	Acute toxicity Category 4; Skin corrosion/irritation Category 2; Serious eye damage/eye irritation Category 1; Reproductive toxicity Category 2; Specific target organ toxicity - repeated exposure Category 2; Short-term (acute) aquatic hazard Category 2; Long-term (chronic) aquatic hazard Category 3; H302, H315, H318, H361, H373, H401, H412	$\geq 10 - < 20\%$
<b>hydrochloric acid</b>		
CAS-No. 7647-01-0 EC-No. 231-595-7 Index-No. 017-002-01-X	Corrosive to Metals Category 1; Skin corrosion/irritation Category 1B; Serious eye damage/eye irritation Category 1; Specific target organ toxicity - single exposure Category 3; Short-term (acute) aquatic hazard Category 2; H290, H314, H318, H335, H401 Concentration limits: $\geq 0.1\%$ : Met. Corr. 1, H290;	$\geq 5 - < 10\%$
<b>2-amino-6-methylpyridine</b>		
CAS-No. 1824-81-3 EC-No. 217-360-1	Acute toxicity Category 3; Acute toxicity Category 2; Skin irritation Category 2; Eye irritation Category 2A; Specific target organ toxicity - single exposure Category 3; H301, H310, H315, H319, H335	$\geq 1 - < 10\%$
<b>Organic preservative</b>		
	Acute toxicity Category 3; Acute toxicity Category 2; Skin corrosion/irritation Category 1C; Serious eye damage/eye irritation Category 1; Skin sensitization Sub-category 1A; Short-term (acute) aquatic hazard Category 1; Long-term (chronic) aquatic hazard Category 1; H301, H330, H310, H314, H318, H317, H400, H410 M-Factor - Aquatic Acute: 100 - Aquatic Chronic: 100	$\geq 0.0003 - < 0.0025\%$

For the full text of the H-Statements mentioned in this Section, see Section 16.

## **SECTION 4: First aid measures**

### **4.1 Description of first-aid measures**

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### **4.2 Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### **4.3 Indication of any immediate medical attention and special treatment needed**

No data available

### **4.4 Notes to physician**

No data available

## **SECTION 5: Firefighting measures**

### **5.1 Extinguishing media**

#### Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Sulfur oxides

Hydrogen chloride gas

Not combustible.

Ambient fire may liberate hazardous vapours.

### **5.3 Advice for firefighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact.

Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

## 6.2 Environmental precautions

Do not let product enter drains.

## 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

## 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

No metal containers.

Tightly closed.

Storage stability

Recommended storage temperature

-20 ° C

Storage class

Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Component	CAS-No.	Value	Control parameters	Basis
Diethanolamine	111-42-2	TWA	1mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values(TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	3 ppm 15mg/m <sup>3</sup>	USA.NIOSH Recommended Exposure Limits
		TWA	3 ppm 15mg/m <sup>3</sup>	USA.OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		PEL	0.46 ppm mg/m <sup>3</sup>	California permissible exposure limits for chemical Contaminants(Title 8,Article 107)
Skin				
Hydrochloric acid	7647-01-0	MAC	7.5mg/m <sup>3</sup>	Occupational

				exposure limits for hazardous agents in the workplace - Chemical hazardous agents.
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## 8.2 Exposure controls

Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.

Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail [sales@kcl.de](mailto:sales@kcl.de), test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

protective clothing

Respiratory protection

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains.

## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

- a) Appearance Form: liquid
- b) Odor No data available
- c) Odor Threshold No data available
- d) pH No data available
- e) Melting point/freezing point  
No data available
- f) Initial boiling point and boiling range  
No data available
- g) Flash point No data available
- h) Evaporation rate No data available
- i) Flammability (solid, gas) No data available
- j) Upper/lower flammability or explosive limits  
No data available
- k) Vapor pressure No data available
- l) Vapor density No data available
- m) Density No data available  
Relative density No data available
- n) Water solubility at 20 ° C soluble
- o) Partition coefficient: n-octanol/water No data available
- p) Autoignition temperature Not applicable
- q) Decomposition temperature No data available
- r) Viscosity  
Viscosity, kinematic: No data available  
Viscosity, dynamic: No data available
- s) Explosive properties Not classified as explosive.
- t) Oxidizing properties none

### **9.2 Other safety information**

No data available

## **SECTION 10: Stability and reactivity**

### **10.1 Chemical stability**

The product is chemically stable under standard ambient conditions (room temperature) .

### **10.2 Possibility of hazardous reactions**

Violent reactions possible with:

The generally known reaction partners of water.

### **10.3 Conditions to avoid**

no information available

### **10.4 Incompatible materials**

Metals

### **10.5 Hazardous decomposition products**

In the event of fire: see section 5

## **SECTION 11: Toxicological information**

### **11.1 Information on toxicological effects**

Mixture

Acute toxicity

Oral: No data available

Symptoms: Possible symptoms:, mucosal irritations

Acute toxicity estimate Dermal - 4,167 mg/kg

(Calculation method)

Skin corrosion/irritation

No data available

Mixture causes skin irritation.

Serious eye damage/eye irritation

No data available

Mixture causes serious eye damage.

Respiratory or skin sensitization

Mixture may produce an allergic reaction.

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Suspected of damaging the unborn child.

Suspected of damaging fertility.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

Remarks: No data available

Mixture may cause damage to organs through prolonged or repeated exposure. - Kidney, Liver, Blood

Aspiration hazard

No data available

### **11.2 Additional Information**

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

Components

Diethanolamine

Acute toxicity

LD50 Oral - Rat - male and female - 1,600 mg/kg

(OECD Test Guideline 401)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Symptoms: Possible damages:, Irritation symptoms in the respiratory tract. Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: irritating

(OECD Test Guideline 404)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Serious eye damage/eye irritation

Eyes - Rabbit



Result: Causes serious eye damage.

(OECD Test Guideline 405)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

Germ cell mutagenicity

Test Type: Ames test

Test system: Escherichia coli/Salmonella typhimurium

Result: negative

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: rat hepatocytes

Result: negative

Test Type: sister chromatid exchange assay

Test system: Chinese hamster ovary cells Result: negative

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster ovary cells

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Result: negative

Method: OECD Test Guideline 474

Species: Mouse - male and female

Result: negative

Carcinogenicity

No data available

Reproductive toxicity

Suspected of damaging the unborn child.

Suspected of damaging fertility.

Specific target organ toxicity - single exposure

No data available

Acute oral toxicity - Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity - Possible damages:, Irritation symptoms in the respiratory tract.

Specific target organ toxicity - repeated exposure

Ingestion - May cause damage to organs through prolonged or repeated exposure. - Kidney, Liver, Blood

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Dermal - Kidney

Aspiration hazard

No data available

hydrochloric acid Acute toxicity

Oral: No data available

Inhalation: Cough Difficulty in breathing

Inhalation: absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Inhalation may lead to the formation of oedemas in the respiratory tract., Possible damages:, damage of respiratory tract, tissue damage

Dermal: No data available

Skin corrosion/irritation

Skin - reconstructed human epidermis (RhE)

Result: Corrosive

(OECD Test Guideline 431)

Serious eye damage/eye irritation

Eyes - Bovine cornea

Result: Corrosive

(OECD Test Guideline 437)

Respiratory or skin sensitization Maximization

Test - Guinea pig Result: negative

(OECD Test Guideline 406)

Germ cell mutagenicity

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells

Result: Conflicting results have been seen in different studies.

Carcinogenicity

Carcinogenicity - Did not show carcinogenic effects in animal experiments. (IUCLID)

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation.

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Inhalation may lead to the formation of oedemas in the respiratory tract., Possible damages:, damage of respiratory tract, tissue damage

Specific target organ toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure. Aspiration hazard

No aspiration toxicity classification

2-amino-6-methylpyridine

3-Acute toxicity

LD50 Oral - Rat - 100 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - 125 mg/kg

Remarks: Lungs, Thorax, or Respiration: Other changes.

Kidney, Ureter, Bladder: Other changes.

Prolonged skin contact may cause skin irritation and/or dermatitis.

Skin corrosion/irritation

No data available

Serious eye damage/eye 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

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

organic preservative Acute toxicity

LD50 Oral - Rat - male and female - 66 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - 0.171 mg/l (OECD Test Guideline 403)

LD50 Dermal - Rabbit - male - 87.12 mg/kg

Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit

Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.

(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

Remarks: (ECHA)

Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: positive

(OECD Test Guideline 406)

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: positive

Test Type: Ames test

Test system: Salmonella typhimurium

Result: Positive results were obtained in some in vitro tests.

Test Type: UDS (Unscheduled DNA synthesis assay)

Test system: rat hepatocytes Result: negative

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Human lymphocytes

Result: positive

Method: OECD Test Guideline 475

Species: Mouse - male and female - Bone marrow

Result: negative  
Method: OECD Test Guideline 486 Species: Rat - male - Liver cells  
Result: negative  
Method: US-EPA  
Species: Mouse - male and female - Bone marrow  
Result: negative  
Method: US-EPA  
Species: Rat - male - Liver cells  
Result: negative  
Method: OECD Test Guideline 474  
Species: Mouse - male and female - Red blood cells (erythrocytes)  
Result: negative  
Carcinogenicity  
No data available  
Reproductive toxicity  
No data available  
Specific target organ toxicity - single exposure  
No data available  
Specific target organ toxicity - repeated exposure  
Aspiration hazard  
No data available

## **SECTION 12: Ecological information**

### **12.1 Toxicity**

Mixture  
No data available

### **12.2 Persistence and degradability**

No data available

### **12.3 Bioaccumulative potential**

No data available

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### **12.6 Other adverse effects**

No data available

Components Diethanolamine

Toxicity to fish

static test LC50 - *Oncorhynchus mykiss* (rainbow trout) - 460 mg/l - 96 h

Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - *Ceriodaphnia dubia* (water flea) - 30.1 mg/l - 48 h

Remarks: (ECHA)

Toxicity to algae

static test ErC50 - *Pseudokirchneriella subcapitata* (green algae) - 9.5 mg/l - 96 h  
(US-EPA)

Toxicity to bacteria

static test EC10 - activated sludge - > 1,000 mg/l - 30 min (OECD Test Guideline 209)

hydrochloric acid

No data available

Toxicity to fish

LC50 - Gambusia affinis (Mosquito fish) - 282 mg/l - 96 h Remarks: (IUCLID)

2-amino-6-methylpyridine

No data available

organic preservative

Toxicity to fish

flow-through test LC50 - Oncorhynchus mykiss (rainbow trout)

- 0.19 mg/l - 96 h (US-EPA)

Toxicity to daphnia and other aquatic invertebrates

flow-through test LC50 - Daphnia magna (Water flea) - 0.18 mg/l - 48 h

(US-EPA)

Toxicity to bacteria

static test EC50 - activated sludge - 4.5 mg/l - 3 h (OECD Test Guideline 209)

## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

## **SECTION 14: Transport information**

### **14.1 UN number**

ADR/RID: - IMDG: - IATA-DGR: -

### **14.2 UN proper shipping name**

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA-DGR: Not dangerous goods

### **14.3 Transport hazard class(es)**

ADR/RID: - IMDG: - IATA-DGR: -

### **14.4 Packaging group**

ADR/RID: - IMDG: - IATA-DGR: -

### **14.5 Environmental hazards**

ADR/RID: no IMDG Marine pollutant: no IATA-DGR: no

### **14.6 Special precautions for user**

### **14.7 Incompatible materials**

Metals

Further information

Not classified as dangerous in the meaning of transport regulations.

## **SECTION 15: Regulatory information**

### **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

National regulatory information

Law on the Prevention and Control of Occupational Diseases

Regulations on Safety Management of Hazardous Chemicals

Catalogue of Hazardous Chemicals: Listed

Other regulations

Please pay attention on the waste treatment should also comply with local regulations requirement.

### **SECTION 16:OTHER INFORMATION**

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.