

MATERIAL SAFETY DATA SHEET

RED PHOSPHORUS

SECTION 1: Chemical Product and Company Identification

1.1 Product identifier

Product Name	: Red Phosphorus
CAS	: 7723-14-0
RTECS	: TH34950000
Synonym	: Phosphorus, amorphous, red
Chemical Name	: Phosphorus (red)
Chemical Formula	: P
Product description	: Inorganic
Product type	: Powder

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

Identified uses	: Laboratory chemicals, Industrial & for professional use only.
Uses advised against	: Industrial manufacture of screening smoke ammunition or smoke payloads

1.3 Details of the supplier of the safety data sheet

Company	: Victory Joint Stock Company
Address	: Lot F21, Phung Hung Str., Dong Pho Moi Industrial Zone, Van Hoa Commune, Lao Cai City , Lao Cai Province, Vietnam
Telephone	: +84 214 3787 5857
Email	: haivicceo@victoryjsc.com

1.4 Emergency telephone number

Emergency Phone	: +84 972 437 555 (Mr.Hai)
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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition:	: Mono-constituent substance
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2.2 Label elements

Hazard pictograms	: 
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Signal word	: Danger
Hazard statement	: Flammable solid. Harmful to aquatic life with long lasting effects.

Precautionary statement

General	: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention	: Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/material-handling equipment in area that dust clouds can be created. Avoid release to the environment. Wear protective gloves/protective clothing/eyeprotection/face protection.
Response	: In case of fire, use water, foam, sand.
Storage	: Not applicable.

Disposal

Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 Other hazards

No

SECTION 3: Composition/information on ingredients**3.1 Substances**

Formular	: P
Molecular Weight	: 30,97 g/mol
CAS-No.	: 7723-14-0
EC-No.	: 231-768-7
Index-No.	: 015-002-00-7
%	: >= 90 - <= 99

See Section 16 for the full text of the R phrases or H statements declared above.

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Occupational exposure limits, if available, are listed in section 8.

SECTION 4: First aid measures**4.1 Description of first aid measures**

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of combustion or decomposition fumes: bring the exposed person to fresh air and get medical aid immediately.
Skin contact	: In case of burns, immediately cool affected skin with cold water and with 2% solution of CuSO ₄ . Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Protection off first-aiders	: No action shall be taken involving any personal risk or without suitable training.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam or dry chemical. Dry sand or other suitable absorbent. Use water spray to keep fire-exposed containers cool. May re-ignite itself after fire is extinguished: Cover with wet earth, sand or other non-combustible material.

Unsuitable extinguishing media : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Fine dust clouds may form explosive mixtures with air.

Hazardous thermal decomposition products : The product burns in persistent way producing a dense smoke which may limit visibility.
Hazardous combustion products: P2O5 (Corrosive gas)

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents. Put on appropriate personal protective equipment (see section 8).

Additional information : Do not breathe gas. High temperatures may cause the formation of traces of pyrophoric yellow phosphorus: Flood fire area with solution of NaOH.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Avoid friction or rough handling because of fire hazard. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". Avoid friction or rough handling because of fire hazard.

6.2 Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. The product sinks in water, but water streams may carry smaller particles away.

6.3 Methods and materials for containment and cleaning up

Small spill : Dispose of via a licensed waste disposal contractor. Eliminate all ignition sources.

Large spill : Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal. Eliminate all ignition sources.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see section 8). Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Prevent dust accumulation. Use only non-sparking tools. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Condition for safe storage, including any incompatibilities

: Store in accordance with local regulations. Store in a cool, well-ventilated area away from incompatible materials and ignition sources. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Possible risk of explosion by shock, friction or sources of ignition. No sparking tools should be used. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not store in unlabeled containers. Separate from oxidizing materials.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Recommended monitoring procedures

: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
Red Phosphorus	DNEL	Long term Inhalation	4 mg/m ³	Workers	Systemic
	DNEL	Long term Dermal	30 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	4 mg/m ³	General population	Systemic
	DNEL	Long term Dermal	30 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	30 mg/kg bw/day	General population	Systemic

PNECs

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
Red Phosphorus	PNEC	Fresh water	10,5 µg/l	Assessment Factors
	PNEC	Marine	1,05 µg/l	Assessment Factors
	PNEC	Intermittent release.	105 µg/l	Assessment Factors
	PNEC	Sewage Treatment Plant	10 µg/l	Assessment Factors
	PNEC	Fresh water sediment	100 mg/kg dwt	Assessment Factors
	PNEC	Marine water sediment	10 mg/kg dwt	Assessment Factors
	PNEC	Soil	12,5 mg/kg dwt	Assessment Factors

8.2 Exposure controls

Appropriate engineering controls	: Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
<u>Individual protection measures</u>	
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
<u>Skin protection</u>	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Body protection	: Wear fire/flammable resistant/retardant clothing.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Filtering device (full mask or mouthpiece) with filter: (as filter combination B-P2)
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: solid [Powder.]
Color	: Brownish-red.
Odor	: Slight
Odor threshold	: Not available.
pH	: Not available.
Melting point/freezing point	: 600 °C Decomposition temperature: 300 °C
Initial boiling point and boiling range	: 280 °C
Flash point	: 300 °C
Fire point	: Not available.
Evaporation rate	: Not applicable.
Flammability (solid, gas)	: Highly flammable
Burning time	: Not applicable.
Upper/lower flammability or explosive limits	: Lower: Not available. Upper: Not applicable.
Vapor pressure	: Not available.
Vapor density	: 4,77 [Air = 1] Not applicable.
Relative density	: 2,0 - 2,2 @ 20 °C
Solubility(ies)	: 0,3 mg/l @ 20 °C Insoluble in the following materials: organic solvents water
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: 215 °C
Decomposition temperature	: 300 °C
Viscosity	: Dynamic: Not applicable. Kinematic: Not applicable.
Explosive properties	: Material in powder form, capable of creating a dust explosion.
Oxidizing properties	: Not applicable.

9.2 Other information

No additional information

SECTION 10: Stability and reactivity

10.1 Reactivity	: No specific test data related to reactivity available for this product or its ingredients
10.2 Chemical stability	: Stable under recommended storage and handling conditions (see section 7).
10.3 Possibility of hazardous reactions	: In contact with water product may release: Toxic gases-Flammable gases
10.4 Conditions to avoid	: Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Avoid shock and friction. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation. Keep away from flames and hot surfaces.

10.5 Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials

10.6 Hazardous decomposition products : Decomposition products may include the following materials: P2O5, (Corrosive gas), Phosphine

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity	: LD50 Oral - rat - female - > 15.000 mg/kg (OECD Test Guideline 401)
Skin corrosion/irritation	: Skin - rabbit Result: No skin irritation - 24 h (OECD Test Guideline 404)
Serious eye damage/eye irritation	: Eyes - rabbit Result: No eye irritation - 24 h (OECD Test Guideline 405)
Respiratory or skin sensitisation	: Buehler Test - guinea pig Result: Does not cause skin sensitisation. (OECD Test Guideline 406)
Germ cell mutagenicity	: Hamster fibroblast Result: negative
Carcinogenicity IARC:	: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive toxicity	: no data available
Specific target organ toxicity - single exposure	: no data available
Specific target organ toxicity - repeated exposure	: no data available
Aspiration hazard	: no data available
Additional Information	: RTECS: TH3495000 Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue., Vomiting, Diarrhoea, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	: static test LC50 - Danio rerio (zebra fish) - 33,2 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	: static test EC50 - Daphnia magna (Water flea) - 10,5 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	: static test EC50 - Desmodesmus subspicatus (green algae) - 18,3 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	: Respiration inhibition EC50 - Sludge Treatment - > 1.000 mg/l - 3 h (OECD Test Guideline 209)

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 : Harmful to aquatic life with long lasting effects

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal	: The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Hazardous waste	: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements. The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Packaging**Methods of disposal**

: The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions

: This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	1338	1338	1338	1338
14.2 UN proper shipping name	PHOSPHORUS, AMORPHOUS (red phosphorus)	PHOSPHORUS, AMORPHOUS (red phosphorus)	PHOSPHORUS, AMORPHOUS (red phosphorus)	PHOSPHORUS, AMORPHOUS (red phosphorus)
14.3 Transport hazard class(es)	 4.1	 4.1	 4.1	 4.1
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	Hazard identification number: 40 Tunnel code: E Remarks: According to the data available, we recommend to use packages meeting group II criteria.	-	Emergency schedules (EmS): F-A / S-G	-

14.6 Special precautions for user

: Not applicable.

SECTION 15: Regulatory information**15.1 This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.**

No data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Abbreviations and acronyms

: ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements

H412	: Harmful to aquatic life with long lasting effects.
H228	: Flammable solid.

Full text of classifications [DSD/DPD]

F - Highly flammable

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