

00013 SG

Section 1. Identification

Product identifier : 160-51(ORPstandard solution powder)
Product code : 3200043618
Other means of identification : Not available.
Product type : Powder.

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

Identified uses

Powder for ORP standard solution

Uses advised against

Not applicable.

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Section 2. Hazards identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2B
Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 25%
Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 50%

GHS label elements, including precautionary statements

Hazard pictograms

:



Signal word

: Warning

Hazard statements

: Harmful if swallowed.
Causes eye irritation.

Precautionary statements

Prevention

: Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Response

: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage

: Keep cool and protect from sunlight. Store locked up.

Disposal

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

Section 2. Hazards identification

Other hazards which do not result in classification : Warning: May form explosible dust-air mixture if dispersed.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification : Not available.

Ingredient name	%	Identifiers
quinhydrone	50	CAS: 106-34-3 EC: 203-387-6
potassium dihydrogenorthophosphate	25	CAS: 7778-77-0 EC: 231-913-4
disodium hydrogenorthophosphate	25	CAS: 7558-79-4 EC: 231-448-7

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

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

Chemical formula : Not applicable.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
- 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.
- Skin contact** : Flush contaminated skin with plenty of water. 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 dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. 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 necessary, call a poison center or physician. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : No known significant effects or critical hazards.

Section 4. First aid measures

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

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

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical powder.

Unsuitable extinguishing media : Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture.

Specific hazards arising from the chemical : May form explosible dust-air mixture if dispersed.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
phosphorus oxides
metal oxide/oxides

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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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.

Section 6. Accidental release measures

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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized 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".

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).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. 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. Empty containers retain product residue and can be hazardous. Do not reuse container.

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.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. 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. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Biological exposure indices

No exposure indices known.

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- 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.
- Individual protection measures**
- 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. Appropriate techniques should be used to remove potentially contaminated clothing. 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. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. If operating conditions cause high dust concentrations to be produced, use dust goggles.
- Skin protection**
- 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- 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** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Solid. [Crystalline powder.]
- Color** : Green.
- Odor** : Uncharacteristic
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point/freezing point** : 174-300°C

Section 9. Physical and chemical properties and safety characteristics

Boiling point or initial boiling point and boiling range : Not available.

Flash point : Not available.

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not available.

Vapor pressure : Not available.

Relative vapor density : Not available.

Relative density : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use.

Conditions to avoid : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). 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.

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

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SADT : Not available.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name

quinhydrone

Result

Rat - Oral - LD50

225 mg/kg

disodium hydrogenorthophosphate

Rat - Oral - LD50

17000 mg/kg

Section 11. Toxicological information

Conclusion/Summary [Product] : Not available.

Skin corrosion/irritation

Product/ingredient name

disodium hydrogenorthophosphate

Result

Rabbit - Skin - Mild irritant

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Product/ingredient name

disodium hydrogenorthophosphate

Result

Rabbit - Eyes - Mild irritant

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 500 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Not available.

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product] : Not available.

Reproductive toxicity

Not available.

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Not available.

Section 11. Toxicological information

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

Not available.

Potential acute health effects

- | | |
|---------------------|--|
| Eye contact | : Causes eye irritation. |
| Inhalation | : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. |
| Skin contact | : No known significant effects or critical hazards. |
| Ingestion | : Harmful if swallowed. |

Symptoms related to the physical, chemical and toxicological characteristics

- | | |
|---------------------|---|
| Eye contact | : Adverse symptoms may include the following:
irritation
watering
redness |
| Inhalation | : Adverse symptoms may include the following:
respiratory tract irritation
coughing |
| Skin contact | : No specific data. |
| Ingestion | : No specific data. |

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- | | |
|------------------------------------|------------------|
| Potential immediate effects | : Not available. |
| Potential delayed effects | : Not available. |

Long term exposure

- | | |
|------------------------------------|------------------|
| Potential immediate effects | : Not available. |
| Potential delayed effects | : Not available. |

Potential chronic health effects

Not available.

Conclusion/Summary [Product] : Not available.

- | | |
|------------------------------|--|
| General | : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. |
| Carcinogenicity | : No known significant effects or critical hazards. |
| Mutagenicity | : No known significant effects or critical hazards. |
| Reproductive toxicity | : No known significant effects or critical hazards. |

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
160-51(ORPstandard solution powder)	337.5	N/A	N/A	N/A	N/A
quinhydrone	225	N/A	N/A	N/A	N/A
disodium hydrogenorthophosphate	17000	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name

potassium dihydrogenorthophosphate

Result

Chronic - NOEC - Marine water

Algae - Neptune's Necklace - *Hormosira banksii* - Gamete
48 mg/l [72 hours]

Effect: Development

disodium hydrogenorthophosphate

Acute - LC50 - Fresh water

Daphnia - Water flea - *Daphnia magna*
3580 mg/l [48 hours]

Effect: Mortality

Conclusion/Summary [Product] : Not available.

Persistence and degradability

Not available.

Conclusion/Summary [Product] : Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
disodium hydrogenorthophosphate	-5.8	-	Low

Mobility in soil

Soil/Water partition coefficient : Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations






Disposal methods

: The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling

Section 13. Disposal considerations

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

	UN	IMDG	IATA	ADR/RID	ADN
UN number	UN2811	UN2811	UN2811	UN2811	UN2811
UN proper shipping name	TOXIC SOLID, ORGANIC, N.O.S. (quinhydrone)	TOXIC SOLID, ORGANIC, N.O.S. (quinhydrone)	TOXIC SOLID, ORGANIC, N.O.S. (quinhydrone)	TOXIC SOLID, ORGANIC, N.O.S. (quinhydrone)	TOXIC SOLID, ORGANIC, N.O.S. (quinhydrone)
Transport hazard class(es)	6.1 	6.1 	6.1 	6.1 	6.1 
Packing group	III	III	III	III	III
Environmental hazards	No.	No.	No.	No.	No.

Additional information

IATA

: The environmentally hazardous substance mark may appear if required by other transportation regulations.

ADR/RID

: **Tunnel code** (E)

Special precautions for user : **Transport within user's premises**: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Singapore - hazardous chemicals under government control

None.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

List name	Ingredient name	Status
Not listed.		

Montreal Protocol

Ingredient name	Status
Not listed.	

Stockholm Convention on Persistent Organic Pollutants

List name	Ingredient name	Status
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

Section 15. Regulatory information

List name	Ingredient name	Status
Not listed.		

UNECE Aarhus Protocol on POPs and Heavy Metals

List name	Ingredient name	Status
Not listed.		

Section 16. Other information

History

Date of issue/Date of revision : 9/10/2025

Date of previous issue : No previous validation

Key to abbreviations :

- ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
- ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- IMO = International Maritime Organization
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
- SGG = Segregation Group
- UN = United Nations

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2B	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.