

MATERIAL SAFETY DATA SHEET (MSDS) *

Poison Centre (R.S.A.): 0860 155 5777

1. Product and Company Identification.

- 1.1. Trade / Commercial Name: **AQUA KING METAL MAGIC**
- 1.2. Synonymous Name: 1-Hydroxyethylidene-1, 1-Diphosphonic Acid
- 1.3. Recommended Usage(s): Widely used in industry as a sequestering agent and calcium carbonate scale inhibitor for application in cooling water treatment, industrial and institutional cleaners, swimming pool stain prevention, personal care products, and metal ion control.
- 1.4. Limited Usage: N/A.

2. Raw Materials Supplier / Manufacturer / Importer Details.

- 2.1. Company: RR Chemicals cc – 1989/010787/23
- 2.2. Company Contact: +27 11 452 3992

3. Composition / Information on Ingredients.

COMPONEMNTS	CAS NO.	CONCENTRATION RANGE
1-Hydroxyethylidene-1, 1-Diphosphonic Acid	2809-21-4	58.0 – 62.0%
Phosphorous Acid	135-36-2	≤ 4.0%
Phosphoric Acid	7664-38-2	≤ 1.0%
Water	7732-18-5	Remainder
Total		100%

4. Hazards Identification.

Emergency Overview –	Form: Liquid. Colour: Clear to Yellow. Odor: Characteristic.	
Warning Statements –	DANGER ! Cause Eye Burns. Corrosive to Mild Steel.	
Potential Health Effects –	Likely routes of exposure:	Eye and skin contact.
	Eye Contact:	Cause eye burns. Injury may be permanent.
	Skin Contact:	No more than slightly irritating to skin. No more than slightly toxic if absorbed.
	Inhalation:	No information available.
	Ingestion:	No more than slightly toxic if swallowed. Significant adverse health effects are not expected to develop if only small amounts (less than a mouthful) are swallowed.

5. First Aid Measures.

Eye Contact:	Flush immediately with plenty of clean water. Continue for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. Remove material from skin and clothing.
Skin Contact:	Immediate first aid is not likely to be required. This material can be removed with water. Wash immediately with plenty of clean water.
Inhalation:	Immediate first aid is not likely to be required. If symptoms occur, remove to fresh air. Remove material from eyes, skin, and clothing.
Ingestion:	Immediate first aid is not likely to be required. A physician or Poison Control Centre can be contacted for advice. Wash heavily contaminated clothing before reuse.

6. *Fire Fighting Measures.*

Flash Point:	Non-flammable aqueous solution.
Extinguishing Media:	Extinguish with water-spray, alcohol resistant foam, CO ₂ , dry chemical. NEVER use water jet.
Exposure Hazards:	Decomposes in a fire, giving off irritant fumes and vapours – CO, CO ₂ , Pox.
Protective Equipment:	Firefighters, and other exposed, wear self-contained breathing apparatus. Wear suitable protective clothing, gloves and eye / face protection.

7. *Accidental Release Measures.*

Personal Precautions:	Use personal protection recommended in Section 9.
Environmental Precautions:	Keep unauthorized persons, children, and animals away from the affected area. Warn everybody in sewers, basements, and work-pits of danger of corrosive hazard. Large Quantities – (1) Prevent liquid entering basements and work-pits. (2) Keep out of drains and water sources. (3) Contain liquid spillage with sandbags or other means to prevent entry into drains.
Methods for Cleaning Up:	Large Spillage – (1) Absorb in earth or sand. (2) Sweep up into containers for disposal. (3) Do not use metal containers for spilled material. (4) Flush spill area with water. (5) Refer to Section 14 for disposal of spilled material. Small Spillage – (1) Treat with hydrated lime or soda ash. (2) Wash away small spills with plenty of water.

8. *Handling and Storage.*

- 8.1. **Handling:** Do not get in eyes, on skin, or, on clothing. Avoid breathing vapour or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Emptied containers retain vapour and product residue.

Observe all recommended safety precautions until container is cleaned, reconditioned, or destroyed. The reuse of this material’s container for non-industrial purposes is prohibited, and any reuse must be in consideration of data provided in this material safety data sheet.

8.2. **Storage:**

Temperature:	> 0°C
Materials to use for Equipment:	Glass Lining. PVC. Polypropylene. Glass Reinforced Plastic. Polyethylene.
Unsuitable Materials for Construction:	Mild Steel. Carbon Steel. Aluminium. Other Metals.
General:	Freeze Sensitive. Keep in a cool, dry, well-ventilated place. Stable under normal conditions of handling and storage.

9. Exposure Controls / Personal Protection (PPE).

- 9.1. **Eye Protection:** Wear chemical goggles. Have eye wash facilities immediately available at any location where eye contact can occur.
- 9.2. **Hand Protection:** Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practices. Wearing protective gloves is recommended. Consult the glove / clothing manufacturer to determine the appropriate type of glove / clothing for a given application.
- 9.3. **Body Protection:** Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practices. Wash thoroughly after handling.
- 9.4. **Respiratory Protection:** Avoid breathing vapour or mist. Use approved respiratory protection equipment when airborne exposure is excessive. If used, full facepiece replaces the need for a face shield, and / or chemical goggles. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer.
- 9.5. **Ventilation:** Provide natural or mechanical ventilation to minimize exposure. If practical, use local exhaust ventilation at sources of air contamination, such as processing equipment.
- 9.6. **XF-334:** No specific occupational exposure limit has been established.

10. Physical and Chemical Properties.

- 10.1. **Appearance:** Clear / Pale Yellow aqueous liquid.
- 10.2. **Odour:** Characteristic odour.
- 10.3. **pH:** (1% Solution) - ≤2.0.
- 10.4. **Freezing Point:** -25°C.
- 10.5. **Specific Gravity:** @ 25°C, g/m³ – 1.42 to 1.47.
- 10.6. **Solubility:** Completely miscible with water.

11. Stability and Reactivity.

- 11.1. **Conditions to Avoid:** Do not expose to extreme temperatures.
- 11.2. **Materials to Avoid:** Attacks many metals. Corrosive to aluminium and mild steel. Contact with strong oxidising agents. Contact with strong bases. Hazardous polymerization does not occur.
- 11.3. **Hazardous Decomposition Products:** CO, CO₂, P_xO_y, Phosphines.

12. Toxicological Information / Potential Acute Health Effects.

- 12.1. **Ingestion:** Harmful if swallowed.

12.2. Acute Animal Toxicity:

Oral LD50 (Rat):	2400mg/Kg, slightly toxic following oral administration.
Dermal LD50 (Rabbit):	7940mg/Kg, particularly non-toxic after skin application in animal studies.
Eye Irritation:	Rabbit, corrosive.
Skin Irritation:	Rabbit, particularly non irritating to skin (rabbit) 24 h.
Repeat Dose Toxicity:	Rat & dog, diet, sub-chronic. Minor effects (less than lesions) were present in some animals at the end of the observation period.
Repeat Dose Toxicity:	Rat & dog, diet, chronic. Minor effects (less than lesions) were present in some animals at the end of the observation period.
Target Organs Affected:	Bone.
Developmental Toxicity:	Rat & rabbit, gavage. No birth defects were noted in rats, given the active ingredient orally during pregnancy.
Reproductive Toxicity:	Rat, diet, 2 generation. This material had no effect on reproduction or fertility.
Mutagenicity:	No genetic effects were observed in standard tests using bacterial and animal cells.

13. Ecological Information.

13.1. Environmental Toxicity:

Invertebrates:	48h EC50 Water flea (<i>Daphnia magna</i>): 527mg/L. 96h LC50 Rainbow trout (<i>Oncorhynchus mykiss</i>): 368mg/L. 96h LC50 Bluegill sunfish (<i>Lepomis macrochirus</i>): 868mg/L.
Algae:	96h EC50 Algae (<i>Selenastrum capricornutum</i>): 3mg/L. Algae growth inhibition is due to the ability of XF-334 to complex materials and not to toxicity per se.

13.2. Environmental Fate:

- **Biodegradation –**
 - Zahn-Wellens Dissolved Organic Carbon removed 33% / 28d.
 - Modified OECD Screening theoretical CO₂ evolution 2% / 70d.
 - Modified SCAS Dissolved Organic Carbon removed 90%.
 - Closed Bottle BOD₃₀/COD 5%.
 - Degrades after acclimatization.
- **Bioconcentration Factor (BCF) –**
 - Not expected to bioaccumulate.

14. Disposal Considerations.

14.1. **U.S. EPA RCRA Status:** This material, when discarded is a hazardous waste as that term is defined by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261. See disposal considerations below for U.S. EPA disposal requirements. Consult regulatory officials for performance standards.

14.2. **Disposal Considerations:** Deactivation. Consult 40 CFR 268.48 for concentration-based standards.

- 14.3. **Miscellaneous Advice:** Local, State, Provincial and National disposal regulations may be more, or less stringent. Consult your attorney or appropriate regulatory officials for information on such disposal. This product should not be dumped, spilled, rinsed, or washed into sewers or public waterways.

15. Transport Information.

- 15.1. The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

15.2. **U.S. DOT –**

- **Proper shipping name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. Phosphonic Acid.
- **Hazard Class:** 8.
- **Hazard Identification Number:** UN3265.
- **Packing Group:** III.
- **Transport Label:** Corrosive.

16. Regulatory Information.

- 16.1. **All components are on the following inventories:** U.S. TSCA, Canadian DSL, EU EINECS, Japanese ENCS, Australia AICS, Korean, Philippine PICCS.

16.2. **Canadian WHMIS Classification:**

- D2(B) – Materials Causing Other Toxic Effects.
- E – Corrosive Material.

17. Other Information.

- 17.1. **Product Use:** Cleaning / washing agents and disinfectants, Complexing agents, Corrosion inhibitors, Cosmetics, Pharmaceutical, other.

17.2. **Suggested NFPA Rating:**

- **Health – 3.**
- **Fire – 1.**
- **Reactivity – 1.**
- **Additional Information –** None specified.

17.3. **Suggested HMIS Rating:**

- **Health – 3.**
- **Fire – 1.**
- **Reactivity – 1.**
- **Additional Information –** H.

- 17.4. **Prepared by:** Wujin Fine Chemical Factory.

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