Date : 05/15/2012
Version : 3

Material Safety Data Sheet

Electrolyte Formula MSC4

1. Product and company identification

Product name : Electrolyte Formula MSC4

Material uses : Electrolyte solution.

Supplier/Manufacturer : Marking Methods, Inc.
301 S. Raymond Avenue
Alhambra, CA 91803-1531
Tel: (626)282-8823

MSDS authored by : KMK Regulatory Services Inc.

In case of emergency : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887

2. Hazards identification

Emergency overview

Physical state : Liquid.

Color : Clear.

Odor : Slight

Signal word : WARNING!

Hazard statements : CAUSES EYE AND SKIN IRRITATION.

Precautionary measures : Do not get in eyes. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Skin : Irritating to skin.

Eyes : Severely irritating to eyes. Risk of serious damage to eyes.

Potential chronic health effects

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : No specific data.

Ingestion : No specific data.

Skin : Adverse symptoms may include the following:
irritation
redness

2. Hazards identification

Eyes : Adverse symptoms may include the following:
pain or irritation
watering
redness

Medical conditions aggravated by overexposure : None known.

See toxicological information (Section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
Magnesium chloride	7786-30-3	10 - 30
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, trisodium salt	68-04-2	10 - 30
Citric acid	77-92-9	5 - 10
Sodium etasulfate	126-92-1	1 - 5

Canada

Name	CAS number	%
Citric acid	77-92-9	5 - 10

Mexico

					Classification			
Name	CAS number	UN number	%	IDLH	H	F	R	Special
Magnesium chloride	7786-30-3	Not regulated.	10 - 30	-	1	0	0	-
Citric acid	77-92-9	Not regulated.	5 - 10	-	2	0	0	-

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.

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.

Inhalation : Move exposed person to fresh air. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

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.

Notes to physician : No specific treatment. Treat symptomatically.

5. Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific fire or explosion hazard.

5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
halogenated compounds

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.

6. Accidental release measures

Personal precautions : Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

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 for cleaning up

Small spill : Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose via a licensed waste disposal contractor.

Large spill : Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). 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. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous.

Storage : Store in accordance with local regulations. 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. 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.

8. Exposure controls/personal protection

Canada

Occupational exposure limits

No exposure limit value known.

Mexico

Occupational exposure limits

No exposure limit value known.

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : 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.

8. Exposure controls/personal protection

Engineering measures : No special ventilation requirements. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Not required under normal conditions of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Ensure a MSHA/NIOSH-approved respirator or equivalent is used.

Hands : Use gloves appropriate for work or task being performed. Recommended: Natural rubber (latex).

Eyes : Safety eyewear should be used when there is a likelihood of exposure. Recommended: Safety glasses with side shields.

Skin : 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. Recommended: Lab Coat.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

9. Physical and chemical properties

Physical state : Liquid.

Flash point : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Auto-ignition temperature : Not available.

Flammable limits : Not available.

Color : Clear.

Odor : Slight

Taste : Not available.

Molecular weight : Not applicable.

Molecular formula : Not applicable.

pH : 1.5 to 3

Boiling/condensation point : 100°C (212°F)

Melting/freezing point : 0°C (32°F)

Critical temperature : Not available.

Relative density : 1.12

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Volatility : Not available.

Odor threshold : Not available.

Evaporation rate : Not available.

SADT : Not available.

Viscosity : Not available.

Ionicity (in water) : Not available.

Dispersibility properties : Not available.

Solubility : Miscible in water.

9. Physical and chemical properties

Physical/chemical properties comments : Not available.

10. Stability and reactivity

Chemical stability : The product is stable.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, reducing materials, metals, acids and alkalis.

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

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Citric acid	LD50 Oral	Rat	3 g/kg	-

Chronic toxicity

There is no data available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Citric acid	Eyes - Severe irritant Skin - Moderate irritant Skin - Mild irritant	Rabbit Rabbit Rabbit	- - -	24 hours 750 µg 0.5 mL 24 hours 500 mg	- - -

Sensitizer

Skin : There is no data available.

Respiratory : There is no data available.

Carcinogenicity

There is no data available.

Mutagenicity

There is no data available.

Teratogenicity

There is no data available.

Reproductive toxicity

There is no data available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Citric acid	Acute LC50 160000 ug/L Marine water	Crustaceans - Carcinus maenas - Adult	48 hours

Persistence/degradability

There is no data available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. 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 empty 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.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

International transport regulations

DOT / TDG / Mexico / IMDG / IATA : Not regulated by any transport mode.

15. Regulatory information

United States

HCS Classification : Irritating material

U.S. Federal regulations : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Citric acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Citric acid: Immediate (acute) health hazard

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

15. Regulatory information

No products were found.

Canada

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Mexico

Classification :

16. Other information

Label requirements : CAUSES EYE AND SKIN IRRITATION.

Hazardous Material Information System (U.S.A.) : **Health :** 1 **Flammability :** 0 **Physical hazards :** 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) : **Health :** 1 **Flammability :** 0 **Instability :** 0

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Canada

WHMIS (Canada) :

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16. Other information

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.