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Version 2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name FeRROMECC® Liquid Iron PLUS MICROS 10-2-4

Other means of identification

Product Code PBI FP 9661016

Product Size 55 U. S. Gal.

Recommended use of the chemical and restrictions on use

Recommended Use Fertilizers.

Uses advised against No information available.

Details of the supplier of the safety data sheet

Supplier

PBI Gordon Corporation
 1217 West 12th Street
 Kansas City, MO 64101

Manufacturer

PBI Gordon Corporation
 1217 West 12th Street
 Kansas City, MO 64101

Company Name

PBI Gordon Corporation
 1217 West 12th Street
 Kansas City, MO 64101

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation

Category 2A

Label elements

Emergency Overview

Warning

Hazard statements

Causes serious eye irritation.



Appearance Liquid

Physical state Liquid

Odor Slight

Precautionary Statements - Prevention

- Wash face, hands and any exposed skin thoroughly after handling
- Wear eye/face protection

Precautionary Statements - 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/attention

Hazards not otherwise classified (HNOC)
Other Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS. Number | Weight % |
|---------------------------|-------------|----------|
| Urea | 57-13-6 | 20-40* |
| Manganese(II) sulfate | 7785-87-7 | 2.5-10* |
| Zinc sulfate heptahydrate | 7446-20-0 | 2.2 |

* The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures

- General advice** If symptoms persist, call a physician.
- Eye contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. If symptoms persist, call a physician.
- Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. Immediate medical attention is not required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.
- Inhalation** Remove to fresh air. If symptoms persist, call a physician. Immediate medical attention is not required. Move to fresh air in case of accidental inhalation of vapors.
- Ingestion** Immediate medical attention is not required. Rinse mouth. Drink plenty of water. Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
- Self-protection of the first aider** Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

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

Specific hazards arising from the chemical

No information available.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full

protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required. Avoid contact with eyes and skin. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Environmental precautions Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional ecological information. Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains. Dam up. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Ensure adequate ventilation, especially in confined areas. Use with local exhaust ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep out of the reach of children. Keep in properly labeled containers. Keep container tightly closed in a dry and well-ventilated place.

Incompatible materials Strong oxidizing agents. Strong acids. Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|------------------------------------|--|---|---|
| Manganese(II) sulfate 7785-87-7 | TWA: 0.02 mg/m ³ Mn respirable fraction TWA: 0.1 mg/m ³ Mn inhalable fraction | (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn | IDLH: 500 mg/m ³ Mn TWA: 1 mg/m ³ Mn STEL: 3 mg/m ³ Mn |

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls Local and General Ventilation.

Individual protection measures, such as personal protective equipment

| | |
|---------------------------------------|---|
| Eye/face protection | Tight sealing safety goggles. Face protection shield. |
| Skin and body protection | Rubber gloves. |
| Respiratory protection | If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. |
| General Hygiene Considerations | When using do not eat, drink or smoke. Wash contaminated clothing before reuse. Regular cleaning of equipment, work area and clothing is recommended. |

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | | | |
|-----------------------|--------|-----------------------|--------------------------|
| Physical state | Liquid | Odor | Slight |
| Appearance | Liquid | Odor threshold | No information available |
| Color | Brown | | |

| <u>Property</u> | <u>Values</u> | <u>Remarks • Method</u> |
|--------------------------------------|--------------------------|-------------------------|
| pH | 5.6-5.9 | |
| Melting point/freezing point | 0 °C / 32 °F | |
| Boiling point / boiling range | No information available | |
| Flash point | No information available | |
| Evaporation rate | No information available | |
| Flammability (solid, gas) | No information available | |
| Flammability Limit in Air | | |
| Upper flammability limit: | No information available | |
| Lower flammability limit: | No information available | |
| Vapor pressure | No information available | |
| Vapor density | No information available | |
| Specific Gravity | 1.33 | |
| Water solubility | Completely soluble | |
| Solubility in other solvents | No information available | |
| Partition coefficient | No information available | |
| Autoignition temperature | No information available | |
| Decomposition temperature | No information available | |
| Oxidizing properties | No information available | |

Other Information

| | |
|----------------|--------------------|
| Density | 11.1 pounds/gallon |
|----------------|--------------------|

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous polymerization

Will not occur.

Conditions to avoid

Keep out of reach of children.

Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products

Carbon oxides. Nitrogen oxides (NOx). Phosphorus oxides. Oxides of sulfur.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation Inhalation of vapors in high concentration may cause irritation of respiratory system.

Eye contact May cause irritation.

Skin Contact May cause irritation.

Ingestion May be harmful if swallowed.

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|--|----------------------|-------------|-----------------|
| Urea 57-13-6 | = 8471 mg/kg (Rat) | - | - |
| Manganese(II) sulfate 7785-87-7 | = 782 mg/kg (Rat) | - | - |
| Zinc sulfate heptahydrate 7446-20-0 | = 1260 mg/kg (Rat) | - | - |

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic toxicity Avoid repeated exposure. May cause adverse effects on the bone marrow and blood-forming system.

Target Organ Effects blood, Central nervous system, kidney, Respiratory system.

Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

Unknown Toxicity 30 % of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 9143 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life with long lasting effects

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

| Chemical Name | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea |
|---------------|----------------------|------------------------------|----------------------------|--------------------------|
| Urea | | 16200 - 18300: 96 h Poecilia | | 3910: 48 h Daphnia magna |

| | | | | |
|---------|--|----------------------|--|---|
| 57-13-6 | | reticulata mg/L LC50 | | mg/L EC50 Static 10000: 24 h Daphnia magna Straus mg/L EC50 |
|---------|--|----------------------|--|---|

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes

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

Contaminated packaging

Do not reuse container, unless specified by the manufacturer.

14. TRANSPORT INFORMATION

DOT

Description

Not DOT Regulated

15. REGULATORY INFORMATION

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

International Inventories

TSCA Not Listed
 DSL/NDSL Listed
 EINECS/ELINCS Not Listed
 ENCS Not Listed
 IECS Listed
 KECL Not Listed
 PICCS Listed
 AICS Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 ENCS - Japan Existing and New Chemical Substances
 IECS - China Inventory of Existing Chemical Substances
 KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances

| Chemical Name | TSCA | DSL | NDSL | EINECS | ELINCS | ENCS | IECS | KECL | PICCS | AICS |
|---------------------------|------|-----|------|--------|--------|------|------|------|-------|------|
| Urea | X | X | | X | | X | X | X | X | X |
| Manganese(II) sulfate | X | X | | X | | X | X | X | X | X |
| Zinc sulfate heptahydrate | | X | | | | | X | | X | X |

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | SARA 313 - Threshold Values % |
|---------------------------------------|-------------------------------|
| Manganese(II) sulfate - 7785-87-7 | 1.0 |
| Zinc sulfate heptahydrate - 7446-20-0 | 1.0 |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute health hazard | Yes |
| Chronic Health Hazard | No |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical Name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Zinc sulfate heptahydrate 7446-20-0 | | X | | |

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|--|------------|---------------|--------------|
| Manganese(II) sulfate 7785-87-7 | X | | X |
| Zinc sulfate heptahydrate 7446-20-0 | X | | X |

International Regulations

| Chemical Name | Carcinogenicity | Exposure Limits |
|-----------------------|-----------------|-----------------------------------|
| Manganese(II) sulfate | | Mexico: TWA 0.2 mg/m ³ |

16. OTHER INFORMATION

| | | | | |
|-------------|------------------|----------------|--------------------|------------------------------------|
| NFPA | Health hazards 2 | Flammability 0 | Instability 0 | Physical and Chemical Properties - |
| HMIS | Health hazards 2 | Flammability 0 | Physical hazards 0 | Personal protection X |

Disclaimer

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End of Safety Data Sheet