

1. Identification

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|---|--|
| Product identifier | Advantage |
| Other means of identification | |
| Product code | 32081 |
| Recommended use | Agricultural/ Horticultural Use- Micronutrient Fertilizer- Refer to product label. |
| Recommended restrictions | Refer to product label. |
| Manufacturer/Importer/Supplier/Distributor information | |
| Manufacturer | |
| Manufactured for: | Innovation Hammer, L.L.C dba Brandt iHammer |
| Address | 479 Village Park Drive Powell, OH 43065 United States |
| Telephone | 614-885-4769 |
| Website | www.BrandtiHammer.co |
| Manufactured by: | Brandt Consolidated, Inc. |
| Address | 2935 South Koke Mill Road Springfield, IL 62711 United States |
| Telephone | 1-217-547-5840 |
| Website | www.brandt.co |
| Email | msds@brandt.co |
| Contact Person | EH&S/Regulatory Department |
| Emergency | CHEMTREC (24 Hours): |
| US, Canada, Puerto Rico | 1 (800) 424-3900 |
| Virgin Islands | 1 (800) 424-3900 |
| International Maritime | +1 (703) 527-3887 |

2. Hazard(s) identification

| | | |
|------------------------------|-----------------------|------------|
| Physical hazards | Not classified. | |
| Health hazards | Reproductive toxicity | Category 2 |
| Environmental hazards | Not classified. | |
| OSHA defined hazards | Not classified. | |

Label elements



| | |
|--------------------------------|--|
| Signal word | Warning |
| Hazard statement | Suspected of damaging fertility or the unborn child. |
| Precautionary statement | |
| Prevention | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | If exposed or concerned: Get medical advice/attention. |
| Storage | Store locked up. |
| Disposal | Dispose of contents/container in accordance with local/regional/national/international regulations. |

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

| Chemical name | Common name and synonyms | CAS number | % |
|--|--------------------------|------------|------------|
| Urea | | 57-13-6 | 10 - < 20* |
| EDTA manganese dipotassium | | 68015-77-0 | 5 - < 10* |
| Potassium Nitrate | | 7757-79-1 | 1 - < 3* |
| Disodium Octaborate Tetrahydrate | | 12008-41-2 | < 0.3* |
| Sodium hydroxide, (Na(OH)) | | 1310-73-2 | < 0.1 |
| Sodium Molybdate, Dihydrate | | 10102-40-6 | < 0.1* |
| Other components below reportable levels | | | 80 - < 90 |

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

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| Inhalation | Move to fresh air. Call a physician if symptoms develop or persist. |
| Skin contact | Wash off with soap and water. Get medical attention if irritation develops and persists. |
| Eye contact | Rinse with water. Get medical attention if irritation develops and persists. |
| Ingestion | Rinse mouth. Get medical attention if symptoms occur. |
| Most important symptoms/effects, acute and delayed | Direct contact with eyes may cause temporary irritation. |
| Indication of immediate medical attention and special treatment needed | Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed. |
| General information | IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. |

5. Fire-fighting measures

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| Suitable extinguishing media | Not applicable, non-combustible. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). |
| Unsuitable extinguishing media | Do not use water jet as an extinguisher, as this will spread the fire. Not applicable, non-combustible. |
| Specific hazards arising from the chemical | During fire, gases hazardous to health may be formed. |
| Special protective equipment and precautions for firefighters | None (non-combustible). |
| Fire-fighting equipment/instructions | Move containers from fire area if you can do so without risk. |
| Specific methods | Use standard firefighting procedures and consider the hazards of other involved materials. |
| General fire hazards | No unusual fire or explosion hazards noted. |

6. Accidental release measures

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|--|---|
| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. |
|--|---|

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Prevent entry into waterways, sewer, basements or confined areas. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid prolonged exposure. Provide adequate ventilation. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Pregnant or breastfeeding women must not handle this product. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value |
|--|---------|---------------------|
| EDTA manganese dipotassium (CAS 68015-77-0) | Ceiling | 5 mg/m ³ |
| Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) | PEL | 2 mg/m ³ |
| Sodium Molybdate, Dihydrate (CAS 10102-40-6) | PEL | 5 mg/m ³ |

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|---|---------|-----------------------|----------------------|
| Disodium Octaborate Tetrahydrate (CAS 12008-41-2) | STEL | 6 mg/m ³ | Inhalable fraction. |
| Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) | TWA | 2 mg/m ³ | Inhalable fraction. |
| | Ceiling | 2 mg/m ³ | |
| Sodium Molybdate, Dihydrate (CAS 10102-40-6) | TWA | 0.5 mg/m ³ | Respirable fraction. |

US. NIOSH: Pocket Guide to Chemical Hazards

| Components | Type | Value | Form |
|---|---------|---------------------|-------|
| EDTA manganese dipotassium (CAS 68015-77-0) | STEL | 3 mg/m ³ | Fume. |
| Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) | TWA | 1 mg/m ³ | Fume. |
| | Ceiling | 2 mg/m ³ | |

US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

| Components | Type | Value | Form |
|--------------------|------|----------------------|--------------------|
| Urea (CAS 57-13-6) | TWA | 10 mg/m ³ | Total particulate. |

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

| | |
|---------------------------------------|---|
| Skin protection | |
| Hand protection | Nitrile. Rubber (natural, latex). Neoprene. Polyvinyl chloride (PVC). Butyl rubber. Viton rubber (fluor rubber). Use protective gloves made of: |
| Other | Use of an impervious apron is recommended. |
| Respiratory protection | Chemical respirator with organic vapor cartridge and full facepiece. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |
| General hygiene considerations | When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. |

9. Physical and chemical properties

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|---|---|
| Appearance | Liquid. |
| Physical state | Liquid. |
| Form | Liquid. |
| Color | Red brown. |
| Odor | faint sweet odor |
| Odor threshold | Not available. |
| pH | 6 - 8 |
| Salt-Out / Crystallization Temp | < 32 °F (< 0 °C) estimated |
| Melting point/freezing point | 270.86 °F (132.7 °C) estimated / < 32 °F (< 0 °C) estimated |
| Initial boiling point and boiling range | > 212 °F (> 100 °C) estimated |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not available. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Explosive limit - lower (%) | Not available. |
| Explosive limit - upper (%) | Not available. |
| Vapor pressure | 0.00001 hPa estimated |
| Vapor density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | 100 % |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Similar to Water estimated |
| Other information | |
| Density | 1.31 g/cm ³ estimated |
| Percent volatile | 54.11 % estimated |
| pH in aqueous solution | 6 - 8 10% v/v estimated |
| Pounds per gallon | 9.7 lb/gal (typical) |
| Shelf life | > 2 years estimated |
| Specific gravity | 1.31 estimated 1.15 - 1.17 |
| VOC (Weight %) | 5.5 % estimated |

10. Stability and reactivity

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|---|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong oxidizing agents. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological information

Information on likely routes of exposure

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|---------------------|--|
| Ingestion | Expected to be a low ingestion hazard. |
| Inhalation | Prolonged inhalation may be harmful. |
| Skin contact | No adverse effects due to skin contact are expected. |
| Eye contact | Direct contact with eyes may cause temporary irritation. |

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

| Product | Species | Test Results |
|---|----------------|-----------------------------------|
| Advantage (CAS Mixture) | | |
| Acute | | |
| <i>Inhalation</i> | | |
| LC50 | Rat | 8142.8569 mg/l, 4 Hours estimated |
| LD50 | Rat | 800.0004 mg/l estimated |
| <i>Oral</i> | | |
| LD50 | Rabbit | 49922.2188 mg/kg estimated |
| | Rat | 30895.6758 mg/kg estimated |
| Components | Species | Test Results |
| Disodium Octaborate Tetrahydrate (CAS 12008-41-2) | | |
| Acute | | |
| <i>Dermal</i> | | |
| LD50 | Rabbit | > 2000 mg/kg |
| <i>Oral</i> | | |
| LD50 | Guinea pig | 5300 mg/kg |
| | Rat | > 2000 mg/kg 2 g/kg |
| Potassium Nitrate (CAS 7757-79-1) | | |
| Acute | | |
| <i>Oral</i> | | |
| LD50 | Rabbit | 1166 mg/kg |
| Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) | | |
| Acute | | |
| <i>Other</i> | | |
| LD50 | Mouse | 40 mg/kg |
| Urea (CAS 57-13-6) | | |
| Acute | | |
| <i>Oral</i> | | |
| LD50 | Rat | 8471 mg/kg |

| Components | Species | Test Results |
|------------|---------|--------------|
| | Sheep | 28500 mg/kg |

* Estimates for product may be based on additional component data not shown.

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|---|--|
| Skin corrosion/irritation | Prolonged skin contact may cause temporary irritation. |
| Serious eye damage/eye irritation | Direct contact with eyes may cause temporary irritation. |
| Respiratory or skin sensitization | |
| Respiratory sensitization | Not available. |
| Skin sensitization | This product is not expected to cause skin sensitization. |
| Germ cell mutagenicity | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. |
| Carcinogenicity | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) | |
| Not listed. | |
| Reproductive toxicity | Suspected of damaging fertility or the unborn child. |
| Specific target organ toxicity - single exposure | Not classified. |
| Specific target organ toxicity - repeated exposure | Not classified. |
| Aspiration hazard | Not available. |
| Chronic effects | Prolonged inhalation may be harmful. |

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

| Product | Species | Test Results | |
|--|---------|--|-------------------------------------|
| Advantage (CAS Mixture) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Daphnia | 37093.125 mg/l, 48 hours estimated |
| Fish | LC50 | Fish | 21408.1504 mg/l, 96 hours estimated |
| Components | | | |
| Potassium Nitrate (CAS 7757-79-1) | | | |
| Aquatic | | | |
| Fish | LC50 | Bluegill (<i>Lepomis macrochirus</i>) | 1200 mg/l, 96 hours |
| <i>Acute</i> | | | |
| Fish | LC50 | Fish | 1378 - 3000 mg/l |
| Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Water flea (<i>Ceriodaphnia dubia</i>) | 34.59 - 47.13 mg/l, 48 hours |
| Fish | LC50 | Western mosquitofish (<i>Gambusia affinis</i>) | 125 mg/l, 96 hours |
| Sodium Molybdate, Dihydrate (CAS 10102-40-6) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Tubificid worm (<i>Tubifex tubifex</i>) | 42.48 - 65.64 mg/l, 48 hours |
| Fish | LC50 | Striped bass (<i>Morone saxatilis</i>) | > 79.8 mg/l, 96 hours |
| Urea (CAS 57-13-6) | | | |
| Aquatic | | | |
| Crustacea | EC50 | Water flea (<i>Daphnia magna</i>) | 3910 mg/l, 48 hours |
| Fish | LC50 | Carp (<i>Leuciscus idus melanotus</i>) | > 10000 mg/l, 48 hours |
| | | Guppy (<i>Poecilia reticulata</i>) | 16200 - 18300 mg/l, 96 hours |
| | | Harlequinfish, red rasbora (<i>Rasbora heteromorpha</i>) | 12000 mg/l, 96 hours |

| Components | Species | Test Results |
|------------|---|--------------------------|
| | Mozambique tilapia (Tilapia mossambica) | 590 - 730 mg/l, 96 hours |

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

Urea -2.11

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

EDTA manganese dipotassium (CAS 68015-77-0) Listed.

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
 Delayed Hazard - Yes
 Fire Hazard - No
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

| Chemical name | CAS number | % by wt. |
|----------------------------|------------|----------|
| EDTA manganese dipotassium | 68015-77-0 | 5 - < 10 |
| Diammonium Zinc EDTA | 67859-51-2 | 4.505 |
| Potassium Nitrate | 7757-79-1 | 1 - < 3 |

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

EDTA manganese dipotassium (CAS 68015-77-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.**US state regulations****US. Massachusetts RTK - Substance List**

Potassium Nitrate (CAS 7757-79-1)

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

Disodium Octaborate Tetrahydrate (CAS 12008-41-2)

EDTA manganese dipotassium (CAS 68015-77-0)

Potassium Nitrate (CAS 7757-79-1)

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Potassium Nitrate (CAS 7757-79-1)

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. Rhode Island RTK

EDTA manganese dipotassium (CAS 68015-77-0)

Potassium Nitrate (CAS 7757-79-1)

Sodium hydroxide, (Na(OH)) (CAS 1310-73-2)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | No |
| Canada | Domestic Substances List (DSL) | No |
| Canada | Non-Domestic Substances List (NDSL) | Yes |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | No |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | No |
| Korea | Existing Chemicals List (ECL) | No |
| New Zealand | New Zealand Inventory | No |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | No |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

| | |
|---------------|------------|
| Issue date | 02-24-2015 |
| Revision date | 12-29-2015 |
| Version # | 02 |

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of Manufacturer's knowledge, information and belief at the date of its publication; however, it is provided only as a guidance for safe handling, use, processing, storage, transportation, disposal and release of the Product. No warranties of any kind, either expressed or implied, including warranties of merchantability or fitness for a particular purpose, are made with respect to the Product or the information provided herein, or that the Product or information herein may be used without infringing the intellectual property rights of others. The information provided in this Safety Data Sheet relates only to the specific Product designated and may not be valid if the Product is used in combination with other materials or in any other process, unless specified herein. The user assumes all risk and liability for loss, injury, damage or expense due to any use, handling, storage or disposal of the Product, and Manufacturer recommends that the user conducts its own tests of the Product to determine suitability of the Product for user's particular use.

Revision Information

Product and Company Identification: Product and Company Identification
Composition / Information on Ingredients: Ingredients
Handling and storage: Precautions for safe handling
Physical & Chemical Properties: Multiple Properties
Transport Information: Agency Name, Packaging Type, and Transport Mode Selection
Other information, including date of preparation or last revision: Disclaimer
Material Attributes & Uses; Experimental Data: Product Uses