SAFETY DATA SHEET

1. Identification

Product identifier: Brandt GlucoPro

Other means of identification:
- Product code: 10013
- Recommended use: Agriculture / Horticulture - Plant Growth Regulator (PGR)
- Recommended restrictions: Refer to product label. No other uses are advised.

Manufacturer/Importer/Supplier/Distributor Information

- Manufacturer: Brandt Consolidated, Inc.
  - Address: 2935 South Koke Mill Road, Springfield, IL 62711, United States
  - Corporate Office: 1-217-547-5800
  - Website: www.brandt.co
  - E-mail: msds@brandt.co
- Emergency phone number:
  - CHEMTREC (24 hours): USA, Canada, Puerto Rico 1-800-424-9300, Virgin Islands 1-800-424-9300, International Maritime +1 (703) 527-3887
- EH&S / Regulatory Department

2. Hazard(s) Identification

- Physical hazards: Not classified.
- Health hazards: Not classified.
- Environmental hazards: Not classified.
- OSHA defined hazards: Not classified.

Label elements

- Hazard symbol: None.
- Signal word: None.
- Hazard statement: The mixture does not meet the criteria for classification.

Precautionary statement

- Prevention: Observe good industrial hygiene practices.
- Response: Wash hands after handling.
- Storage: Store away from incompatible materials.
- Disposal: Dispose of waste and residues in accordance with local authority requirements.

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

Supplemental information: None.

3. Composition/Information on Ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td></td>
<td>57-13-6</td>
<td>5 - &lt; 10*</td>
</tr>
<tr>
<td>EDTA manganese dipotassium</td>
<td></td>
<td>68015-77-0</td>
<td>&lt; 1*</td>
</tr>
<tr>
<td>Ammonium Hydroxide</td>
<td></td>
<td>1336-21-6</td>
<td>&lt; 0.1*</td>
</tr>
</tbody>
</table>

Other components below reportable levels: 90 - 100

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

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
Treat symptomatically.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media
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.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

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

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. 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. 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.

Environmental precautions
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Avoid prolonged exposure. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
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

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Hydroxide (CAS 1336-21-6)</td>
<td>PEL</td>
<td>35 mg/m3</td>
</tr>
<tr>
<td>EDTA manganese dipotassium (CAS 68015-77-0)</td>
<td>Ceiling</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mg/m3</td>
</tr>
</tbody>
</table>
US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Hydroxide (CAS 1336-21-6)</td>
<td>STEL</td>
<td>35 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>25 ppm</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Hydroxide (CAS 1336-21-6)</td>
<td>STEL</td>
<td>27 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>18 mg/m³</td>
<td></td>
</tr>
<tr>
<td>EDTA manganese dipotassium (CAS 68015-77-0)</td>
<td>STEL</td>
<td>3 mg/m³</td>
<td>Fume.</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (CAS 57-13-6)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Total particulate.</td>
</tr>
</tbody>
</table>

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
Wear safety glasses with side shields (or goggles).

Skin protection
Hand protection
Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other
Wear suitable protective clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
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

Appearance
Aqueous solution.

Physical state
Liquid.

Form
Liquid.

Color
Amber to Red.

Odor
Faint sweet odor.

Odor threshold
Not available.

pH
7 - 8 (typical)

Melting point/freezing point
< 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 applicable.

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 1.079 g/cm³ (typical)

Solubility(ies)
- Solubility (water) 100 %
- Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.
Decomposition temperature Not available.

Viscosity
- 1.39 cSt (40oC)
- 2.05 cSt (20oC)

Other information
- Explosive properties Not explosive.
- Oxidizing properties Not oxidizing.
- Percent volatile 74 % estimated
- pH in aqueous solution 7.73 (1% solution in distilled water)
- Pounds per gallon 9 lb/gal (typical)
- Shelf life > 2 years
- Specific gravity 1.08 @ 20/20 C

10. Stability and reactivity
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 No dangerous reaction known under conditions of normal use.
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
- 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.
- Ingestion Expected to be a low ingestion hazard.
- Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects
Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brandt GlucoPro</td>
<td>Acute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>26050 mg/kg estimated</td>
</tr>
</tbody>
</table>
### Components

**Ammonium Hydroxide (CAS 1336-21-6)**
- **Acute**
  - Oral
    - LD50
      - Rat: 350 mg/kg

**Urea (CAS 57-13-6)**
- **Acute**
  - Oral
    - LD50
      - Rat: 8471 mg/kg
      - Sheep: 28500 mg/kg

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

**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 a respiratory sensitizer.
- **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.

**IARC Monographs. Overall Evaluation of Carcinogenicity**
- Not listed.

- Not regulated.

**US. National Toxicology Program (NTP) Report on Carcinogens**
- Not listed.

**Reproductive toxicity**
- This product is not expected to cause reproductive or developmental effects.

- **Specific target organ toxicity - single exposure**
  - Not classified.

- **Specific target organ toxicity - repeated exposure**
  - Not classified.

**Aspiration hazard**
- Not an aspiration hazard.

**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.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brandt GlucoPro</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia, 74843.2813 mg/l, 48 hours estimated</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish, 33087.8906 mg/l, 96 hours estimated</td>
</tr>
<tr>
<td><strong>Components</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium Hydroxide (CAS 1336-21-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Western mosquitofish (Gambusia affinis), 15 mg/l, 96 hours</td>
</tr>
<tr>
<td><strong>Urea (CAS 57-13-6)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna), 3910 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Carp (Leuciscus idus melanotus), &gt; 10000 mg/l, 48 hours</td>
</tr>
<tr>
<td>Guppy</td>
<td></td>
<td>Guppy (Poecilia reticulata), 16200 - 18300 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

Material name: Brandt GlucoPro
### Components Test Results

<table>
<thead>
<tr>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harlequinfish, red rasbora (Rasbora heteromorpha)</td>
<td>12000 mg/l, 96 hours</td>
</tr>
<tr>
<td>Mozambique tilapia (Tilapia mossambica)</td>
<td>590 - 730 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

* 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

- **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.

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

### 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 not known to be 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)**
    - Ammonium Hydroxide (CAS 1336-21-6) Listed.
    - EDTA manganese dipotassium (CAS 68015-77-0) Listed.

  - **SARA 304 Emergency release notification**
    - Not regulated.

    - Not regulated.

  - **Superfund Amendments and Reauthorization Act of 1986 (SARA)**
    - **Hazard categories**
      - Immediate Hazard - No
      - Delayed Hazard - No
      - 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)  
Not regulated.

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.

FIFRA Information  
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Registration Number: 48813-3

Hazard statement  
CAUTION: Causes moderate eye irritation. Harmful if swallowed. Avoid contact with eyes, skin, or clothing.

US state regulations
US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)  
Not listed.

US. Massachusetts RTK - Substance List  
Ammonium Hydroxide (CAS 1336-21-6)

US. New Jersey Worker and Community Right-to-Know Act  
Ammonium Hydroxide (CAS 1336-21-6)
EDTA manganese dipotassium (CAS 68015-77-0)

US. Pennsylvania Worker and Community Right-to-Know Law  
Ammonium Hydroxide (CAS 1336-21-6)

US. Rhode Island RTK  
Ammonium Hydroxide (CAS 1336-21-6)
EDTA manganese dipotassium (CAS 68015-77-0)

US. California Proposition 65  
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

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

*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 | 07-25-2018 |
| Revision date | 07-30-2018 |
| Version # | 03 |
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

Physical & Chemical Properties: Multiple Properties