RRAND

SAFETY DATA SHEET

1. Identification

Product identifier Brandt Smart Trio

Other means of identification

Product code 29001BRN

Recommended use Agricultural/ Horticultural Use- Micronutrient Fertilizer- Refer to product label.

Recommended restrictions Refer to product label. Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Brandt Consolidated, Inc. Company name **Address** 2935 South Koke Mill Road

Springfield, IL 62711

United States

1-217-547-5800 **Telephone** Corporate Office

Website www.brandt.co E-mail msds@brandt.co

Contact person EH&S / Regulatory Department

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

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Skin corrosion/irritation Category 2

> Serious eye damage/eye irritation Category 1 Reproductive toxicity Category 2 Category 3

Hazardous to the aquatic environment, acute **Environmental hazards**

hazard

Hazardous to the aquatic environment, Category 3

long-term hazard

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Causes skin irritation. Causes serious eye damage. Suspected of damaging fertility or the unborn **Hazard statement**

child. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read

and understood. Wash thoroughly after handling. Avoid release to the environment. Wear

protective gloves/protective clothing/eye protection/face protection.

If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Response

Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated

clothing and wash before reuse.

Store locked up. Storage

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Material name: Brandt Smart Trio SDS US 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	%
Manganese Sulfate, monohydrate		10034-96-5	10 - < 20*
Urea		57-13-6	5 - < 10*
Zinc Sulfate		7733-02-0	5 - < 10*
Disodium Octaborate Tetrahydrate		12008-41-2	1 - < 3*
Other components below reportable I	evels		70 - < 80

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

4. First-aid measures

Move to fresh air. Call a physician if symptoms develop or persist. Inhalation

Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get Skin contact

medical advice/attention. Wash contaminated clothing before reuse.

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if Eye contact

present and easy to do. Continue rinsing. Get medical attention immediately.

Rinse mouth. Get medical attention if symptoms occur. Ingestion

Most important

symptoms/effects, acute and

delayed

Indication of immediate

medical attention and special

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

treatment needed **General information**

IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). 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

Suitable extinguishing media

Unsuitable extinguishing

media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Special protective equipment

During fire, gases hazardous to health may be formed.

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

Move containers from fire area if you can do so without risk.

Fire fighting equipment/instructions

Specific methods

No unusual fire or explosion hazards noted. General fire hazards

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. 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.

Use standard firefighting procedures and consider the hazards of other involved materials.

Material name: Brandt Smart Trio SDS US

Methods and materials for containment and cleaning up

This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Should not be released into the environment.

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 release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. 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. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. 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

Components	Туре	Value	
Manganese Sulfate, monohydrate (CAS 10034-96-5)	Ceiling	5 mg/m3	
US. ACGIH Threshold Limit Va	alues		
Components	Туре	Value	Form
Disodium Octaborate Tetrahydrate (CAS 12008-41-2)	STEL	6 mg/m3	Inhalable fraction.
,	TWA	2 mg/m3	Inhalable fraction.
Manganese Sulfate, monohydrate (CAS 10034-96-5)	TWA	0.1 mg/m3	Inhalable fraction.
,		0.02 mg/m3	Respirable fraction.
US. NIOSH: Pocket Guide to C	hemical Hazards		
Components	Туре	Value	Form
Manganese Sulfate, monohydrate (CAS 10034-96-5)	STEL	3 mg/m3	Fume.
·	TWA	1 mg/m3	Fume.
US. AIHA Workplace Environn	nental Exposure Level (WEEL) Guides		
Components	Туре	Value	Form
Urea (CAS 57-13-6)	TWA	10 mg/m3	Total particulate.
ogical limit values	No biological exposure limits noted for the i	paradiant(a)	

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. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Material name: Brandt Smart Trio SDS US Skin protection

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

supplier.

Other Wear appropriate chemical resistant clothing. 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

Observe any medical surveillance requirements. 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 Light pink.
Odor Not available.
Odor threshold Not available.

pH 1.5 - 2.5 (1% Solution)

Melting point/freezing point Not available.

Initial boiling point and boiling 1562 °F (850 °C) estimated

range

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 densityNot available.Relative density1.23 - 1.29 g/cm3

Solubility(ies)

Solubility (water) 100 %

Partition coefficient Not available.

(n-octanol/water)

Auto-ignition temperatureNot available.Decomposition temperatureNot available.ViscosityNot available.

Other information

1.23 - 1.29 g/cm3 **Density** Not explosive. **Explosive properties Oxidizing properties** Not oxidizing. Percent volatile 63.72 % estimated Pounds per gallon 10.5 (typical) Shelf life > 4 years Specific gravity 1.23 - 1.29VOC 4.35 % estimated

Material name: Brandt Smart Trio

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10. Stability and reactivity

Reactivity Reacts violently with strong alkaline substances. This product may react with reducing agents.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous Hazardous polymerization does not occur.

reactions

Conditions to avoidContact with incompatible materials. Do not mix with other chemicals.

Incompatible materials Bases. Reducing 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 Causes skin irritation.

Eye contact Causes serious eye damage.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and

physical, chemical and toxicological characteristics

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause

Test Results

redness and pain.

Species

Information on toxicological effects

Acute toxicity

Product

Product	Species	rest Results
Brandt Smart Trio		
<u>Acute</u>		
Dermal		
LD50	Rat	23529 mg/kg estimated
Oral		
LD100	Mouse	2773 mg/kg estimated
LD50	Rat	6816 mg/kg estimated
Components	Species	Test Results
Disodium Octaborate Tetra	ahydrate (CAS 12008-41-2)	
<u>Acute</u>		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Guinea pig	5300 mg/kg
	Rat	2550 mg/kg
		2 g/kg
Manganese Sulfate, monol	hydrate (CAS 10034-96-5)	
<u>Acute</u>		
Oral		
LD100	Mouse	305 mg/kg
Urea (CAS 57-13-6)		
<u>Acute</u>		
Oral		
LD50	Rat	8471 mg/kg
	Sheep	28500 mg/kg

Material name: Brandt Smart Trio SDS US

Components **Species Test Results**

Zinc Sulfate (CAS 7733-02-0)

Acute Dermal

LD50 Rat > 2000 mg/kg

Oral

LD50 Rat 623 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye

irritation

Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

No data available to indicate product or any components present at greater than 0.1% are Germ cell mutagenicity

mutagenic or genotoxic.

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity Suspected of damaging fertility or the unborn child. Not classified.

Specific target organ

toxicity - single exposure

Specific target organ

toxicity - repeated

Aspiration hazard

exposure

Not classified.

Not an aspiration hazard.

Prolonged inhalation may be harmful. **Chronic effects**

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects. Because of the low pH of this product, it would be

expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic

systems.

Product		Species	Test Results
Brandt Smart Trio			
Aquatic			
Crustacea	EC50	Daphnia	72.8682 mg/l, 48 hours estimated
Fish	LC50	Fish	130.6685 mg/l, 96 hours estimated
Components		Species	Test Results
Disodium Octaborate Tetrah	ydrate (CAS 1200	08-41-2)	
Aquatic			
Acute			
Crustacea	LC50	Daphnia magna	619 mg/l
Fish	LC50	Pimephales promelas	370 mg/l
Manganese Sulfate, monohy	drate (CAS 1003	4-96-5)	
Aquatic			
Crustacea	EC50	Water flea (Daphnia obtusa)	30.8 - 44.1 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	36.9 mg/l, 96 hours

Material name: Brandt Smart Trio

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29.7 - 52.7 mg/l, 192 hours

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

Components		Species	Test Results
Jrea (CAS 57-13-6)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	3910 mg/l, 48 hours
Fish	LC50	Carp (Leuciscus idus melanotus)	> 10000 mg/l, 48 hours
		Guppy (Poecilia reticulata)	16200 - 18300 mg/l, 96 hours
		Harlequinfish, red rasbora (Rasbora heteromorpha)	12000 mg/l, 96 hours
		Mozambique tilapia (Tilapia mossambica)	590 - 730 mg/l, 96 hours
inc Sulfate (CAS 7733	-02-0)		
Aquatic			
Algae	LC50	Green algae (Chlorella vulgaris)	5 mg/l, 24 hours
Crustacea	EC50	Amphipod (Crangonyx pseudogracilis)	15.1 - 24.5 mg/l, 96 hours
		Rotifer (Philodina acuticornis)	0.5 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	10.62 - 11.3 mg/l, 5 days
			0.168 - 0.25 mg/l, 96 hours
		Fish (Lepidocephalichthyes guntea)	76 - 118.8 mg/l, 24 hours

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

-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

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow **Disposal instructions**

this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches

with chemical or used container. Dispose of contents/container in accordance with

local/regional/national/international regulations.

Local disposal regulations

Dispose in accordance with all applicable regulations. The waste code should be assigned in discussion between the user, the producer and the waste Hazardous waste code

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).

Since emptied containers may retain product residue, follow label warnings even after container is Contaminated packaging

emptied. Empty containers should be taken to an approved waste handling site for recycling or

disposal.

14. Transport information

DOT

UN number UN3082

UN proper shipping name Environmentally hazardous substances, liquid, n.o.s. (Zinc Sulfate RQ = 11765 LBS)

Transport hazard class(es)

Environmental hazards

9 Class Subsidiary risk 9 Label(s) Ш Packing group

> Marine pollutant No

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions 8, 146, 335, IB3, T4, TP1, TP29 Packaging exceptions155Packaging non bulk203Packaging bulk241

Not DOT regulated in domestic (USA ground) transportation in package sizes less than 11,765 lbs (1,119 gallons); 5,336 kg (4,235 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

DOT Shipping Notes: 40 CFR 172.504(f)(9) For Class 9, a CLASS 9 placard is not required for domestic (USA ground) transportation, however shipments with packaging exceeding the Reportable Quantity (RQ) or bulk packaging must be marked with the appropriate identification number on a CLASS 9 placard, an orange panel, or a white square-on-point display configuration as required. Since the Class 9 placard is not required (although it may be used) the hazardous material endorsement is also not required on a Commercial Drivers License.

DOT corrosive to aluminum. Not regulated if transported by road or rail in packaging that will not react dangerously or be degraded by this material [49 CFR Sec.173.154(d)]

IATA

UN number UN3264

UN proper shipping name Corrosive liquid, acidic, inorganic, n.o.s. (Mineral Acid)

Transport hazard class(es)

Class 8
Subsidiary risk Label(s) 8
Packing group III
Environmental hazards No

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Other information:

Passenger aircraft: 5L Cargo aircraft only: 60 L

IMDG

UN number UN3264

UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Mineral Acid)

Transport hazard class(es)

Class 8
Subsidiary risk Packing group III
Environmental hazards

Marine pollutant No EmS F-A. S-B

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

DOT



IATA; IMDG



Material name: Brandt Smart Trio

Not DOT regulated in domestic (USA ground) transportation in package sizes less than 11,765 lbs (1,119 gallons); 5,336 kg (4,235 liters). The DOT transportation information above is for shipments with package sizes equal to or exceeding this value.

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)

Manganese Sulfate, monohydrate (CAS 10034-96-5) Listed. Zinc Sulfate (CAS 7733-02-0) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

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

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous No

chemical

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.	
Manganese Sulfate, monohydrate	10034-96-5	10 - < 20	_
Zinc Sulfate	7733-02-0	5 - < 10	

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Manganese Sulfate, monohydrate (CAS 10034-96-5)

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. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Zinc Sulfate (CAS 7733-02-0)

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

Disodium Octaborate Tetrahydrate (CAS 12008-41-2) Manganese Sulfate, monohydrate (CAS 10034-96-5)

Zinc Sulfate (CAS 7733-02-0)

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

Zinc Sulfate (CAS 7733-02-0)

US. Rhode Island RTK

Manganese Sulfate, monohydrate (CAS 10034-96-5)

Zinc Sulfate (CAS 7733-02-0)

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

Material name: Brandt Smart Trio

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes

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Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

Japan Inventory of Existing and New Chemical Substances (ENCS)

Korea Existing Chemicals List (ECL)

New Zealand New Zealand Inventory

Philippines Philippine Inventory of Chemicals and Chemical Substances

Yes

(PICCS)

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory

Inventory name

Yes

On inventory (yes/no)*

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

 Issue date
 02-06-2014

 Revision date
 07-24-2017

Version # 17

Country(s) or region

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 owns tests of

the Product to determine suitability of the Product for user's particular use.

Revision information Hazard(s) identification: Hazard statement

Ecological information: Ecotoxicity

Transport Information: Material Transportation Information

GHS: Classification

Material name: Brandt Smart Trio SDS US

^{*}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).