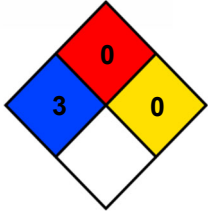




SAFETY DATA SHEET HUMA GRO® Z-Phos™



HMIS	
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PPE	D

SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

PRODUCT IDENTIFIER:	HUMA GRO® Z-Phos™	Product# 285
GENERAL USE:	Used as a part of a plant nutrition program.	
PRODUCT DESCRIPTION:	A clear to slightly hazy, blue liquid having a slight characteristic odor.	
SUPPLIER INFORMATION:	Bio Huma Netics, Inc. 1331 W Houston Avenue Gilbert, AZ 85233	EMERGENCY PHONE NUMBERS
For Additional SDS call:	PHONE: (480) 961-1220	CHEMTREC: (In the USA) 800-424-9300 (International) 703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

HAZARDS OVERVIEW:

A clear to slightly hazy, strongly acidic, blue liquid having a slight characteristic odor. The vapors, mists and liquid may cause severe irritation or burns to all tissues contacted. Phosphoric Acid may generate flammable Hydrogen gas on contact with many metals.



CLASSIFICATION: SKIN CORROSION – CATEGORY 1A

SIGNAL WORD: DANGER

HAZARD STATEMENT: H314; causes severe skin burns and eye damage

PRECAUTIONARY STATEMENT: P260; Do not breathe dusts/mist/vapors. P280; Wear protective gloves/protective clothing/eye protection/face protection P264; Wash hands thoroughly after handling



CLASSIFICATION: HAZARD CATEGORY 4

SIGNAL WORD: WARNING

HAZARD STATEMENT: H302; Harmful if Swallowed

PRECAUTIONARY STATEMENT: P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell, P330; Rinse Mouth P264; Wash hands thoroughly after handling, P270; Do not eat, drink or smoke when using this product.

SECTION 3: COMPOSITION & INFORMATION ON INGREDIENTS

COMPONENT	CAS #	OSHA HAZARD	WT %	ACGIH		OSHA	
				TLV _(TWA)	STEL	PEL _(TWA)	STEL
Zinc Sulfate	7733-02-0	Eye, Skin & Respiratory Irritant; Cardiovascular, ; Blood & Central Nervous System toxin	17 ± 3	None	None	None	None
Phosphoric Acid	7664-38-2	Corrosive; Lung Toxin	15 ± 3	1 mg/m ³	3 mg/m ³	1 mg/m ³	None
Manganese Sulfate	7785-87-7	Eye, Skin & Respiratory Irritant; Central Nervous System toxin; Moderately toxic by Ingestion	4.5 ± 1	0.2 mg/m ³	None	Ceiling 5 mg/m ³	None
Monoammonium Phosphate	7722-76-1	Eye, Skin & Respiratory Irritant; Central Nervous System toxin	4 ± 1	Proposed: 0.02 mg/m ³ None	None	None	None
Copper Sulfate *	7758-98-7	Eye, Skin & Respiratory Irritant; Blood, Liver & Kidney toxin	2 ± 1	1 mg/m ³ (Dusts & Mists as Cu)	None	None	None

* (DOT name is Cupric Sulfate)

NDA = No Data Available N/A = Not Applicable

SECTION 4: FIRST AID MEASURES

INHALATION:	If inhaled, immediately move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; use the Holger Nielsen method (back pressure-arm lift) or proper respiratory device. If breathing is difficult, give oxygen. Call a physician.
EYE CONTACT:	In case of contact, immediately flush eyes with plenty of clean running water for at least 15 minutes, lifting the upper and lower lids occasionally. Remove contact lenses, if worn. Get medical attention immediately.
SKIN CONTACT:	In case of contact, immediately flush skin with plenty of clean running water for at least 15 minutes, while removing contaminated clothing and shoes. If burn or irritation occurs, call a physician.
INGESTION:	If large quantities of this product are swallowed, call a physician immediately. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
NOTE TO PHYSICIANS:	Phosphoric Acid solutions may have a low oral toxicity, but they can be severely irritating and/or corrosive to the eyes, skin and mucous membranes. If ingested, consideration should be given to careful endoscopy as stomach or esophageal burns, perforations or strictures may occur. Careful gastric lavage with an endotracheal tube in place should be considered. Treat exposure symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

Flashpoint and Method:	This product does not flash.		
Flammable Limits (in air, % by volume)	Lower:	Not applicable	Upper: Not applicable
Autoignition Temperature:	Not Determined		
GENERAL HAZARD:	This product is not combustible, but it can generate flammable / explosive Hydrogen gas on contact with many metals. The Uniform Fire Code health hazard classification for this product is: Corrosive (Acidic) . Dilute solutions of this product may also be corrosive. It may produce hazardous mists or hazardous decomposition products.		
FIRE FIGHTING INSTRUCTIONS:	EXTINGUISHING MEDIA: Water, foam, CO ₂ or dry chemicals. Use a water spray or fog to cool the containers exposed to the heat of a fire.		
FIRE FIGHTING EQUIPMENT:	Fire fighters should wear full protective equipment, including self-contained breathing apparatus.		
HAZARDOUS COMBUSTION PRODUCTS:	When heated to dryness and decomposition, it emits toxic Ammonia gas with toxic zinc, phosphorus, manganese, sulfur and copper oxides, with trace or ultra-trace toxic oxide amounts, of potassium, nitrogen, iron, magnesium, calcium, sodium and carbon.		

SECTION 6: ACCIDENTAL RELEASE MEASURES

RELEASE TO LAND:	Wearing recommended protective equipment and clothing, dike the spill and pick up the bulk of liquid using pumps or a vacuum truck, or absorb the liquid in sand or a commercially absorbent material. Place in approved containers for recovery, disposal, or satellite accumulation. Neutralize the acidity, of the remaining liquid, using soda ash, lime, or other agent appropriate for neutralizing acidic liquids. Flush the spill area with water; collect the rinsates for disposal or sewer, as appropriate.
RELEASE TO WATER:	Wear recommended protective equipment and clothing if contact with hazardous material can occur. Stop or divert water flow. Dike contaminated water and remove for disposal and/or treatment. As appropriate, notify all downstream users of possible contamination.

SECTION 7: HANDLING AND STORAGE

STORAGE TEMPERATURE:	Ambient	STORAGE PRESSURE:	Ambient
GENERAL:	Store in a cool, dry, well-ventilated, area away from incompatible materials and products. Protect eyes, skin and clothing from contact with product. Wear recommended personal protective equipment when handling this product. Avoid breathing vapors or mists. Use with adequate ventilation. Do not take internally. Keep the container tightly closed when not in use. Wash thoroughly after handling this product.		

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL MEASURES: Use a local or general, mechanical exhaust ventilation system capable of maintaining emissions, in the work area, below the OSHA-PEL, ACGIH-TLV or levels that may cause irritation.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

RESPIRATOR: For exposure above the ACGIH-TLV or OSHA-PEL, wear a NIOSH-approved full facepiece or half mask air-purifying cartridge respirator equipped with a good mist / particulate filter cartridge or supplied air.

Note: Always consult the respirator manufacturer's data when determining the suitability of respiratory protective devices prior to use.

EYES: Wear chemical goggles (recommended by ANSI Z87.1-1979), unless a full facepiece respirator is worn. **Note:** Always consult the protective eyewear manufacturer's data when determining the suitability of protective eyewear prior to use.

GLOVES: Wear Neoprene, Nitrile, Butyl Rubber, or Natural Rubber gloves. **Note:** Always consult the glove manufacturer's permeation data when determining the suitability of gloves prior to use.

CLOTHING & EQUIPMENT: If contact is likely, wear a Neoprene, Nitrile, Butyl Rubber, or Natural Rubber apron when handling this product. An eye wash station and safety shower should be available in the work area. **Note:** Always consult the clothing/equipment manufacturer's permeation data when determining the suitability of clothing/equipment prior to use.

FOOTWEAR: Wear Neoprene, Nitrile, Butyl Rubber or Natural Rubber boots. **Note:** Always consult the footwear manufacturer's permeation data when determining the suitability of footwear prior to use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear to slightly hazy, blue	Bulk Density (pounds/ft³):	Not applicable
Physical State:	Liquid	Vapor Pressure:	No data available
Odor:	Slight, characteristic	Vapor Density (air=1):	No data available
Odor Threshold:	No data available	Evaporation Rate (n-Butyl Acetate=1):	No data available
Molecular Formula:	Mixture	VOC Content / Organic Matter:	No data available / 0.2%
Molecular Weight:	Not applicable	% Volatile:	No data available
Boiling Point:	Greater than 100° C. (212° F.)	Solubility in H₂O:	Complete
Freezing/Melting Point:	Less than 0° C. (32° F.)	Octanol/Water Partition Coefficient:	No data available
Specific Gravity:	1.39 – 1.49 @ 30° C.	pH (as is):	0.8 - 1.8
Density (pounds/gallon):	Approximately 11.6	pH (1% solution):	Less than 3.0

SECTION 10: STABILITY AND REACTIVITY

GENERAL: This product is stable and hazardous polymerization will not occur.

CONDITIONS TO AVOID: Do not store this product below 50° F (10° C) or above 90° F (30° C)

INCOMPATIBLE MATERIAL: Contact with most metals (e.g. mild steel, Aluminum, Magnesium, Zinc & Copper), alloys of these metals, caustics and alkali, sulfides, sulfites, cyanides and chlorine releasers.

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to dryness and decomposition, it emits toxic Ammonia gas with toxic zinc, phosphorus, manganese, sulfur and copper oxides, with trace or ultra-trace toxic oxide amounts, of potassium, nitrogen, iron, magnesium, calcium, sodium and carbon.

SENSITIVITY TO MECHANICAL IMPACT: This product is not sensitive to mechanical impact.

SENSITIVITY TO STATIC DISCHARGE: This product is not sensitive to static discharge.

SECTION 11: TOXICOLOGICAL INFORMATION

Components:	<u>Zinc Sulfate</u>	<u>Phosphoric Acid</u>
Eye Contact:	Rabbit: 420 ug; Moderate	Rabbit: 119 mg; Severe
Skin Contact:	No data available	Rabbit: 595 mg/24 hours; Severe
Oral Rat LD₅₀:	1,710 mg/kg	1,530 mg/kg
Dermal Rabbit LD₅₀:	No data available (Subcutaneous LD ₅₀ : 300 mg/kg)	2,740 mg/kg
Inhalation Rat LC₅₀:	No data available	Greater than 850 mg/m ³ /1 hour
Human Data:	Oral Human TD _{Lo} : 45 mg/kg/7 Days; Cardiac & Blood Effects	Unreported Route Man LD _{Lo} : 220 mg/kg
Other Toxicological Data:	Subcutaneous Rat LD _{Lo} : 330 mg/kg	Oral Man TD _{Lo} : 1,286 uL/kg
Carcinogenicity:	Subcutaneous Rabbit LD _{Lo} : 3,625 ug/kg/5 Days – Tumorigenic – Tumors at site of application	No data available
Teratogenicity:	Oral Rat TD _{Lo} : 333 mg/kg (female 1-18 Days pregnant) Effects on fertility – Post implantation mortality	No data available
Mutagenicity:	Human DNA Inhibition, HeLa cell: 1 umol/Liter/4 hours	No data available
Synergistic Products:	None reported	None reported
Target Organs:	Eyes, Skin, Lungs, Blood, Cardiovascular & Central Nervous Systems	Eyes, Skin, Mucous membranes, Lungs & Gastrointestinal tract
Medical Conditions Aggravated By Exposure:	Skin, Respiratory or Heart disorders	Skin, Respiratory or Gastrointestinal disorders
Components:	<u>Manganese Sulfate</u>	<u>Monoammonium Phosphate</u>
Eye Contact:	No data available	No data available
Skin Contact:	No data available	No data available
Oral Rat LD₅₀:	2,150 mg/kg	5,750 mg/kg
Dermal Rabbit LD₅₀:	No data available	Greater than 7,940 mg/kg
Inhalation Rat LC₅₀:	No data available	No data available
Human Data:	No data available	No data available
Other Toxicological Data:	Oral Mouse LD ₅₀ : 2,330 mg/kg	No data available
Carcinogenicity:	Intraperitoneal Mouse TD _{Lo} : 660 mg/kg/8 Weeks; Tumorigenic – Neoplastic by RTECS criteria	No data available
Teratogenicity:	Intraperitoneal Mouse TD _{Lo} : 34,356 ug/kg; (female 10 Days pregnant) Post-implantation mortality	No data available
Mutagenicity:	Bacteria B Subtilis DNA Repair: 50 mmol/ Liter	No data available
Synergistic Products:	None reported	None reported
Target Organs:	Eyes, Skin, Lungs & Central Nervous Systems	Eyes, Skin, Lungs & Central Nervous System
Medical Conditions Aggravated By Exposure:	Skin or Respiratory disorders	Skin or Respiratory disorders

SECTION 11: TOXICOLOGICAL INFORMATION (Continued from Page 4)

Components:	<u>Copper Sulfate</u>
Eye Contact:	No data available
Skin Contact:	No data available
Oral Rat LD₅₀:	300 mg/kg
Dermal Rabbit LD₅₀:	No data available
Inhalation Rat LC₅₀:	No data available
Human Data:	Oral Human TD _L : 11 mg/kg; Toxic Effects - Gastritis, Gastrointestinal Hypermotility, diarrhea
Other Toxicological Data:	Oral Child TD _L : 150 mg/kg; Toxic Effects – Kidney, Ureter and Bladder-Changes in tubules (acute renal failure)
Carcinogenicity:	Parenteral Chicken, TD _L : 10 mg/kg; Tumorigenic – Equivocal tumorigenic agent by RTECS criteria
Teratogenicity:	Subcutaneous Rat TD _L : 12,768 ug/kg; (male 1 Day prior to mating) paternal effects–Testes, epididymis, sperm duct
Mutagenicity:	Rat DNA damage, Ascites tumor: 500 umol/Liter
Synergistic Products:	None reported
Target Organs:	Eyes, Skin, Mucous membranes, Lungs, Liver, Kidneys & Blood
Medical Conditions Aggravated By Exposure:	Wilson's Disease, Skin, Liver, Kidney & Respiratory disorders

SECTION 12: ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

This product is heavier than water, completely soluble in water and will affect the pH of the water. Inorganic phosphates, in contact with soil, sub-surface or surface waters, may be taken up by plants and utilized as essential nutrients. Phosphates may also form precipitates, usually with Calcium or Magnesium. The resultant compounds are insoluble, becoming part of the soil.

ENVIRONMENTAL CONSIDERATIONS:

The aquatic toxicity for this product is related to the pH of the water. For Rainbow trout, the reported LC₅₀ is about a pH of 4.0 for a 7 day bioassay. Other species may vary a bit from this pH level, but all susceptible to acidic pH conditions.

SECTION 13: DISPOSAL CONSIDERATIONS

RCRA 40 CFR 261 CLASSIFICATION:	Corrosive Waste
U.S. EPA WASTE NUMBER/DESCRIPTION:	D002

If this product is disposed of as shipped, it meets the criteria of a hazardous waste as defined under 40 CFR 261 due to its corrosivity. If this product becomes a waste, it will be a hazardous waste, which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly. As a hazardous liquid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage, and disposal facility.

SECTION 14: TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME:	Phosphoric acid, solution		
	Hazard Class: 8	UN Number: UN1805	Packing Group: III
	Primary Label: Corrosive	Subsidiary Label(s): None Required	
	Primary/Subsidiary Placards: Corrosive		
DOT Reportable Quantity (RQ):	10 pounds (Cupric Sulfate)	RQ for Product: 794 pounds (66 gallons)	
Marine Pollutant:	Yes (Severe Marine Pollutant) Applicable to transport by water & in a bulk packaging.		
2012 North American Emergency Response Guidebook No.:	154		
TDG PROPER SHIPPING NAME:	PHOSPHORIC ACID, SOLUTION		
	Hazard Class: 8	UN Number: UN1805	Packing Group: III
	Primary Label: Corrosive	Subsidiary Label(s): None Required	
	Primary/Subsidiary Placards: Corrosive		
TDG Reportable Quantity (RQ): *	At least 5 kg or 5 liters.		
TDG Schedule XII:	Not listed		
Regulated Limit (RL): **	230 kg (H ₃ PO ₄)	RL for Product: 1,533.3 kg (1,064.8 liters)	
Other Shipping Information:	Note: In the U.S., a packaging holding 794 pounds, or more, the shipping description must be followed by: "RQ, (Cupric Sulfate)", and then, all those hazardous material shipping descriptions, for this product, must be followed by "(Marine Pollutant)".		

* Canadian Transportation of Dangerous Goods Regulations (TDGR), Part IX, Table I, Quantities or levels for Immediate Reporting: releases of reportable quantities, RQ, that meet the definition of a "dangerous occurrence" (a threat to life, health, property, or the environment) must be reported to the appropriate authorities as outlined in TDGR 9.13(1) and 9.14(1). ** Reporting to Environment Canada is required for any releases exceeding the regulated limits, RL, of 9.2 materials (primary or secondary). The regulated limits are found in Schedule XIII of the TDGR.

SECTION 15: REGULATORY INFORMATION

COMPONENTS:	<u>Zinc Phosphate</u>	<u>Phosphoric Acid</u>	<u>Manganese Sulfate</u>	<u>Monoammonium Phosphate</u>
<u>OSHA Target Organs:</u>	Eyes, Skin, Lungs, Cardiovascular, Blood & Central Nervous Systems	Eyes, Skin, Mucous membranes, Lungs & Gastrointestinal tract	Eyes, Skin, Lungs & Central Nervous Systems	Eyes, Skin, Lungs & Central Nervous System
<u>Carcinogenic Potential:</u>				
Regulated by OSHA:	No	No	No	No
Listed on NTP Report:	No	No	No	No
Listed by IARC:	No	No	No	No
IARC Group:	Not applicable	Not applicable	Not applicable	Not applicable
ACGIH Appendix A:	Not listed	Not listed	Not listed	Not listed
A1 Confirmed Human:	Not applicable	Not applicable	Not applicable	Not applicable
A2 Suspected Human:	Not applicable	Not applicable	Not applicable	Not applicable

U.S. EPA Requirements

Release Reporting

CERCLA (40 CFR 302)

Listed Substance:	Yes	Yes	Yes (Manganese Compounds)	Not listed
Reportable Quantity:	1,000 pounds	5,000 pounds	1 pound	Not applicable
Category:	C	D	Not listed	Not applicable
RCRA Waste No.:	Not listed	Not listed	Not listed	Not applicable
Unlisted Substance:	Not applicable	Not applicable	Not applicable	Not applicable
Reportable Quantity:	Not applicable	Not applicable	Not applicable	Not applicable
Characteristic:	Not applicable	Not applicable	Not applicable	Not applicable
RCRA Waste No.:	Not applicable	Not applicable	Not applicable	Not applicable

SARA TITLE III

Section 302 & 303 (40 CFR 355):

Listed Substance:	Not listed	Not listed	Not listed	Not listed
Reportable Quantity:	Not applicable	Not applicable	Not applicable	Not applicable
Planning Threshold:	Not applicable	Not applicable	Not applicable	Not applicable

Section 311 & 312 (40 CFR 370):

Hazard Categories (product):	Fire: <u>N</u>	Sudden Release of Pressure: <u>N</u>	Reactive: <u>N</u>	Acute Health: <u>Y</u>	Chronic Health: <u>N</u>
Planning threshold:	10,000 pounds	10,000 pounds	10,000 pounds	10,000 pounds	10,000 pounds

Section 313 (40 CFR 372):

Listed Toxic Chemical:	Yes (Zinc Category)	No (Delisted in June 2000)	Yes (Manganese Category)	Yes (Aqua Ammonia)
Reporting Threshold:	10,000 pounds	Not applicable	10,000 pounds	10,000 pounds

U.S. TSCA Status

Listed (40 CFR 710):	Yes	Yes	Yes	Yes
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State Regulations

State of California: Safe Drinking Water and Toxins Enforcement Act, 1986 (Proposition 65):

Carcinogen:	No	No	No	No
Reproductive Toxin:	No	No	No	No

Other Regulations

State Right To Know Laws: MA, NJ, PA

Canadian Regulations

Product Information:

Controlled Product:	Yes
WHMIS Hazard Symbols:	Corrosive Material
WHMIS Class & Division:	E

Ingredient Information:

IDL Substance:	No	Yes	Yes	No
DSL or NDSL Lists:	DSL	DSL	DSL	DSL

SECTION 15: REGULATORY INFORMATION (Continued from Page 6)

COMPONENTS:	<u>Copper Sulfate</u>
<u>OSHA Target Organs:</u>	Eyes, Skin, Mucous membranes, Lungs, Liver, Kidneys & Blood
<u>Carcinogenic Potential:</u>	
Regulated by OSHA:	No
Listed on NTP Report:	No
Listed by IARC:	No
IARC Group:	Not applicable
ACGIH Appendix A:	Not listed
A1 Confirmed Human:	Not applicable
A2 Suspected Human:	Not applicable

U.S. EPA Requirements

Release Reporting

CERCLA (40 CFR 302)

Listed Substance:	Yes
Reportable Quantity:	10 pounds (Anhydrous)
Category:	A
RCRA Waste No.:	Not listed
Unlisted Substance:	Not applicable
Reportable Quantity:	Not applicable
Characteristic:	Not applicable
RCRA Waste No.:	Not applicable

SARA TITLE III

Section 302 & 303 (40 CFR 355):

Listed Substance:	Not listed
Reportable Quantity:	Not applicable
Planning Threshold:	Not applicable

Section 311 & 312 (40 CFR 370):

Planning threshold:	10,000 pounds
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Section 313 (40 CFR 372):

Listed Toxic Chemical:	Yes (Copper Category)
Reporting Threshold:	10,000 pounds

U.S. TSCA Status

Listed (40 CFR 710):	Yes
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State Regulations

State of California: Safe Drinking Water and Toxins Enforcement Act, 1986 (Proposition 65):

Carcinogen:	No
Reproductive Toxin:	No

Other Regulations

State Right To Know Laws:	MA, NJ, PA
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Canadian Regulations

Ingredient Information:

IDL Substance:	Yes
DSL or NDSL Lists:	DSL

SECTION 16: OTHER INFORMATION

EPA Registration number: Not applicable

Approved Product Uses: Used as part of a plant nutrition program.

Special Notes:

This product is not manufactured, or formulated to contain substances, which the State of California has found to cause cancer and/or birth defects or other reproductive harm. However, as it contains mined minerals, this product may contain trace (parts per million) or ultra-trace (parts per billion) of elements known to the State of California to cause cancer, birth defects or other reproductive harm.

Special Instructions:

When making solutions, always add Z-Phos™ to water, or other solutions, with adequate mixing to ensure a uniform solution. Do not add this product to hypochlorite bleaches, chlorine sanitizers or chlorinated cleaners as this liberates toxic, corrosive Chlorine gas. Do not add this product to strong alkali or caustic materials and products as this can liberate a large amount of heat and toxic Ammonia gas.

SDS Revision Information: Revised Date: 9/08/2020

SDS Distributed by: Bio Huma Netics, Inc.

Prepared By:	Frank S. Pidgeon, Sr. EHSS Director
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Date Prepared:	October 21, 2014
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