Regarding: **Application for re-zoning**
1336 Taylor Road
Sorrento, B.C.

Thank you for considering the re-zoningof the above mentioned property, as we hope to add ***Cannabis Cultivation*** as a permitted use for the 80 acre parcel.

The applicant wishes to obtain a Health Canada license for a Standard Cannabis Cultivation and Processing Facility located on this property. This process is in the early stage, and obviously requires compliance with CSRD permitted uses bylaws before proceeding. The licensing process is lengthy and very stringent. We contend that the laws in place for the license will greatly mitigate any negative community impact, as we will outline below.

Overview:

The property in question is currently zoned M2 with a special condition that specifies the permitted uses. The applicant proposes to create a cannabis production facility on the 80 acre rural location which was previously home to a sawmill and furniture manufacturer. The proposed operation would be well outside the proximity of schools, parks, places of worship and any other licensed cannabis facilities. As the crow flies, it is approximately 350 meters from the nearest residence.

The applicant wishes to utilize existing structures previously used by the sawmill business. An extensive renovation will take place on the access road, the yard, and the buildings as they must comply with Health Canada security and building standards. All construction would be permitted by the CSRD. The various buildings would house cultivation operations as well as processing areas (packaging of cannabis for sale). The facility would undergo several stages of inspection and ongoing compliance inspections once business is underway.

The federal government compliance and inspections are important because the framework set by the government greatly improves security and diminishes negative community impact. Historically, "grow ops" have had detrimental effects on neighborhoods, but the new legislation in the Cannabis Act ensures that license holders are held to a very high standard.

Security: This is the most obvious improvement over historical "grow ops". Standard Cultivation and Processing facilities require very high levels of security that include locked perimeter fencing, full surveillance systems, monitored intrusion detection systems, and very limited access to any room containing cannabis.

Corporate shareholders, investors, management and full-time employees are vetted and must pass a strict security clearance check. These background checks are very thorough, as the Federal Government must ensure there are no ties to illicit cannabis markets or organized crime. Because of this, license holders and their staff are truly members of the legitimate business community.

Notice is an important part of the application process. The more information that is shared, the more compliance can be assured and the more governments and communities can be comfortable with a new cannabis business. Currently, we live in an area well known for black market and "grey market" medicinal grow operations. Zero notice is required for communities, neighbors, or governments for

this activity. With the new legislation, the applicants for cannabis licenses must give notice to the district or municipality, RCMP, local fire and ambulance services. With communities and authorities notified of licensed activities, we are entering a positive new era of legal cannabis.

Traffic: The remote location of the facility is ideal as many of the perceived nuisances of the business will be far from other residences and thus not noticable to the residents who might otherwise be affected (below). One factor to consider, however, is the possible slight increase in traffic on the road leading to the facility.

It is important to note that the pre-existing business (sawmill and furniture manufacturing) had a typical payroll of 15-30 employees. In addition, and of extreme importance, is that deliveries of raw product via logging trucks were commonplace for that operation. By contrast, the applicant projects a full-time workforce of only 10-12 employees when operational. No deliveries in or out will be transported in anything larger than a pickup truck or smal transport van.

For this specific location, the applicant understands that a residential area shares the road leading into the proposed facility. In preliminary talks with some neighbors, the applicant also understands there are families with small children in the area. To that end, the applicant wishes to contribute to community safety by posting road signage (department of highways approved) upon successfully obtaining their license ("Caution", "Children at Play" etc). In addition, a specific part of the hiring and training program for all employees will be dedicated to road safety and consideration for the surrounding community.

Odour: For any cannabis facility, odour is a consideration. Again, because of strict federal guidelines during licensing, this is an area that must be addressed, unlike black or grey market operations the applicants site design includes enclosed airtight grow rooms where exhaust airflow is only discharged after it has been processed through a carbon filtration system in order to extract all odors. As part of the standard operating procedures, all equipment is checked daily. Ongoing maintenance and filter replacements of the odor control systems will occur well within the manufacturers guidelines in order to maintain the highest filtration efficiency possible.

As mentioned above, the location of this property ensures that sufficient distance between residents is maintained (see attached). In the highly unlikely case of a temporary malfunction in the venting system, the distance should prevent any unwanted odor reaching nearby community members.

Noise: Much like the possibility of odor, noise is something the applicant addresses in the site design of this facility. The distance from other properties ensures that this facility will never impede the quiet enjoyment neighbouring residents would expect from the area.

In reality, the only significant noise created by the facility itself will be the exhaust fans and the condensers for the air conditioner units. These units will be installed in such a way as to divert sound from traveling towards the residential area and the decibel readings for these items are fairly low (see attached), especially when compared with an active sawmill.

Waste: New legislation improves the practice of waste management. Black and grey market Cannabis Growers have been known to produce piles of waste bi-product on their respective properties. Unwanted soil, leaf, and other waste are often left to rott. The standard operating procedure for licensees under the Cannabis Act, however, dictates that all waste must me recorded, weighed, and disposed of correctly. It is an

integral part of the application, as Health Canada does not want ANY cannabis product or bi-products to fall into the hands of unlicensed individuals.

While this is more of a security and sanitary issue for Health Canada, it has the added positive effect of maintaining clean and orderly facilities within the communities in which cannabis facilities exist.

Economic Spin-off: The preceding areas of consideration have been of a potential negative impact, but there is also a positive impact of having a cannabis facility within the community. The applicant expects to create 10-12 full-time jobs, with the possibility of part time employment opportunities as the business expands. Nearby residents seeking employment may benefit from the proximity to a growing business (pardon the pun). As Canada's new legislation creates jobs and tax revenue with the fledgling cannabis industry, the applicant could eventually become a significant employer in the area.

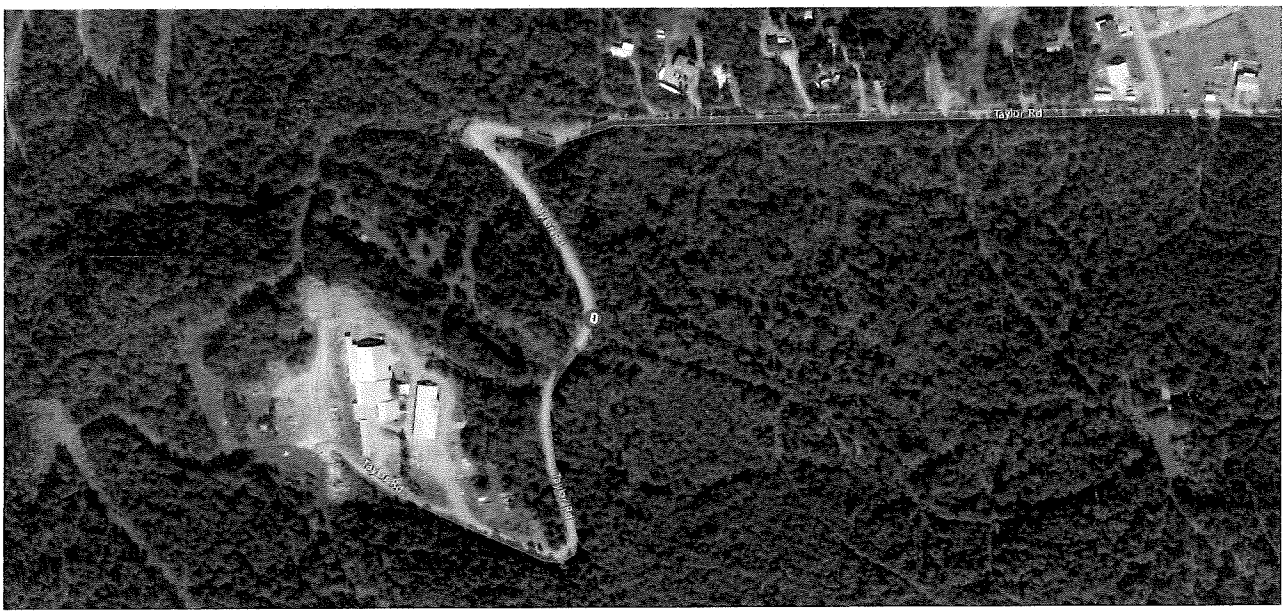
It is our contention, that the zoning for this property should be amended to allow for a "Cannabis Cultivation Facility." As described above, many factors make cannabis production the highest and best use for this property. Improvements of security, smell, noise, and road safety from the previous business make a cannabis facility more desirable for the community than the sawmill for which the original zoning was created. We hope the CSRD supports our upcoming re-zoning application due to improved community impact while generating economic opportunities therein.

COMPARITIVE EXAMPLES OF NOISE LEVELS

Noise Source	Decibel Level	Decibel Effect
Jet take-off (at 25 meters) **Recommended product:** Outdoor Noise Barriers	150	Eardrum rupture
Aircraft carrier deck	140	
Military jet aircraft take-off from aircraft carrier with afterburner at 50 ft (130 dB).	130	
Thunderclap, chain saw. Oxygen torch (121 dB).	120	Painful. 32 times as loud as 70 dB.
Steel mill, auto horn at 1 meter. Turbo-fan aircraft at takeoff power at 200 ft (118 dB). Riveting machine (110 dB); live rock music (108 - 114 dB).	110	Average human pain threshold. 16 times as loud as 70 dB.
Jet take-off (at 305 meters), use of outboard motor, power lawn mower, motorcycle, farm tractor, jackhammer, garbage truck. Boeing 707 or DC-8 aircraft at one nautical mile (6080 ft) before landing (106 dB); jet flyover at 1000 feet (103 dB); Bell J-2A helicopter at 100 ft (100 dB).	100	8 times as loud as 70 dB. Serious damage possible in 8 hr exposure.
Boeing 737 or DC-9 aircraft at one nautical mile (6080 ft) before landing (97 dB); power mower (96 dB); motorcycle at 25 ft (90 dB). Newspaper press (97 dB).	90	4 times as loud as 70 dB. Likely damage in 8 hour exposure.
Garbage disposal, dishwasher, average factory, freight train (at 15 meters). Car wash at 20 ft (89 dB); propelier plane flyover at 1000 ft (88 dB); diesel truck 40 mph at 50 ft (84 dB); diesel train at 45 mph at 100 ft (83 dB). Food blender (88 dB); milling machine (85 dB); garbage disposal (80 dB).	80	2 times as loud as 70 dB. Possible damage in 8 hour exposure.
Passenger car at 65 mph at 25 ft (77 dB); freeway at 50 ft from pavement edge 10 a.m. (76 dB). Living room music (76 dB); radio or TV-audio, vacuum cleaner (70 dB).	70	Arbitrary base of comparison. Upper 70s are annoyingly loud to some people.
Conversation in restaurant, office, background music, Air conditioning unit at 100 feet.	60	Half as loud as 70 dB. Fairly quiet.
Quiet suburb, conversation at home. Large electrical transformers at 100 feet.	50	One-fourth as loud as 70 dB.
Library, bird calls (44 dB); lowest limit of urban ambient sound	40	One-eighth as loud as 70 dB.
Quiet rural area.	30	One-sixteenth as loud as 70 dB. Very Quiet.
Whisper, rustling leaves	20	
Breathing	10	Barely audible

Aerial View of subject property

1336 Taylor Road
Sorrento, B.C.



SHUSWAP
BOTANICALS INC.

Date: April 8, 2019

Columbia Shuswap Regional District

555 Harbourfront Drive NE
Salmon Arm, BC
V1E 3M1

Attention: Director Electoral Area F

Regarding:
1336 Tayler Rd, Sorrento
Pending Health Canada application for Cannabis Micro Cultivation Facility

Attn: Christine Lefloch, Corey Paiement (CSRD Development Dept)

To Whom It May Concern,

In regard to the pending re-zoning application for 1336 Taylor Rd, Sorrento BC, I would like to add some specific information. As the intended use is commercial cannabis cultivation, there may be concerns over the management of water, waste, and traffic.

Water:

In order to understand water's role in the proposed cannabis cultivation facility, we have to understand proposed scale. For this facility, we propose the following approximate volumes:

- 2000 plants in 3 gallon pots
- 1000 plants in 5"x5" small planter pots
- 700L of fresh water utilized per day for irrigation
- 7500lbs of soil growing medium (dry) in use at any time
- Bathroom facilities for employees - projected use of 100L per day fresh water (septic system)

In terms of fresh water use, this facility projects a volume less than the average Canadian three-person household would use. **

From a septic capacity perspective, the large sawmill and door manufacturing facility of the past would have had many more employees and the increased frequency use of bathroom use and thus demand on the septic system.

Most importantly, we must point out that AT NO POINT DOES IRRIGATION WATER ENTER THE SEPTIC, OR FRESHWATER SYSTEM. All flooring in the facility is cement, and no floor drains are present.

Irrigation water contains liquid fertilizers, which are mixed with fresh water in a reservoir to a desired concentration. In this process, the Master Grower fills a plastic reservoir with fresh water. Fill lines run directly into the reservoir, and even though freshwater spills are highly unlikely, the reservoir still is positioned on a metal catch tray. Once full, the Master Grower measures fertilizer mix and adds these concentrated liquids (please see MSDS attachment) until a desired level is reached within the reservoir. The contents of the reservoir are constantly measured with a digital meter. When the Master Grower determines that the concentration has reached 1500 parts per million of fertilizer, he then adjusts the PH accordingly to attain a target of 6.2. At this point the Master Grower has created “Irrigation Water” and he is ready to have it enter the Irrigation System.

Irrigation water is now pumped at low pressures through irrigation lines that feed the liquid to individual plants. The lines are run on top of the pots containing soil and are carefully oriented to only discharge onto the soil grow medium. Freeboard differential (top of soil to top of pot) creates a contained circumference that prevents any spillage as water is absorbed into the soil.

The entire irrigation process and structure is well designed to not only prevent any spillage but to feed the plants in the most effective way possible to minimize costs. The process is performed on a daily basis by the Master Grower and the irrigation lines are activated manually under his super vision. This process is not automated and there is no risk of a leak occurring without it being noticed and immediately rectified.

In the unlikely event of a leak, there are specific protocols in place. Part of the Health Canada application contains Standard Operating Procedures for spills and cleanup. To summarize, larger spills are managed with wet-vacs, mops etc. Small spills or moisture on the floor are identified with safety (slip and fall) procedure and allowed to evaporate into the grow room atmosphere.

The atmosphere in the cannabis cultivation rooms are highly controlled to create specific temperature, humidity, air flow and C02 levels. These rooms are sealed, and only intake and exhaust (filtered) air a few times per day. Specifically, evaporation and humidity control pertain to the management of water and are affected by heat created by the grow lights and also dehumidifiers that are tasked with maintaining a specific level of humidity. As mentioned, moisture from the soil, plants, and even small spills on the concrete floor are evaporated because temperatures in the rooms average 78 degrees Fahrenheit. The air is then moved around the room with a series of fans and processed through the dehumidifiers. Water collected in the dehumidifiers is contained in a small reservoir, transferred to the irrigation reservoir, and then re-used as irrigation water.

This way, zero waste water is generated with the irrigation system.

Waste:

Although no water waste will be generated in the proposed facility, solid waste is. Soil grow medium is removed from the facility after each harvest, and bi-product from the plants (leaf, stalk, roots) are also disposed of. Health Canada insists on strict process for this cannabis waste, and demands meticulous record keeping for destruction procedures.

Soil grow medium to be used in the facility is Pro-Mix HP (please see MSDS) and it is obtained in compressed bales. These units are stored on the premises, ready for use when needed. The soil is used during the plant up procedure, when it is loaded into 3 gallon pots or smaller planter pots. At any time, this facility projects to have about 7500lbs of (dry) soil on the premises.

The growth cycle of the plants is:

1. Clone (2 weeks)
2. Veg (stage 1, 5”x5” planters) – 30 days
3. Veg (stage 2, 3 gallon pots) – 30 days
4. Flower – 60 days

Soil is needed for steps 2-4, so its usefulness is no more than 4 months. When the flower cycle is complete and the harvest is executed, soil is removed. At the time of harvest, the soil will contain some level of moisture content and some remnants of the fertilizers used. Currently, the process of disposal involves bagging the soil inside the building, and containing it in steel waste bins outside the building. The bins are removed monthly by a third-party contractor that takes the waste to the landfill***.

It is crucial to understand that AT NO POINT IS THE SOIL CONTAINING FERTILIZER MIXED WITH OR IN CONTACT WITH DIRT OUTSIDE OF THE BUILDING.

Cannabis facilities of the past have stock-piled used soil on the property, allowing fertilizers to leach into the ground and possibly affect ground water. With this facility, soil is never exposed and poses no threat of contamination.

The above-mentioned bi-products of leaf and stalk are also managed this way, albeit in far smaller volumes. They too, have zero interaction with the atmosphere outside of the facility.

Traffic:

Because the facility will involve much less traffic than the property experienced during its past uses, we do not foresee any issues with the road access. Having not been used in recent years, some basic maintenance including gravelling and grading will occur prior to commencement of licensed activities but no major structural alterations are anticipated.

In terms of the traffic volume itself, this facility expects to receive one delivery per month from a commercial truck for its soil and have one commercial truck monthly removing waste. Aside

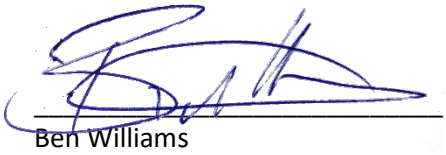
from the two commercial trucks per month, the only traffic this facility will experience is the staff arriving in their automobiles.

At the suggestion of Ms. LeFloch, we intend to contact the Ministry of Transportation and begin the process to obtain a commercial access permit.

**Canadians currently use an average of 329 litres of water per person, per day — second only to the United States in the developed world, and more than twice as much as Europeans.

***A composting/ recycling program to manage and re-use soil from cultivation facilities is something I would love to develop with the CSRD. The soil volume will un-necessarily choke landfills, and the soil itself is fantastic for other uses. Please contact me if there is any interest in developing a Health Canada – CSRD approved program that may be the catalyst for similar programs nationwide.

Best Regards,



Ben Williams

Shuswap Botanicals Inc | (250) 517 0504

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER		VitaMax Plus		**WHMIS CLASSIFICATION**		D2B (eye, skin & respiratory irritant)	
PRODUCT USE **Fertilizer**							
Manufacturers Name		**Greenstar Plant Products Inc.**		**Suppliers Name**			
Street Address		9430 198th Street		**Street Address**			
City	Langley	**Province**	BC	**City**		**Province**	
Postal Code	V1M 3C8	**Emergency Telephone**	(604) 882-7686	**Postal Code**		**Emergency Telephone**	
Date MSDS Prepared	August 26, 2009	**Prepared By**	**Greenstar Plant Products Inc.**			**Phone Number**	

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients (***Specific)***	**%**	**CAS**	**LD_{50} of Ingredient** (***species and route***)	**LC_{50} of Ingredient** (***specify species)***
Magnesium Nitrate	**1-5**	13446-18-9	**LD_{50} 5440 mg/kg oral rat**	NAP
Magnesium Sulphate	**1-5**	10034-99-8	**NAV**	NAP
Monopotassium Phosphate (MKP)	**10-5**	7778-77-0	**LD_{50} 4640 mg/kg oral rat**	NAP
Potassium Nitrate	**1-5**	7757-79-1	**LD_{50} 3750 mg/kg oral rat**	NAP
Ammonium Nitrate	**1-5**	6484-52-2	**LD_{50} 2217 mg/kg oral rat**	NAP

SECTION 3 – HAZARDS IDENTIFICATION

Route of Entry
√ Skin contact √ Eye Contact √ Inhalation √ Ingestion

Emergency Overview CONTACT WITH PRODUCT MAY CAUSE SKIN, EYE AND RESPIRATORY TRACT IRRITATION. PRODUCES TOXIC FUMES WHEN HEATED OR BURNED (SEE SECTION 5 – FIRE FIGHING MEASURES).

WHMIS Symbols: NAV

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

Eye Contact:
May cause eye irritation

Skin Contact:
May cause skin irritation

Inhalation:
May cause irritation to the respiratory irritation

Ingestion:
May cause irritation to the gastrointestinal tract. May cause violent gastroenteritis, anemia, methomolglobinemia, nausea/vomiting, diarrhea, dizziness, abdominal pain, convulsions, collapse, unconsciousness, cardiac effects and central nervous system effects. Nitrates may be reduced to nitrites by bacteria in the digestive tract causing nitrite poisoning.

EFFECTS OF CHRONIC EXPOSURE: Repeated or chronic exposure may aggravate medical conditions. May impair target organs especially kidneys and cause anemia.

SECTION 4 – FIRST AID MEASURES

Skin Contact
Immediately flush skin with plenty of water (cold water may be used) for a minimum of 15 minutes. Remove contaminated clothing and shoes. Seek medical attention. Wash clothing before reuse.

Eye Contact
Immediately flush eyes with a gentle but large stream of water (cold water may be used) for at least 15 minutes holding both the upper and lower eye lids open. Seek medical attention

Inhalation
Move victim to fresh air. Allow the victim to rest in a well ventilated area. If not breathing, give artificial respiration and seek medical attention immediately. If breathing is difficult, give oxygen. Seek medical attention.

Ingestion
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as collar, tie, belt or waistband. If victim is conscious and alert, give 2-4 cupfuls of water or milk to dilute material. If vomiting occurs have victim lean forward with head down to avoid breathing in vomit. Rinse mouth. Obtain medical attention immediately.

SECTION 5 – FIRE FIGHTING MEASURES

Flammable	Non-Flammable	**If yes, under what conditions?**			
Means of Extinction: Dry chemical, carbon dioxide, water spray, fog or foam.			**Special Procedures:** Do not allow water runoff to enter sewers or waterways.		
Flashpoint (°C) and method	NAP	**Upper Flammable Limit (% by volume)**	NAP	**Lower Flammable Limit (% by volume)**	NAP
Auto ignition Temperature (°C)	NAP	**Explosion Data – Sensitivity to Impact**	NAP	**Explosion Data- Sensitivity to Static Discharge**	NAP
Hazardous Combustion Products: NAV					

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures: Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Small Spill: Use appropriate tools to put the spilled solid in a convenient a closed waste disposal container.

Large Spill: Do not touch spilled material. Prevent entry into sewers, basements, or confined areas; dike if needed.

SECTION 7 – HANDLING AND STORAGE

Handling Procedures and Equipment

Do not handle unless safety precautions have been read and understood. Limit all unnecessary personal contact. Keep in a tightly closed container. Do not handle unless safety precautions have been read and understood. Avoid eye and skin contact. Do not puncture, drag or slide container. Protect against physical damage and moisture.

Storage Requirements

Store in a cool, dry and ventilated area. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for this product.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits √**ACGIH TLV** √**OSHA PEL** □ **Other (*specify)***

Specific Engineering Controls

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Avoid splashing.

Personal Respirators (NIOSH Approved): When engineering controls are not feasible, a respirator (NIOSH approved) may be worn.

Personal Protective Equipment √**Gloves** √**Respirator** √**Eye** √**Footwear** √**Clothing** √**Other**

Hands: Wear water resistant rubber (latex, butyl or plastic (PVC) gloves. **Respirator:** Wear a NIOSH approved aerosol and dust filter cartridge to remove residues during product application. **Eyes:** Wear goggles. **Footwear:** Wear work boots or rubber boots. **Clothing:** Wear long sleeves and pants.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State Liquid	**Odour and Appearance** Slight vitamin B1 odour, purple liquid	**Odour Threshold (ppm)** NAV
Specific Gravity NAV	**Vapour Density (air = 1)** NAV	**Vapour Pressure (mmHg)** NAV
Evaporation Rate NAV	**Boiling Point (°C)** NAV	**Freezing Point (°C)** NAV
pH NAV	**Coefficient of Water/Oil Distribution** NAV	**[Solubility in Water]** NAV

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability √Yes □ No	**If no, under which conditions** NAP
Incompatibility with Other Substances √Yes □ No	**If yes, which ones?** Strong acid & alkali, organic solvents and oxidizing agents
Reactivity, and under what conditions?	NAV
Hazardous Decomposition Products	NAV

SECTION 11 – TOXICOLOGICAL INFORMATION

Magnesium Nitrate	LD_{50} 5440 mg/kg oral rat
Magnesium Sulphate	NAV
Monopotassium Phosphate (MKP)	LD_{50} 4640 mg/kg oral rat
Potassium Nitrate	LD_{50} 1901mg/kg oral rat
Ammonium Nitrate	LD_{50} 2000 mg/kg oral rat

Irritancy of Product
May cause mild irritation to eyes, skin, digestive tract and respiratory system**.**

Skin Sensitization NAV	**Respiratory Sensitization** NAV
Carcinogenicity - IARC NAV	**Carcinogenicity – ACGIH** NAV
Reproductive Toxicity NAV	**Teratogenicity** NAV
Embryotoxicity NAV	**Mutagenicity** NAV

Name of Synergistic Products/Effects NAV

SECTION 12 – ECOLOGICAL INFORMATION

Potassium Nitrate: Aquatic Toxicity:
Fish: (Lepomis macrochirus) LC_{50}= 1839 mg NO_3/L
Environmental Fate: Potassium Nitrate will disassociate into potassium and nitrate ions which may be absorbed by plants. The nitrate ions may be converted to organic nitrogen compounds or nitrogen dioxides and released to the environment.

Magnesium Nitrate is a marine pollutant.
Environmental Fate: NAV

Monopotassium Phosphate: NAV
Magnesium Sulphate: NAV

Ammonium Nitrate: When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal

Waste must be disposed of in accordance with federal, provincial and municipal environmental control regulations.

SECTION 14 – TRANSPORT INFORMATION

Special Shipping Information Not regulated for transport	
TDG NAP	**DOT** NAP

SECTION 15 – REGULATORY INFORMATION

WHMIS Classification D2B (eye, skin & respiratory irritant)	**OSHA** Not Regulated
SARA Not regulated	**TSCA**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR

SECTION 16 – OTHER INFORMATION

As of the date of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable laws. However, no warranty or representation of law or fact, with respect to such information is intended or given.

genhydro.com

SAFETY DATA SHEET

FloraBloom™ Advanced Nutrient System

Section 1. Identification

GHS product identifier : FloraBloom™ Advanced Nutrient System

Other means of identification : A mixture of plant nutrition minerals in aqueous solution.

Product type : Liquid.

Identified uses : Hydroponic plant nutrient.

Supplier's details : General Hydroponics
2877 Giffen Ave
Santa Rosa, CA 95407
Tel: (707) 824-9376
Fax: (707) 824-9377

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887 (24/7)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified (HNOC) : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : A mixture of plant nutrition minerals in aqueous solution.

CAS number/other identifiers

CAS number : Not applicable.

Product code : Not available.

Section 3. Composition/information on ingredients

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact : Flush contaminated skin with plenty of water. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No special protection is required.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
sulfur oxides
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Not required under normal conditions of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Pink.

Odor : Odorless.

Odor threshold : Not available.

pH : 3.5

Melting point : -1°C (30.2°F)

Boiling point : Not available.

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1.162

Solubility : Soluble in water.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Volatility : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

There is no data available.

Irritation/Corrosion

There is no data available.

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Section 11. Toxicological information

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

There is no data available.

Mobility in soil

Soil/water partition coefficient (K_{OC}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

AERG : Not applicable.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 311: Phosphoric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Section 15. Regulatory information

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

SARA 313

No products were found.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

No products were found.

Section 16. Other information

History

Date of issue mm/dd/yyyy : 02/15/2016

Date of previous issue : 06/30/2015

Version : 3

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

genhydro.com

SAFETY DATA SHEET

FloraGro™ Advanced Nutrient System

Section 1. Identification

GHS product identifier : FloraGro™ Advanced Nutrient System

Other means of identification : Nitrates, and inorganic minerals in aqueous solution.

Product type : Liquid.

Identified uses : Hydroponic plant nutrient.

Supplier's details : General Hydroponics
2877 Giffen Ave
Santa Rosa, CA 95407
Tel: (707) 824-9376
Fax: (707) 824-9377

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887 (24/7)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified (HNOC) : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Nitrates, and inorganic minerals in aqueous solution.

CAS number/other identifiers

CAS number : Not applicable.

Product code : Not available.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Ammonium nitrate	3 - 5	6484-52-2
Ammonium sulfate	0.3 - 1	7783-20-2
Urea	0 - 0.1	57-13-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Maintain an open airway. Get medical attention if symptoms occur.

Skin contact : Flush contaminated skin with plenty of water. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides
sulfur oxides
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Urea	**AIHA WEEL (United States, 10/2011).** TWA: 10 mg/m³ 8 hours.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Aqueous solution.]

Color : Green.

Odor : Odorless.

Odor threshold : Not available.

pH : 3.5

Melting point : -1°C (30.2°F)

Boiling point : 101°C (213.8°F)

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1.108

Solubility : Soluble in water.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Volatility : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium nitrate	LD50 Oral	Rat	2217 mg/kg	-
Ammonium sulfate	LD50 Oral	Rat	2840 mg/kg	-
Urea	LD50 Oral	Rat	8471 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Urea	Skin - Mild irritant	Human	-	72 hours 22 milligrams Intermittent	-
	Skin - Moderate irritant	Human	-	24 hours 20 Percent	-

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	20074.8 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ammonium nitrate	Chronic NOEC 6 to 12 mg/L Fresh water	Crustaceans - Cladocera	21 days
Ammonium sulfate	Acute LC50 2.6 mg/L Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours
	Acute LC50 14000 to 15000 µg/L Fresh water	Daphnia - Daphnia magna - Young	48 hours
	Acute LC50 68 µg/L Fresh water	Fish - Oncorhynchus gorbuscha - Alevin	96 hours
	Chronic NOEC 7.5 mg/L Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
	Chronic NOEC 143 µg/L Marine water	Fish - Salmo salar - Post-smolt	5 weeks
Urea	Acute EC50 6573.1 mg/L Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/L Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 22.5 ppt Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Urea	<-1.73	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	**Remarks** Special Provision 58: Concentrations of FloraGroTM, at the minimum temperature encountered during normal transportation, will not exceed 80% of the saturation limit.	**Remarks** Special Provision A270: Concentrations of FloraGroTM, at the minimum temperature encountered during normal transportation, will not exceed 80% of the saturation limit.	**Remarks** Special Provision A65 (270): Concentrations of FloraGroTM, at the minimum temperature encountered during normal transportation, will not exceed 80% of the saturation limit.

AERG : Not available.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 311: Phosphoric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Section 15. Regulatory information

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Ammonium nitrate Urea	3 - 5 0 - 0.1	Yes. No.	No. No.	No. No.	Yes. Yes.	No. No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Potassium nitrate Ammonium nitrate	7757-79-1 6484-52-2	10 - 30 3 - 5
Supplier notification	Potassium nitrate Ammonium nitrate	7757-79-1 6484-52-2	10 - 30 3 - 5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Potassium nitrate; Ammonium nitrate

New York : None of the components are listed.

New Jersey : The following components are listed: Potassium nitrate; Ammonium nitrate

Pennsylvania : The following components are listed: Potassium nitrate; Ammonium nitrate

California Prop. 65

No products were found.

Section 16. Other information

History

Date of issue mm/dd/yyyy : 02/15/2016

Date of previous issue : 06/30/2015

Version : 3

Prepared by : KMK Regulatory Services Inc.

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Conforms to ANSI Z400.1-2011 Standard (United States).

TECHNAFLORA PLANT PRODUCTS LTD.

Material Safety Data Sheet

Magical

1 . Product and company identification

Common name : **Magical**

Material uses : Calcium and magnesium supplement for plants.

Supplier/Manufacturer : Technaflora Plant Products Ltd.
7261 River Place, 101
Mission, B.C.
Canada, V4S 0A3
Tel. 604-826-4759 / 1-800-586-1211

In case of emergency : CHEMTREC, U.S. : (800) 424-9300 International: (703) 527-3887

2 . Hazards identification

Physical state : Liquid.

Odor : Odorless.

Color : Gold.

Hazard status : This material is classified as hazardous under OSHA regulations.

Emergency overview : WARNING!

CAUSES EYE IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE SKIN IRRITATION.

Do not ingest. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes : Irritating to eyes.

Skin : Moderately irritating to the skin.

Inhalation : No known significant effects or critical hazards.

Ingestion : May be harmful if swallowed.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation.

See toxicological information (section 11)

3 . Composition/information on ingredients

United States

Name	CAS number	%
Magnesium Nitrate	10377-60-3	5 - 10
Calcium nitrate	10124-37-5	5 - 10
Calcium chloride	10043-52-4	5 - 10

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Skin contact : Wash with soap and water. Get medical attention if symptoms occur.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.

5 . Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7 . Handling and storage

Handling : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety glasses.

Skin : Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of use.

Hands : Natural rubber (latex).

HMIS Code/Personal protective equipment : B

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

Hygiene measures : Wash hands, forearms and face thoroughly after handling compounds and before eating, smoking and using the lavatory and at the end of the day. Follow good industrial hygiene practice.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Gold.

Odor : Odorless.

pH : 5.33 [Acidic.]

Boiling/condensation point : The lowest known value is 100°C (212°F) (Water).

Melting/freezing point : May start to solidify at 0°C (32°F) based on data for: Water.

Relative density : 1.17 (Water = 1)

Vapor pressure : The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (Water).

Vapor density : The highest known value is 0.62 (Air = 1) (Water).

Evaporation rate : 0.36 (Water) compared with Butyl acetate.

Solubility : Miscible in water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with acids, alkalis, oxidizing materials, reducing materials, organic materials and metals.

Hazardous decomposition products : These products are halogenated compounds, hydrogen chloride.

Hazardous polymerization : Will not occur.

Conditions of reactivity : None known.

11 . Toxicological information

Toxicity data

Product/ingredient name	Test	Result	Route	Species
Calcium nitrate	LD50	302 mg/kg	Oral	Rat
Calcium chloride	LD50	1940 mg/kg	Oral	Mouse
	LD50	1000 mg/kg	Oral	Rat

Acute Effects

Eyes : Irritating to eyes.

Skin : Moderately irritating to the skin.

Inhalation : No known significant effects or critical hazards.

Ingestion : May be harmful if swallowed.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

12 . Ecological information

Ecotoxicity data

Product/ingredient name	Species	Period	Result
Calcium chloride	Pimephales promelas (LC50)	96 hour(s)	4630 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	9500 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	10650 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	11300 mg/l

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides and water, nitrogen oxides, halogenated compounds. Some metallic oxides.

Toxicity of the products of biodegradation : The products of degradation are as toxic as the product itself.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.

14 . Transport information

NAERG : Not applicable.

Regulatory information

UN/ IMDG/ IATA DOT : Not regulated.

15 . Regulatory information

United States

HCS Classification : Irritating material

U.S. Federal regulations : TSCA : All components listed.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Magnesium Nitrate; Calcium nitrate; Calcium chloride
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Magnesium Nitrate: Fire hazard; Calcium nitrate: Fire hazard; Calcium chloride: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements :	Calcium nitrate	10124-37-5	5 - 10
Supplier notification :	Calcium nitrate	10124-37-5	5 - 10

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: Magnesium Nitrate: (generic environmental hazard)
Massachusetts RTK: Magnesium Nitrate
New Jersey: Magnesium Nitrate; Calcium nitrate
California prop. 65: No products were found.

International regulations

International lists : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements (U.S.A.) : CAUSES EYE IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE SKIN IRRITATION.

Hazardous Material Information System (U.S.A.) :

HMIS RATING

Health	1
Fire hazard	0
Physical Hazard	0
Personal protection	B

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal
See section 8 for more detailed information on personal protection.

National Fire Protection Association (U.S.A.) :

References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG.

Date of issue : 09/02/2011

Date of previous issue : 08/01/2006

Version : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER		VitaMax Plus		**WHMIS CLASSIFICATION**		D2B (eye, skin & respiratory irritant)	
PRODUCT USE **Fertilizer**							
Manufacturers Name		**Greenstar Plant Products Inc.**		**Suppliers Name**			
Street Address		9430 198th Street		**Street Address**			
City	Langley	**Province**	BC	**City**		**Province**	
Postal Code	V1M 3C8	**Emergency Telephone**	(604) 882-7686	**Postal Code**		**Emergency Telephone**	
Date MSDS Prepared	August 26, 2009	**Prepared By**	**Greenstar Plant Products Inc.**			**Phone Number**	

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients (***Specific)***	**%**	**CAS**	**LD_{50} of Ingredient** (***species and route***)	**LC_{50} of Ingredient** (***specify species)***
Magnesium Nitrate	**1-5**	13446-18-9	**LD_{50} 5440 mg/kg oral rat**	NAP
Magnesium Sulphate	**1-5**	10034-99-8	**NAV**	NAP
Monopotassium Phosphate (MKP)	**10-5**	7778-77-0	**LD_{50} 4640 mg/kg oral rat**	NAP
Potassium Nitrate	**1-5**	7757-79-1	**LD_{50} 3750 mg/kg oral rat**	NAP
Ammonium Nitrate	**1-5**	6484-52-2	**LD_{50} 2217 mg/kg oral rat**	NAP

SECTION 3 – HAZARDS IDENTIFICATION

Route of Entry
√ Skin contact √ Eye Contact √ Inhalation √ Ingestion

Emergency Overview CONTACT WITH PRODUCT MAY CAUSE SKIN, EYE AND RESPIRATORY TRACT IRRITATION. PRODUCES TOXIC FUMES WHEN HEATED OR BURNED (SEE SECTION 5 – FIRE FIGHING MEASURES).

WHMIS Symbols: NAV

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

Eye Contact:
May cause eye irritation

Skin Contact:
May cause skin irritation

Inhalation:
May cause irritation to the respiratory irritation

Ingestion:
May cause irritation to the gastrointestinal tract. May cause violent gastroenteritis, anemia, methomolglobinemia, nausea/vomiting, diarrhea, dizziness, abdominal pain, convulsions, collapse, unconsciousness, cardiac effects and central nervous system effects. Nitrates may be reduced to nitrites by bacteria in the digestive tract causing nitrite poisoning.

EFFECTS OF CHRONIC EXPOSURE: Repeated or chronic exposure may aggravate medical conditions. May impair target organs especially kidneys and cause anemia.

SECTION 4 – FIRST AID MEASURES

Skin Contact
Immediately flush skin with plenty of water (cold water may be used) for a minimum of 15 minutes. Remove contaminated clothing and shoes. Seek medical attention. Wash clothing before reuse.

Eye Contact
Immediately flush eyes with a gentle but large stream of water (cold water may be used) for at least 15 minutes holding both the upper and lower eye lids open. Seek medical attention

Inhalation
Move victim to fresh air. Allow the victim to rest in a well ventilated area. If not breathing, give artificial respiration and seek medical attention immediately. If breathing is difficult, give oxygen. Seek medical attention.

Ingestion
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as collar, tie, belt or waistband. If victim is conscious and alert, give 2-4 cupfuls of water or milk to dilute material. If vomiting occurs have victim lean forward with head down to avoid breathing in vomit. Rinse mouth. Obtain medical attention immediately.

SECTION 5 – FIRE FIGHTING MEASURES

Flammable	Non-Flammable	**If yes, under what conditions?**			
Means of Extinction: Dry chemical, carbon dioxide, water spray, fog or foam.			**Special Procedures:** Do not allow water runoff to enter sewers or waterways.		
Flashpoint (°C) and method	NAP	**Upper Flammable Limit (% by volume)**	NAP	**Lower Flammable Limit (% by volume)**	NAP
Auto ignition Temperature (°C)	NAP	**Explosion Data – Sensitivity to Impact**	NAP	**Explosion Data- Sensitivity to Static Discharge**	NAP
Hazardous Combustion Products: NAV					

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures: Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Small Spill: Use appropriate tools to put the spilled solid in a convenient a closed waste disposal container.

Large Spill: Do not touch spilled material. Prevent entry into sewers, basements, or confined areas; dike if needed.

SECTION 7 – HANDLING AND STORAGE

Handling Procedures and Equipment

Do not handle unless safety precautions have been read and understood. Limit all unnecessary personal contact. Keep in a tightly closed container. Do not handle unless safety precautions have been read and understood. Avoid eye and skin contact. Do not puncture, drag or slide container. Protect against physical damage and moisture.

Storage Requirements

Store in a cool, dry and ventilated area. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for this product.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits √**ACGIH TLV** √**OSHA PEL** □ **Other (*specify)***

Specific Engineering Controls

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Avoid splashing.

Personal Respirators (NIOSH Approved): When engineering controls are not feasible, a respirator (NIOSH approved) may be worn.

Personal Protective Equipment √**Gloves** √**Respirator** √**Eye** √**Footwear** √**Clothing** √**Other**

Hands: Wear water resistant rubber (latex, butyl or plastic (PVC) gloves. **Respirator:** Wear a NIOSH approved aerosol and dust filter cartridge to remove residues during product application. **Eyes:** Wear goggles. **Footwear:** Wear work boots or rubber boots. **Clothing:** Wear long sleeves and pants.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State Liquid	**Odour and Appearance** Slight vitamin B1 odour, purple liquid	**Odour Threshold (ppm)** NAV
Specific Gravity NAV	**Vapour Density (air = 1)** NAV	**Vapour Pressure (mmHg)** NAV
Evaporation Rate NAV	**Boiling Point (°C)** NAV	**Freezing Point (°C)** NAV
pH NAV	**Coefficient of Water/Oil Distribution** NAV	**[Solubility in Water]** NAV

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability √Yes □ No	**If no, under which conditions** NAP
Incompatibility with Other Substances √Yes □ No	**If yes, which ones?** Strong acid & alkali, organic solvents and oxidizing agents
Reactivity, and under what conditions?	NAV
Hazardous Decomposition Products	NAV

SECTION 11 – TOXICOLOGICAL INFORMATION

Magnesium Nitrate	LD_{50} 5440 mg/kg oral rat
Magnesium Sulphate	NAV
Monopotassium Phosphate (MKP)	LD_{50} 4640 mg/kg oral rat
Potassium Nitrate	LD_{50} 1901mg/kg oral rat
Ammonium Nitrate	LD_{50} 2000 mg/kg oral rat

Irritancy of Product
May cause mild irritation to eyes, skin, digestive tract and respiratory system**.**

Skin Sensitization NAV	**Respiratory Sensitization** NAV
Carcinogenicity - IARC NAV	**Carcinogenicity – ACGIH** NAV
Reproductive Toxicity NAV	**Teratogenicity** NAV
Embryotoxicity NAV	**Mutagenicity** NAV

Name of Synergistic Products/Effects NAV

SECTION 12 – ECOLOGICAL INFORMATION

Potassium Nitrate: Aquatic Toxicity:
Fish: (Lepomis macrochirus) LC_{50}= 1839 mg NO_3/L
Environmental Fate: Potassium Nitrate will disassociate into potassium and nitrate ions which may be absorbed by plants. The nitrate ions may be converted to organic nitrogen compounds or nitrogen dioxides and released to the environment.

Magnesium Nitrate is a marine pollutant.
Environmental Fate: NAV

Monopotassium Phosphate: NAV
Magnesium Sulphate: NAV

Ammonium Nitrate: When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal

Waste must be disposed of in accordance with federal, provincial and municipal environmental control regulations.

SECTION 14 – TRANSPORT INFORMATION

Special Shipping Information Not regulated for transport	
TDG NAP	**DOT** NAP

SECTION 15 – REGULATORY INFORMATION

WHMIS Classification D2B (eye, skin & respiratory irritant)	**OSHA** Not Regulated
SARA Not regulated	**TSCA**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR

SECTION 16 – OTHER INFORMATION

As of the date of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable laws. However, no warranty or representation of law or fact, with respect to such information is intended or given.

MATERIAL SAFETY DATA SHEET

PRO-MIX HP MYCORRHIZAE

Section I – Product and company identification

Product's Name
PRO-MIX HP MYCORRHIZAE

Manufacturer's Name Premier Tech Horticulture Ltd	**Emergency Telephone Number:** (418) 862-6356 or 800-667-5366
Address 1, Avenue Premier	**Telephone Number for information:** (418) 862-6356 or carf@premiertech.com
Rivière-du-Loup (Québec)	**Prepared by:** Frederic Caron
G5R 6C1 CANADA	

Section II – Hazard Identification

Route(s) of Entry:	Inhalation	Skin	Ingestion	Eyes
	Possible	Open wounds	Not applicable	Possible

Carcinogenicity:
Long term exposure (10-15 years) to concentrated quartz dust; present in common soil mix ingredients such as Perlite, gypsum and sand, may cause significant risk of lung damage (silicosis). However, product water content renders significant exposure unlikely under typical use conditions.

Signs and Symptoms of Exposure:
Inhalation over long periods of high amounts of any nuisance dust may overload lung clearance mechanism, irritate mucous membrane and make lungs more vulnerable to respiratory disease.

Section III – Composition, Information and Ingredients

Product Composition

A. **Hazardous**
Nuisance dust

Ingredient	#CAS	%
Perlite	93763-70-3	25 - 35

Comments : Perlite may contain less than 1% Quartz (CAS # 14808-60-7)

B. **Non-Hazardous**

Ingredient	#CAS	%
Peat Moss	---	65 - 75

Exposure limits of Peat Moss Dust

OSHA PEL		ACGIH TLV	
Respirable Dust	5 mg/m^3	Respirable Particules	3 mg/m^3
Total Dust	15 mg/m^3	Inhalable Particules	10 mg/m^3

Section IV – Emergency and First Aid Measures

Inhalation: If inhaled, provide fresh air.

Eye contact: Rinse eyes with water.

Skin contact: Keep open wounds covered and clean as suggested by any good hygiene program.

Section V – Fire Fighting Measures			
Flash Point (Method Used): Not applicable	**Flammable Limits:** Not applicable	**LEL: ---**	**UEL: ---**
Extinguishing Media: Water	**Unusual Fire and Explosion Hazard** : None		

Special Fire-Fighting Procedures:
None. Caution: Burning may continue inside bags or piles after surface fire is out. Break bags or separate pile to assure that the fire is extinguished

Section VI – Accidental Release Measures

Steps to Be Taken in Case Material is Released or Spilled:
Use methods to clean spill which avoid creating airborne dust. Avoid breathing dust by using adequate ventilation and/or NIOSH or MSHA approved respirator for nuisance dust of this type.

Section VII – Handling and Storage

Handling: Avoid creating excessive dust during handling. Avoid breathing dust by using adequate ventilation and/or NIOSH or MSHA approved respirator for nuisance dust of this type.
Storage: No special storage requirements.

Section VIII – Exposure Control and Personal Protection

Respiratory Protection *(Specify Type):*
If dust is created use NIOSH or MSHA approved respirator for nuisance dust of this type.

Ventilation:
Local exhaust advisable if excessive dust is created.

Protective Gloves:
Not normally necessary but suggested in cases of open wounds that are not appropriately protected.

Eye Protection:
Protective eyewear should be worn where dust levels are high enough to cause irritation.

Protective Clothing or Equipment:
Normal work clothing.

Work/Hygienic Practices:
NIOSH or MSHA approved respirator, eye protection and ventilation under conditions where excessive dust is created. Open wounds should be kept clean and suitably protected.

Section IX – Physical and Chemical Properties			
Boiling Point	Not applicable	**Specific Gravity (H_2O = 1)**	1.5
Vapor Pressure (mm Hg)	Not applicable	**Melting Point**	Not applicable
Vapor Density (AIR = 1)	Not applicable	**Evaporation Rate (Butyl Acetate = 1)**	Not applicable
Solubility in Water	Not applicable		
Appearance and Odor	From blond to light brown fiber, earthy odor.		

Section X – Stability and Reactivity	
Stability: Stable	**Conditions to Avoid:** None known
Incompatibility *(Materials to Avoid):* None known	
Hazardous Decomposition or by Products: None	
Hazardous Polymerization: Will not occur	**Conditions to Avoid:** None

Section XI – Toxicological Information

Acute toxicity

Eye effects: Contact with eyes may cause irritation
Skin effects: May cause skin irritation in susceptible persons

Chronic toxicity

Carcinogenic effects:	NTP	IARC	OSHA
	None	None	None

Ingestion: Health injuries are not known or expected under normal use
Inhalation: Health injuries are not known or expected under normal use

Section XII – Ecological Information

Ecotoxicity effects: No known effects.

Persistence and degradability: Inherently biodegradable.

Bioaccumulative potential: Not applicable.

Mobility: The product is insoluble and sinks in water.

Aquatic toxicity: May be beneficial to plant life.

Section XIII – Disposal Information

Disposal: The waste of this product is not defined as hazardous. Dispose of all waste in accordance with federal, state and local regulation.

Hazardous Waste Classification: Not applicable

Section XIV – Transport Information

TDG Classification: Not regulated

DOT Classification: Ground/Air Transport – NAFTA: Not regulated

Water/Air Transport – International: Not regulated

Section XV – Regulatory Information

WHMIS
Not a controlled product

Canadian Environmental Protection Act (CEPA)
All constituents of these products are on the Domestic Substance List (DSL).

EPCRA SARA Title III Classification
Section 311/312/ Hazard Classes: Not applicable
Section 313 Toxic Chemicals: Not applicable

CERCLA/SARA 302 Reportable Quantity (RQ)
Not applicable

RCRA Hazardous Waste Classification (40 CFR 261)
Not applicable

Toxic Substances Control Act (TSCA)
All ingredients are either listed on the TSCA Inventory or are exempt from listing

Section XVI – Other Information

Original Issued Date: January 22, 2014 **Revision Date**: January 22, 2014

Additional Information: The information above is accurate and reliable to the best of our knowledge as the date hereof. However, such information is not to be interpreted as representing a warranty or guarantee as to its accuracy and reliability or completeness. No warranty of any kind is given or implied and PREMIER TECH HORTICULTURE LTD will not be liable for any damages, losses, injuries or consequential damages which may result from the uses or reliance on any information contained. The users must do their own research for the pertinence of the information for specific use. For more information: www.pthorticulture.com.

genhydro.com

Date : 06/15/2013
Version : 2

Material Safety Data Sheet

PH DOWN LIQUID

1. Product and company identification

Product name : PH DOWN LIQUID

Material uses : Not available.

Supplier/Manufacturer : General Hydroponics
PO BOX 1576
Sebastopol CA 95472
Tel: (707) 824-9376
Fax: (707) 824-9377

MSDS authored by : KMK Regulatory Services Inc.

In case of emergency : CHEMTREC, U.S. : 1-800-424-9300
International: +1-703-527-3887 (collect calls accepted)

2. Hazards identification

Emergency overview

Physical state : Liquid.

Color : Yellow.

Odor : Odorless.

Signal word : DANGER!

Hazard statements : CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Precautionary measures : Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do not get in eyes. Do not get on skin. Do not eat, drink or smoke when using this product. Keep container tightly closed. Wash thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Inhalation : Corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Skin : Corrosive to the skin. Causes burns.

Eyes : Corrosive to eyes. Causes burns.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

2. Hazards identification

Target organs : Contains material which may cause damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion : Adverse symptoms may include the following:
stomach pains

Skin : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes : Adverse symptoms may include the following:
pain
watering
redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
Phosphoric acid	7664-38-2	10 - 30
Ammonium dihydrogenorthophosphate	7722-76-1	5 - 10
Citric acid	77-92-9	5 - 10

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

Flammability of the product : No specific fire or explosion hazard.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No special precaution is required.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.

7. Handling and storage

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States

Ingredient	Exposure limits
Phosphoric acid	**ACGIH TLV (United States, 3/2012).** STEL: 3 mg/m³ 15 minutes. TWA: 1 mg/m³ 8 hours. **NIOSH REL (United States, 6/2009).** STEL: 3 mg/m³ 15 minutes. TWA: 1 mg/m³ 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 1 mg/m³ 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes.
Ammonium dihydrogenorthophosphate	**ACGIH TLV (United States).** TWA: 5 mg/m³ 8 hours. Form: Dust

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

8. Exposure controls/personal protection

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state : Liquid.

Color : Yellow.

Odor : Odorless.

pH : 1.2

Boiling/condensation point : 104°C (219.2°F)

Melting/freezing point : -8°C (17.6°F)

Relative density : 1.13

Vapor pressure : 2.3 kPa (17.5 mm Hg) [room temperature]

Viscosity : Kinematic (room temperature): 0.01 cm^2/s (1 cSt)

Solubility : Easily soluble in the following materials: cold water and hot water.

Partition coefficient (LogKow) : There is no data available.

10. Stability and reactivity

Chemical stability : The product is stable.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Phosphoric acid	LD50 Oral	Rat	1.25 g/kg	-
Ammonium dihydrogenorthophosphate	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
Citric acid	LD50 Oral	Rat	3 g/kg	-

Chronic toxicity

There is no data available.

Irritation/Corrosion

11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Citric acid	Eyes - Severe irritant	Rabbit	-	24 hours 750 Micrograms	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	0.5 Mililiters	-

Sensitizer

Skin : There is no data available.

Respiratory : There is no data available.

Carcinogenicity

There is no data available.

Mutagenicity

There is no data available.

Teratogenicity

There is no data available.

Reproductive toxicity

There is no data available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Citric acid	Acute LC50 160000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours

Persistence/degradability

There is no data available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN1805	PHOSPHORIC ACID, SOLUTION RQ(Phosphoric Acid)	8	III		**Reportable quantity** 24449.9 lbs / 11100.2 kg [2595 gal / 9823.2 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
IMDG Class	UN1805	PHOSPHORIC ACID, SOLUTION	8	III		-
IATA-DGR Class	UN1805	PHOSPHORIC ACID, SOLUTION	8	III		-

PG* : Packing group Exemption to the above classification may apply. **AERG :** 153

15. Regulatory information

HCS Classification : Corrosive material
Target organ effects

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 311: Phosphoric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Reactive
Immediate (acute) health hazard

Composition/information on ingredients

15. Regulatory information

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Phosphoric acid	10 - 30	No.	No.	No.	Yes.	No.
Citric acid	5 - 10	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Ammonium dihydrogenorthophosphate	7722-76-1	5 - 10
Supplier notification	Ammonium dihydrogenorthophosphate	7722-76-1	5 - 10

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Phosphoric acid

New York : The following components are listed: Phosphoric acid

New Jersey : The following components are listed: Phosphoric acid

Pennsylvania : The following components are listed: Phosphoric acid

California Prop. 65

No products were found.

16. Other information

Label requirements : CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) : **Health :** 3 * **Flammability :** 0 **Physical hazards :** 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) : **Health :** 3 **Flammability :** 0 **Instability :** 0

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History

Date of issue mm/dd/yyyy : 06/15/2013

Date of previous issue : 03/15/2013

Version : 2

Revised Section(s) : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

16. Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

genhydro.com

Date : 06/15/2013
Version : 2

Material Safety Data Sheet

PH UP LIQUID

1. Product and company identification

Product name : PH UP LIQUID

Material uses : Not available.

Supplier/Manufacturer : General Hydroponics
PO BOX 1576
Sebastopol CA 95472
Tel: (707) 824-9376
Fax: (707) 824-9377

MSDS authored by : KMK Regulatory Services Inc.

In case of emergency : CHEMTREC, U.S. : 1-800-424-9300
International: +1-703-527-3887 (collect calls accepted)

2. Hazards identification

Emergency overview

Physical state : Liquid.

Color : Blue.

Odor : Odorless.

Signal word : WARNING!

Hazard statements : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED.

Precautionary measures : Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Not available.

Potential acute health effects

Inhalation : Irritating to respiratory system.

Ingestion : Harmful if swallowed.

Skin : Irritating to skin.

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

2. Hazards identification

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion : No known significant effects or critical hazards.

Skin : Adverse symptoms may include the following:
irritation
redness

Eyes : Adverse symptoms may include the following:
pain or irritation
watering
redness

Medical conditions aggravated by over-exposure : None known.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
Potassium Carbonate	584-08-7	10 - 30

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Flammability of the product : No specific fire or explosion hazard.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No special precaution is required.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state : Liquid.

Color : Blue.

Odor : Odorless.

pH : 12 to 12.3

Boiling/condensation point : 100°C (212°F)

Melting/freezing point : 0°C (32°F)

Relative density : 1.09

Solubility : Easily soluble in the following materials: cold water and hot water.

Partition coefficient (LogKow) : There is no data available.

10. Stability and reactivity

Chemical stability : The product is stable.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Potassium Carbonate	LD50 Oral	Rat	1870 mg/kg	-

Chronic toxicity

There is no data available.

Irritation/Corrosion

Skin : There is no data available.

Eyes : There is no data available.

Respiratory : There is no data available.

Sensitizer

Skin : There is no data available.

Respiratory : There is no data available.

Carcinogenicity

There is no data available.

Mutagenicity

There is no data available.

Teratogenicity

There is no data available.

Reproductive toxicity

There is no data available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Potassium Carbonate	Acute LC50 630000 to 670000 µg/l Fresh water Acute LC50 650000 to 820000 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia Daphnia - Daphnia magna	48 hours 48 hours

Persistence/degradability

There is no data available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group Exemption to the above classification may apply. **AERG** : Not applicable

15. Regulatory information

HCS Classification : Irritating material

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

15. Regulatory information

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Potassium Carbonate	10 - 30	No.	No.	No.	Yes.	No.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

No products were found.

16. Other information

Label requirements : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED.

Hazardous Material Information System (U.S.A.) : **Health :** 2 **Flammability :** 0 **Physical hazards :** 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) : **Health :** 2 **Flammability :** 0 **Instability :** 0

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History

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Version : 2

Revised Section(s) : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.