SAMM 694

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FORMULATION:

18 – 15 – 10 – 2 – 0.3 + TE

MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer or Formulator	:	GREENFEED AGRO SDN. BHD.
Address	:	Lot, 56 Jalan Sepintas 26/13, Hicom Industrial Estate 40400 Shah Alam Selangor, Malaysia.
Product Name	:	GREENFEED
Product Type	:	SLOW RELEASE FERTILIZER
Emergency Phone	:	+603-51928135

SECTION 2 COMPOSITION AND INFORMATION ON INGREDIENTS

Physical Outlook	:	Nugget / Palletized
Physical State	:	Solid
Colour / Appearance	:	Grey
Molecular Weight	:	NA
Molecular formula	:	NA
Specific Gravity	:	NA
Boiling Point	:	NA
Freezing/Melting Point	:	NA
Decomposition Temperature	:	>220°C
Vapour Pressure	:	NA
% Volatiles	:	NA
Vapour Density	:	NA
Solubility	:	Dissolve very slowly, Soluble
Odor Threshold	:	NA
Evaporation rate	:	NA
pH	:	NA / Applicable only after dissolving in water
Viscosity	:	NA
Log K_{ow}	:	NA / Low Solubility in water

Substances:

See section below for composition of mixtures.

Mixtures:

CHEMICAL	CAS Number	Weight [%]
Urea	57-13-6	22
Ammonium Sulphate	7783-20-2	10
Monoammonium Phosphate	7722-76-1	12
Dicalcium Phosphate n-hydrate	7789-77-7	25
Potassium Chloride	7447-40-7	11
Potassium Sulphate	7778-80-5	13
Micronutrients	Various	7

* NA = Not Applicable/Available

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SECTION 3 HAZARD INDENTIFICATION

Classification of the Substance or Mixture:

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability	**0**		
Toxicity	**1**		
Body Contact	**0**		
Reactivity	**0**		
Chronic	**0**		

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Hazard Statement(s):

H360	May damage fertility or the unborn child.

Precautionary Statement(s) Prevention:

P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement(s) Storage:

P405	Store locked up.

Precautionary Statement(s) Disposal:

P501	Dispose of contents/container in accordance with local regulations.

SECTION 4 FIRST AID MEASURES

Description of First Aid Measures:

Eye Contact	If this product comes in contact with the eyes: • Wash out immediately with fresh running water. • Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. • Seek medical attention without delay; if pain persists or recurs seek medical attention. • Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: • Flush skin and hair with running water (and soap if available). • Seek medical attention in event of irritation.
Inhalation	• If dust is inhaled, remove from contaminated area. • Encourage patient to blow nose to ensure clear passage of breathing. • If irritation or discomfort persists seek medical attention.
Ingestion	• If swallowed do **NOT** induce vomiting. • If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. • Observe the patient carefully. • Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. • Give water to rinse out mouth, then provide liquid slowly and as much as the person can comfortably drink. • Seek medical advice.

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Indication of any immediate medical attention and special treatment needed:

For acute or repeated short term exposures to boron and its compounds:

- Nausea, vomiting, diarrhoea and epigastric pain, haematemesis and blue-green discolouration of both faeces and vomitus characterise adult boron intoxication.
- Access and correct any abnormalities found in airway and circulation.
- Emesis should be induced unless the patient is in coma, is experiencing seizures or has lost the gag reflex. If any of these are present, gastric lavage should be performed with a large-bore tube after endotracheal intubation or in the presence of continuous respiratory action.
- Activated charcoal is probably not of value though its use might be indicated following gastric evacuation. Catharsis might be useful to eliminate any borates remaining in the gastro-intestinal tract (magnesium sulfate: adults, 30 gms: children 250 mg/kg).
- Peritoneal dialysis and haemodialysis remove some borates.

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIREFIGHTING MEASURES

Extinguishing Media:

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture:

Fire Incompatibility	None known.

Advice for Firefighters:

Fire Fighting	Foam, Dry Chemical, Carbon Dioxide, Water Fog. Wear self-contained Breathing Apparatus and impervious clothing. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves in the event of a fire. Prevent, by any means available, spillage from entering drains or water courses. Use fire fighting procedures suitable for surrounding area. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	Non-combustible. Not considered a significant fire risk, however containers may burn. Decomposition may produce toxic fumes of: metal oxides May emit poisonous fumes.
Fire Fighting Procedures	Minimize the amount of water used and contain the run-off. The products will decompose on heating.
Other Fire or Explosion Hazards	Noxious fumes, hydrogen chloride and chloride containing compounds, oxides of nitrogen and other hazardous materials may be formed in a fire situation.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Minor Spills	• Clean up all spills immediately. • Avoid contact with skin and eyes. • Wear impervious gloves and safety glasses. • Use dry clean up procedures and avoid generating dust. • Vacuum up (consider explosion-proof machines designed to be grounded during storage and use). • Do NOT use air hoses for cleaning. • Place spilled material in clean, dry, sealable, labelled container.
Major Spills	• Clear area of personnel and move upwind. • Control personal contact with the substance, by using protective equipment and dust respirator. • Prevent spillage from entering drains, sewers or water courses. • Recover product wherever possible. • Sweep / Pick / shovel up.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

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SECTION 7 HANDLING AND STORAGE

Precautions to be taken in handling:

Safe Handing	• Limit all unnecessary personal contact. • Wear protective clothing when risk of exposure occurs. • Use in a well-ventilated area. • When handling **DO NOT** eat, drink or smoke. • Always wash hands with soap and water after handling. • Avoid physical damage to containers. • Use good occupational work practice.
Other Information	• Store in original bag. • Keep bag securely sealed. • Store in a cool, dry, well-ventilated area. • Store away from incompatible materials and foodstuff. • Protect bag against physical damage and check regularly for leaks. • Observe manufacturer's storage and handling recommendations contained within this SDS.
Suitable Bag	**NOTE:** Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Check that all bags are clearly labelled and free from leaks. Packing as recommended by manufacturer.
Storage Incompatibility	• Use normal safety procedures and good personal hygiene. • Keep out of the reach of children. • Keep bag tightly closed. • Keep bag in dry, cool and well ventilated area

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Control Parameters:

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA:
NA

MATERIAL DATA:

Appropriate Engineering Control	• Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. • Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure.
Personal Protection	
Eye and Face Protection	• Safety glasses with side shields • Chemical goggles. • Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. • Adequate ventilation. • Approved dust respirator when necessary. • Normal clean work clothing.
Skin protection	See Hand protection below
Hands / Feet Protection	• The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has

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	to be obtained from the manufacturer of the protective gloves and.has to be observed when making a final choice. • Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: -Frequency and duration of contact, −Chemical resistance of glove material, -Glove thickness and -Dexterity −Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent). • When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. • When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended. • Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present. -Polychloroprene. -Nitrile rubber. -Butyl rubber. -Fluorocaoutchouc. -Polyvinyl chloride. • Gloves should be examined for wear and/ or degradation constantly.
	See Other protection below
Other Protection	• Overalls. • P.V.C. apron. • Barrier cream. • Skin cleansing cream. • Eye wash unit.
Thermal Hazards	NA

* NA = Not Applicable/Available

Respiratory Protection
Particulate. (AS/NZS 1716 & 1715, EN 143:000 & 149:001, ANSI Z88 or national equivalent)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance	Odourless white to grey nugget. Soluble in cold water, highly soluble in hot water.		
Physical state	Solid	**Relative density (Water = 1)**	NA
Odour	NA	**Partition coefficient n-octanol / water**	NA
Odour threshold	NA	**Auto-ignition temperature (°C)**	NA
pH (as supplied)	NA	**Decomposition temperature**	>220^{O}C
Melting point / freezing point (°C)	NA	**Viscosity (cSt)**	NA
Initial boiling point and boiling range (°C	NA	**Molecular weight (g/mol)**	NA
Flash point (°C)	NA	**Taste**	NA
Evaporation rate	NA	**Explosive properties**	NA
Flammability	NA	**Oxidising properties**	NA
Upper Explosive Limit (%)	NA	**Surface Tension (dyn/cm or mN/m)**	NA
Lower Explosive Limit (%)	NA	**Volatile Component (%vol)**	NA
Vapour pressure (kPa)	NA	**Gas group**	NA
Solubility in water (g/L)	Partially Soluble	**pH as a solution (1%)**	7~8
Vapour density (Air = 1)	NA	**VOC g/L**	NA

* NA = Not Applicable/Available

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SECTION 11 TOXICOLOGICAL INFORMATION

Information on Toxicological Effects:

Inhaled	The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual. Symptoms of borate poisoning include nausea, vomiting, diarrhoea, epigastric pain. These may be accompanied headache, weakness and a distinctive red skin rash. In severe cases there may be shock, increased heart rate and the skin may appear blue. Vomiting (which may be violent) is often persistent and vomitus and faeces may contain blood. Weakness, lethargy, headache, restlessness, tremors and intermittent convulsions may also occur. Poisoning produces central nervous system stimulation followed by depression, gastrointestinal disturbance (haemorrhagic gastro-enteritis), erythematous skin eruptions (giving rise to a boiled lobster appearance) and may also involve kidneys (producing oliguria, albuminuria, anuria) and, rarely, liver (hepatomegaly, jaundice). Toxic symptoms may be delayed for several hours.
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.
Chronic	There is sufficient evidence to provide a strong presumption that human exposure to the material may result in impaired fertility on the basis of: - clear evidence in animal studies of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary non-specific consequence of other toxic effects. There is sufficient evidence to provide a strong presumption that human exposure to the material may result in developmental toxicity, generally on the basis of: - clear results in appropriate animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray. Chronic poisoning by borates may be characterised gastrointestinal disturbances and skin rash. Chronic absorption of small amounts of borax causes mild gastroenteritis and dermatitis. Chronic feeding studies involving borate administration to rats and dogs leads to accumulation in the testes, germ cell depletion and testicular atrophy. Hair loss in a young woman was traced to chronic ingestion of boric acid-containing mouthwashes whilst hair loss, dermatitis, gastric ulcer and hypoplastic anaemia in an adult male was attributed to the consumption of an uncharacterised "boric tartrate" for 20 years (symptoms disappeared following withdrawal). Repeated ingestion or inhalation of sub-acute doses of boric acid produces gastrointestinal irritation and disturbance, loss of appetite, disturbed digestion, nausea and vomiting, erythematous rash which may become hard and purpuric, dryness of the skin and mucous membranes, reddening of the tongue, cracking of the lips, conjunctivitis, palpebral oedema and kidney injury. Workers exposed to dust levels containing in excess of 31 mg/m3 boric acid, showed atrophic and subatrophic changes of the respiratory mucous membranes. Prolonged ingestion by animals produces a variety of reproductive effects including changes to the ovaries, fallopian tubes, the testes, epididymis and sperm ducts.
Acute Oral Toxicity	LD50 (rat) is 5,000-6,000 mg/kg (ppm), practically nontoxic; not acutely toxic by oral exposure. (TFI Product Testing Results, OECD Guideline 425)
Acute Aquatic Toxicity	Fish 96-hour LC50 is 1,560-5,900 mg/L (ppm); daphnia 24-hour EC50: 1,790-1,825 mg/L; algae no toxicity up to 87.6 mg/L. Non-toxic to aquatic life. (TFI Product Testing Results)

Legend:

Continue next page…

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity; 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

Acute Toxicity	⦸	**Carcinogenicity**	⦸
Skin Irritation/Corrosion	⦸	**Productivity**	⦸
Serious Eye Damage/Irritation	⦸	**STOT - Single Exposure**	⦸
Respiratory or Skin sensitisation	⦸	**STOT - Repeated Exposure**	⦸
Mutagenicity	⦸	**Aspiration Hazard**	⦸

Legend:

✖ *– Data available but does not fill the criteria for classification*

✔ *– Data required to make classification available*

⦸ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity:

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
NA	NA	NA	NA	NA	NA

***** NA = Not Applicable/Available

Legend:
Extracted from:
1. IUCLID Toxicity Data; 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity; 3. EPIWIN Suite V3.12 – Aquatic Toxicity Data (Estimated); 4. US EPA, Ecotox database - Aquatic Toxicity Data; 5. ECETOC Aquatic Hazard Assessment Data; 6. NITE (Japan) - Bioconcentration Data; 7. METI (Japan) - Bioconcentration Data; 8. Vendor Data

Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air. Once released to surface of waters and moist soils, their fate depends on solubility and dissociation in water. Environmental processes (such as oxidation and the presence of acids or bases) may transform insoluble metals to more soluble ionic forms. Microbiological processes may also transform insoluble metals to more soluble forms. Such ionic species may bind to dissolve ligands or sorb to solid particles in aquatic or aqueous media. A significant proportion of dissolved/ sobbed metals will end up in sediments through the settling of suspended particles. The remaining metal ions can then be taken up by aquatic organisms.
For boron and borates:

Environmental Fate:
Boron is generally found in nature, bound to oxygen and is never found as free element. Atmospheric boron may be in the form of particulate matter or aerosols as borides, boron oxides, borates, boranes, organ boron compounds, trihalide boron compounds, or borazines. Borates are relatively soluble in water, and will probably be removed from the atmosphere by precipitation and dry deposition. The half-life of airborne particles is usually on the order of days, depending on the size of the particle and atmospheric conditions. Boron readily hydrolyses in water to form the electrically neutral, weak monobasic acid boric acid (H_3BO_3) and the monovalent ion, $B(OH)^{4-}$. In concentrated solutions, boron may polymerise, leading to the formation of complex and diverse molecular arrangements. Because most environmentally relevant boron minerals are highly soluble in water, it is unlikely that mineral equilibria will control the fate of boron in water.

DO NOT discharge into sewer or waterways.

Persistence and Degradability:

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bio Accumulative Potential:

Ingredient	Bio accumulation
	No Data available for all ingredients

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Waste Disposal	Dispose of empty bag in household garbage. Dispose of spilt product as a Fertilizer, in accordance with Local, Provincial or Federal government regulations. Pick up with a shovel and broom and use as a fertilizer by applying to soil.
Environmental Effects	Do not contaminate local water supplies or environments. The information contained herein is considered accurate and offered only as a guide to the handling of this specific material. This information, does not relate to its use with any other material or product or in any process. No warranty, expressed or implied is made regarding the accuracy of the data or the performance of the material by **GREENFEED AGRO SDN. BHD.**

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Product / Packaging disposal	• Recycle wherever possible or consult manufacturer for recycling options. • Consult State Land Waste Management Authority for disposal. • Bury residue in an authorised landfill. • Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 TRANSPORT INFORMATION

This product is not classified as hazardous according to National Standards, Act and Regulations.

Labels Required:

Marine Pollutant	No

Land transport (UN)	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Air transport (ICAO-IATA / DGR)	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Sea transport (IMDG-Code / GGVSee)	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Transport in bulk according to Annex II of MARPOL and the IBC code	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Hazard Class	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Reportable Quantity (RQ)	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
D.O.T. Number	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Labels Required	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS
Haz Waste No	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture.

SLOW RELEASE FERTILIZER: Not Applicable

SECTION 16 ADDITIONAL INFORMATION

Hazard Rating System: HMIS

Health	Flammability	Physical Hazard	Reactivity
1	0	0	0

Hazard Rating: 0=Least; 1-Slight; 2=Moderate; 3=High; 4=Severe

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General Comment	This document contains health, safety, and environmental information useful to emergency response agencies, health care providers, manufacturers, and workers/employees. It does not replace the precautionary language, use directions, or the storage and disposal information found on the product label. The information contained herein is considered accurate and offered only as a guide to the handling of this specific material. This information, does not relate to its use with any other material or product or in any process. No warranty, expressed or implied is made regarding the accuracy of the data or the performance of the material by **GREENFEED AGRO SDN. BHD**. This Material Safety Data Sheet is valid for three years from the Issue Date.

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