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Section 1: Identification of the Hazardous Chemical and of the Supplier

1.1 Product Identifier

Product Name:	Liquid NPK Foliar Fertilizer
Trade Name:	HI-PK
Active Ingredient:	Nitrogen, Phosphate, Potassium and other micro-nutrients
CAS No.(AI):	Please refer Section 3
Structural Formula:	-
Recommended Usage:	Plant nutrition

1.2 Supplier's Information

Address:	Agricultural Chemicals (M) Sdn. Bhd. 962, Lorong Perusahaan 8 Taman Perindustrian Perai 13600 Perai , Pulau Pinang Malaysia
Tel.:	+6-04-3907988
Fax:	+6-04-3905703
Web:	www.agrichem.com.my
Emergency Phone:	+6-04-3907988

Section 2: Hazard Identification

Classification:	Serious eye damage, category 1 Hazardous to the Aquatic Environment-Chronic Hazard, category 3
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Pictogram:



Signal Word:	Danger
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Hazard Statement:	
H318	Causes serious eye damage
H412	Harmful to aquatic life with long lasting effects

Precautionary Statement:	
P280:	Wear protective gloves/protective clothing/eye protection/face protection.
P273:	Avoid release to the environment.
P305+P351+P338:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



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P310: Immediately call a POISON CENTER or doctor/physician.
P501: Dispose of contents/container in compliance with local regulations.

Section 3: Composition and Information of the Ingredients of the Hazardous Chemical

Component	CAS No.	Weight, %	Hazard Code
Ammonium Molybdate	12054-85-2	< 0.01%	H302, H315, H319, H335
Anticaking agent	-	<5%	H373
Boric Acid	10043-35-3	< 0.5%	H360FD
Buffer agent	-	< 0.5%	H319
Chelating agent	-	5% - 10%	H302, H318
Copper Sulphate	7758-99-8	< 0.1%	H302, H315, H319
Ferrous Sulphate	7782-63-0	< 2%	H302, H315, H319
Zinc Chloride	7646-85-7	< 0.5%	H302, H314, H318, H335, H373, H400, H410

*This product contains other materials which are not classified as hazardous under CLASS Regulations.

Section 4: First-aid Measures

Call a POISON CENTER or doctor/physician if you feel unwell.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin Contact: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion: DO NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

Symptoms: No data available

Notes to Physician: No data available

Section 5: Fire-fighting Measures

Suitable Extinguishing Media: Water, carbon dioxide (CO₂), chemical foam, dry chemical

Specific Hazard During Fire: No data available

Special Protective Equipment: Fire fighters should wear full-faced self-contained breathing apparatus and protective clothing.



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Section 6: Accidental Release Measures

Personal Precautions:	Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.
Environmental Precautions:	Avoid release to the environment.
Method for Cleaning Up:	Turn off all ignition sources. Wear protective clothing as indicated in Section 8. Evacuate non essential personnel. Absorb spills with inert material such as clay, sand, earth, sawdust etc. and collect in a drum. Cover up the contaminated area with household detergent and small amount of water. Brush the slurry and spread inert absorbents on the slurry liquid and collect the absorbed material in a drum. Seal drum and dispose of. Do not contaminate water resources.

Section 7: Handling and Storage

Precautions for Safe Handling:	Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid release to the environment.
Conditions for Safe Storage:	Store in a well ventilated place. Store away from combustible materials. Keep away from heat/sparks/open flames/hot surfaces - No smoking. Keep container tightly closed.
Incompatibles:	None known.

Section 8: Exposure Control and Personal Protection

Exposure Limit:

Source	Component	CAS No.	Limit	
	Ammonium Molybdate	12054-85-2	Contains no substances with OEL value	
US (WEEL)	Anticaking agent	-	TWA	10mg/m ³
ACGIH	Boric Acid	10043-35-3	TWA inhalable fraction	2mg/m ³
			STEL/ceiling inhalable fraction	6mg/m ³
ACGIH TLV	Buffer agent	-	No data	
	Chelating agent	-	TWA- 8hr	10mg/m ³
ACGIH TLV	Copper Sulphate	7758-99-8	TWA	1mg/m ³
NIOSH			IDLH	100mg/m ³
IDLH			TWA	1mg/m ³
	Ferrous Sulphate	7782-63-0	No data	



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Source	Component	CAS No.	Limit	
ACGIH TLV	Zinc Chloride	7646-85-7	TWA	1mg/m ³
			STEL	2mg/m ³
US.NIOSH			REL	1mg/m ³
			STEL	2mg/m ³
US.OSHA			PEL	1mg/m ³
			STEL	2mg/m ³
			TWA	1mg/m ³

Engineering Control: Local exhaust ventilation
Individual Protection Measure: Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.
Personal Protective Equipment:
Eye Protection: Protective goggles
Skin Protection: Rubber gloves and boots
Respiratory Protection: Respirator

Section 9: Physical and Chemical Properties

Appearance: Orangish viscous liquid
Odour: Characteristic odour
Odour Threshold: No data
pH: 5.6
Melting/Freezing Point: No data
Initial Boiling Point: No data
Boiling Range: No data
Flash Point: Not applicable
Evaporation Rate: No data
Flammability: Not applicable
Upper Flammability Limit: Not applicable
Lower Flammability Limit: Not applicable
Vapour Pressure: No data
Vapour Density: No data
Relative Density: 1.48g/ml
Solubility in Water: Soluble
Partition Coefficient P_{o/w}: No data
Auto-ignition Temperature: No data
Decomposition Temperature: No data
Viscosity: No data

Section 10: Stability and Reactivity

Reactivity: No data
Chemical Stability: The material is stable under normal storage condition
Hazardous Reaction: No data



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Condition to Avoid: Direct sunlight, extreme temperature, open flame, sparks
Incompatible Material: Strong reducing agent, strong oxidizing agents
Hazardous Decomposition Product: Carbon oxides, nitrogen oxides, sulfur oxides, phosphorous oxides, zinc oxides, hydrogen chloride

Section 11: Toxicological Information

11.1 Acute Toxicity

Component: Ammonium Molybdate		
Ingestion, Oral LD ₅₀ :		
	Rat	333mg/kg
Component: Anticaking agent		
Ingestion, Oral LD ₅₀ :		
	Rat	12565mg/kg
Dermal, LD ₅₀		
	Rabbit	11980mg/kg
Component: Boric Acid		
Ingestion, Oral LD ₅₀ :		
	Rat	3765mg/kg
Dermal, LD ₅₀		
	Rabbit	> 2000mg/kg
Inhalation, LC ₅₀		
	Rat	> 2.03mg/L
Component: Buffer agent		
Ingestion, Oral LD ₅₀ :		
	Rat	5400mg/kg
Dermal, LD ₅₀		
	Rat	> 2000mg/kg
Component: Chelating agent		
Ingestion, Oral LD ₅₀ :		
	Rat	1000 - 2000mg/kg
Component: Copper Sulphate		
Ingestion, Oral LD ₅₀ :		
	Rat	481mg/kg
Dermal, LD ₅₀		
	Rat	> 1000mg/kg
Component: Ferrous Sulphate		
Ingestion, Oral LD ₅₀ :		
	Rat	319mg/kg
Component: Zinc Chloride		
Ingestion, Oral LD ₅₀ :		
	Rat	350mg/kg
	Mouse	1260mg/kg
Inhalation, LC ₅₀		
	Rat, 10 min	1975mg/m ³



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11.2 Chronic Effect from Short and Long Term Exposure

Skin Contact:	Not classified as hazardous
Eye Contact:	Causes serious eye damage
Inhalation:	No data available
Ingestion:	No data available
Carcinogenicity:	No data available
Mutagenicity:	No data available
Teratogenicity:	

Boric Acid

Adverse effect on fertility:

Multigeneration study: NOAEL (fertility, male rats): 17.5mg B/kg bw/day

Developmental effects have been observed in laboratory animals. The critical effect is considered to be decrease fetal body weight in rats. There is no evidence of developmental effects in human attributable to boron in studies of populations with high exposure to boron

Boric acid is classified and labeled as "Presumed human reproductive toxicant, category 1B", in accordance with Appendix A to 29CFR section 1910.1200, OSHA-GHS

11.3 Symptoms No data available

Section 12: Ecological Information

Ecotoxicity:

Component: Ammonium Molybdate

Acute Toxicity:

<i>Onchorynchus mykiss</i> , LC ₅₀ , 96hr	320mg/L
<i>Daphnia magna</i> , EC ₅₀ , 48 hr	140mg/L
<i>Desmodesmus subspicatus</i> , EC ₅₀ , 48 hr	41mg/L

Component: Anticaking agent

Acute Toxicity:

Fathead minnow, LC ₅₀ , 96hr	75200mg/L
Water flea, EC ₅₀ , 24hr	> 10000mg/L

Component: Boric Acid

Acute Toxicity

Fish, LC ₅₀ , 96 hr	74 - 725mg/L
Aquatic invertebrates, EC ₅₀ , 48hr	45 - 1376mg/L
<i>Pseudokirchneriella subcapitata</i> , EC ₅₀ , 72hr	40mg B/L

Chronic Toxicity

Fish, NOEC/EC ₁₀	2.89 - 16.65mg B/L
Higher plants/Alga/Clorophita, NOEC/EC ₁₀	4 - 50mg B/L
Crustacea/Amphibian, NOEC/EC ₁₀	5.67 - 40.62 mg B/L
Aquatic micro-organisms, EC ₅₀ , 3hr	>175mg B/L

Component: Buffer agent

Acute Toxicity

Fish (<i>Leuciscus idus melanotus</i>), LC ₅₀ , 48 hr	440mg/L
<i>Daphnia magna</i> , static test, 24hr	1535mg/L



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Component: Chelating agent

Acute Toxicity

Fish (*Leuciscus idus*), LC₅₀, 96hr > 500mg/L

Component: Copper Sulphate

Acute Toxicity

Freshwater fish, LC₅₀, 96 hr 0.1mg/L

Water flea, EC₅₀, 48hr 0.024mg/L

Component: Ferrous Sulphate

No data

Component: Zinc Chloride

Acute Toxicity

Onchorynchus mykiss, LC₅₀, 96hr 0.179-0.393mg/L Mortality

Lymnaea stagnalis, EC₅₀, 6hr 64mg/L Intoxication

Callianassa australienses, EC₅₀, 7d 1.61-2.45mg/L Intoxication

Callianassa australienses, EC₅₀, 10d 1.38-1.71mg/L Intoxication

Callianassa australienses, EC₅₀, 14d 0.97-1.22mg/L Intoxication

Persistence and Degradability: No data available

Bioaccumulative Potential: No data available

Mobility in Soil: No data available

Other Adverse Effect: No data available

Section 13: Disposal Information

Dispose of contents/container to Kualiti Alam / authorized body by DOE.


Section 14: Transportation Information

Land (ADR/RID)	Not regulated
Sea (IMDG)	Not regulated
Air (IATA)	Not regulated

Section 15: Regulatory Information

Classification: Serious eye damage, category 1
Hazardous to the Aquatic Environment-Chronic Hazard, category 3

Signal Word: Danger

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Pictogram:



Pesticides Act: Not applicable
 Classification: Not applicable

Section 16: Other Information

Date of Preparation: 15 December 2015
 Date of Revision: 17 November 2016
 Reference Document: ICOP on Chemicals Classification and Hazard Communication 2014
 GHS Purple Book
 MSDS:

Material	Source	Date
Ammonium Molybdate Tetrahydrate	Columbus Chemical Industries	6/11/2012
Anticaking agent	Pharmco-Aaper	12.03.13
Boric Acid	SQM North America	Oct 2012
Buffer agent	Sigma Aldrich (M) Sdn Bhd	6/1/2015
Chelating agent	Orica Australia Pty Ltd,	21/10/2013
Copper Sulphate	Fisher Scientific	20 May 2014
Ferrous Sulphate Monohydrate	Kimleigh Chemicals SA Pty Ltd	14 Feb 2012
Zinc Chloride	Avantos Performance Material Inc	16/5/2014

Disclaimer: To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.