

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

Section 1: Identification of substance or mixture and society or company.	
Commercial product name:	BETK-03® (WP).
Active compound name:	<i>Bacillus thuringiensis</i> strain N1, <i>Bacillus thuringiensis</i> strain N2 y <i>Bacillus thuringiensis</i> strain N3.
Recommend uses:	Microbiological Insecticide.
Supplier name:	Bio Insumos Nativa SpA.
Supplier address:	Parcela Antilhue Allotment 4 B2, Maule, Talca, Chile. Phone: +56-71-2970696. ventas@bionativa.cl www.bionativa.cl
Supplier phone number:	PHONE: +56-71-2970696.
Emergency phone number in Chile:	CITUC TOXICOLOGY EMERGENCIAS/PHONE: +56-2- 26353800.

SECTION 2: Danger/s identification.			
Classification by SGA/GHS:			
Route of exposure	Danger Category	Danger indication	Word of Warning
Oral:	Unclassified.	-	-
Dermal:	Unclassified	-	-
Inhalation	Category 4.	H332: Harmful if inhaled.	Attention.
Dermal irritation:	Unclassified.	-	-
Eye irritation:	Unclassified.	-	-
Sensitization:	Unclassified.	-	-
Acute aquatic fish and invertebrates Aquatic:	Absence of acute toxicity, rapid degradability and non-Bioaccumulative.		
SGA Label:			
Symbol:	Caution advice:		
Inhalation: 	Prevention: P261: Avoid powder breathing. P271: Only use in open places or in a well-ventilated place. Intervention: P304 + P340. IN CASE OF INHALATION: Carry the person outdoors and keep that person in a position that ease to breathe. P312: Call a TOXICOLOGY CENTER and/or a doctor if the person present complications.		
Oral, dermal, eye irritation, dermal and sensitization: Without symbol.	Intervention: P312: Call a POISON CENTER/doctor if you feel unwell.		
Specific classification: Chile Resolution SAG 2.196/2000:			
Specific distinctive:		Green Danger Label.	
Others' dangers:		Non-flammable, non-corrosive, non-explosive.	

SECTION 3: Compound composition/information.	
In case of a mixture:	It does not contain components that are classified as hazardous.

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

	Component 1	Component 2	Component 2
Classification SGA:	Oral: Not classified. Dermal: Not classified. Inhalation: Category 4. H332: Harmful if inhaled. Skin irritation: Not classified. Eye irritation: Not classified. Sensitization: Not classified. ATTENTION. 	Oral: Not classified. Dermal: Not classified. Inhalation: Category 4. H332: Harmful if inhaled. Skin irritation: Not classified. Eye irritation: Not classified. Sensitization: Not classified. ATTENTION. 	Oral: Not classified. Dermal: Not classified. Inhalation: Category 4. H332: Harmful if inhaled. Skin irritation: Not classified. Eye irritation: Not classified. Sensitization: Not classified. ATTENTION. 
Systematic chemical name:	N° CE: 614-245-1*.	N° CE: 614-245-1*.	N° CE: 614-245-1*.
Common or generic name:	<i>Bacillus thuringiensis</i> strain N1.	<i>Bacillus thuringiensis</i> strain N2.	<i>Bacillus thuringiensis</i> strain N3.
Concentration range:	1,81% m/m (18,1 g/kg)		
CAS number:	68038-71-1 *	68038-71-1 *	68038-71-1 *

* *Bacillus thuringiensis*.

SECTION 4: First aids measures.

IN CASE OF INTOXICATION TAKE THE PATIENT TO THE DOCTOR AND GIVE HIM THE LABEL.

Inhalation:	Move the affected person to fresh air. If the person is not breathing, administer artificial respiration. Take the affected person to a medical center as quickly as possible, presenting the product label to the healthcare professional in charge.
Skin contact:	Remove clothing and shoes and wash the skin thoroughly with plenty of clean water, including between the hair, nails, and skin folds. Take the affected person to a medical center as quickly as possible, presenting the product label to the healthcare professional in charge.
Eye contact:	Rinse immediately with plenty of water. If the affected person wears contact lenses, rinse with plenty of tap water for 5 minutes, then remove them and continue rinsing for 15 to 20 minutes. Take the affected person to a medical center as quickly as possible, presenting the product label to the healthcare professional in charge.
Ingestion:	DO NOT INDUCE VOMITING. Never give anything by mouth to an unconscious person. Take the person to a medical center as quickly as possible, presenting the product label to the healthcare professional in charge.
Main symptoms and effects, both acute and delayed:	If swallowed, diarrhea may occur; if in contact with skin or eyes, irritation may occur. No delayed effects are expected.
Protection of first responders:	Especial protection is not required.
Notes for attending doctor:	Antidote: It doesn't have. Medical Treatment: Treat symptomatically.

SECTION 5: Measure for firefighting.

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

Extinguishing agents:	CO and CO ₂ , chemical powder or foamy solution. Inappropriate Extinguishing Agents does not apply.
Specific hazards:	There are no known special risks related to the combustion and thermal degradation of this product.
Recommendations for the personnel fighting against Fire:	Precautions for emergency personnel and/or firefighters: Only firefighters' structural protective clothing is required for firefighting. It poses no special hazards.

SECTION 6: Measures to be taken in the event of accidental spillage/spillage.

Personal precautions, protective equipment and emergency procedure:	<p>Personal precautions: Avoid inhalation, ingestion and contact with the skin and eyes. Ensure adequate ventilation, especially in confined areas. Rubber gloves, rubber boots, waterproof coveralls, a mask, and a face shield.</p> <p>Collect spilled material with normal means and transfer it to a container for disposal. Wash the spill area with water and detergent, depending on the location of the spill.</p>
Environmental precautions:	<p>It does not offer special dangers, but:</p> <ul style="list-style-type: none"> • Prevent their introduction into waterways, sewers, basements or confined areas. • Do not throw into surface water or the sewer system. • Prevent the penetration of the product into drains. • It should not be released into the environment. <p>•PROTECT THE ENVIRONMENT WITH GOOD AGRICULTURAL PRACTICES.</p> <p>•DO NOT CONTAMINATE RIVERS, LAKES, PONDS AND UNDERGROUND WATER SOURCES WITH THIS PRODUCT OR EMPTY CONTAINERS OR PACKAGING.</p>
Containment and cleaning methods and materials (Recovery, neutralization, and final disposal):	<p>Collect the spilled material, transfer it to a properly identified container and send it to an authorized facility for this type of waste.</p> <p>-Recovery: Not applicable.</p> <p>-Neutralization: Does not apply.</p> <p>-Final disposal: Dispose of waste in accordance with local, provincial, and national regulations.</p>
Additional disaster prevention measures:	Not applicable.
Other indications relating to spills/spills:	No.

SECTION 7: Handling and storage.

Manipulación: Handling: Precautions for safe handling:	<p>Handling during manufacturing/Formulation:</p> <p>Avoid contact with eyes, skin, and clothing. Do not ingest. Do not inhale. Manufacture/formulation of the product only by trained and authorized persons.</p> <p>Do not eat, drink, or smoke during the manufacture/formulation of the product. During manufacture/formulation personal protective equipment is required: rubber gloves, rubber boots, waterproof long loam overalls, mask, and goggles.</p> <p>Immediately remove contaminated clothing and bathe at the end of the Manufacture/Formulation.</p> <p>Use and Handling:</p> <p>Avoid contact with eyes, skin, and clothing. Do not ingest. Do not inhale. Handle outdoors or in a well-ventilated place.</p>
--	--

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

<p>Contact prevention:</p> <p>Storage:</p> <p>Conditions for the secure storage:</p> <p>Technical measures:</p> <p>Incompatible substances and mixtures:</p>	<p>Keep out of reach of children and inexperienced people. Handling and application of the product only by trained and authorized persons. DO NOT EAT, SMOKE OR DRING DURING THE HANDLING AND APPLICATION OF THIS PRODUCT. BATHE AFTER WORK AND PUT ON CLEAN CLOTHES.</p> <p>During the handling and application of the product use: rubber gloves, rubber boots, waterproof long loam overalls, mask, and goggles. Do not mix products during handling and application. Immediately remove contaminated clothing and bathe at the end of handling and application.</p> <p>Avoid contact.</p> <p>DO NOT STORE THIS PRODUCT IN HOMES ROOMS. KEEP UNDER LOCK AND KEY OUT OF REACH OF THE CHILDREN. STAY AWAY FROM CHILDREN, PEOPLE DON'T AUTHORISED, DOMESTIC ANIMALS, FOOD AND DRUGS.</p> <p>Keep separate from any type of food, fodder, seeds or any other that are intended for use or consumption human the animal. Storage T°: Ambient temperature. Store the product in the original container, labeled, in a dry, cool, well-ventilated place, storage temperature recommended and ventilated. Shelf life: 24 months. Do not store near heat, open flame, direct sunlight or hot surfaces. It is recommended not to mix with other pesticides. Use only packaging that ensures integrity of internal bags.</p> <p>The product must be handled and stored in secure warehouses with good ventilation, a cement floor, and, if possible, a spill containment system. Under no circumstances should it be stored in areas where human or animal food is present. Do not store in areas where corrosive or explosive products are present.</p> <p>Incompatible with copper compounds, bactericides and antibiotics.</p>
---	--

SECTION 8: Exposure controls/personal protection.	
<p>Control parameters:</p> <p>- Weighted permissible limit (LPP):</p> <p>- Absolute permissible limit (LPA):</p> <p>- Time permissible limit (LPT):</p> <p>- Tolerance limit biological:</p> <p>Personal protection elements:</p> <p>Respiratory protection:</p> <p>Hand protection:</p> <p>Eye protection:</p> <p>Protection of the skin and body:</p>	<p>Do not expect occupational exposure to this product to be a cause for concern due to the low toxicity profile and in assumption that precautionary labelling instructions aim to minimize worker exposure.</p> <p>Not determined by DS. 594 Minsal Chile/OSHA.</p> <p>Not determined by DS. 594 Minsal Chile/OSHA.</p> <p>Not determined by DS. 594 Minsal Chile/OSHA. Identification of bacteria in blood and joint fluids.</p> <p>Identification in blood and joint fluids.</p> <p>Mask.</p> <p>Rubber gloves.</p> <p>Spectacles.</p> <p>Rubber boots, waterproof long loam overalls.</p>

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

Engineering measures:	Showers, eye washing stations, ventilation systems.
------------------------------	---

SECTION 9: Physical and chemical properties.

Physical Condition:	Solid.
How it is presented:	Dust.
Color:	Beige.
Smell:	Characteristic.
pH:	6,95+/-0,1 (1% p/v in water at 20°C).
Melting point/freezing point:	Not applicable.
Boiling starting point and boiling interval:	Not applicable.
Flash point:	Non-flammable. >400°C.
Upper/lower flammability or explosive limit:	It does not generate toxic combustion products, only CO and CO2.
Vapor pressure:	Not applicable.
Vapor density:	Not applicable.
Density:	0,54 g/mL.
Partition coefficient (n-octanol/ water (Log Kow)):	Not applicable.
Auto-ignition temperature:	>400°C.
Decomposition temperature:	50-80°C.
Odor threshold:	Not applicable.
Evaporation rate:	Not applicable.
Viscosity:	Not applicable.
Explosive properties:	Not applicable.
Inflammability:	Not applicable.
Corrosivity:	Non-corrosive.

SECTION 10: Stability and reactivity.

Reactivity: Chemical:	Non-reactive.
Stability: Chemical:	Stable at normal discharge temperature.
Dangerous reactions:	It doesn't happen.
Conditions to be avoided:	A large surface area exposed to oxygen in the air can cause polymerization and heat release.
Incompatible materials:	Not applicable, as it corresponds to a microorganism that is naturally present in the environment, specifically in the soil. Strains can be neutralized with industrial or household disinfectants, copper compounds, antibiotics, and any bactericide for gram-positive bacteria.
Hazardous decomposition products:	None.

SECTION 11: Toxicological Information.

Acute Toxicity:	Within the analyses of oral, dermal, skin and eye toxicity along with skin sensitization for the BETK-03 formulation, no cases are reported in the literature indicating that products based on Bacillus thuringiensis present acute oral, dermal toxicity, skin irritation, eye and skin sensitization in mammals.
Acute toxicity (LD50 and LC50):	LD50 = > 2,000 mg/kg / LC50 = 2.3 mg/L.
Skin irritation/corrosion:	May cause mild skin irritation..
Serious eye damage/eye irritation:	May cause mild eye irritation. No systemic effects.
Skin sensitization:	No sensitization.

SECURITY SHEET
By NCh. 2245:2021

Date: 07/22/2025.
Version: 03.

Subchronic and chronic toxicity:		The Environmental Protection Agency of the USA (EPA) does not require chronic toxicity tests for <i>Bacillus thuringiensis</i> (Organic Agriculture Centre of Canada (OACC)).
Mutagenicity of reproductive cells:	Not applicable.	
Carcinogenicity:	Not applicable.	
Reproductive toxicity:	Not applicable.	
Specific toxicity to certain organs – single exposure:		
There is no known damage caused to the organism (body and different organs) of humans and mammals: Not applicable.		
Specific toxicity to certain organs – repeated exposures:		
There is no known damage caused to the organism (body and different organs) of humans and mammals: Not applicable.		
Danger of aspiration:	It is not dangerous by this route of exposure.	
Possible routes of exposure:	Avoid contact.	
Symptoms related to the physical, chemical and toxicological characteristics:	If swallowed, diarrhea may occur; if in contact with skin or eyes, irritation may occur. No delayed effects are expected.	
Toxicokinetic:		
Other relevant information on adverse health effects:	Absorption:	Not applicable.
	Metabolism:	
	Distribution:	
	Excretion:	
Pathogenicity and acute infectivity (oral, dermal and inhalation):		
It is not pathogenic or infectious.		
Endocrine disruption: The product is not an endocrine disruptor.		
Neurotoxicity: It is not a neurotoxic product.		
Immunotoxicity: Does not affect the immune system.		

SECTION 12: Ecological information.	
Ecotoxicity (EC, IC, and LC):	No known reports of adverse effects on the environment. EPA concluded that <i>Bacillus thuringiensis</i> products will not pose unreasonable risks to the environment.
Aquatic organisms:	
Fish:	It is not toxic to aquatic organisms.
<i>Daphnia magna</i>:	
Algae:	
Terrestrial organisms:	
Birds:	Non-toxic to birds.
Bees:	
Method:	OPPTS 885.4380, 1996.
Test Type:	Bees (<i>Apis mellifera</i>), acute contact and oral toxicity test.
Species Used:	Bees (<i>Apis mellifera</i>).
Exposure Route:	Oral and Contact.
Results:	DL50 oral; 72 hours: > 1,00 x 10 ⁶ UFC/mL (equivalent to 200 µg/bee)
	DL50 contact; 96 hours:

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

Classification:	> 1,00 x 10 ⁶ UFC/mL (equivalent to 10 µg/bee) Oral: Practically nontoxic according to the OECD LD ₅₀ classification: > 100 µg/bee. Contact: Moderately toxic according to the OECD LD ₅₀ classification: 2 to 10.99 µg/bee.
------------------------	---

Persistence and degradability:

The ability to generate endospores makes their survival in the soil indefinite, as long as temperatures above 80°C are not reached for more than 10 minutes and there are no other organisms that compete with these bacteria.

Bioaccumulative potential: It is a free-living organism, so its population dynamics will depend on local conditions.

Mobility on the ground:

Bacillus spp., which make up this formulation, inhabit all types of environments, so they are able to thrive and remain in them depending on the availability of nutrients.

SECTION 13: Information on the final disposition.

Waste/remnants/waste:	Waste must be disposed of by controlled incineration at high temperatures and/or disposed of if permitted by national or local legislation.
Contaminated packaging:	"USING THE CONTAINERS OR PACKAGING DIFFERENTLY FOR WHAT THEY WERE DESIGNED TO ENDANGER HUMAN HEALTH AND THE ENVIRONMENT." Container: Dispose of the container in a clearly identified place, until the health authority specifies its final destination. Contaminated packaging: Dispose of the packaging in a clearly identified place, until the health authority specifies its final destination. Uncontaminated packaging may be recycled.
Prohibition of discharge into wastewater:	The discharge of untreated wastewater into bodies shall be prohibited of RIVERS, LAKES, PONDS AND SOURCES OF UNDERGROUND AND SUPERFICIAL WATERS.
Other special precautions:	Contaminated material: The contaminated material will be transferred to properly labeled containers for subsequent disposal in facilities approved by the health and environmental authority. Cleaning and decontamination procedures for application equipment and contaminated areas: The equipment (interior and exterior) that contained the product must be cleaned with water (triple rinse) and the water from the rinses will be applied on the object of the application. In contaminated areas, collect the material with normal means, transfer them to a properly identified container and sent to an authorized facility to this type of waste.

SECTION 14: Transportation Information.

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.
Version: 03.

Regulations	Mode of transport		
	Terrestrial	Maritime	Aerial
	ADR/RID	IMDG	IATA
NU number:	Merchandise no dangerous for transport.	Merchandise no dangerous for transport.	Merchandise no dangerous for transport.
Official transport designation:	It does not apply.	It does not apply.	It does not apply.
Class or division:	It does not apply.	It does not apply.	It does not apply.
NU Secondary Hazard:	It does not apply.	It does not apply.	It does not apply.
Packing group:	It does not apply.	It does not apply.	It does not apply.
Hazard Identification Badge according to NCh 2190:	It does not apply.	It does not apply.	It does not apply.
Environmental hazards:	Not generated environmental hazards.	Not generated environmental hazards.	Not generated environmental hazards.
Bulk transport (MARPOL 972 73/78-Anexo II-; IBC Code):	No precautions Special.	No precautions Special.	No precautions Special.

General Precautions:

- Transport palletizing.
- From the not transport with food, plant products or any other that are intended for human or animal use or consumption.
- From the not transport with flammable or explosive elements.
- The conveyor must always have the safety sheet at hand.

SECTION 15: Current Standards.

National-Chile:

NCh N° 382 in force:	Hazardous substances - Terminology and general classification.
NCh N° 2190 in force:	Land transport of dangerous goods - Hazard identification badges.
NCh N° 2245 in force:	Chemical Safety Data Sheet - Contents and Order of the Sections.
NCh N° 2979 in force:	Sustancias Peligrosas - Segregación y embalaje/envase en el transporte terrestre.
NCh N°1411/4 in force:	Hazardous Substances - Segregation and packaging in land transport.
D.S. N° 298 in force:	Regulations on the Transport of Hazardous Substances through Streets and Roads.
D.S. N° 148 in force:	Sanitary Regulations on Hazardous Waste Management.
D.S. N° 594 in force:	Regulation on basic sanitary and environmental conditions in the workplace.
D.S. N° 43 in force:	Regulation on the Storage of Hazardous Substances.
Exempt Resolution No. 408:	List of Substances Hazardous to Health.

International:

SGA (2019 rev8):	Globally Harmonized System of Classification and Labelling of Chemicals.
NFPA 704:	Standard system for hazard identification of response materials emergency, 2017.
REACH:	Regulation of registration, evaluation, authorization, and restriction of chemical substances.

The receiver should verify the possible existence of local regulations applicable to the product.

SECTION 16: Other information.

Biological properties of the Microorganisms *Bacillus thuringiensis* strain N1, *Bacillus thuringiensis* strain N2 and *Bacillus thuringiensis* strain N3:

The *Bacillus* strains used in the product exhibit insecticidal action through competition, inhibition, and microparasitism. It also has a growth biostimulant effect, improving vegetative and root development. The formula contains endospores, which are recognized as nature's most resistant survival structures, able to withstand high temperatures and a complete lack of moisture. When applying the product, the label instructions must be strictly followed and safety precautions must always be used.

SECURITY SHEET

By NCh. 2245:2021

Date: 07/22/2025.

Version: 03.

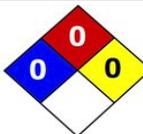
When applying the product, the label instructions must be strictly followed and safety precautions must always be used.

Change control:	Update to NCh 2245-year 2021.
------------------------	-------------------------------

Abbreviations and acronyms:

CAS:	Unique numerical identification for chemical compounds, polymers, biological sequences, preparations and alloys.
DL50:	Lethal dose, 50%.
CL50:	Lethal concentration, 50%.
IATA:	International Air Transport Association.
IMDG:	International Maritime Dangerous Goods Code.
ADR:	Accord européen relatif au transport international des marchandises dangereuses par route.
ECHA:	European Chemicals Agency.
EPA:	U.S. Environmental Protection Agency.
OSHA:	Occupational Safety and Health Administration.
NFPA:	National Fire Protection Association.
NCh:	Chilean Standard.
HDS:	Safety Sheet.
D.S.	Supreme Decree.
BCF:	Bioconcentration factor in fish.
DOT:	Department of Transportation.
NIOSH:	National Institute for Occupational Safety and Health.
FAO:	Food and Agriculture Organization of the United Nations.
NU:	United Nations (UN) number corresponds to a 4-digit serial number assigned to a hazardous substance in the United Nations system.
References:	Material Safety Data Sheets, EPA, ECHA, FAO, OSHA, ACGIH, DOT, NIOSH, NFPA.
CAS:	Unique numerical identification for chemical compounds, polymers, biological sequences, preparations and alloys.

Safety signal (NCh1411/4):

	
Oral Route: Blue: 0 Minimal risk.	Inhalation Route: Blue: 2 Moderate risk.

Current revision date:	07/22/2025.
-------------------------------	-------------

Referenced hazard warnings:

ATTENTION



Classification by SGA/GHS:

Route of exposure	Danger Category	Danger indication	Word of Warning
Oral:	Unclassified.	-	-
Dermal:	Unclassified	-	-
Inhalation	Category 4.	H332: Harmful if inhaled.	Attention.

SECURITY SHEET
By NCh. 2245:2021

Date: 07/22/2025.
Version: 03.

Dermal irritation:	Unclassified.	-	-
Eye irritation:	Unclassified.	-	-
Sensitization:	Unclassified.	-	-
Acute aquatic fish and invertebrates Aquatic:	Absence of acute toxicity, rapid degradability and non-Bioaccumulative.		
Date created:	01/26/2018,		
Date of next review:	07/22/2027.		
Provider's Limit of Liability:	In this act it is recorded that the information provided in this document is timely and transparent, in accordance with the requirements of national and international standards, in turn, it is established that the inappropriate use of this Product, could generate damage to people, private property and/or environment. It is advised, carefully read the present document and contact an expert to guide you in case you require assistance.		

The data contained in this fact sheet were obtained from reliable sources. The options expressed in this Safety Sheet are those of trained professionals. The information that is delivered in it is the one currently known on the subject. Considering that the use of this information and the products is beyond the control of the supplier, the Company does not assume any responsibility for this concept. Determining the conditions of safe use of the product is the obligation of the user.