

Massivo BioNik Plant Growth Regulator

SDS# VBC-0109 Revision 0

ISSUED 09/21/15

[Classification according to OSHA; 29 CFR § Part 1910.1200, (3/12/2012)]

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY**1.1 Product Identifier****MATERIAL NAME:** Massivo BioNik Plant Growth Regulator**Synonyms:** VBC-40009**EPA Reg No.:** 73049-474**Code Number:** 62706**List Number:** 60235**Chemical Family:** Naturally Occurring Isoprenoid Plant Growth Regulator**1.2 Relevant Identified Uses and Uses Advised Against****Identified Uses:** Plant growth regulator, use only for treating seed.**Uses Advised Against:** It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.**1.3 Details of the supplier of the Safety Data Sheet****Supplied By:** Valent BioSciences Corporation
870 Technology Way
Libertyville, Illinois 60048**1.4 EMERGENCY TELEPHONE NUMBERS****Emergency Health or Spill:**

Outside the United States: (+1) 651-632-6184

Within the United States: 877-315-9819

2. HAZARDS IDENTIFICATION**2.1 Classification of the Substance or Mixture**

Hazardous to the aquatic environment, Acute Category 1 (Lemna)

2.2 Labeling Elements**Symbol(s)**

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Signal Word

WARNING

Hazard Statement

Harmful to the Aquatic Life (Lemna)

Precautionary Statement:

Prevention

- Avoid release to the environment
- Avoid contact with skin, eyes or clothing.
- Wash hands and face thoroughly after handling.

Response

- IF IN EYES: 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.
- IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/ attention. Take off contaminated clothing and wash it before reuse.

2.3 Other Hazards

None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Component Name	(Classification)	Percent
21293-29-8	S-Abscisic Acid; (97.9% A.I)	Hazardous to aquatic environment, Acute Cat 1	25.54 % (25.00)
Trade Secret	Trade Secret	Not classified	74.46 %

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

GENERAL: In all cases of doubt, seek medical attention.

EYES: Remove from source of exposure. Flush with copious amounts of water. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present and easy to do, after the first 5 minutes, then continue rinsing. Provide symptomatic /supportive care as necessary. If irritation persists or signs of toxicity occur, seek medical attention. Call a poison center or doctor for treatment advice.

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SKIN: Remove from source of exposure. Take off contaminated clothing. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

INGESTION: Remove from source of exposure. Move person to fresh air. Do NOT induce vomiting. Give large quantities of water. If signs of toxicity occur, seek medical attention. Provide symptomatic /supportive care as necessary.

INHALATION: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. If person is not breathing, call 911, then give artificial respiration.

4.2 Most important Symptoms and Effects, both Acute and Delayed**Acute**

Causes Mild Eye Irritation and slight skin irritation

Delayed

No information on significant adverse effects

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

Treat symptomatically and supportively

5. FIRE FIGHTING PROCEDURES**5.1 Extinguisher Media****Suitable Extinguisher Media**

Dry chemical, water spray, foam or carbon dioxide.

Unsuitable Extinguisher Media

None known

5.2 Specific Hazards Arising from the Chemical

None known

Thermal decomposition products

Carbon oxides, nitrogen oxides

5.3 Advice to Firefighters**Protective Equipment and Precautions for Firefighters**

Fire fighter should wear full-face, self-contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling combustion products. See Section 8 (Exposure Controls / Personal Protection)

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Fire & Explosive Hazard

Material is not highly flammable and not explosive.

6. ACCIDENTAL RELEASE MEASURES**6.1 Personal Precautions, Protective Equipment and Emergency Procedures**

Where exposure level is known, wear respirator suitable for level of exposure. Where exposure level is not known, wear approved, positive pressure, self-contained respirator. In addition to the personal protection as recommended in section 8.

6.2 Environmental Precautions

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other water bodies unless in accordance with the requirements of a National Pollutant Discharge Elimination Systems (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or regional Office of the EPA. Do not contaminate water when disposing of equipment wash waters or rinsate.

6.3 Methods and Materials for Containment and Cleaning Up

Ventilate area. Wear appropriate personal protective equipment. Recover product by sweeping and place into appropriate container for disposal.

6.4 Reference to Other Sections

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. See Section 13 for Disposal Considerations. US Regulations may require reporting spills of hazardous materials: See Section 15: Regulatory Information for details on reportable quantities, if any.

7. HANDLING AND STORAGE**7.1 Precautions for Safe Handling**

Ventilate. Avoid breathe dust. Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Do not eat, drink or smoke while working with product. Obey reasonable safety precautions and practice good housekeeping. For filling operations respiratory protection may be recommended particularly in enclosed areas.

7.2 Conditions for Safe Storage

Protect against physical damage. Keep containers tightly closed. Store in a dry, cool, ventilated place, and out of direct sunlight.

Incompatibilities

None Known

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7.3 Specific End Use(s)

Plant Growth Regulator Product, Use only for treating seed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Component Exposure Limits

None established.

Derived No Effect Levels (DNELs)

No DNELs available

Predicted No Effect Concentrations (PNECs)

No PNECs available

8.2 Exposure Controls

Appropriate Engineering Controls

Provide general ventilation. Where adequate general ventilation is unavailable use process enclosure, local exhaust ventilation, or other engineering controls to control dust.

SKIN PROTECTION:

Wear impervious protective clothing, including boots and gloves. Wear gloves made of Latex or other impervious materials. Wash thoroughly with soap and water after handling.

EYE PROTECTION:

Wear goggles or safety glasses with side shields when handling.

RESPIRATORY PROTECTION:

For filling operations if dust is produced, respiratory protection is recommended. Use dust filtering respirator (MSHA/NIOSH approved number prefix TC-21C) or a NIOSH approved respirator with any N, P, R or HE filter).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Appearance/Color:	Viscous White to Off-White liquid suspension	Odor:	Fruity
pH:	3.38	Bulk Density:	Not Determined
Viscosity:	737 mm ² /s	Relative Density:	1.007 g/ml
Vapor Pressure:	Not Determined	Henry's Law constant	Not Determined
Solubility:	Not Determined	pK _a	Not Determined
Solubility in Organic Solvents:	Not Determined	Partition coefficient; n-octanol/water:	Not Determined
Surface Tension:	37.04 (dyne/cm) ³	Flammability:	Not Determined

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Auto-Ignition Temp.:	Not Determined	Oxidizing/Reducing Properties:	Not Determined
Explosive properties:	Not Determined	Corrosion Characteristics:	Not corrosive to HDPE plastic container

10. CHEMICAL STABILITY AND REACTIVITY

10.1 Reactivity

Material does not pose a significant reactivity hazard.

10.2 Chemical Stability

Stable under ordinary conditions of use and storage.

10.3 Possibility of Hazardous Reactions

Does not undergo hazardous polymerization

10.4 Conditions to Avoid

None known

10.5 Incompatible Materials

None known

10.6 Hazardous Decomposition Products

Carbon oxides and unidentified organic compounds.

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Likely Routes of Exposure

- Inhalation: Not likely
- Eye Contact: Yes
- Skin Contact: Yes
- Ingestion: Not likely

Product Toxicology

Acute Effects

- Oral Toxicity: LD₅₀ > 5,000 mg a.i./kg bw (rat) [Limit test]
- Dermal Toxicity: LD₅₀ > 5,000 mg a.i./kg bw (rat) [Limit test]
- Inhalation Toxicity: LC₅₀ > 5.08 mg/L air (rat)
- Corrosiveness: Not corrosive.
- Dermal Irritation: Slightly-irritating

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Ocular Irritation: Mildly irritating (rabbit). All test animals were free of ocular irritation by 72-hrs

Dermal Sensitization: Not a contact skin sensitizer (guinea pig) [Buehler method]

Mutagenicity Information: Components of this product are not listed as mutagens. Negative in chromosomal aberration in CHO. Negative in E-coli reverse mutation AMES test (Study conducted with TGAI)

Carcinogenicity Information: Components of this product are not listed as carcinogenic by NTP, IARC or OSHA. (Study conducted with TGAI)

12. ECOLOGICAL INFORMATION**12.1 Ecotoxicity (Studies Conducted with TGAI)**

Fish: LC₅₀ > 121 mg a.i./L (96-H, Rainbow trout)

Bird: LC₅₀ > 2,250 mg a.i./kg bw (Acute Oral - Bobwhite quail) [Limit dose]

Invertebrates (Daphnia): EC₅₀ > 116 mg a.i./L (48-H, *Daphnia magna*)

Insects (Bees): LC₅₀ >108.28 µg a.i./bee (48-H, acute oral toxicity) [Limit dose]

LC₅₀ >100.0 µg a.i./bee (48-H, contact toxicity) [Limit dose]

Aquatic Plants: EC₅₀ >0.040 mg a.i./L (7-D, *Lemna gibba*, yield – frond number)

EC₅₀ >0.249 mg a.i./L (7-D, *Lemna gibba*, growth rate – frond number)

After 14-D exposure EC values could not be calculated because there was insufficient inhibition of growth (*Lemna gibba*).

EC₅₀ >95.3 mg a.i./L (72-H, *Pseudokirchneriella subcapitata*, yield)

EC₅₀ >95.3 mg a.i./L (72-H, *Pseudokirchneriella subcapitata*, growth rate)

Earthworm: LC₅₀ >1,000 mg a.i./kg dry soil (14-D, *Eisenia foetida*, acute toxicity)

12.2 Persistence and Degradability (Studies Conducted with TGAI)

Naturally occurring Plant Growth regulator that has been shown in publications to be present in all plants and to degrade naturally in the environment.

Readily degrades in surface water, degradation follows first order kinetics (DT₅₀ 2.6 to 6.9 hrs).

In soil, quickly degraded by photolysis >50% in the first 24-H (DT₅₀ = 34 hours, DT₉₀ = 204 hours. In soil, rapidly degraded in all soil types studied by aerobic metabolism (DT₅₀: 0.8 – 2.2 days).

No inhibitory effect was observed on the respiration rate of activated sludge.

No long term influence on nitrogen or carbon transformation (12.5 kg a.i./ha).

Considered to be readily biodegradable.

12.3 Bioaccumulation potential (Studies Conducted with TGAI)

Partition coefficient n-octanol/water

Non-ionized form: Log P_{ow} = 1.8

ionized form: Log P_{ow} = 0.94

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Bio-concentration Factor (BCF): Given that the log P_{OW} for the active ingredient is much less than 3, there is no potential for bio-concentration in fatty tissues and no potential for aquatic bio-magnification.

12.4 Mobility in Soil

No data available

12.5 Results of PBT and vPvB assessment

Assessments not performed

12.6 Other adverse effects

None known

13. DISPOSAL CONSIDERATIONS**13.1 Waste Disposal Methods**

Dispose of product in accordance with federal, state, provincial, and local regulations. Prevent contamination of environment by wastes.

US EPA WASTE NUMBER & DESCRIPTIONS:

There is no applicable EPA waste number. This product, if discarded, is not expected to be a characteristic or listed hazardous waste.

14. TRANSPORTATION INFORMATION

DOT STATUS: Not regulated for domestic ground transport by US DOT
UN PROPER SHIPPING NAME: N/A
REMARKS: N/A

IATA/ICA0 STATUS: Regulated
PROPER SHIPPING NAME: UN3077 Environmentally Hazardous Substance, Liquid, N.O.S. (S-Abscisic Acid), 9, III, Marine Pollutant
REMARKS: Single or inner packaging less 5 Liters net (liquid) excepted from Dangerous Goods regulations – see IATA Special Provision A197

IMDG STATUS: Regulated
PROPER SHIPPING NAME: UN3077 Environmentally Hazardous Substance, Liquid, N.O.S. (S-Abscisic Acid), 9, III, Marine Pollutant
REMARKS: Single or inner packaging less 5 Liters net (liquid) excepted from Dangerous Goods regulations – see IMDG 2.10.2.7

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15. REGULATORY INFORMATION**15.1 Safety, Health and Environmental Regulations / Specific Legislation**

TSCA STATUS: N/L

CERCLA STATUS: Not regulated as hazardous

SARA STATUS: Acute: No Chronic: Yes Fire: No CDT: No

RCRA STATUS: Not regulated as hazardous

State Right-To-Know: Consult applicable national, state provincial or local laws to determine regulations, laws or ordinances which may be applicable.

OSHA HAZARD COMMUNICATION STANDARD: Not defined by the OSHA Hazard Communication Standard, 29 CFR

15.2 EPA Pesticide Regulations

EPA Registration Number: 73049-474

EPA Pesticide Label signal word: CAUTION

Product must have EPA Approved Pesticide Label attached to or accompanying all containers.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions and limitations for its use.

KEEP OUT OF REACH OF CHILDREN

CAUTION

PRECAUTIONARY STATEMENTS**HAZARDS TO HUMANS & DOMESTIC ANIMALS****CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Do Not use treated seed for animal or human consumption. Do Not allow treated seed to contaminate grain or other seed intended for animal or human consumption.

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ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash-water or rinsate.

To prevent potential consumption by animals, cover or collect treated seeds spilled during loading.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

Treated seed must not be used for or mixed with food or animal feed, or processed for oil. Seed commercially treated with a pesticide must be labeled as follows: "Treated Seed. Do not use for food, feed or oil."

The seed treater must add an EPA approved dye with the pesticide during the seed treatment process, unless dye is already on the seed [40 CFR 153.155(b)(1)].

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage

Keep container tightly closed when not in use. Store product in a cool place. Avoid extended storage conditions at temperatures above 25°C (77°F). Avoid exposure of product to light or sunlight.

Pesticide Disposal

To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling

Nonrefillable container. Do not reuse or refill this container.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after flow begins to drip. Fill container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances.

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16. OTHER INFORMATION**NFPA Hazard Ratings**Health: 0
Flammability: 0
Instability: 0**HMIS Hazard Ratings**Health: 0
Flammability: 0
Instability: 00 = minimal
1 = slight
2 = moderate
3 = serious
4 = ExtremeREASON FOR ISSUE: New GHS Formatting.
APPROVAL DATE: 09/21/15
SUPERSEDES DATE: --/--/--

LEGEND: N/A = Not Applicable

N/L = Not Listed

C = Ceiling

(R) = Registered Trademark of Valent BioSciences

(TM) = Registered Trademark of Valent BioSciences

N/D = Not Determined

L = Listed

S = Short-term

The information provided in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate at the time of preparation of the SDS. However, to the extent consistent with applicable law, Valent BioSciences Corporation and its subsidiaries or affiliates extend no warranties, make no representations, and assume no responsibility as to the accuracy, suitability, or completeness of such information. Additionally, to the extent consistent with applicable law, neither Valent BioSciences Corporation nor any of its subsidiaries or affiliates represents or guarantees that this information or product may be used without infringing the intellectual property rights of others. Except to the extent a particular use and particular information are expressly stated on the product label, it is the users' own responsibility to determine the suitability of this information for their own particular use of this product. If necessary, contact Valent BioSciences Corporation to confirm that you have the most current product label and SDS.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABEL (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use as required by the Occupational Health and Safety Act (29 CFR 1910.1200, "Hazcom"). The product label provides information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products is regulated by the EPA under the authority of FIFRA through the product label. All necessary hazard classification and appropriate precautionary use, storage, and disposal information is set forth on that label or labeling accompanying the pesticide or to which reference is made on the label. It is a violation of federal law to use an EPA-registered pesticide product in any manner inconsistent with its labeling.