SAFETY DATA SHEET

Glyfonova Bio

This safety data sheet complies with the requirements of: Regulation (EC) No. 453/2010 and Regulation (EC) No. 1272/2008



SDS #: FO002207-2-A

Revision date: 2018-08-29

Format: EU Version 1

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Code(s) FO002207-2-A

Legacy Product Code 4521

Product Name Glyfonova Bio

Synonyms GLYPHOSATE ISOPROPYLAMINE SALT: Glycine, N-(phosphonomethyl)- (CAS name);

N-(Phosphonomethyl)glycine (IUPAC name)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use: Herbicide

Restrictions on Use: Use as recommended by the label.

1.3. Details of the supplier of the safety data sheet

<u>Supplier</u> CHEMINOVA A/S, a subsidiary of FMC Corporation

Thyborønvej 78 DK-7673 Harboøre Denmark +45 9690 9690

SDS.Ronland@fmc.com

For further information, please contact:

Contact point (+45) 97 83 53 53 (24 h; for emergencies only)

1.4. Emergency telephone number

Emergency telephone Medical emergencies:

Austria: +43 1 406 43 43 Belgium: +32 70 245 245 Bulgaria: +359 2 9154 409

Cyprus: 1401

Czech Republic: +420 224 919 293, +420 224 915 402

Denmark: +45 82 12 12 12 France: +33 (0) 1 45 42 59 59 Finland: +358 9 471 977 Greece: 30 210 77 93 777 Hungary: +36 80 20 11 99

Ireland (Republic): +352 1 809 2166

Italy: +39 02 6610 1029

Lithuania: +370 523 62052, +370 687 53378

Luxembourg: +352 8002 5500 Netherlands: +31 30 274 88 88 Norway: +47 22 591300

Poland: +48 22 619 66 54, +48 22 619 08 97

Page 1/11

Version 1

Portugal: 808 250 143 (in Portugal only) +351 21 330 3284

Romania: +40 21318 3606 Slovakia: +421 2 54 77 4 166 Slovenia: +386 41 650 500 Spain: +34 91 562 04 20 Sweden: +46 08-331231112

Switzerland: 145

United Kingdom: 0870 600 6266 (in the UK only) U.S.A. & Canada: +1 800 / 331-3148 (ProPharma Group) All other countries: +1 651 / 632-6793 (ProPharma - Collect)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture Regulation (EC) No 1272/2008

This product has no label elements.
This product has no classification under CLP.

Hazard symbol not required.

2.2. Label elements

Hazard pictograms

This product has no label elements.

This product has no classification under CLP.

Hazard symbol not required.

EUH210 - Safety data sheet available on request

EUH401 - To avoid risks to human health and the environment, comply with the instructions for use

2.3. Other hazards

None of the ingredients in the product meets the criteria for being PBT or vPvB.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

The product is a mixture, not a substance.

3.2 Mixtures

Chemical nature

The product contains 486 g/l of the pure active ingredient glyphosate as its isopropylamine salt, equivalent to 360 g/l of the free acid glyphosate.

Chemical name	EC-No	CAS-No	Weight %	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number
Glyphosate	213-997-4	1071-83-6	31	Eye Dam. 1 (H318) Aquatic Chronic 2 (H411)	No data available
Poly(oxy-1,2-ethanediy l), ✓phos-phono- ¹butoxy -, isopropylamine salt		431040-31-2	3 (max)	Skin Corr. 1C (H314) Eye Dam. 1 (H318)	No data available
2-(2-(2-Butoxyethoxy)e thoxy)ethanol	205-592-6	143-22-6	1 (max)	Eye Dam. 1 (H318)	No data available
Alcohols, C8-10 (even numbered),	None	71060-57-6	1 (max)	Acute Tox. 4 (H302) Eye Dam. 1 (H318)	No data available

Version 1

ethoxylated

Additional Information

For the full text of the H-, R- and EUH- phrases mentioned in this Section, see Section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove

contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison

control center or doctor for further treatment advice.

Skin Contact Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20

minutes. Call a poison control center or doctor for further treatment advice.

Inhalation If experiencing any discomfort, immediately remove from exposure. Light cases: Keep

person under surveillance. Get medical attention immediately if symptoms develop. Serious

cases: Get medical attention immediately or call for an ambulance.

Immediate medical attention is required. Call a physician or poison control center

immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to

an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed

Symptoms from skin contact may include redness, itching and swelling. May cause eye irritation. If inhaled, may cause irritation to the nose, throat, and upper respiratory tract. Symptoms may include coughing and sneezing. Ingestion: no exposure symptoms reported under normal conditions of use. Ingestion of large amounts may cause stomach irritation. Symptoms include nausea, vomiting and diarrhea.

4.3. Indication of any immediate medical attention and special treatment needed

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

Immediate medical attention is required in case of ingestion or eye contact. The irritating effects of this product can be treated as usual against effects of acids or acid fumes. Possible mucosal damage may contraindicate the use of gastric lavage.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

Small Fire

Dry chemical, Carbon dioxide (CO₂).

Large Fire Water spray, Foam.

Unsuitable extinguishing media

Avoid heavy hose streams.

5.2. Special hazards arising from the substance or mixture

The essential breakdown products are carbon monoxide, carbon dioxide, phosphorus pentoxide and nitrogen oxides.

5.3. Advice for firefighters

Cool containers / tanks with water spray. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Isolate fire area. Evaluate upwind. As in any fire, wear self-contained breathing apparatus and full protective gear. Dike to prevent runoff.

Version 1

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions

It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels for the collection of spills should be available. In case of large spill (involving 10 tonnes of the product or more):

use personal protection equipment; see section 8 call emergency telephone no.; see section 1 alert authorities.

all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, gloves and rubber boots. Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from the spill area.

For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

For emergency responders

Use personal protection recommended in Section 8.

6.2. Environmental precautions

Contain the spill to prevent any further contamination of surface, soil or water. Do not discharge into drains or rivers. Contain the spillage using bunding. Accidental release into water courses must be alerted to the appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

bunding or capping.

Methods for cleaning up If appropriate, surface water drains should be covered. Minor spills on the floor or other

impervious surface should be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with damp cloth and/or strong industrial detergent with much water. Absorb wash liquid onto a suitable absorbent such as universal binder, attapulgite, bentonite or other absorbent clays and transfer contaminated absorbent to suitable containers. The used containers should be properly closed and labelled.

spills which soak into the ground should be dug up and transferred to suitable containers. in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal.

6.4. Reference to other sections

See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Handling

In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems with remote system control. Otherwise it is recommended to handle the material by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.

Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use.

The product should be mixed or stored using only stainless steel, aluminium, fiberglass, plastic or plastic-lined containers. Do not discharge to the environment. Do not contaminate water when disposing of equipment wash waters. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.

Hygiene measures

Clean water should be available for washing in case of eye or skin contamination. Remove and wash contaminated clothing before

Version 1

re-use. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Launder work clothing separately from regular household laundry.

7.2. Conditions for safe storage, including any incompatibilities

Storage

The product is stable under normal conditions of warehouse storage. Store in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading "POISON" is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

7.3. Specific end use(s)

Specific Use(s)

The product is a registered pesticide which may only be used for the applications it is registered for, in accordance with a label approved by the regulatory authorities.

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

To our knowledge, personal exposure limits have not been established for the active ingredient in this product.

Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Glyphosate	=	-	TWA 10 mg/m ³	=	=
1071-83-6			_		

Derived No Effect Level (DNEL) 0.2 mg/kg bw/day (Glyphosate free acid).

Predicted No Effect Concentration

(PNEC)

0.028 mg/L (Glyphosate free acid).

8.2. Exposure controls

Engineering measures When used in a closed system, personal protection equipment will not be required. The

following is meant for other situations, when the use of a closed system is not possible, or when it is necessary to open the system. Consider the need to render equipment or piping

systems non-hazardous before opening.

Personal protective equipment

Eye/Face Protection Tightly fitting safety goggles, Safety glasses with side-shields, Face-shield. Maintain eye

wash fountain and quick-drench facilities in work area.

Hand Protection Use protective gloves made of chemical materials such as nitrile or neoprene. Wash the

outside of gloves with soap and water before reuse. Check regularly for leaks.

Skin and Body ProtectionWear appropriate chemical resistant clothing to prevent skin contact depending on the

extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of appreciable or prolonged exposure,

coveralls of barrier laminate may be required.

Respiratory Protection The product is not likely to present an airborne exposure concern during normal handling,

but in the event of an accidental discharge of the material which produces a heavy vapour or mist, workers must put on officially approved respiratory protection equipment with a

universal filter type including particle filter.

Environmental exposure controls No information available.

Version 1

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State Liquid
Appearance Viscous
Odor Slight amine

Color yellow

Odor threshold No information available pH No information available 5.1 @ 25°C (1% solution)

Upper flammability limit: No information available Lower flammability limit: No information available

Vapor pressure For glyphosate free acid: 1.31 x 10-5 Pa at 25°C

Vapor densityNo information availableSpecific gravity1.169 g/cm³ @ 20°CWater solubilityMiscible with water

Solubility in other solvents Solubility of glyphosate isopropylamine salt @ 20°C in

dichloromethane 0.184 g/l

methanol 15.88 g/l

Solubility of glyphosate free acid in water: 10.5 g/l @ 20°C.

Partition coefficient Glyphosate free acid: log Kow = -3.3

Autoignition temperature

Decomposition temperature

Viscosity, kinematic

No information available
No information available
No information available

Viscosity, dynamic 24.6 mPa.s @ 25°C, 11.9 mPa.s @ 45°C

Explosive propertiesNot explosive
Oxidizing properties
Non-oxidizing

9.2. Other information

Softening point
Molecular weight
VOC content (%)
Density
Bulk density
No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

To our knowledge, the product has no special reactivities.

10.2. Chemical stability

Stable under recommended storage conditions.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge Not expected to be sensitive to static discharge.

10.3. Possibility of hazardous reactions

Hazardous polymerization

Hazardous polymerization does not occur.

Hazardous reactions

None under normal processing.

Version 1

10.4. Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5. Incompatible materials

Do not mix, store or apply this product in galvanised or unlined steel containers. This product can react with such containers to produce hydrogen gas which could flash or explode if ignited. Stainless steel may be used. The product may react with such containers to produce hydrogen gas which could flash or explode if ignited.

10.6. Hazardous decomposition products

See Section 5 for more information.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Product Information

The product is practically non-toxic. However, it should always be treated with the usual care of handling chemicals.

No significant adverse health effects are expected if only small amounts (less than a mouthful) are swallowed. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with nausea, vomiting and diarrhea. Ingestion of large quantities of a similar product has been reported to result in hypotension and lung edema.

LD50 Oral> 5000 mg/kg (rat) (Based on a similar product) (Method: OECD 401)LD50 Dermal> 2000 mg/kg (rat) (Based on a similar product) (Method: OECD 402)LC50 Inhalation> 4.72 mg/L (4-hr) (rat) (Based on a similar product) (Method: OECD 403)

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Glyphosate	= 4873 mg/kg (Rat)	= 7940 mg/kg (Rabbit)	> 4.98 mg/L (Rat) 4 h
2-(2-(2-Butoxyethoxy)ethoxy)eth	= 5300 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	
anol			
Alcohols, C8-10 (even	= 2700 mg/kg (Rat)		
numbered), ethoxylated			

Skin corrosion/irritation

Serious eye damage/eye irritation N

Not irritating in animal studies. (Based on a similar product). (Method: OECD 404). Non-irritating. (Based on a similar product). (Method: OECD 405).

Non-sensitizing (Based on a similar product) (Method: OECD 406)

Mutagenicity
Carcinogenicity

Sensitization

Not a mutagen based on the evaluated studies. Contains no ingredient listed as a carcinogen.

Reproductive toxicity

Not expected to have reproductive effects.

Teratogenicity

Not expected to be a teratogen.

STOT - single exposure

No specific effects after single exposure have been observed.

STOT - repeated exposure

The following has been measured on the active ingredient glyphosate: In long-term studies with glyphosate free acid, the first minor effects (body weight and liver weight changes) were noted in rats at exposure levels of 60 - 100 mg glyphosate/kg bw/day. No signs of

toxicity were found at any level, including the highest exposure level of 4800 mg

glyphosate/kg bw/day. No information available. No information available.

Target organ effects Symptoms

Neurological effects

Irritation.

Aspiration hazard The product does not present an aspiration pneumonia hazard.

Version 1

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity

The product is an active ingredient in herbicides and therefore expected to be toxic to all green plants. The product is not considered as harmful to fish, aquatic invertebrates, birds, insects and soil micro- and macro-organisms.

The ecotoxicity of the product is measured as:

The following has been measured on a similar but more concentrated product:

- Earthworms: Eisenia foetida14-day LD50: > 30-40 fing/kg soil
- Bees: Honeybee (Apis mellifera africanised)LD50, acute oral: > 100 ug/bee

12.2. Persistence and degradability

Not readily biodegradable.

12.3. Bioaccumulative potential

Not expected to bioaccumulate.

12.4. Mobility in soil

Mobility in soil

Glyphosate: Binds strongly to soil. Not mobile in soil.

Mobility

Glyphosate: Relatively immobile in soil.

12.5. Results of PBT and vPvB assessment

This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

12.6. Other adverse effects

No information available

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products

Directive 2008/98/EC on waste: Dispose of in accordance with the European Directives on waste and hazardous waste. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated Packaging

It is recommended to consider possible ways of disposal in the following order: Reuse or recycling should first be considered. Reuse is prohibited except by the authorisation holder. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.

Controlled incineration with flue gas scrubbing is possible for combustible packaging

Version 1

materials.

Delivery of the packaging to a licensed service for disposal of hazardous waste.

Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

Section 14: TRANSPORT INFORMATION

IMDG/IMO

14.1UN/ID noNot regulated14.2Proper Shipping NameNot regulated14.3Hazard classNot regulated14.4Packing GroupNot regulated14.5Marine PollutantNot applicable

Environmental Hazard The product may be harmful in the environment.

14.6 Special ProvisionsAvoid any unnecessary contact with the product. Misuse can result in damage to health. Do

not discharge to the environment.

14.7 Transport in bulk according to This product is not transported in bulk containers.

Annex II of MARPOL 73/78 and the

IBC Code

RID

14.1 UN/ID noNot regulated14.2 Proper Shipping NameNot regulated14.3 Hazard classNot regulated14.4 Packing GroupNot regulated

14.5 Environmental Hazard The product may be harmful in the environment.

14.6 Special ProvisionsAvoid any unnecessary contact with the product. Misuse can result in damage to health. Do

not discharge to the environment.

ADR/RID

14.1 UN/ID noNot regulated14.2 Proper Shipping NameNot regulated14.3 Hazard classNot regulated14.4 Packing GroupNot regulated

14.5 Environmental HazardThe product may be harmful in the environment.

14.6 Special ProvisionsAvoid any unnecessary contact with the product. Misuse can result in damage to health. Do

not discharge to the environment.

ICAO/IATA

14.1UN/ID noNot regulated14.2Proper Shipping NameNot regulated14.3Hazard classNot regulated14.4Packing GroupNot regulated

14.5 Environmental Hazard The product may be harmful in the environment.

14.6 Special ProvisionsAvoid any unnecessary contact with the product. Misuse can result in damage to health. Do

not discharge to the environment.

Section 15: REGULATORY INFORMATION

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

European Union

Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants

Version 1

Not Applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not Applicable

International Inventories

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINC S (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Glyphosate 1071-83-6		Х	X	Х	X	X	X	Χ
Poly(oxy-1,2-ethanediyl), *phos-phono- *butoxy-, isopropylamine salt 431040-31-2	Х	Х						
2-(2-(2-Butoxyethoxy)ethox y)ethanol 143-22-6	Х	Х	Х	Х	Х	Х	Х	Х
Alcohols, C8-10 (even numbered), ethoxylated 71060-57-6	Х	Х			Х	Х		Х

15.2. Chemical safety assessment

A chemical safety assessment is not required to be included for this product.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of R-phrases referred to under sections 2 and 3

Not applicable

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H411 - Toxic to aquatic life with long lasting effects EUH210 - Safety data sheet available on request

EUH401 - To avoid risks to human health and the environment, comply with the instructions for use

Legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS: CAS (Chemical Abstracts Service)

Ceiling: Maximum limit value:

DNEL: Derived No Effect Level (DNEL)

EINECS: EINECS (European Inventory of Existing Chemical Substances)

GHS: Globally Harmonized System (GHS)

IATA: International Air Transport Association (IATA)
ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods (IMDG)

LC50: LC50 (lethal concentration)

LD50: LD50 (lethal dose)

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Chemicals

RID: Regulations Concerning the International Transport of Dangerous Goods by Rail

STEL: Short term exposure limit

SVHC: Substances of Very High Concern for Authorization:

TWA: time weighted average

FO002207-2-A Glyfonova Bio

SDS #: FO002207-2-A **Revision date**: 2018-08-29

Version 1

vPvB: very Persistent and very Bioaccumulative

Revision date: 2018-08-29

Reason for revision: Format Change.

Disclaimer

FMC Corporation believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specified product designated and may not be applicable where such product is used in combination with any other materials or in any process. Use of this product is regulated by the U.S. Environmental Protection Agency (EPA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Further, since the conditions and methods of use are beyond the control of FMC Corporation, FMC corporation expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

Prepared By:

FMC Corporation

FMC Logo - Trademark of FMC Corporation

© 2018 FMC Corporation. All Rights Reserved.

End of Safety Data Sheet