

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



BDO Biomass Waste

Version	Revision Date:	SDS Number:	Date of last issue: 05/22/2025
1.1	05/22/2025	000050006080	Date of first issue: 05/22/2025

SECTION 1. IDENTIFICATION

Product name : BDO Biomass Waste

Manufacturer or supplier's details

Company name of supplier : Cargill Incorporated
Address : 15407 McGinty Rd W Wayzata, MN 55391

Telephone : 1-800-227-4455
Emergency telephone number : VelocityEHS 1-800-255-3924 (North America) +1-813-248-0585 (International) Contract number MIS7953677

Recommended use of the chemical and restrictions on use

Recommended use : By-product
Residues

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a hazardous substance or mixture.

GHS label elements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Escherichia coli	68583-22-2	$\geq 45 - \leq 55$
water	7732-18-5	$\geq 40 - \leq 50$
butane-1,4-diol	110-63-4	$\geq 1 - < 5$

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If inhaled, remove to fresh air.
If symptoms persist, call a physician.

In case of skin contact : Wash contaminated clothing before reuse.
Wash off with soap and plenty of water.
If skin irritation persists, call a physician.

In case of eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.

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If swallowed	:	If eye irritation persists, consult a specialist. Rinse mouth with water. Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	None known.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	:	Do NOT use water jet.
Specific hazards during fire-fighting	:	Burning produces irritant fumes.
Hazardous combustion products	:	No hazardous combustion products are known
Further information	:	In the event of fire and/or explosion do not breathe fumes. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation.
Environmental precautions	:	Should not be released into the environment. Try to prevent the material from entering drains or water courses.
Methods and materials for containment and cleaning up	:	Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Provide appropriate exhaust ventilation at places where dust is formed.
Advice on safe handling	:	Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static elec-

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tricity.
Wear personal protective equipment.
Do not get in eyes or mouth or on skin.
Use only with adequate ventilation.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage : Store in original container.
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : No materials to be especially mentioned.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection

Remarks : For prolonged or repeated contact use protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Safety glasses

Skin and body protection : Protective suit

Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : solid

Colour : brown

Odour : pungent

Odour Threshold : No data available

pH : 5 - 6

Freezing point/ range : No data available

Boiling point/boiling range : No data available

Flash point : No data available

Evaporation rate : No data available

Flammability (liquids) : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : No data available

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Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned.
Conditions to avoid	:	No data available
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Eye contact
Skin contact
Ingestion

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Remarks: This information is not available.
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Components:

Escherichia coli:

Acute oral toxicity	:	LD50 (Mouse): > 5,000 mg/kg Test substance: Based on data from similar materials Remarks: Estimated value
Acute inhalation toxicity	:	Remarks: This information is not available.
Acute dermal toxicity	:	Remarks: Not readily absorbed through the skin.

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water:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 20 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg

butane-1,4-diol:

Acute oral toxicity : LD50 (Rat, male and female): 1,500 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 15 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg

Skin corrosion/irritation

Not classified due to lack of data.

Product:

Remarks : Prolonged skin contact may cause skin irritation.

Components:

Escherichia coli:

Result : No skin irritation
Test substance : Based on data from similar materials
Remarks : No skin irritation

water:

Species : Human
Result : No skin irritation
Remarks : No skin irritation

butane-1,4-diol:

Species : Rabbit
Result : No skin irritation
Remarks : No skin irritation

Serious eye damage/eye irritation

Not classified due to lack of data.

Product:

Remarks : slight irritation

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Components:

Escherichia coli:

Result	:	No eye irritation
Remarks	:	Dust contact with the eyes can lead to mechanical irritation.

water:

Species	:	Human
Result	:	No eye irritation
Remarks	:	No eye irritation

butane-1,4-diol:

Species	:	Rabbit
Result	:	No eye irritation
Remarks	:	No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Not classified due to lack of data.

Respiratory sensitisation

Not classified due to lack of data.

Components:

water:

Species	:	Humans
Result	:	Did not cause sensitisation on laboratory animals.
Remarks	:	Did not cause sensitisation on laboratory animals.

butane-1,4-diol:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Does not cause skin sensitisation.
Remarks	:	Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Not classified due to lack of data.

Components:

water:

Germ cell mutagenicity - Assessment	:	Animal testing did not show any mutagenic effects.
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Carcinogenicity

Not classified due to lack of data.

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Components:

Escherichia coli:

Remarks : Weight of evidence does not support classification as a carcinogen

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

water:

Remarks : Animal testing did not show any carcinogenic effects.

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified due to lack of data.

Components:

water:

Effects on fertility : Remarks: No effects on fertility and early embryonic development were detected.

Reproductive toxicity - Assessment : No toxicity to reproduction, No effects on or via lactation
Animal testing did not show any effects on foetal development.

STOT - single exposure

Not classified due to lack of data.

Components:

water:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

butane-1,4-diol:

Exposure routes : inhalation (dust/mist/fume)

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

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STOT - repeated exposure

Not classified due to lack of data.

Components:

water:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

water:

Remarks : No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

Not classified due to lack of data.

Components:

Escherichia coli:

No aspiration toxicity classification

water:

No aspiration toxicity classification

Further information

Product:

Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : LC50 (Fish): > 100 mg/l
Exposure time: 96 h
Test substance: Input data for the components
Method: Calculation method

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): > 100 mg/l
Exposure time: 48 h
Test substance: Input data for the components
Method: Calculation method

Toxicity to algae/aquatic plants : ErC50 (algae): > 100 mg/l
Exposure time: 72 h
Test substance: Input data for the components
Method: Calculation method

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Components:

Escherichia coli:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Based on data from similar materials
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): > 100 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Based on data from similar materials
Method: OECD Test Guideline 201

NOEC (Raphidocelis subcapitata (freshwater green alga)): > 100 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Based on data from similar materials
Method: OECD Test Guideline 201

water:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l
Exposure time: 96 h

butane-1,4-diol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 30,000 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 813 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Scenedesmus capricornutum (fresh water algae)): > 500 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 85 mg/l
End point: see user defined free text
Exposure time: 21 d

Toxicity to microorganisms : EC50 (Protozoa): > 15,000 mg/l
Exposure time: 40 h

see user defined free text (activated sludge): > 788 mg/l
Exposure time: 30 min

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Persistence and degradability

Product:

Biodegradability : Remarks: Expected to be biodegradable

Components:

Escherichia coli:

Biodegradability : Remarks: Expected to be biodegradable

butane-1,4-diol:

Biodegradability : aerobic
Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 90 - 100 %
Exposure time: 7 d
Method: OECD Test Guideline 302B
GLP: no

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Components:

Escherichia coli:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : Remarks: No data available

water:

Partition coefficient: n-octanol/water : log Pow: -0.467

butane-1,4-diol:

Bioaccumulation : Remarks: Accumulation in aquatic organisms is unlikely.

Partition coefficient: n-octanol/water : log Pow: -0.88
Method: OECD Test Guideline 107

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufac-

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tured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.
Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR

Not regulated as a dangerous good

Special precautions for user

Remarks : Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

acetic acid	64-19-7	>= 0 - < 0.1 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

acetic acid	64-19-7	>= 0 - < 0.1 %
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This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

California Prop. 65

WARNING: This product can expose you to chemicals including nickel, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TCSI	: Not in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory
AIIC	: Not in compliance with the inventory
DSL	: This product contains the following components that are not on the Canadian DSL nor NDSL.
ENCS	: Not in compliance with the inventory
ISHL	: Not in compliance with the inventory
KECI	: Not in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: Not in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
TECI	: Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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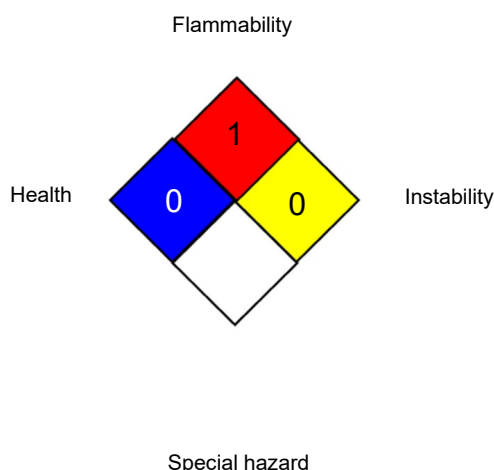
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	/	0
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -

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Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 05/22/2025

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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