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Product name	ACCUDO	August 2018
Safety data sheet according to EU Reg. 1907/2006 as amended		Supersedes July 2017

SAFETY DATA SHEET

ACCUDO

Revision: Sections containing a revision or new information are marked with a ♣.

♣ SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1. **Product identifier** **ACCUDO**
- Code name F4019-4
- 1.2. **Relevant identified uses of the substance or mixture and uses advised against** Can be used as a biostimulant for agricultural purposes only.
- 1.3. **Details of the supplier of the safety data sheet** **CHEMINOVA A/S**, a subsidiary of FMC Corporation
 Thyborønvej 78
 DK-7673 Harboøre
 Denmark
SDS.Ronland@fmc.com
- 1.4. **Emergency telephone number**
- Medical emergencies:*
- | | |
|-------------------------------------|---|
| Austria: +43 1 406 43 43 | Norway: +47 22 591300 |
| Belgium: +32 70 245 245 | Poland: +48 22 619 66 54 |
| Bulgaria: +359 2 9154 409 | +48 22 619 08 97 |
| Cyprus: 1401 | Portugal: 808 250 143 (in Portugal only) |
| Czech Republic: +420 224 919 293 | +351 21 330 3284 |
| +420 224 915 402 | Romania: +40 21318 3606 |
| Denmark: +45 82 12 12 12 | Scotland: +8454 24 24 24 |
| England and Wales: 111 | Slovakia: +421 2 54 77 4 166 |
| France: +33 (0) 1 45 42 59 59 | Slovenia: +386 41 650 500 |
| Finland: +358 9 471 977 | South Africa: +27 83 123 3911 (Bateleur Emergency Response Co.) |
| Greece: 30 210 77 93 777 | Spain: +34 91 562 04 20 |
| Hungary: +36 80 20 11 99 | Sweden: +46 08-331231 |
| Ireland (Republic): +353 1 837 9964 | 112 |
| Italy: +39 02 6610 1029 | Switzerland: 145 |
| Lithuania: +370 523 62052 | Turkey: 114 |
| +370 687 53378 | U.S.A. & Canada: +1 800 / 331 3148 (ProPharma) |
| Luxembourg: +352 8002 5500 | All other countries: +1 651 / 632 6793 (ProPharma - Collect) |
| Netherlands: +31 30 274 88 88 | |

For fire, leak, spill or other accident emergencies:

U.S.A.: +1 800 / 424 9300 (CHEMTREC)
 All other countries: +1 703 / 741 5970 (CHEMTREC - Collect)

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♣ SECTION 2: HAZARDS IDENTIFICATION

- 2.1. **Classification of the substance or mixture** None
- WHO classification Class U (Unlikely to present acute hazard in normal use)
- Health hazards No serious hazards to health are expected. However, the product should always be treated with the usual care of handling chemicals.
- Environmental hazards Not expected to be harmful to aquatic organisms.
- 2.2. **Label elements**
According to EU Reg. 1272/2008 as amended
- Product identifier Accudo
- Hazard pictograms None
- Signal word None
- Hazard statements None
- Precautionary statements None
- Supplementary hazard statements
- EUH210 Safety data sheet available on request.
- EUH401 To avoid risks to human health and the environment, comply with the instructions of 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** The product contains *Bacillus licheniformis* RTI184 (2.2%), a biologically active material.
- | <u>Reportable ingredient</u> | Content (% w/w) | CAS no. | EC no. (EINECS no.) | Classification |
|------------------------------|-----------------|---------|---------------------|----------------|
| Glycerol | 32 | 56-81-5 | 200-289-5 | None |

SECTION 4: FIRST AID MEASURES

- 4.1. **Description of first aid measures**
- Inhalation If experiencing any discomfort, immediately remove from exposure. Get medical attention if discomfort does not disappear.
- Skin contact Remove contaminated clothing and footwear. Wash with water and soap. See physician if any symptom develops.

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Eye contact	Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. Get medical attention if irritation persists.
Ingestion	Inducing vomiting is not recommended. Rinse mouth and drink a few glasses of water or milk. If vomiting does occur, rinse mouth and drink fluids again. Consult a physician.
4.2. Most important symptoms and effects, both acute and delayed	To our knowledge, adverse effects in humans have not been reported.
4.3. Indication of any immediate medical attention and special treatment needed	Medical attention is required in case of ingestion. It may be helpful to show this safety data sheet to physician
Note to physician	A specific antidote for exposure to this material is not known. Treatment is as for a general chemical. Gastric lavage and/or administration of activated charcoal can be considered. After decontamination, treatment of exposure should be directed at the control of symptoms and the clinical condition.

♣ SECTION 5: FIRE-FIGHTING MEASURES
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5.1. Extinguishing media	Dry chemical or carbon dioxide for small fires, water spray or foam for large fires. Avoid heavy hose streams.
5.2. Special hazards arising from the substance or mixture	The essential breakdown products are sulphur dioxide, carbon monoxide and carbon dioxide.
5.3. Advice for firefighters	Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures	It is recommended to have a predetermined plan for the handling of spills. Empty, sealable vessels for the collection of spills should be available. In case of large spill (involving 10 tonnes of the product or more): 1. use personal protection equipment; see section 8 2. call emergency telephone no.; see section 1 3. alert authorities. Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this
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may mean wearing face mask or eye protection, chemical resistant clothing, gloves and boots.

Stop the source of the spill immediately if safe to do so. Avoid and reduce mist formation as much as possible.

6.2. Environmental precautions Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.

6.3. Methods and materials for containment and cleaning up It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. See GHS (Annex 4, Section 6).

If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be absorbed onto an absorptive material such as universal binder, hydrated lime, bentonite, attapulgate or other absorbent clays. Collect the contaminated absorbent in suitable containers. Clean area with detergent and rinse with water. The used containers should be properly closed and labelled.

Large spills which soak into the ground should be dug up and transferred to suitable containers.

Spills 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 subsection 8.2. for personal protection. See section 13 for disposal.

♣ SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe 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. The material should be handled 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.

For its use as a pesticide, first look for precautions and personal protection measures on the officially approved label on the packaging or for other official guidance or policy in force. If these are lacking, see section 8.

Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly after handling. Remove contaminated clothing immediately. Then wash thoroughly and put on clean clothing.

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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.

7.2. Conditions for safe storage, including any incompatibilities

The product is stable under normal conditions of warehouse storage. Protect against heat.

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. 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)

This 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.

♣ SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

To our knowledge not established for any other of the ingredients in this product than glycerol:

Glycerol		Year	
ACGIH (USA) TLV		2015	Not established
OSHA (USA) PEL		2015	15 mg/m ³ , total dust (mist)
EU, 2000/39/EC as amended		2009	5 mg/m ³ , respirable fraction
Germany, MAK		2014	Not established
HSE (UK) WEL		2011	10 mg/m ³ , mist

However, other personal exposure limits defined by local regulations may exist and must be observed.

Glycerol

DNEL, inhalation	56 mg/m ³
PNEC, freshwater	0.885 mg/l
PNEC, marine water	0.088 mg/l

8.2. Exposure controls

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.

The precautions mentioned below are primarily meant for handling of the undiluted product and for preparing the spray solution, but can be recommended for spraying as well.

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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.



Protective gloves

Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber. The breakthrough times of these gloves for the product are unknown, but it is expected that they will give adequate protection. It is recommended to limit the work to be done manually.



Eye protection

Wear safety glasses or goggles. It is recommended to have an eye wash fountain immediately available in the workplace when there is a potential for eye contact.



Other skin protection

Wear 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 excessive or prolonged exposure, coveralls of barrier laminate may be required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on physical and chemical properties

Appearance	Liquid
Odour	Fermented
Odour threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Initial boiling point and boiling range	Not determined
Flash point	> 100°C
Evaporation rate	Not determined
Flammability (solid/gas)	Not applicable (liquid)
Upper/lower flammability or explosive limits	Not determined
Vapour pressure	Not determined
Vapour density	Not determined
Relative density	Not determined
Solubility(ies)	Not determined
Partition coefficient n-octanol/water	Not determined
Autoignition temperature	Not determined
Decomposition temperature	Not determined
Viscosity	Not determined
Explosive properties	Not explosive
Oxidising properties	Not oxidising

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9.2. Other information

Miscibility The product is miscible with water.

SECTION 10: STABILITY AND REACTIVITY

- 10.1. **Reactivity** To our knowledge, the product has no special reactivities.
- 10.2. **Chemical stability** The product is stable during normal handling and storage at ambient temperatures.
- 10.3. **Possibility of hazardous reactions** None known
- 10.4. **Conditions to avoid** Heating of the product will produce harmful and irritant vapours.
- 10.5. **Materials to avoid** None known
- 10.6. **Hazardous decomposition products** See subsection 5.2.

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1. **Information on toxicological effects** * = Based on available data, the classification criteria are not met.
 - Product The product contains biologically active material. Hazards to human health which would require classification are not expected, but it is recommended to handle the product with care and to avoid unnecessary exposure.
 - Acute toxicity The product is not considered as harmful by single exposures. * The acute toxicity is estimated as:
 - Route(s) of entry - ingestion LD₅₀, oral, rat: > 2000 mg/kg
 - skin LD₅₀, dermal, rat: > 2000 mg/kg
 - inhalation LC₅₀, inhalation, rat: > 5 mg/l/4 h
 - Skin corrosion/irritation Not irritating to skin. *
 - Serious eye damage/irritation Not irritating to eyes. *
 - Respiratory or skin sensitisation ... Not expected to be sensitising to skin. *
 - Germ cell mutagenicity The product contains no ingredients known to be mutagenic. *
 - Carcinogenicity The product contains no ingredients known to be carcinogenic. *
 - Reproductive toxicity The product contains no ingredients known to have adverse effects on reproduction. *
 - STOT – single exposure To our knowledge, no specific effects have been observed after single exposure. *

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STOT – repeated exposure	To our knowledge, no specific effects have been observed after repeated exposure. *
Aspiration hazard	The product does not present an aspiration hazard. *
Symptoms and effects, acute and delayed	To our knowledge, adverse effects have not been reported.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity	The product is not expected to be toxic to fish, plants, algae, aquatic invertebrates, birds, mammals, insects and soil micro- and macroorganisms at a level which would require classification.
12.2. Persistence and degradability	The product is expected to be readily biodegradable.
12.3. Bioaccumulative potential	Bioaccumulation is not expected.
12.4. Mobility in soil	The product contains no hazardous ingredients which may be mobile in the environment.
12.5. Results of PBT and vPvB assessment	None of the ingredients meets the criteria for being PBT or vPvB.
12.6. Other adverse effects	Other relevant hazardous effects in the environment are not known.

♣ SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods	<p>Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste.</p> <p>Disposal of waste and packagings must always be in accordance with all applicable local regulations.</p>
Disposal of product	<p>According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not feasible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.</p> <p>Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.</p>
Disposal of packaging	<p>It is recommended to consider possible ways of disposal in the following order:</p> <p>1. 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.</p>

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2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.
3. Delivery of the packaging to a licensed service for disposal of hazardous waste.
4. 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

ADR/RID/IMDG/IATA/ICAO classification

- | | |
|---|---|
| 14.1. UN number | Not classified as hazardous material for transport |
| 14.2. UN proper shipping name | Not applicable |
| 14.3. Transport hazard class(es) | Not applicable |
| 14.4. Packing group | Not applicable |
| 14.5. Environmental hazards | The product may be harmful in the environment. |
| 14.6. Special precautions for user | Avoid 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 Annex II of MARPOL 73/78 and the IBC code | The product is not transported in bulk by ship. |

♣ SECTION 15: REGULATORY INFORMATION

- | | |
|---|---|
| 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture | To our knowledge, no specific regulations apply.
All ingredients are covered by EU chemical legislation. |
| 15.2. Chemical safety assessment | A chemical safety assessment is not required to be included for this product. |

♣ SECTION 16: OTHER INFORMATION

- | | | | | | | | | | | | |
|---|---|-------|---|-----|----------------------------|------|-----------|------|-------------------------|----|--------------------|
| Relevant changes in the safety data sheet | Various changes have been made to adapt the format of the safety data sheet, but these do not involve new information about hazardous properties. | | | | | | | | | | |
| List of abbreviations | <table border="0"> <tr> <td>ACGIH</td> <td>American Conference of Governmental Industrial Hygienists</td> </tr> <tr> <td>CAS</td> <td>Chemical Abstracts Service</td> </tr> <tr> <td>Dir.</td> <td>Directive</td> </tr> <tr> <td>DNEL</td> <td>Derived No Effect Level</td> </tr> <tr> <td>EC</td> <td>European Community</td> </tr> </table> | ACGIH | American Conference of Governmental Industrial Hygienists | CAS | Chemical Abstracts Service | Dir. | Directive | DNEL | Derived No Effect Level | EC | European Community |
| ACGIH | American Conference of Governmental Industrial Hygienists | | | | | | | | | | |
| CAS | Chemical Abstracts Service | | | | | | | | | | |
| Dir. | Directive | | | | | | | | | | |
| DNEL | Derived No Effect Level | | | | | | | | | | |
| EC | European Community | | | | | | | | | | |

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EINECS	European INventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013
HSE	Health & Safety Executive, UK
IBC	International Bulk Chemical code
LC ₅₀	50% Lethal Concentration
LD ₅₀	50% Lethal Dose
MAK	Maximale Arbeitsplatz-Konzentration
MARPOL	Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution
OECD	Organisation for Economic Cooperation and Development
OSHA	Occupational Safety and Health Administration
PBT	Persistent, Bioaccumulative, Toxic
PEL	Personal Exposure Limit
PNEC	Predicted No Effect Concentration
Reg.	Regulation
SL	Soluble concentrate
STOT	Specific Target Organ Toxicity
TLV	Threshold Limit Value
vPvB	very Persistent, very Bioaccumulative
WEL	Workplace Exposure Limit
WHO	World Health Organisation

Method for classification	Calculation method
Used hazard statements	EUH210 Safety data sheet available on request. EUH401 To avoid risks to human health and the environment, comply with the instructions of use.
Advice on training	This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.

The information provided in this safety data sheet is believed to be accurate and reliable, but uses of the product vary and situations unforeseen by FMC Corporation may exist. The user has to check the validity of the information under local circumstances.

Prepared by: FMC Corporation / Cheminova A/S / GHB