

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

1. Identification of the substance/mixture and of the company/undertaking**1.1 Product Identifier**

Trade name : RONOZYME® MultiGrain (GT)

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

Use of the Substance/Mixture : Additive for animal nutrition to be used in feed

1.3 Details of the supplier of the safety data sheet

Company : DSM Nutritional Products Ltd.
 PO Box 2676
 CH-4002 Basel

Telephone : +41618158888
 Telefax : +41618157253
 E-mail address : sds.nutritionalproducts@dsm.com
 Responsible/issuing person :

1.4 Emergency telephone number

+41 62 866 2314

2. Hazards identification**2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Respiratory sensitisation, Category 1 H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Classification (67/548/EEC, 1999/45/EC)

Sensitising R42: May cause sensitisation by inhalation.

2.2 Label elements**Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms



Signal word : Danger

Hazard statements : H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements : **Prevention:**
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
 P285 In case of inadequate ventilation wear respiratory protection.

Response:
 P304 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

P342 + P311

If experiencing respiratory symptoms: Call a
POISON CENTER or doctor/ physician.**Disposal:**
P501Dispose of contents/ container to an
approved waste disposal plant.

Hazardous components which must be listed on the label:

9012-54-8	cellulase
62213-14-3	glucanase, endo-1,3(4)-β-
9025-57-4	Xylanase, endo-1,4-

2.3 Other hazards

Risk of dust explosion.

3. Composition/information on ingredients

Brief description of the product : Mixture (preparation) containing enzymes and auxiliary substances

3.2 Mixtures**Hazardous components**

Chemical Name	CAS-No. EC-No Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
cellulase	9012-54-8 232-734-4	R42	Resp. Sens. 1A; H334	> 0 - < 5
glucanase, endo-1,3(4)-β-	62213-14-3 263-462-4	R42	Resp. Sens. 1A; H334	> 0 - < 5
Xylanase, endo-1,4-	9025-57-4 232-800-2	R42	Resp. Sens. 1A; H334	> 0 - < 5

For the full text of the R-phrases mentioned in this Section, see Section 16.
For the full text of the H-Statements mentioned in this Section, see Section 16.**Further ingredients**

Chemical Name	CAS-No. EC-No Registration number	Classification	GHS Classification	Concentration [%]
cellulose	9004-34-6 232-674-9			>= 5 - < 10

4. First aid measures**4.1 Description of first aid measures**

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

Wash off with soap and plenty of water.
If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No specific symptoms known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

5. Firefighting measures**5.1 Extinguishing media**

Suitable extinguishing media : Water
Foam

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : None known.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Consider dust explosion hazard.

6. Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Avoid dust formation.
Avoid breathing dust.

6.2 Environmental precautions

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

Prevent further leakage or spillage if safe to do so.
 If the product contaminates rivers and lakes or drains inform respective authorities.
 Try to prevent the material from entering drains or water courses.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust.
 Keep in suitable, closed containers for disposal.
 Avoid formation of dust and aerosols.

6.4 Reference to other sections

For personal protection see section 8.
 For disposal considerations see section 13.

7. Handling and storage**7.1 Precautions for safe handling**

Advice on safe handling : Avoid formation of respirable particles.
 Avoid exceeding of the given occupational exposure limits (see section 8).
 For personal protection see section 8.
 Provide sufficient air exchange and/or exhaust in work rooms.
 Dispose of rinse water in accordance with local and national regulations.
 Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Avoid dust formation.
 Provide appropriate exhaust ventilation at places where dust is formed.
 Take necessary action to avoid static electricity discharge.

7.2 Conditions for safe storage, including any Incompatibilities

Requirements for storage areas and containers : Keep away from direct sunlight.
 Protect from humidity.

: Keep container tightly closed and dry.

Storage temperature : < 25 °C

7.3 Specific end use(s)

Specific use(s) : not applicable

8. Exposure controls/personal protection**8.1 Control parameters**

Components	CAS-No.	Value (Form of exposure)	Control parameters	Update	Basis
cellulose	9004-34-6	TWA (inhalable dust)	10 mg/m ³	2011-12-01	GB EH40
		TWA (Respirable)	4 mg/m ³	2011-12-01	GB EH40

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

		dust)			
		STEL (inhalable dust)	20 mg/m ³	2011-12-01	GB EH40
	:	The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m ⁻³ 8-hour TWA of inhalable dust or 4 mg.m ⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit.			

8.2 Exposure controls**Personal protective equipment**

- Respiratory protection : Suitable mask with particle filter P3 (European Norm 143)
: In the case of dust or aerosol formation use respirator with an approved filter.
- Hand protection : Glove material: for example nitrile rubber
: Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.
- Eye protection : Safety glasses with side-shields
- Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : When using do not eat or drink.
Avoid contact with skin, eyes and clothing.
Do not breathe dust or spray mist.

9. Physical and chemical properties**9.1 Information on basic physical and chemical properties**

- Appearance : powder, granular
- Colour : off-white
- Odour : slight
- Odour Threshold : No information available.
- pH : no data available
- Melting point/range : not determined
- Boiling point/boiling range : not determined
- Flash point : not applicable
- Flammability (solid, gas) : Not classified as flammable as defined by the transport regulations.
- Vapour pressure : not applicable
- Relative vapour density : not applicable
- Density : 0,45 g/cm³
- Water solubility : partly soluble
- Partition coefficient: n- : not applicable

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

octanol/water
Auto-ignition temperature : no data available
Thermal decomposition : Not relevant
Explosive properties : Not explosive
Oxidizing properties : no data available

9.2 Other information

Combustibility index for deposited dust : 2 (23 °C)
: 2 (100 °C)

Dust explosion class : The sample could not be ignited under test conditions (Hartmann tube). (Milled sample, Median value of the tested sample 0,057 mm, Loss on drying 1,8 %)

Minimum ignition energy : > 1 000 mJ (Milled sample, Median value of the tested sample 0,057 mm, Loss on drying 1,8 %)
The Minimum ignition energy (MIE) of a dust/air mix depends on the particle size the water content and the temperature of the dust. The finer and the dryer the dust the lower the MIE.
: General remark: The indicated dust explosion characteristics are only valid for this product and are sensitive to the sample's parameters.

Powder volume resistivity : ca. 5E+09 Ohmm (Product sample, Median value of the tested sample 0,467 mm, Loss on drying 0,4 %)

Minimum ignition temperature of a dust/air mix : 460 °C (Median value of the tested sample 0,467 mm) determined in the BAM oven

Particle size : 0 % < 0,15 mm

Bulk density : ca. 1 020 kg/m³

10. Stability and reactivity**10.1 Reactivity**

No hazards to be specially mentioned.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Dust may form explosive mixture in air.

10.4 Conditions to avoid

Heat.

10.5 Incompatible materials

Strong acids and strong bases

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

Strong oxidizing agents

10.6 Hazardous decomposition products

No decomposition if used as directed.

11. Toxicological information**11.1 Information on toxicological effects**

- Acute oral toxicity : LD50 (rat): > 5 000 mg/kg
(calculated from LD50 of components)
- Skin corrosion/irritation : Prolonged skin contact may cause skin irritation.
- Serious eye damage/eye irritation : Dust contact with the eyes can lead to mechanical irritation.
- Respiratory or skin sensitisation
cellulase : May cause sensitisation by inhalation.
- glucanase, endo-1,3(4)- β - : May cause sensitisation by inhalation.
- Xylanase, endo-1,4- : May cause sensitisation by inhalation.
- Genotoxicity in vitro : No indication for mutagenicity known.
- Carcinogenicity : No indication for carcinogenicity known.
- Reproductive toxicity : This information is not available.
- STOT - repeated exposure : This information is not available.
- Experience with human exposure: Inhalation
- cellulase : Inhalation may induce sensitization and may cause allergic reactions in sensitized individuals.
- glucanase, endo-1,3(4)- β - : Inhalation may induce sensitization and may cause allergic reactions in sensitized individuals.
- Xylanase, endo-1,4- : Inhalation may induce sensitization and may cause allergic reactions in sensitized individuals.
- Experience with human exposure: Skin contact
- cellulase : Prolonged skin contact may cause skin irritation.
- glucanase, endo-1,3(4)- β - : Prolonged skin contact may cause skin irritation.
- Xylanase, endo-1,4- : Prolonged skin contact may cause skin irritation.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

12. Ecological information**12.1 Toxicity**

No data is available on the product itself.

12.2 Persistence and degradability

No data is available on the product itself.

12.3 Bioaccumulative potential

Bioaccumulation : no data available
Partition coefficient: n-octanol/water : not applicable

12.4 Mobility in soil

Distribution among environmental compartments : no data available

12.5 Results of PBT and vPvB assessment

Assessment : not determined

12.6 Other adverse effects

Additional ecological information : There is no data available for this product.

13. Disposal considerations**13.1 Waste treatment methods**

Product : Do not contaminate ponds, waterways or ditches with chemical or used container.
Do not dispose of waste into sewer.
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Dispose of as unused product.
Do not re-use empty containers.

14. Transport information**14.1 UN number**

ADR
Not dangerous goods
RID
Not dangerous goods
IMDG
Not dangerous goods
IATA
Not dangerous goods

14.2 Proper shipping name

ADR
Not dangerous goods
RID

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.3 Transport hazard class**ADR**

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.4 Packing group**ADR**

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.5 Environmental hazards**ADR**

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

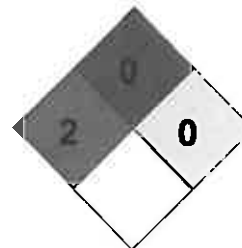
Not dangerous goods

14.6 Special precautions for user

Not classified as dangerous in the meaning of transport regulations.

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

no data available

15. Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****NFPA Classification**: Health hazard: 2
Fire Hazard: 0
Reactivity Hazard: 0**15.2 Chemical Safety Assessment**

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**RONOZYME® MultiGrain (GT)****5015312**

Version 1.0

Revision Date 23.10.2013

Print Date 23.10.2013

not applicable

16. Other information**Full text of R-phrases referred to under sections 2 and 3**

R42 May cause sensitisation by inhalation.

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

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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.

Abbreviations: 67/548/EEC= Dangerous Substances Directive. 1999/45/EC= Dangerous Preparations Directive. Regulation (EC) No. 1272/2008= Regulation on classification, labelling and packaging of substances and mixtures. DNEL= Derived No-Effect Level. PNEC= Predicted No-Effect Concentration. NFPA= National Fire Protection Association (USA). IATA= International Air Transport Association. IMDG= International Maritime Dangerous Goods. RID= International Rule for Transport of Dangerous Substances by Railway; ADR= European Agreement concerning the International Carriage of Dangerous Goods by Road. TWA= Time Weighted Average. STEL= Short term exposure limit.

Product Information

Product Data Sheet

RONOZYME[®] MultiGrain (GT)

Description

RONOZYME MultiGrain (GT) is a practically odourless granulate which is partly soluble in water. It contains an enzyme complex derived from *Trichoderma reesei*, also known as *Trichoderma longibrachiatum*, stabilized and standardized with cellulose, dextrin, kaolin and sodium sulphate. The main activities of this complex are endo-1,4- β -glucanase (EC/IUB No. 3.2.1.4), endo-1,3(4)- β -glucanase (EC/IUB No. 3.2.1.6) and endo-1,4- β -xylanase (EC/IUB No. 3.2.1.8).

Product identification

Product code: 50 1531 2

Specifications

Appearance:	off-white granular powder
Endo-1,4- β -glucanase activity:	min. 800 units per gram
Endo-1,3(4)- β -glucanase activity:	min. 700 units per gram
Endo-1,4- β -xylanase activity:	min. 2700 units per gram

Dosage range

50-200 g per tonne of complete feed.

Stability and storage

RONOZYME MultiGrain (GT) is stable at room temperature, but may be affected by sunlight and humidity. The product may be stored for 18 months from the date of manufacture in the unopened original container and at a temperature below 25 °C. The 'best use before' date is printed on the label.

Uses

As a feed additive.

Safety

This product is safe for the intended use. Avoid ingestion, inhalation of dust or direct contact by applying suitable protective measures and personal hygiene.

For full safety information and necessary precautions, please refer to the respective DSM Material Safety Data Sheet.

Product Information
 Product Data Sheet

RONOZYME® MultiGrain (GT)

Legal notice

The information given in this publication is based on our current knowledge and experience, and may be used at your discretion and risk. It does not relieve you from carrying out your own precautions and tests. We do not assume any liability in connection with your product or its use. You must comply with all applicable laws and regulations, and observe all third party rights.

Additional information

To find out more about our ingredients, please contact your nearest DSM Nutritional Products office.

DSM Nutritional Products Ltd Product Management Building 241 PO Box 2676 CH-4002 Basel Switzerland	Tel.: +41 (0) 61 815 8899 Internet www.dsmnutritionalproducts.com
DSM Nutritional Products LLC 45 Waterview Boulevard Parsippany, NJ 07054-1298	Tel.: +1 (800) 526 0189 (Human Nutrition, Personal Care) Tel.: +1 (800) 451-8325 (Animal Nutrition) Internet www.unlimitednutrition-na.dsm.com
DSM Nutritional Products Europe Ltd. PO Box 2676 CH-4002 Basel Switzerland	Tel.: +41 (0) 61 815 7777 Internet www.unlimitednutrition-eu.dsm.com
DSM Singapore Industrial Pte Ltd. trading as DSM Nutritional Products Asia Pacific 30 Pasir Panjang Road #13-31 Mapletree Business City Singapore 117440	Tel.: + (65) 66326500 Internet www.dsmnutritionalproducts.com
DSM Nutritional Products China No. 476, Li Bing Road Zhangjiang High-Tech Park Pudong Area, Shanghai 201203 P.R. of China	Tel.: + 86 (0)21 6141 8188 Internet www.dsmnutritionalproducts.cn
DSM Produtos Nutricionais Brasil S.A. Avenida Engenheiro Billings, nº 1729 - Prédio 31 Sala A CEP:05321-010 São Paulo - SP Brasil	Tel.: + 55 (11) 3760-6300 Internet www.dsmnutritionalproducts.com