



# MATERIAL SAFETY DATA SHEET

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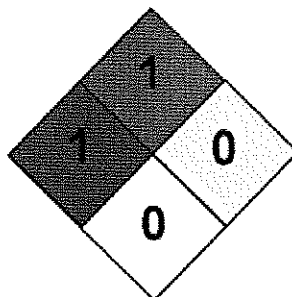
## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Invertase®
Chemical Name	Enzyme preparation
Declared activity	Beta-fructofuranosidase
Use of the substance/preparation	Novozymes' enzyme preparations are biocatalysts used in a variety of industrial processes within food manufacturing
Contact Manufacturer	Novozymes North America, Inc. 77 Perry Chapel Church Rd., Box 576 Franklinton, NC 27525 E-mail: SafetyDataSheet@novozymes.com www.novozymes.com
Information Telephone Number	1-919-494-3000, 8 am - 4:30 pm EST M-F
Emergency Telephone Number	1-800-424-9300 (Chemtrec) 24 hours every day

**2. HAZARDS IDENTIFICATION**

See Section 4 for first aid

1	Health
1	Flammability
0	Reactivity
X	Protective Equipment



**OSHA Regulatory Status**

This material is covered under the OSHA Hazard Communication Standard (29 CFR 1910.1200)

**Physico-chemical Properties**

The data available do not support any physical or chemical hazard

**Environmental Effects**

The data available do not support any environmental hazard

**Human health effects**

Repeated inhalation of enzyme dust or aerosols resulting from improper handling may induce sensitization and may cause allergic type 1 reactions in sensitized individuals  
 Mild skin irritation  
 Mild eye irritation

**Effects of overexposure**

See Section 4

See Section 11 for additional Toxicological information

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Hazardous Components**

Chemical Name	CAS-No	Weight %
Beta-fructofuranosidase	9001-57-4	30 - 60

Enzymes are defined as enzyme concentrate (dry matter basis)

**4. FIRST AID MEASURES**

In case of unintended overexposure, the following measures apply

**Inhalation**

Effects

May cause allergic respiratory reaction

Symptoms

Shortness of breath, wheezing and coughing

**First Aid**

The effect of inhalation may be delayed  
 Remove person to fresh air. If signs/symptoms continue, get medical attention  
 Show this safety data sheet to the doctor in attendance

**Skin Contact****Effects**

May cause slight irritation.

**Symptoms**

Slight irritation.

**First Aid**

Remove and wash contaminated clothing before re-use. Wash off immediately with plenty of water. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance.

**Eye Contact****Effects**

May cause slight irritation.

**Symptoms**

Slight irritation

**First Aid**

Hold eye open and rinse slowly and gently with water for 15-20 min. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance

**Ingestion****Effects**

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.  
 Irritation

**Symptoms**

Rinse mouth with water and drink plenty of water. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance.

**First Aid**

## 5. FIRE-FIGHTING MEASURES

Flammable Properties	Slightly flammable according to HMIS criteria
Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Unsuitable Extinguishing Media	None
Hazardous Combustion Products	None
Specific Hazards Arising from the Chemical	May cause allergic respiratory reaction
Protective Equipment and Precautions for Firefighters	Self-contained breathing apparatus and standard turn-out apparel

## 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	For personal protection see section 8
Environmental Precautions	No special environmental precautions required
Methods for cleaning up	Avoid formation of dust and aerosols

Spilled preparation should be removed immediately to avoid formation of dust from dried preparation. Take up by mechanical means preferably by a vacuum cleaner equipped with a HEPA (High Efficiency Particulate Air) filter. Flush remainder carefully with plenty of water. Avoid splashing, high pressure washing or compressed air cleaning to avoid formation of aerosols. Ensure sufficient ventilation. Wash contaminated clothing.

For personal protection see section 8

## 7. HANDLING AND STORAGE

Handling	Avoid formation of dust and aerosols Ensure adequate ventilation Granulated enzymes are coated to prevent formation of enzyme dust. However, inappropriate handling may release dust
Storage	Keep tightly closed in a dry and cool place. Temperature 0-10°C (32°F-50°F)

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Occupational exposure controls

Engineering Controls	Ensure adequate ventilation, especially in confined areas Maintain good conditions of industrial hygiene. Some processes may require enclosures, local exhaust ventilation, or other engineering controls to control airborne levels. Additional handling and healthy/safety information is available upon request
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### Personal Protective Equipment

Respiratory Protection	In case of insufficient ventilation wear suitable respiratory equipment that meets HEPA/P100 specifications
Eye Protection	Safety glasses with side-shields
Skin Protection	Long sleeved clothing
Hand Protection	Protective gloves

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practices

Environmental exposure controls Local authorities should be advised if significant spillages cannot be contained

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Granulate
Color	Off-white
Odor	Slight fermentation odour

## 10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended storage conditions
Conditions to Avoid	None
Materials to avoid	None
Hazardous Decomposition Products	None
Possibility of Hazardous Reactions	None

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

Oral rat LD50 > 2g/kg

### Chronic Toxicity

According to experience not expected

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

LC50(fish) > 100mg/L, EC50(daphnia) > 100mg/L, IC50(algae) > 100mg/L

Environmental Effects	The data available do not support any environmental hazard
Persistence/Degradability	The organic components of the product are biodegradable
Bioaccumulative Potential	According to experience not expected
Other adverse effects	No information available

## 13. DISPOSAL CONSIDERATIONS

Waste Disposal Method	Dispose of in accordance with local regulations
Contaminated Packaging	Dispose of wastes in an approved waste disposal facility

## 14. TRANSPORT INFORMATION

Transport Regulations	No dangerous goods according to transport regulations No special precautions required
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## 15. REGULATORY INFORMATION

The product complies with the recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC).

**15. REGULATORY INFORMATION**

USA, Federal Regulations

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and 40 CFR Part 372.

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

USA, State Regulations

**California Proposition 65**                      This product does not contain any Proposition 65 chemicals

Canada

**WHMIS Hazard Class**                      Controlled product hazard class D2 A (respiratory sensitizer)

**WHMIS Statement**                      This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

**16. OTHER INFORMATION**

**Disclaimer**

The information provided on this MSDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text. Furthermore, as the conditions of use are beyond the control of Novozymes, it is the responsibility of the customer to determine the conditions of safe use of these products.



**Training advice**                      Details on the safe handling of this product can be found in the "Handling enzymes" on [www.novozymes.com](http://www.novozymes.com)

*End of Safety Data Sheet*

1 / ANSI / English / 03/12/2009