

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: Glucose dehydrogenase (FADGDH-AA)

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

Identified uses: Production and research use only

1.3. Details of the supplier of the safety data sheet

Name of manufacturer in Japan: Kikkoman Biochemifa Company
Address 2-1-1, Nishi-Shinbashi, Minato-ku, Tokyo 105-0003, Japan
Telephone number +81-3-5521-5493
Fax number +81-3-5521-5498
e-mail address biochemifa@mail.kikkoman.co.jp

1.4. Emergency telephone number +81-3-5521-5493

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification in accordance with EC No 1272/2008:

Health hazards Resp. Sens. Cat.1

2.2. Label elements

In accordance with EC No 1272/2008:

Pictogram



Signal word

Danger

Hazard Statements

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

Precautionary Statements

Prevention

Avoid breathing dust/fume/gas/mist/vapours/spray.

[In case of inadequate ventilation] wear respiratory protection.

Emergency response

IF INHALED : Remove person to fresh air and keep comfortable for breathing.

If experiencing respiratory symptoms: Call a doctor.

Disposal

Dispose of container/its content to in accordance with local and applicable regulations.

2.3. Other hazards

The product does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients**3.1. Substances** Not applicable**3.2. Mixtures**

Product Name: Glucose dehydrogenase (FADGDH-AA)

Information on ingredients:

Comp. No.	Chemical name		CAS No.	EC No.	Index No.	REACH Registration No.*	Concentration (wt %)
1.	Glucose dehydrogenase		9028-53-9	232-836-9	-	-	90-99
2.	Potassium Phosphate	Dipotassium hydrogenphosphate	7758-11-4	231-834-5	-	-	1-10
3.		Potassium dihydrogenphosphate	7778-77-0	231-913-4	-	-	

* Registration numbers of ingredients which shall be in compliance with Regulation (EC) No 1907/2006 will be filled in later.

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

IF INHALED	Remove victim to fresh air and keep at rest in a position comfortable to breathing. Call a doctor as needed.
IF ON SKIN	Gently wash skin with plenty of water and soap. If a symptom occurs, see a doctor.
IF IN EYES	Rinse eyes with plenty of water for a few minutes. If eye irritation persists, call a doctor.
IF SWALLOWED	Rinse mouth and throat thoroughly with water. Do not induce vomiting. Call a doctor as needed.

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

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

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable extinguishing media:**

Water spray, foam, dry chemical powder, carbon dioxide, dry sand.

Unsuitable extinguishing media

Applying direct water may be dangerous because fire may expand to surroundings.

5.2. Special hazards arising from the substance or mixture

Toxic, irritating dust or smoke may be emitted.

A container might explode by heating.

5.3. Advice for firefighters

Wear normal protective equipment and self-contained breathing apparatus if necessary.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

Remove spilled substances and ignition sources, and ventilate the area.
Avoid formation of dust, and avoid contact with skin and eyes.

For emergency responders:

Keep out except responsible personnel.
Wear suitable protective equipment described in "Section 8: Exposure controls/ personal protection".

6.2. Environmental precautions

Protect spills from entering drains.
Do not allow to enter public sewers and watercourses.
Avoid releasing to the environment.

6.3. Methods and material for containment and cleaning up

Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

Refer to SECTION 7 for storage and SECTION 13: Disposal considerations as appropriate.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Protective measures:

See SECTION 8: Exposure controls/personal protection.
Ensure good ventilation of the room when handling this substance.
Avoid contact with eyes, skin and clothing. Avoid prolonged and repeated exposure.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures:

Install appropriate equipment and wear suitable protective apparatus described in "SECTION 8: Exposure controls/ personal protection".

Conditions for safe storage:

Store desiccated below -20°C protected from light.
Keep container tightly closed in a dry and well-ventilated place.

Packing material:

Use a sealed container without damage or leakage.

7.3. Specific end use(s)

Production and research use.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Acceptable concentration (exposure limit, biological exposure index)

Not regulated

8.2. Exposure controls

Appropriate engineering controls:

Use exhaust ventilation to keep airborne concentrations below exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection	Use a NIOSH/MSHA or European Standard EN149 approved respirator if the vapour concentrations exceed regulatory guidelines.
Hand protection	Impermeable gloves.
Eye protection	Safety glasses (goggles).
Skin and body protection	Protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance (physical state, form and colour)	Yellow lyophilizate
Odour	No information
pH	No information
Initial boiling point and boiling range	No information
Flash point	No information
Vapour pressure	No information
Relative density	No information
Solubility (ies)	Soluble in water
Auto-ignition temperature	No information

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under normal handling condition.

10.3. Possibility of hazardous reactions

No hazardous reactions expected under normal handling.

10.4. Conditions to avoid

Sunlight, heat.

10.5. Incompatible materials

A strong oxidizing agent, a strong base.

10.6. Hazardous decomposition products

Carbon monoxide, carbon dioxide, nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on product:

Respiratory sensitization:	Comp.1 (Glucose dehydrogenase) May cause allergic respiratory reaction.
----------------------------	--

SECTION 12: Ecological information

Information on product:	No information
Information on ingredients:	No information

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environmental agency for specific rules).

After contents are completely removed, dispose of its container in accordance with local/regional/national/international regulation.

SECTION 14: Transport information

14.1. UN number	Not applicable
------------------------	----------------

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	Not applicable
------------------------------------	----------------

14.6. Special precautions for user

When transporting, avoid direct sunlight. Confirm no leakage to containers. When loading, prevent containers from falling, dropping off or damaging. Take preventive measures of collapse.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code

Not applicable

SECTION 15: Regulatory information

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

The product and its ingredients are not regulated by specific provisions related to protection of human health or the environment at EU level, e.g. not considered as SVHCs or POPs.

15.2. Chemical safety assessment

Not conducted

SECTION 16: Other information

Update history:

Date of issue: 29th August 2016

References:

- 1) NITE CHRIP
- 2) JIS Z 7252 : 2014
- 3) JIS Z 7253 : 2012
- 4) Globally Harmonized System of classification and labeling of chemicals, (6th ed., 2015), UN

Abbreviations

PBT: Persistent, Bioaccumulative and Toxic substance

POPs: Persistent Organic Pollutants

SVHC: Substances of Very High Concern

vPvB: Very Persistent and Very Bioaccumulative

[Disclaimer]

This SDS has been prepared based on the best available information however, it may not be sufficient in some cases. It is user's responsibility to modify or update any contents in this SDS regarding information on hazardous properties and/or instruction for safe handling of the product when they become available. Precautionary measures in this SDS are only applicable for normal handling conditions and it is necessary to take appropriate additional measures to ensure safe handling which depend on your specific use conditions or situations.