SAFETY DATA SHEET

GLYCERYL MONOSTEARATE (GMS) POWDER

CAS No.: 123-94-4

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

GLYCERYL MONOSTEARATE (GMS) POWDER
Glycerol Monostearate; Mono- and Di-glycerides of Fatty Acids (E471), Powder Form
CAS: 123-94-4

Other means of identification

INS/E Number: E471 (mono- and diglycerides of fatty acids family; this product is the mono-ester, glyceryl monostearate)

Recommended use of the chemical and restrictions on use

Relevant uses: Food-grade emulsifier and stabilizer (bakery, confectionery, dairy, margarine) and non-food emulsifier/thickener for cosmetics, pharmaceuticals and industrial formulations. Suitable for food use only where a food-grade certified batch/COA is supplied.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

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2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Glyceryl monostearate is **not classified** as hazardous under GHS criteria based on available data; it is a widely used, well-established food additive and cosmetic ingredient.

Not classified	No hazard category applies based on standard data for glyceryl monostearate, CAS 123-94-4

GHS label elements, including precautionary statements

GHS: No pictogram/signal word required.

Hazard statements
None assigned.

Precautionary statements
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/eye protection when handling bulk/loose material.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501: Dispose of contents/container in accordance with local regulations.

Other hazards which do not result in classification

Fine powder may form combustible dust clouds in air in the presence of an ignition source, as is typical for organic fatty-acid ester powders – avoid dust accumulation and control ignition sources. Molten product presents a thermal burn hazard if handled hot. Not a PBT/vPvB substance based on available information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Glyceryl Monostearate (mono-glyceride of stearic/palmitic acid mixture, technical/food grade)

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 123-94-4	Glyceryl monostearate – Not classified	Monoester content typically 40–55% (regular/self-emulsifying grade) to ≥90% (distilled monoglyceride grade) – exact grade specification available on request

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

Mixtures

Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

Request medical assistance if symptoms occur or persist, showing the SDS of this product.

By inhalation
Remove the person affected to fresh air. Not normally expected to require treatment.

By skin contact
Wash skin with soap and water. If molten/hot product causes a burn, cool the area under running water and seek medical attention.

By eye contact
Rinse eyes thoroughly with lukewarm water for several minutes. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists.

By ingestion/aspiration
No specific treatment normally required – this is an approved food additive. Rinse mouth with water if desired.

Most important symptoms/effects, acute and delayed	None expected under normal use. Molten product may cause thermal burns. See section 11.
Indication of immediate medical attention and special treatment needed, if necessary	Not relevant

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	**Suitable:** Water spray/fog, foam, dry chemical powder, carbon dioxide. **Unsuitable:** High-pressure water jet on a dust fire (may disperse dust).
Specific hazards arising from the chemical	Combustible organic solid. Fine powder may form combustible dust clouds in air in the presence of an ignition source, as is typical for organic fatty-acid ester powders – avoid dust accumulation and control ignition sources. Combustion may produce carbon monoxide, carbon dioxide and acrolein/other irritant decomposition products typical of heated/burning fats and glycerides.
Special protective actions for fire-fighters	Wear self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water spray. Avoid generating dust clouds during fire-fighting/clean-up.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	**For non-emergency personnel** Avoid raising dust (powder grade). Product becomes very slippery underfoot when melted/wetted – take care of footing. **For emergency responders** Not normally required for this low-hazard product.
Environmental precautions	Prevent large spills from entering drains/watercourses, as accumulated fatty material can affect local water treatment/drainage systems (biological oxygen demand).
Methods and materials for containment and cleaning up	Sweep or vacuum up solid material and place in a labelled container for disposal/reuse. Clean residual greasy film with warm water and a suitable degreasing agent.
Reference to other sections	See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use
Avoid generating and breathing dust (powder grade). Avoid contact with strong oxidizers. Handle molten product with care to avoid thermal burns.

B. Technical recommendations for the prevention of fires and explosions
Use local exhaust ventilation/dust extraction where fine dust is generated during bag emptying (powder grade). Bond and ground equipment used for bulk powder handling to control static discharge. Keep away from ignition sources.

C. Technical recommendations on general occupational hygiene
Maintain good food-hygiene practice during handling of food-grade batches. Wash hands after handling.

D. Technical recommendations to prevent environmental risks
No special measures required beyond good housekeeping; avoid large accumulations entering drains.

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Minimum Temp.	5°C
Maximum Temp.	30°C (below melting point – see section 9)
Maximum time (unopened, original packaging)	12 Months

B. General conditions for storage
Store in tightly closed original packaging, in a cool, dry place away from direct sunlight and strong oxidizing agents. Store below the product's melting point to maintain physical form.

Specific end use(s)

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

No specific occupational exposure limit is established for glyceryl monostearate under the Factories Act, 1948. General nuisance dust limits (particulates not otherwise classified) of 10 mg/m³ (total dust, 8-hr TWA) are recommended as good practice for the powder grade.

Appropriate engineering controls

General ventilation is normally sufficient. Use local exhaust ventilation where dust is generated (powder grade).

B. Respiratory protection
Dust mask/filtering half-mask where dust generation is possible (powder grade); not normally required for flake/pastille handling.

C. Specific protection for the hands
Standard work gloves; heat-resistant gloves when handling molten product.

D. Eye and face protection
Safety glasses recommended when handling loose bulk material.

E. Bodily protection
Standard work clothing; food-hygiene attire for food-grade handling.

F. Additional emergency measures
Eyewash station recommended where bulk material is handled.

Environmental exposure controls
No special measures required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid (fine powder)
Appearance	Fine free-flowing powder
Color	White to cream/pale yellow
Odor	Faint, characteristic fatty odor
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	Non-applicable (decomposes before boiling)
Vapour pressure at 20°C / 50°C	Negligible
Evaporation rate at 20°C	Negligible
Product Description	
Density / Relative density at 20°C	Approx. 0.97–1.0 g/cm³ (solid); approx. 0.90–0.95 g/cm³ (molten)
Dynamic / Kinematic viscosity	Non-applicable (solid); moderate viscosity when molten
Concentration	Monoester content per grade – see section 3
pH (aqueous dispersion)	Approx. 5–7 (practically insoluble; forms a dispersion, not a true solution)
Vapour density at 20°C	Not relevant *
Partition coefficient n-octanol/water 20°C	Log Pow >5 (highly lipophilic, typical of long-chain fatty acid esters)
Solubility in water at 20°C	Practically insoluble in cold water; disperses in hot water; soluble in warm oils/alcohol
Decomposition temperature	>200°C (approx.)
Melting point/freezing point	Approx. 55–65°C (grade dependent)
Flammability	
Flash Point	>200°C (approx., combustible solid, not readily ignitable at ambient temperature)
Flammability (solid, gas)	Combustible solid; combustible dust hazard possible in fine powder form
Autoignition temperature	Available on request
Lower / Upper flammability limit	Not relevant *
Particle Characteristics	
Median equivalent diameter	Available on request (fine powder grade)

** Not relevant due to the nature of the product, not providing information on the properties of its hazards.*

Other information

Explosive properties	Not explosive; fine dust cloud may be combustible
Oxidising properties	Not an oxidizer
Corrosive to metals	Non-corrosive
Heat of combustion	Approx. 35–38 kJ/g (typical for fatty acid esters, class data)
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use. May react slowly with strong oxidizing agents. Hydrolyses slowly to glycerol and stearic/palmitic acid in the presence of strong acids/alkalis or prolonged moist heat.

Chemical stability

Chemically stable under the indicated conditions of storage, handling and use. Can undergo oxidative rancidity on prolonged exposure to air/light/heat, as is typical for fatty acid esters.

Possibility of hazardous reactions

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected. Fine dust clouds (powder grade) can be combustible in the presence of an ignition source.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Prolonged exposure may cause oxidative rancidity	Avoid exceeding melting point during storage	Avoid prolonged direct exposure	Not critical

Incompatible materials

Strong Oxidizers	Strong Acids/Alkalis
Avoid contact	Avoid contact (hydrolysis)

Hazardous decomposition products

Thermal decomposition/combustion may release carbon monoxide, carbon dioxide and acrolein (from glycerol backbone at high heat).

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Glyceryl monostearate is a well-established, widely used food additive (E471) and cosmetic ingredient with a long history of safe use; it is of very low toxicological concern.

A. Ingestion (acute effect)

Practically non-toxic. Approved for food use at typical use levels (Good Manufacturing Practice / quantum satis per applicable food regulations).

B. Inhalation (acute effect)

Dust (powder grade) may cause mechanical irritation of the respiratory tract.

C. Contact with skin and eyes (acute effect)

Not expected to cause irritation under normal conditions; widely used in cosmetic formulations. Molten product may cause thermal burns.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data; not listed by IARC.

E. Sensitizing effects

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure

Classification criteria are not met based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure

Classification criteria are not met based on available data.

H. Aspiration hazard

Not applicable (solid).

Product-specific toxicological information

Identification	Acute Toxicity	Genus
Glyceryl monostearate CAS: 123-94-4	LD50 oral: >10000 mg/kg (practically non-toxic, class data for food-grade monoglycerides)	Rat

12. ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment.

Toxicity

Glyceryl monostearate has low aquatic toxicity (class data for fatty acid esters; LC50/EC50 typically >100 mg/L for fish/invertebrates). Large accumulated spills may contribute to biological/chemical oxygen demand in receiving water.

Persistence and degradability

Readily biodegradable (hydrolyses to glycerol and fatty acids, both naturally metabolized).

Bioaccumulative potential

Despite a high Log Pow, the substance is readily metabolized/biodegraded and is not expected to bioaccumulate significantly in practice.

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
High (lipophilic, binds to organic matter)	Low	Low mobility	Low mobility

Results of PBT and vPvB assessment

Not expected to meet PBT/vPvB criteria – readily biodegradable.

Other adverse effects

Not described

13. DISPOSAL CONSIDERATIONS

Disposal methods

Non-hazardous organic solid; may be disposed of as general/food-industry solid waste in accordance with local regulations, or composted/rendered where local facilities accept such material. Avoid large discharges to drains (may cause fat/grease blockages).

Refer to national and local regulations on waste management.

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	Not regulated as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22)

14.1 UN number	Not regulated as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Marine pollutant	No
14.6 Special precautions for user	Not regulated
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024)

14.1 UN number	Not regulated as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Not regulated
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation

Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011 (India) – permitted emulsifier, INS 471
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Public Liability Insurance Act, 1991

16. OTHER INFORMATION

Legislation related to safety data sheets

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3

Non-applicable – no hazard statements are assigned to this product.

Not applicable, as the product is not classified as hazardous.

Advice related to training

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources

The United Nations Economic Commission for Europe (UNECE); JECFA/Codex Alimentarius specifications for mono- and di-glycerides of fatty acids (INS 471); publicly available GHS classification and physicochemical reference data for glyceryl monostearate (CAS 123-94-4).

Abbreviations and acronyms

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | Log-POW: Octanol-water partition coefficient | GMS: Glyceryl Monostearate | INS: International Numbering System for Food Additives | JECFA: Joint FAO/WHO Expert Committee on Food Additives

Disclaimer: The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

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