

GLUCONO DELTA-LACTONE (GDL, E575)

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

GLUCONO DELTA-LACTONE (GDL, E575)
D-Glucono-1,5-lactone; Gluconolactone
CAS: 90-80-2

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Food acidulant and slow-release acid/leavening aid (E575) used in cured/processed meats, dairy products (e.g. cheese, tofu coagulation) and bakery products; also used as a chelating/sequestering agent. For industrial/commercial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 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).

Not classified	Not a hazardous substance or mixture according to GHS criteria, based on available data.
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2.2 GHS label elements, including precautionary statements:

GHS: No signal word, pictogram or hazard statement is required under GHS classification criteria.

Hazard statements:

None assigned.

Precautionary statements:

P270: Do not eat, drink or smoke when using this product (good industrial/food-handling hygiene practice).
P280: Wear protective gloves/eye protection where dust generation is significant.
P262: Do not get in eyes, on skin, or on clothing (general dust-nuisance precaution).
P501: Dispose of contents/container in accordance with local/national regulations.

2.3 Other hazards which do not result in classification:

Fine powder/dust of this product may cause mechanical/nuisance irritation to the eyes, skin and respiratory tract on prolonged or repeated contact; it is not considered a specific target organ toxicant. Dust accumulation may present a slip hazard if spilled. This substance is not identified as a PBT or vPvB substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Glucono Delta-Lactone – the intramolecular cyclic ester (lactone) of D-gluconic acid
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 90-80-2	Glucono Delta-Lactone (GDL) — Not classified	≥ 99% (food/technical grade, per current specification sheet)

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

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

This product is not classified as hazardous; however, standard first-aid practice should be followed in case of accidental exposure.

By inhalation:

In case of dust inhalation causing discomfort, remove the person affected to fresh air and keep at rest. Seek medical attention if irritation persists.

By skin contact:

Remove contaminated clothing. Wash the affected area with plenty of soap and water. Seek medical attention if irritation develops or persists.

By eye contact:

Rinse eyes thoroughly with clean, lukewarm water for several minutes, lifting upper and lower eyelids. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists.

By ingestion/aspiration:

Rinse mouth with water. If a large quantity is accidentally swallowed and discomfort occurs, seek medical advice. Do not induce vomiting unless directed by medical personnel.

4.2 Most important symptoms/effects, acute and delayed:

No significant acute or delayed effects are expected under normal conditions of use. See sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Not relevant – treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:
Suitable: Water spray/fog, foam, dry chemical powder, carbon dioxide (CO₂) – select based on surrounding fire.
Unsuitable: High-pressure water jet (may disperse dust and create inhalation/dust-explosion hazard).

5.2 Specific hazards arising from the chemical:
Not classified as flammable. As with most finely divided organic solids, suspended dust in sufficient concentration in air may present a dust-explosion hazard in the presence of an ignition source. Combustion may generate oxides of carbon and, where applicable, oxides of nitrogen/sulphur.

5.3 Special protective actions for fire-fighters:
Evacuate non-essential personnel. Wear self-contained breathing apparatus and full protective clothing in case of a significant fire. Cool exposed containers with water spray.

Additional provisions:
Avoid generating or dispersing dust clouds near open flame or ignition sources.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel:
Avoid generating dust. Use the personal protective equipment described in section 8. Ensure adequate ventilation.
For emergency responders:
No special equipment beyond standard PPE (section 8) is required for this non-hazardous product.

6.2 Environmental precautions:
Avoid large-scale discharge into drains or water courses, which may cause a biological oxygen demand (BOD) load. Notify the relevant authority in case of a large spill reaching the environment.

6.3 Methods and materials for containment and cleaning up:
Sweep up or vacuum (avoiding dust dispersion) and collect in a clean, dry, labelled container for reuse or disposal. Avoid dry sweeping of large spills where practical; use methods that limit dust generation.

6.4 Reference to other sections:
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:
A. General precautions for safe use:
Handle in accordance with good industrial/food-hygiene practice. Avoid generating dust. Use local exhaust ventilation where dust may be generated in bulk handling.
B. Technical recommendations for the prevention of fires and explosions:
Avoid accumulation of fine dust on surfaces and in equipment. Use properly earthed equipment during bulk transfer to minimise static build-up. GDL is hygroscopic and slowly hydrolyses to gluconic acid in the presence of moisture; keep container tightly closed and dry.
C. Technical recommendations on general occupational hygiene:
Do not eat, drink or smoke in work areas. Wash hands after handling. Keep in food-grade/technical-grade conditions appropriate to end use.
D. Technical recommendations to prevent environmental risks:
Avoid uncontrolled discharge to drains, soil or water courses. Follow the protective measures in section 8.

7.2 Conditions for safe storage, including any incompatibilities:
A. Specific storage requirements:

Storage temperature	Cool, ambient conditions – typically below 30°C
Recommended shelf life	Typically 24 months from date of manufacture in original sealed packaging
Container	Original, tightly closed, moisture-proof container/bag

B. General conditions for storage:
Store in a cool, dry, well-ventilated area away from direct sunlight, strong oxidisers, moisture and sources of contamination. Keep container tightly closed when not in use. For additional information see subsection 10.5.

7.3 Specific end use(s):
Used as a food-grade acidulant (E575) providing controlled, slow-release acidity through in-situ hydrolysis to gluconic acid; also used as a leavening acid and sequestrant. Except for the instructions already specified, no special recommendation beyond the uses described in section 1.2 is necessary.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:
No specific occupational exposure limit (OEL) has been established for this substance under the Factories Act, 1948 (as amended). As a general nuisance-dust guidance value, an airborne exposure limit of 10 mg/m³ (inhalable fraction, 8-hr TWA) / 3 mg/m³ (respirable fraction) for particulates not otherwise classified (PNOC) is recommended as good practice.

8.2 Appropriate engineering controls:
Use local exhaust ventilation where significant dust is generated during bulk handling/transfer.

B. Respiratory protection:
Not normally required under good ventilation. A dust/particulate filter mask (e.g. FFP1/FFP2) is recommended during prolonged bulk handling or where dust levels are elevated.

C. Specific protection for the hands:
Protective gloves recommended for prolonged or repeated handling as good industrial hygiene practice.

D. Eye and face protection:
Safety glasses/goggles recommended where dust may be generated.

E. Bodily protection:
Standard clean work clothing/apron appropriate to food/industrial handling; safety footwear in bulk-handling areas.

F. Additional emergency measures:
Eyewash station recommended in areas of regular bulk handling.

Environmental exposure controls:
Avoid uncontrolled release to the environment. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Solid (crystalline powder)
Color	White to off-white
Odor	Odourless
Odour threshold	Not established for this grade
Volatility	
Boiling point	Non-applicable (solid)

Vapour pressure at 20°C	Not relevant *
Evaporation rate	Not relevant *
pH (1% aqueous solution)	Typical value – refer to current specification sheet (mildly acidic on hydrolysis to gluconic acid)
Product Description	
Molecular formula	C6H10O6
Molecular weight	178.14 g/mol
Bulk density	Typical value – refer to current specification sheet
Solubility in water	Freely soluble in water (slowly hydrolyses to D-gluconic acid); slightly soluble in ethanol
Partition coefficient n-octanol/water	Not established for this grade
Flammability	
Flash Point	Non-applicable (solid)
Flammability (solid, gas)	Not classified as flammable
Autoignition temperature	Not established for this grade
Lower / Upper flammability limit	Not relevant *

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

9.2 Other information:

Explosive properties	Not classified; fine dust may present a combustible-dust hazard under specific conditions (see section 5.2)
Oxidising properties	Not classified
Corrosive to metals	Not relevant *
Decomposition temperature	Decomposes above approximately 153°C (melts with decomposition)

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:
No reactivity hazards are known under normal conditions of storage, handling and use.

10.2 Chemical stability:
Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:
Under the specified conditions, hazardous reactions are not expected.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Avoid prolonged exposure to high temperature	Avoid prolonged direct exposure	Avoid contact with moisture (caking/degradation)

10.5 Incompatible materials:

Strong Oxidisers	Strong Acids/Alkalis	Moisture
Avoid contact	Avoid contact	Avoid prolonged exposure (hygroscopic/caking tendency)

10.6 Hazardous decomposition products:
None under normal conditions of storage and use. Thermal decomposition at high temperature may generate oxides of carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:
This substance has a long history of safe use in the food/pharmaceutical/industrial sector. Based on available data, the classification criteria for the health hazard classes below are not met.

A. Ingestion (acute effect):
Acute toxicity classification criteria are not met based on available data. LD50 oral (rat): >5,000 mg/kg (practically non-toxic, long history of safe food use as E575)

B. Inhalation (acute effect):
Not classified. Inhalation of dust in high concentration may cause mechanical irritation of the respiratory tract.

C. Contact with skin and eyes (acute effect):
Not classified. Prolonged or repeated contact with dust may cause mild, transient mechanical irritation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not listed.

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:
Classification criteria are not met based on available data.

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Glucono Delta-Lactone (GDL) CAS: 90-80-2	LD50 oral (rat): >5,000 mg/kg (practically non-toxic, long history of safe food use as E575)	Rat (oral)

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment. This substance is readily biodegradable, being a naturally derived/food-grade material.

12.1 Toxicity:

Acute Toxicity	Species	Genus
Not expected to be toxic to aquatic organisms at relevant concentrations (based on composition and history of use)	Non-applicable	Fish/Crustacean

12.2 Persistence and degradability:
Readily biodegradable under aerobic conditions, consistent with its natural/organic origin.

12.3 Bioaccumulative potential:
Not expected to bioaccumulate, based on its physicochemical properties.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not established	Not relevant	No data	No data

12.5 Results of PBT and vPvB assessment:
This substance does not meet the PBT/vPvB criteria of GHS/REACH Annex XIII.

12.6 Other adverse effects:
Excessive discharge may locally increase biological oxygen demand (BOD) in water courses.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:
Dispose of waste/residues in accordance with local municipal/industrial waste regulations. Small quantities may be disposed of as general/organic waste where permitted; larger quantities should be handled by an authorised waste contractor. Avoid discharge of concentrated product into drains or water courses. Empty containers may be recycled or disposed of as general waste after ensuring they are empty; do not reuse for other purposes without cleaning.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

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

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

SECTION 15: REGULATORY INFORMATION

15.1 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. Where the product is used as a food ingredient/additive, it should additionally comply with the Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, and amendments thereto, as applicable to the specific food application.

Other legislation:
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Food Safety and Standards Act, 2006, and Rules/Regulations made thereunder (where applicable to food-grade use)
Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (not applicable – product not classified as hazardous)

SECTION 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:
Not applicable – no GHS hazard statements are assigned to this product.
The product is not classified as hazardous under the GHS criteria, based on available data; this SDS is nonetheless provided to support safe industrial handling, storage, and transport.

Advice related to training:
Minimal training is recommended to familiarise staff with good handling/storage practice and with this safety data sheet.

Principal bibliographical sources:
Published GHS classification and physicochemical reference data for this substance; Food Safety and Standards Authority of India (FSSAI) guidance, where applicable to food-grade use.

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 | BOD: Biological Oxygen Demand | LD50: Lethal Dose 50 | PBT: Persistent, Bioaccumulative and Toxic | vPvB: very Persistent and very Bioaccumulative | IARC: International Agency for Research on Cancer | FSSAI: Food Safety and Standards Authority of India

END OF SAFETY DATA SHEET

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