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

Catalogue Number	CS-SS-26558
Product Name	Metformin Secondary standard
CAS No.	657-24-9
Category	Secondary Standards
Synonyms	"1,1-Dimethylbiguanide"
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email **sales@clearsynth.com** for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Skin irritation (Category 2)
Serious eye damage/eye irritation (Category 2)
Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning

Hazard Statement(s)

Code	Statement
H302	Harmful if swallowed.
H315	Causes skin irritation.

H319	Causes serious eye irritation.

Precautionary Statement(s)

Code	Statement
P264	Wash hands thoroughly after handling.
P270	Not available
P301+P317	Not available
P330	Not available
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio
P264+P265	Not available
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if presen
P321	Specific treatment (see … on this label).
P332+P317	If skin irritation occurs: Get medical help.
P337+P317	If eye irritation persists: Get medical help.
P362+P364	Take off contaminated clothing and wash it before reuse.

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Metformin Secondary standard
CAS Number : 657-24-9
Molecular Formula : C■H■■N■
Molecular Weight : 129.16
Parent Chemical : Metformin
Synonyms : "1,1-Dimethylbiguanide"
Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures
- General advice: Remove from exposure. Show this SDS to medical personnel if available.
- Inhalation: Move person to fresh air. If symptoms persist, get medical attention.
- Skin contact: Wash with soap and water. Remove contaminated clothing and wash before reuse. Get medical attention if irritation persists.

- Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get medical attention if irritation persists.
- Ingestion: Rinse mouth. Do not induce vomiting unless directed by medical personnel. Get medical attention.

4.2 Most important symptoms/effects, acute and delayed
- Not available.

4.3 Indication of immediate medical attention and special treatment needed
- Treat symptomatically. No data available.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
- Water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
- No data available. Thermal decomposition may produce irritating and/or toxic fumes.

5.3 Advice for firefighters
- Wear self-contained breathing apparatus (SCBA) and full protective gear.
- Use water spray to cool unopened containers.

5.4 Hazardous combustion products
- Not available.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
- Avoid dust formation and inhalation.
- Use appropriate personal protective equipment (see Section 8).
- Ensure adequate ventilation.

6.2 Environmental precautions
- Avoid release to the environment. Prevent entry into drains, surface water, or soil.

6.3 Methods and material for containment and cleaning up
- Sweep up or vacuum without generating dust; place in a suitable, closed container for disposal.
- Clean spill area with water after material pickup, as appropriate.

6.4 Reference to other sections
- See Section 8 for exposure controls/personal protection and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling
- Handle in accordance with good industrial hygiene and safety practice.
- Avoid contact with eyes, skin, and clothing.

- Avoid breathing dust. Use with adequate ventilation.
- Keep container tightly closed when not in use.

7.2 Conditions for safe storage, including any incompatibilities
- Store in a cool, dry, well-ventilated place.
- Protect from moisture.
- Incompatibilities: Not available.

7.3 Specific end use(s)
- Laboratory/research use as a secondary standard. Not for food, drug, or household use.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
- Occupational exposure limits: Not available.
- Biological limit values: Not available.

8.2 Exposure controls
- Engineering controls: Provide adequate ventilation. Use local exhaust where dust may be generated.
- Personal protective equipment (PPE):
- Eye/face protection: Safety glasses with side shields or chemical splash goggles.
- Skin protection: Protective gloves. Wear lab coat or suitable protective clothing.
- Respiratory protection: If ventilation is inadequate or dust is generated, use a suitable particulate respirator per applicable standards.
- Hygiene measures: Wash hands after handling. Do not eat, drink, or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available

Property	Value
d) pH	2.7
e) Vapour Pressure	No data available
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

SECTION 10: Stability and reactivity

10.1 Reactivity
- No data available.

10.2 Chemical stability
- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
- No data available.

10.4 Conditions to avoid
- Avoid dust generation. Avoid moisture exposure. Other conditions: Not available.

10.5 Incompatible materials
- Not available.

10.6 Hazardous decomposition products
- Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- Acute toxicity: Metformin is an antihyperglycemic, not hypoglycemic agent; it does not cause insulin release from the pancreas and does not cause hypoglycemia, even in large doses. Accumulation may occur in patients with renal impairment and such accumulation rarely can result in lactic acidosis, a serious, potentially fatal metabolic disease; lactic acidosis constitutes a medical emergency requiring immediate hospitalization and treatment and is characterized by elevated blood lactate concentrations, decreased blood pH, electrolyte disturbances with an increased anion gap, and an increased lactate/pyruvate ratio. Approximately 50% of cases of metformin-associated lactic acidosis have been reported to be fatal. Metformin overdose is associated with hypoglycemia and lactic acidosis; treatment primarily involves supportive care as no specific antidote is available; metformin is easily dialyzable and if lactic acidosis due to toxic metformin levels is suspected, discontinuation and hemodialysis are recommended.
- Skin corrosion/irritation: No data available.
- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: No data available.
- Germ cell mutagenicity: No evidence of mutagenicity or chromosomal damage was observed in in vitro test systems, including human lymphocytes assay; no evidence of mutagenicity or chromosomal damage was observed in vivo in a micronucleus test in mice or in in vitro test systems, including microbial (Ames test) and mammalian (mouse lymphoma) assays.
- Carcinogenicity: No evidence of carcinogenic potential was seen in a 104-week study in male and female rats receiving metformin hydrochloride dosages up to and including 900 mg/kg daily or in a 91-week study in male and female mice receiving metformin hydrochloride at dosages up to and including 1500 mg/kg daily. Cancer preventive effect of metformin has been studied in mice, rats and hamsters; in the majority of cases metformin treatment leads to inhibition of carcinogenesis. Long-term metformin treatment in aged male mice decreased transcription of BDNF, NGF and NTF3 and decreased expression of Nrf2; this cautions of the possibility that extended metformin use may alter brain biochemistry in a manner that creates a vulnerable brain environment and warrants further investigation.
- Reproductive toxicity: No evidence of impaired fertility was observed in rats following administration of metformin hydrochloride dosages of 600 mg/kg daily. Reproduction studies in rats and rabbits given metformin hydrochloride dosages of 600 mg/kg daily have not revealed teratogenicity. In a rat model of diet-induced obesity during pregnancy, prenatal metformin attenuated some diet-induced fatty acid changes and inflammation in fetal livers without affecting maternal livers, suggesting that maternal metformin may impact fetal/neonatal fatty acid/lipid metabolism.
- STOT-single exposure: No data available.
- STOT-repeated exposure: Accumulation of metformin may occur in patients with renal impairment and such accumulation rarely can result in lactic acidosis, a serious, potentially fatal metabolic disease. Review of published reports of so-called metformin-associated lactic acidosis found lactic acidosis was either absent, precipitated by concurrent pathology, precipitated by metformin (in the context of renal failure either chronic or acute), or of uncertain origin; death occurred in some cases.
- Aspiration hazard: No data available.

Likely routes of exposure
- Overdose of metformin hydrochloride has occurred, including ingestion of amounts greater than 50 grams.

Symptoms related to the physical, chemical and toxicological characteristics
- Hypoglycemia was reported in approximately 10% of overdose cases (no causal association established). Lactic acidosis has been reported in approximately 32% of metformin overdose cases; lactic acidosis is characterized by elevated blood lactate concentrations, decreased blood pH, electrolyte disturbances with an increased anion gap, and an increased lactate/pyruvate ratio, and is a serious, potentially fatal metabolic disease requiring immediate hospitalization and treatment.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1 Toxicity
- Not available.

12.2 Persistence and degradability
- Not available.

12.3 Bioaccumulative potential
- Not available.

12.4 Mobility in soil
- Not available.

12.5 Results of PBT and vPvB assessment
- Not available.

12.6 Endocrine disrupting properties
- Not available.

12.7 Other adverse effects
- Not available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods
- Dispose of contents/container in accordance with local/regional/national/international regulations.
- Do not discharge to drains.
- Contaminated packaging: Dispose of as unused product or according to local requirements.

Waste codes
- Not available.

SECTION 14: Transport information

SECTION 14: Transport information

- UN number: Not available.
- UN proper shipping name: Not available.
- Transport hazard class(es): Not available.
- Packing group: Not available.
- Environmental hazards: Not available.
- Special precautions for user: Not available.

Transport in bulk according to IMO instruments
- Not available.

SECTION 15: Regulatory information

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Not available.

15.2 Chemical safety assessment
- Not available.

SECTION 16: Other information

SECTION 16: Other information

- Product name: Metformin Secondary standard
- Catalog no.: CS-SS-26558
- CAS no.: 657-24-9
- Synonyms: 1,1-Dimethylbiguanide
- Supplier: Clearsynth Labs Ltd., Mumbai, India
- Emergency phone: +91-22-245045900

Disclaimer
- The information provided is believed to be accurate based on available data, but no warranty is expressed or implied. Users are responsible for determining suitability for their particular application and for compliance with applicable laws and regulations.

Revision information
- Not available.

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