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

Catalogue Number	CS-M-53382
Product Name	2(5H)-Furanone
CAS No.	497-23-4
Category	Fine Chemicals
Synonyms	γ-Crotonolactone
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.
H335	Not available

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
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264+P265	Not available
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if presen
P319	Get medical help if you feel unwell.
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.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : 2(5H)-Furanone
CAS Number : 497-23-4
Molecular Formula : C4H4O2
Molecular Weight : 84.07
Parent Chemical : .

Synonyms : γ-Crotonolactone
Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures
- General advice: Remove contaminated clothing and shoes. Seek medical attention if symptoms persist or develop.
- Inhalation: Move person to fresh air. If breathing is difficult, seek medical attention.
- Skin contact: Wash with plenty of soap and water. Seek medical attention if irritation occurs.
- Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention.
- Ingestion: Rinse mouth. Do not induce vomiting unless directed by medical personnel. Seek medical attention.

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

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

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media
- Suitable extinguishing media: Use extinguishing measures appropriate to surrounding fire (e.g., water spray, alcohol-resistant foam, dry chemical, carbon dioxide).
- Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture
- Hazardous combustion products: Not available.
- Specific hazards: Not available.

5.3 Advice for firefighters
- Wear self-contained breathing apparatus (SCBA) and full protective gear.
- Cool containers with water spray if exposed to fire.
- Prevent fire-fighting water from entering drains or waterways.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
- Avoid breathing dust/vapors/mist.
- Avoid contact with skin and eyes.
- Use appropriate personal protective equipment (see Section 8).
- Ensure adequate ventilation.

6.2 Environmental precautions
- Prevent further leakage or spillage if safe to do so.

- Avoid release to the environment. Prevent entry into drains, sewers, or waterways.

6.3 Methods and material for containment and cleaning up
- Contain spill. Collect using inert absorbent material.
- Place in suitable, closed container for disposal.
- Clean contaminated area with water and detergent as appropriate.

6.4 Reference to other sections
- Disposal considerations: see Section 13. Exposure controls/personal protection: see Section 8.

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 skin, eyes, and clothing.
- Avoid breathing dust/vapors/mist.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities
- Store in a cool, dry, well-ventilated place.
- Keep container tightly closed.
- Protect from moisture and incompatible materials.
- Incompatible materials: Not available.

7.3 Specific end use(s)
- Fine chemical / laboratory use. No data available.

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 appropriate.
- Personal protective equipment (PPE):
- Eye/face protection: Safety glasses with side shields or chemical splash goggles.
- Skin protection: Protective gloves (material not specified; select based on risk assessment) and protective clothing.
- Respiratory protection: If ventilation is inadequate, use appropriate respiratory protection (selection per applicable standards).
- Hygiene measures: Do not eat, drink, or smoke when using this product. Wash hands after handling.
- Environmental exposure controls: Avoid release to the environment.

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
d) pH	No data available
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. No data available.

10.3 Possibility of hazardous reactions
- No data available.

10.4 Conditions to avoid
- 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: 2-furanone and 2-pyrone induce cellular DNA damage and the formation of topoisomerase I- and topoisomerase II-DNA complexes in cells. Both lactones were cytotoxic in human cell lines: in A549 lung cancer cells at lower concentrations than in MRC5 non-malignant lung fibroblasts. In animal studies, intraperitoneal administration in doses of 30 to 100 mg/kg decreased food intake dose-dependently; intragastric and intra-third cerebroventricular administration also dose-dependently reduced food intake. In Rhesus monkeys, intracerebroventricular administration produced satiety effects (effective dose 20.0 mg; 10.6 mg mild; 25.0 mg severe). Intraperitoneal injection (5 mg/kg) facilitated spatial performance in mice. 2-furanone suppressed clinical symptoms of experimental allergic encephalomyelitis in Lewis rats and reduced delayed-type hypersensitivity response to myelin basic protein.
- Skin corrosion/irritation: No data available.
- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: No data available.
- Germ cell mutagenicity: 2-furanone and 2-pyrone induce cellular DNA damage (assessed by the comet assay and the gamma-H2AX focus assay) and the formation of topoisomerase I- and topoisomerase II-DNA complexes in cells (visualized and quantified in situ by the TARDIS assay). Cells mutated in BRCA2 were significantly hypersensitive to the cytotoxic activity of 2-pyrone.
- Carcinogenicity: 2-furanone and 2-pyrone induce cellular DNA damage and the formation of topoisomerase I- and topoisomerase II-DNA complexes in cells. Both lactones were cytotoxic in human cell lines. These results suggest possible anticancer and DNA-damaging activities for 2-furanone and 2-pyrone.
- Reproductive toxicity: In female Wistar rats treated intraperitoneally with 2-buten-4-olide (0, 30 or 100 mg/kg/day) for 2 weeks, treatment with 100 mg/kg/day delayed the estrous cycle, increased pituitary content of LH, and decreased serum LH level in diestrus; it did not affect GnRH content of the mediobasal hypothalamus. In perifused pituitary, medium containing 2-buten-4-olide (10(-4) mol/L) suppressed the pituitary response to GnRH (2 ug/L). In rat pups, 2-buten-4-olide (50, 75 mg/kg, ip) produced a dose dependent effect on body weight; micro-infusion into lateral hypothalamus of 12-14 day old pups (1 uL of 10 ug/uL) initiated a significant reduction of body weight lasting up to 24 hr.
- STOT-single exposure: No data available.
- STOT-repeated exposure: No data available.
- Aspiration hazard: No data available.

Likely routes of exposure

- No data available.

Symptoms related to the physical, chemical and toxicological characteristics
- Suppresses appetite and/or food intake; in animal studies decreased food intake dose-dependently. In Rhesus monkeys, intracerebroventricular administration produced satiety effects (mild to severe depending on dose). Intraperitoneal injection facilitated spatial performance in mice. Suppressed clinical symptoms of experimental allergic encephalomyelitis in Lewis rats and reduced delayed-type hypersensitivity response to myelin basic protein.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1 Toxicity
- No data available.

12.2 Persistence and degradability
- No data available.

12.3 Bioaccumulative potential
- No data available.

12.4 Mobility in soil
- No data available.

12.5 Results of PBT and vPvB assessment
- Not available.

12.6 Endocrine disrupting properties
- No data available.

12.7 Other adverse effects
- No data 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 or the environment.
- Contaminated packaging: Dispose of as unused product or according to local requirements.
- Waste code: 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
- Regulatory listings (e.g., GHS classification, inventory status): Not available.

15.2 Chemical safety assessment
- No data available.

SECTION 16: Other information

SECTION 16: Other information

- Product name: 2(5H)-Furanone
- Synonyms: γ-Crotonolactone
- CAS No.: 497-23-4
- Catalog No.: CS-M-53382
- Supplier: Clearsynth Labs Ltd., Mumbai, India
- Emergency phone: +91-22-245045900
- Revision date: Not available.
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