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

Catalogue Number	CS-IP-00320
Product Name	Metronidazole
CAS No.	443-48-1
Category	IP Standards
Synonyms	1-Hydroxyethyl-2-methyl-5-nitroimidazole; 2-Methyl-5-nitro-1H-imidazole-1-ethanol (ACI); Imidazole-1-ethanol, 2-methyl-5-nitro- (6CI, 8CI); Anagiardil
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:

Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning

Hazard Statement(s)

Code	Statement
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H332	Harmful if inhaled.

H341	Not available
H350	Not available
H351	Not available
H373	Not available
H412	Not available

Precautionary Statement(s)

Code	Statement
P203	Not available
P260	Not available
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P270	Not available
P271	Use only outdoors or in a well-ventilated area.
P273	Not available
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P317	Not available
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.
P317	Not available
P318	Not available
P319	Get medical help if you feel unwell.
P321	Specific treatment (see … on this label).
P330	Not available
P362+P364	Take off contaminated clothing and wash it before reuse.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Metronidazole

CAS Number : 443-48-1
Molecular Formula : C6H9N3O3
Molecular Weight : 171.15
Parent Chemical : Metronidazole
Synonyms : 1-Hydroxyethyl-2-methyl-5-nitroimidazole; 2-Methyl-5-nitro-1H-imidazole-1-ethanol (ACI); Imidazole-1-ethanol, 2-methyl-5-nitro- (6CI, 8CI); Anagiardil
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 if exposure is significant.
- Inhalation: Move person to fresh air. Keep at rest. If breathing is difficult, seek medical attention.
- Skin contact: Wash with plenty of soap and water. Get medical attention if irritation develops or persists.
- Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.
- 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, dry chemical, foam, carbon dioxide).
- Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture
- May decompose under fire conditions to release irritating and/or toxic fumes.
- Specific hazardous combustion products: Not available.

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

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Avoid dust formation. Avoid breathing dust.
- 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. Do not allow to enter drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up
- Collect spilled material by mechanical means (e.g., sweep carefully) avoiding dust generation.
- Place in a suitable, closed container for disposal.
- Clean contaminated area with water and detergent as appropriate.

6.4 Reference to other sections
- See Section 8 for personal protective equipment 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 skin and eyes. Avoid inhalation of dust.
- Minimize dust generation and accumulation.
- Wash hands thoroughly after handling.

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

7.3 Specific end use(s)
- Laboratory/research use. Not available for other specific uses.

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
- Appropriate engineering controls: Use local exhaust ventilation or other engineering controls to minimize airborne dust.

Personal protective equipment (PPE)
- Eye/face protection: Safety glasses with side shields or chemical splash goggles.
- Skin protection: Protective gloves. Wear protective clothing as appropriate.
- Respiratory protection: If dust is generated and ventilation is inadequate, use a suitable particulate respirator in accordance with applicable standards.

- Hygiene measures: Wash hands after handling. Remove contaminated clothing and wash before reuse.

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	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 excessive heat. Avoid dust formation.

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: Despite the wide use of metronidazole, only rare cases of hepatotoxicity have been reported, and metronidazole is not listed among causes of drug induced liver injury and acute liver failure in large case series. High doses of metronidazole given parenterally or in an overdose can cause elevations in serum aminotransferase levels, but these are usually self-limited and minimally symptomatic. Acute, clinically apparent liver injury from metronidazole is rare. Metronidazole has been associated with an acute hepatitis-like syndrome with a short incubation period, but much more rarely. Fever, rash and eosinophilia are uncommon as are autoimmune features. A fatal recurrence of acute liver injury after reexposure to metronidazole has been published. Multiple instances of metronidazole hepatoxicity have been reported in Cockayne syndrome with short latency (1 to 7 days) to onset of jaundice, a hepatocellular pattern of enzyme elevations and severe course with a high mortality rate. Likelihood score: C (probable rare cause of clinically apparent liver injury). Adverse effects include reversible peripheral neuropathy with prolonged therapy, CNS toxicity, disulfiram effect with alcohol, dark red-brown urine, metallic taste, nausea, epigastric distress, dizziness, vertigo and paresthesias associated with high doses, and neutropenia (reversible and mild).
- 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 data available.
- Carcinogenicity: Metronidazole: reasonably anticipated to be a human carcinogen. Neurotoxic effects, including seizures and peripheral neuropathy, have occurred in individuals who received 6-10.4 g of metronidazole orally every other day for 5-7 days for the treatment of malignant tumors. Nausea, vomiting, and ataxia without serious resultant toxicity have been reported in individuals who ingested up to 19.5 g of metronidazole in a single dose.
- Reproductive toxicity: No data available.
- STOT-single exposure: No data available.
- STOT-repeated exposure: Metronidazole was administered for lifetime in the diet of Swiss mice at levels of 0.06%, 0.15%, 0.3% and 0.5%; survival was similar in all groups. The incidence of lung tumours rose from 19% in untreated

males to 33, 58, 67 and 77% in treated males and from 20% in untreated females to 40, 50, 70 and 44% in treated females. Female mice also exhibited a significantly increased incidence of lymphomas at the two highest dose levels. Metronidazole has been shown to be carcinogenic in a number of studies in mice; pulmonary tumorigenesis has been reported in six studies in mice, including one study with intermittent dosing (every four weeks). Malignant hepatic tumors have also been reported in male mice given very high doses (approximately 500 mg/kg/day). Malignant lymphomas have been reported in one lifetime feeding study in mice.
- Aspiration hazard: No data available.

Likely routes of exposure
- There have been reports of disulfiram-like reactions in patients drinking alcohol while administered systemic or vaginal metronidazole. Ethanol-containing medications can also lead to a disulfiram-like reaction when ingested with metronidazole.

Symptoms related to the physical, chemical and toxicological characteristics
- Despite the wide use of metronidazole, only rare cases of hepatotoxicity have been reported. High doses of metronidazole given parenterally or in an overdose can cause elevations in serum aminotransferase levels, usually self-limited and minimally symptomatic. Acute, clinically apparent liver injury is rare; an acute hepatitis-like syndrome with short incubation period has been reported. Fever, rash and eosinophilia are uncommon as are autoimmune features. A fatal recurrence of acute liver injury after reexposure has been published. In Cockayne syndrome, cases were marked by short latency (1 to 7 days) to onset of jaundice, hepatocellular pattern of enzyme elevations and severe course with high mortality rate. Likelihood score: C (probable rare cause of clinically apparent liver injury).

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 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.

ADR/RID: Not available.
IMDG: Not available.
IATA: 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 identification
- Product name: Metronidazole
- CAS No.: 443-48-1
- Catalog No.: CS-IP-00320
- Category: IP Standards
- Molecular weight: 171.15
- Synonyms: 1-Hydroxyethyl-2-methyl-5-nitroimidazole; 2-Methyl-5-nitro-1H-imidazole-1-ethanol (ACI); Imidazole-1-ethanol, 2-methyl-5-nitro- (6CI, 8CI); Anagiardil
- Supplier: Clearsynth Labs Ltd., Mumbai, India
- Emergency phone: +91-22-245045900

Disclaimer
- The information provided is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. Not available data indicates information was not provided.

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