Briti Scientific®
An ISO 9001:2015 and ISO/IEC 17025:2017 Certified Company.

MATERIAL SAFETY DATA SHEET

www.britiscientific.com **Issue Date:**

1- Chemical Product Information and Company Identification.

Product Name: Benzene, GC Reference standard, AnStan ®.
Synonym: cyclohexatriene
Product code: BS10100.
CAS Number: 71-43-2.
Company Name: Briti Scientific.
Company Address: Plot No: 78/B/13, SY-79, Phase-VI, Jeedimetla,Hyderabad- 500 055. Telangana, India.

Section 2- Composition / Information on Ingredients.

CAS No.	Chemical Name	Mol. Formula
71-43-2.	Cyclo hexatriene	C_6H_6

Section 3- Hazards Identification.

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 2), H225
Skin irritation (Category 2), H315
Eye irritation (Category 2), H319
Germ cell mutagenicity (Category 1B), H340
Carcinogenicity (Category 1A), H350
Specific target organ toxicity - repeated exposure (Category 1), H372
Aspiration hazard (Category 1), H304
Chronic aquatic toxicity (Category 3), H412

Label elements

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H340 May cause genetic defects.
H350 May cause cancer.
H372 Causes damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.

Other hazards
This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher.

Section 4- First Aid Measures.

Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician

Section 5- Fire Fighting Measures.

Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Special hazards arising from the substance or mixture
Carbon oxides Flash back possible over considerable distance., Container explosion may occur under fire conditions.
Advice for fire-fighters
Wear self-contained breathing apparatus for fire fighting if necessary
Further information
Use water spray to cool unopened containers.

Section 6- Accidental Release Measures.

Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided
Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulation

Section 7- Handling and Storage.

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Avoid exposure - obtain special instructions before use. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.

Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Storage class (TRGS 510): Flammable liquids

Section 8- Exposure Control/Personal Protection.

Control parameters

Components with workplace control parameters

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided

Section 9- Physical and Chemical Properties.

Information on basic physical and chemical properties

a) Appearance Form: clear, liquid
Colour: colourless
b) Odour: No data available
c) Odour Threshold: No data available
d) pH: No data available
e) Melting point/freezing point freezing point: 5.2 °C - lit.
f) Initial boiling point and boiling range: 79-810° C
g) Flash point: - 10.99 °C - closed cup
h) Evaporation rate: No data available
i) Flammability (solid, gas): No data available
j) Upper/lower flammability or explosive limits: Upper explosion limit: 8 %(V) Lower explosion limit: 1.3 %(V)
k) Vapour pressure: 2213 hPa at 37.7 °C 99.5 hPa at 20.0 °C
l) Vapour density: No data available
m) Relative density: 0.875 – 0.879g/cm3 at 20 °C
n) Water solubility: No data available
o) Partition coefficient: n- log Pow: 2.13 at 25 °C octanol/water
p) Auto-ignition: 562.0 °C temperature
q) Decomposition: No data available temperature
r) Viscosity: No data available
s) Explosive properties: No data available
t) Oxidizing properties: No data available

Section 10- Stability and Reactivity.

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions

Possibility of hazardous reactions

No data available

Conditions to avoid
Heat, flames and sparks.
Incompatible materials
acids, Bases, Halogens, Strong oxidizing agents, Metallic salts

Section 11- Toxicological Information.

Information on toxicological effects
Acute toxicity
LD50 Oral - Rat - male - > 5.960 mg/kg (OECD Test Guideline 401)
LC50 Inhalation - Rat - female - 4 h - 43,7 mg/l (OECD Test Guideline 403)
LD50 Dermal - Rabbit - 8.263 mg/kg
Skin corrosion/irritation
Skin - Rabbit Result: Skin irritation - 4 h (OECD Test Guideline 404)
Serious eye damage/eye irritation
Eyes – Rabbit Result: Eye irritation
Respiratory or skin sensitisation
Maximisation Test (GPMT) – Guinea pig
Result: Does not cause skin sensitisation
Germ cell mutagenicity
Laboratory experiments have shown mutagenic effects. In vivo tests showed mutagenic effects
Chinese hamster lung cells
Result: positive
OECD Test Guideline 475
Mouse – male
Result: positive
Carcinogenicity
Carcinogenicity - Human - male - Inhalation Tumorigenic: Carcinogenic by RTECS criteria. Leukaemia Blood: Thrombocytopenia.
Carcinogenicity - Rat - Oral Tumorigenic: Carcinogenic by RTECS criteria. Endocrine: Tumors. Leukaemia
This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.
Reproductive toxicity
Reproductive toxicity - Mouse - Intraperitoneal Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetal death.

Developmental Toxicity - Rat - Inhalation Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).
Developmental Toxicity - Mouse - Inhalation Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material). Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).

Additional Information

Repeated dose Rat - male and female - Oral - NOAEL : 100 mg/kg - OECD Test Guideline 408 toxicity RTECS: CY1400000
Nausea, Dizziness, Headache, narcosis, Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation and/or giddiness, depression, drowsiness, or fatigue.

The victim may experience tightness in the chest, breathlessness, and loss of consciousness. Tremors, convulsions, and death due to respiratory paralysis or circulatory collapse can occur in a few minutes to several hours following severe exposures. Aspiration of small amounts of liquid immediately causes pulmonary enema and haemorrhage of pulmonary tissue. Direct skin contact may cause erythema. Repeated or prolonged skin contact may result in drying, scaling dermatitis, or development of secondary skin infections. The chief target organ is the hematopoietic system. Bleeding from the nose, gums, or mucous membranes and the development of purpuric spots, pancytopenia, leukopenia, thrombocytopenia, aplastic anaemia, and leukaemia may occur as the condition progresses. The bone marrow may appear normal, aplastic or hyperplastic, and may not correlate with peripheral blood-forming tissues. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased., Blood disorders

Section 12- Ecological Information.

Toxicity

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) – 15.00 – 32.00 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates EC50 - Ceriodaphnia dubia (water flea) – 17.2 mg/l - 48 h.

Toxicity to algae Growth inhibition EC50 - Pseudokirchneriella subcapitata (green algae) - 100 mg/l - 72 h (OECD Test Guideline 201)

Persistence and degradability

Biodegradability aerobic - Exposure time 28 d Result: 96 % - Readily biodegradable (OECD Test Guideline 301F)

Bio accumulative potential Leuciscus idus (Golden orfe) - 3 d – 0.05 mg/l

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher

13- Disposal Considerations.

Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

Section 14- Transport Information.

UN number

ADR/RID: 1114 IMDG: 1114 IATA: 1114

UN proper shipping name

ADR/RID: Benzene

IMDG: Benzene

IATA: Benzene

Transport hazard class (es)

ADR/RID: 3 IMDG: 3 IATA: 3

Packaging group

ADR/RID: II IMDG: II IATA: II

Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

15-Other Regulatory Information.

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

Safety, health and environmental regulations/legislation specific for the substance or mixture

Benzene CAS-No.: 71-43-2
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
Carcinogens: category 1A
Restricted to professional users
See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction

Benzene CAS-No.: 71-43-2
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
Shall not be placed on the market, or used, as a substance or in mixtures
See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction
Benzene CAS-No.: 71-43-2
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
Not permitted in toys or part of toys
See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction

Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

Section 16- Other Information.

Briti Scientific provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.