

SIGMA-ALDRICH**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

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GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name : 1,4-BUTANEDIOL DIMETHANESULFONATE

Product Number : 19012

Brand : Fluka

Company : Sigma-Aldrich (Shanghai) Trading Co.,Ltd
22A-B Century Ba-Shi Building,
398 Huai Hai Zhong Road
200020 SHANGHAI
CHINA

Telephone : +862161415566

Fax : +862161415567

Emergency Phone # : +8615921213336

E-mail address : china@sial.com

2. HAZARDS IDENTIFICATION**Risk advice to man and the environment**

May cause cancer. Also very toxic by inhalation, in contact with skin and if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₆H₁₄O₆S₂

Molecular Weight : 246,3 g/mol

CAS-No.	EC-No.	Index-No.	Classification	Concentration
Busulfan				
55-98-1	200-250-2	-	T+, R45 - R26/27/28	-

4. 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

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear respiratory protection. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods for cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling

Avoid exposure - obtain special instructions before use. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Storage

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) 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).

Hand protection

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Handle with gloves.

Eye protection

Safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form crystalline

Colour beige

Safety data

pH no data available

Melting point no data available

Boiling point no data available

Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Water solubility	no data available

10. STABILITY AND REACTIVITY

Storage stability

Stable under recommended storage conditions.

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - mouse - 110 mg/kg

Remarks: Diarrhoea Skin and Appendages: Other: Hair.

Irritation and corrosion

no data available

Sensitisation

no data available

Chronic exposure

Carcinogenicity - Human - female - Oral

Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Kidney tumors. Tumorigenic Effects: Other reproductive system tumors.

Carcinogenicity - mouse - Intravenous

Tumorigenic: Neoplastic by RTECS criteria. Leukaemia Blood: Lymphomas including Hodgkin's disease.

Carcinogenicity - mouse - Intraperitoneal

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration: Tumors.

Carcinogenicity - Human - male - Oral

Tumorigenic: Carcinogenic by RTECS criteria. Leukaemia

IARC: Group 1 - Carcinogenic to humans (Busulfan)

Genotoxicity in vitro - mouse - leukocyte

DNA inhibition

Genotoxicity in vitro - mouse - lymphocyte

Mutation in mammalian somatic cells.

Genotoxicity in vitro - Hamster - Lungs

DNA damage

Genotoxicity in vitro - Hamster - ovary

Micronucleus test

Genotoxicity in vitro - Human - leukocyte

Cytogenetic analysis

Genotoxicity in vitro - Human - lymphocyte

Cytogenetic analysis

Genotoxicity in vitro - Hamster - Kidney
Morphological transformation.

Genotoxicity in vitro - Human - lymphocyte
Sister chromatid exchange

Genotoxicity in vitro - Human - HeLa cell
DNA inhibition

Genotoxicity in vivo - mouse - Intraperitoneal
Dominant lethal test

Genotoxicity in vivo - Hamster - Oral
Cytogenetic analysis

Genotoxicity in vivo - Hamster - Intraperitoneal
Sister chromatid exchange

Genotoxicity in vivo - rat - Oral
DNA inhibition

Genotoxicity in vivo - rat - Intraperitoneal
Dominant lethal test

Genotoxicity in vivo - mouse - Intraperitoneal
Micronucleus test

Genotoxicity in vivo - mouse - Intraperitoneal
Unscheduled DNA synthesis

Developmental Toxicity - rat - Oral
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Developmental Toxicity - rat - Oral
Specific Developmental Abnormalities: Urogenital system.

Developmental Toxicity - rat - Intraperitoneal
Effects on Embryo or Fetus: Fetal death.

Developmental Toxicity - mouse - Oral
Specific Developmental Abnormalities: Musculoskeletal system.

Developmental Toxicity - mouse - Oral
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Developmental Toxicity - mouse - Oral
Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Developmental Toxicity - mouse - Intraperitoneal
Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).

Developmental Toxicity - Human - female - Unreported
Specific Developmental Abnormalities: Gastrointestinal system.

Developmental Toxicity - Human - female - Oral
Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Endocrine system.

Reproductive toxicity - rat - Oral
Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

Reproductive toxicity - rat - Oral
Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Reproductive toxicity - rat - Intraperitoneal
Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Other measures of fertility Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Reproductive toxicity - rat - Intraperitoneal
Effects on Newborn: Behavioral.

Reproductive toxicity - mouse - Oral
Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Reproductive toxicity - mouse - Intraperitoneal
Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Reproductive toxicity - mouse - Intraperitoneal
Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Reproductive toxicity - mouse - Intraperitoneal
Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Fertility: Other measures of fertility

Reproductive toxicity - female - female - Oral
Maternal Effects: Uterus, cervix, vagina.

Reproductive toxicity - female - female - Unreported
Maternal Effects: Menstrual cycle changes or disorders.

Reproductive toxicity - female - male - Oral
Paternal Effects: Breast development.

Reproductive toxicity - Mammal - Oral
Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Reproductive toxicity - Mammal - Oral
Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Reproductive toxicity - Hamster - Intraperitoneal
Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Potential Health Effects

Inhalation	May be fatal if inhaled. May cause respiratory tract irritation.
Skin	May cause skin irritation. May be fatal if absorbed through skin.
Eyes	May cause eye irritation.
Ingestion	May be fatal if swallowed.
Target Organs	Bone marrow, Eyes,

Additional Information

RTECS: EK1750000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

no data available

Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**ADR/RID**

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S.

IMDG

UN-Number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S.
Marine pollutant: No

IATA

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic n.o.s.

15. REGULATORY INFORMATION**Labelling according to EC Directives**

Hazard symbols

T+ Very toxic

R-phrase(s)

R45 May cause cancer.
R26/27/28 Also very toxic by inhalation, in contact with skin and if swallowed.

S-phrase(s)

S53 Avoid exposure - obtain special instructions before use.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Restricted to professional users.

16. OTHER INFORMATION**Further information**

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