



SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 05/18/2006
Date Updated: 01/30/2006
Version 1.50

Section 1 - Product and Company Information

Product Name (+)-5-Bromo-2'-deoxyuridine, 97%
Product Number 858811
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5052

Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313	EC no	Annex I Index Number
(+)-5-BROMO-2'-DEOXYURIDINE	59-14-3	No	200-415-9	

Formula C₉H₁₁BrN₂O₅
Synonyms BDU, 5-Bdu, Bromodeoxyuridine, 5-Bromodeoxyuridine, 5-Bromodesoxyuridine, 5-Bromo-2'-deoxyuridina, Bromouracil deoxyriboside, 5-Bromouracil deoxyriboside, 5-Bromouracil-2-deoxyriboside, Broxuridine, Brudr, BU DR, 5-Budr

Section 3 - Hazards Identification

Emergency Overview

Caution: Avoid contact and inhalation. Target organ(s): Immune system.

HMS Rating
Health: 1* Flammability: 0 Reactivity: 0

NFPA Rating
Health: 1 Flammability: 0 Reactivity: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media Suitable

Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure(s) of Personal Precaution(s)

Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of dust.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks.

Hand

Protective gloves.

Eye

Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Color	Form
Physical State Solid	White	Powder

Molecular Weight: 307.11 AMU

pH	N/A
BP/BP Range	N/A
MP/MP Range	190 °C
Freezing Point	N/A
Vapor Pressure	N/A
Vapor Density	N/A
Saturated Vapor Conc.	N/A
SG/Density	N/A
Bulk Density	N/A
Odor Threshold	N/A
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point °F	N/A
Flash Point °C	N/A

Explosion Limits N/A

Flammability N/A
Autoignition Temp N/A

Optical Rotation Degree of Rotation:
+28 - +23 (+/-1)

Solvent:H2O10 g/l

Solubility N/A

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable

Stable.

Materials to Avoid

Strong oxidizing agents.

Hazardous Decomposition Products

Hazardous Decomposition Products

Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen bromide gas.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

May cause skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

May cause eye irritation.

Inhalation

May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion

May be harmful if swallowed.

Target Organ(s) or System(s)

Immune system.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: YU7350000

Toxicity Data

Oral - Rat: 8400 mg/kg (LD50)

Intraperitoneal - Rat: 1500 MG/KG (LD50)

Subcutaneous - Rat: 3900 MG/KG (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).

Cardiac:Pulse rate.

Lungs, Thorax, or Respiration:Respiratory depression.

Intravenous - Rat: 2320 MG/KG (LD50)

Remarks: Vascular:Other changes.

Oral - Mouse: 9100 mg/kg (LD50)

Remarks: Behavioral:Muscle weakness.

Blood:Changes in spleen.

Nutritional and Gross Metabolic:Weight loss or decreased weight gain.

Intraperitoneal - Mouse: 3050 MG/KG (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).

Cardiac:Pulse rate.

Lungs, Thorax, or Respiration:Respiratory depression.

Subcutaneous - Mouse: 3500 MG/KG (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).

Cardiac:Pulse rate.

Lungs, Thorax, or Respiration:Respiratory depression.

Intravenous - Mouse: 2500 MG/KG (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).

Cardiac:Pulse rate.

Lungs, Thorax, or Respiration:Respiratory depression.

Oral - Quail: > 100 mg/kg (LD50)

Chronic Exposure - Carcinogen

Rat - Subcutaneous: 16 MG/KG

Result: Tumorigenic:Carcinogenic by RTECS criteria. Endocrine:Thyroid tumors. Tumorigenic Effects: Testicular tumors.

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
	Result: Laboratory experiments have shown teratogenic effects.		
Rat	250 MG/KG	Intraperitoneal	(13D PREG)
	Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).		
Rat	200 MG/KG	Intraperitoneal	(13D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
	Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	500 MG/KG	Intraperitoneal	(11D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
	Specific Developmental Abnormalities: Respiratory system.		
Mouse	300 MG/KG	Intraperitoneal	(10D PREG)
	Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
	Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	200 MG/KG	Intraperitoneal	(8D PREG)
	Result: Specific Developmental Abnormalities: Central nervous system.		
	Specific Developmental Abnormalities: Eye, ear.		
Mouse	200 MG/KG	Intraperitoneal	(11D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
	Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	40 MG/KG	Intravenous	(6D PREG)
	Result: Effects on Embryo or Fetus: Other effects to embryo.		
Mouse	300 MG/KG	Parenteral	(8D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Mouse	300 MG/KG	Parenteral	(8D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Mouse	600 MG/KG	Parenteral	(9D PREG)
	Result: Specific Developmental Abnormalities: Eye, ear.		
	Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	1 GM/KG	Parenteral	(10D PREG)
	Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
Mouse	500 MG/KG	Unreported	(11D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
	Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
Hamster	400 MG/KG	Intraperitoneal	(8D PREG)
	Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Hamster	400 MG/KG	Intraperitoneal	(10D PREG)
	Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
	Specific Developmental Abnormalities: Musculoskeletal system.		
Hamster	900 MG/KG	Intraperitoneal	(9D PREG)
	Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).		
	Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
Hamster	400 MG/KG	Intravenous	(8D PREG)
	Result: Effects on Embryo or Fetus: Fetal death.		
Hamster	400 MG/KG	Intravenous	(8D PREG)
	Result: Specific Developmental Abnormalities: Central nervous system.		
	Specific Developmental Abnormalities: Eye, ear.		
	Specific Developmental Abnormalities: Musculoskeletal system.		

Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Cell Type</u>	<u>Mutation test</u>
	Result: Laboratory experiments have shown mutagenic effects.		

Human	82 UMOL/L			fibroblast	Micronucleus test
Human	10 UMOL/L			fibroblast	DNA damage
Human	1 MMOL/L			HeLa cell	DNA inhibition
Human	82 UMOL/L			fibroblast	Cytogenetic analysis
Human	200 MG/L			leukocyte	Cytogenetic analysis
Human	13 MG/L			lymphocyte	Cytogenetic analysis
Human	15 MG/L			lymphocyte	Sister chromatid exchange
Human	20 UMOL/L			lymphocyte	Sister chromatid exchange
Human	10 MG/L			leukocyte	Sister chromatid exchange
Human	10 MG/L			fibroblast	Sister chromatid exchange
Human	20 MG/L			ovary	Sister chromatid exchange
Human	15 MG/L			Other cell types	Sister chromatid exchange
Human	15 MG/L			testis	Sister chromatid exchange
Human	15 MG/L			fibroblast	Mutation in mammalian somatic cells.
Human	100 UMOL/L			lymphocyte	Mutation in mammalian somatic cells.
Human	10 UMOL/L			Other cell types	Sister chromatid exchange
Human	10 UMOL/L			ovary	Sister chromatid exchange
Rat	100 UMOL/L			Embryo	DNA damage
Rat	1 UMOL/L			Other cell types	DNA damage
Rat	1087 MG/KG	Subcutaneous			DNA inhibition
Rat	1 UMOL/L			lymphocyte	Other mutation test systems
Rat	25 UMOL/L			lymphocyte	Cytogenetic analysis
Rat	80 MG/KG	Intravenous	24H		Sister chromatid exchange
Rat	1 UMOL/L			lymphocyte	Sister chromatid exchange
Rat	1087 MG/KG	Subcutaneous			Mutation in mammalian somatic cells.
Rat	5 MG/L			Other cell types	Mutation in mammalian somatic cells.
Rat	150 MG/KG	Subcutaneous			sperm
Mouse	500 MG/KG	Intraperitoneal			Micronucleus test
Mouse	10 UMOL/L			lymphocyte	DNA damage
Mouse	72 UMOL/L			fibroblast	DNA damage
Hamster	20 UMOL/L			kidney	Cytogenetic analysis
Mouse	90 UMOL/L			fibroblast	Cytogenetic analysis
Mouse	20 MG/KG	Intraperitoneal			Cytogenetic analysis
Mouse	50 MG/L			Embryo	Cytogenetic analysis
Mouse	10 MG/L		4W	lymphocyte	Cytogenetic analysis
Mouse	5 MG/L			Ascites tumor	Cytogenetic analysis
Mouse	1200 MG/KG	Subcutaneous			Sister chromatid exchange
Mouse	220 MG/KG	Implant			Sister chromatid exchange
Mouse	200 MG/KG	Intraperitoneal			Sister chromatid exchange
Mouse	1 UMOL/L			Other cell types	Sister chromatid exchange
Mouse	10 MG/L			lung	Sister chromatid exchange
Mouse	10 MG/L			testis	Sister chromatid exchange
Mouse	10 UMOL/L			Other cell types	Sister chromatid exchange
Mouse	1 NMOL/L			Embryo	Sister chromatid exchange
Mouse	1250 NMOL/L			Embryo	Mutation in mammalian somatic cells.
Mouse	10 GM/KG	Parenteral		sperm	sperm
Mouse	200 MG/KG	Intraperitoneal			sperm
Mouse	50 MG/KG	Intraperitoneal			Heritable translocation test
Hamster	5 UMOL/L			ovary	Micronucleus test
Hamster	50 UMOL/L			ovary	specific locus test
Hamster	1560 UG/L			Embryo	Morphological transformation.
Hamster	10 UMOL/L			ovary	DNA damage
Hamster	50 UMOL/L			ovary	Cytogenetic analysis
Hamster	25 MG/L		28H	Other cell types	Cytogenetic analysis
Hamster	25 MG/L			fibroblast	Cytogenetic analysis

Hamster	100 MG/L		Other cell types	Cytogenetic analysis
Hamster	10 UMOL/L		ovary	Sister chromatid exchange
Hamster	40 MG/L		Other cell types	Sister chromatid exchange
Hamster	100 UMOL/L		fibroblast	Sister chromatid exchange
Hamster	28800 UG/KG	Intraperitoneal		Sister chromatid exchange
Hamster	10 MMOL/L		lung	Mutation in mammalian somatic cells.
Hamster	300 UMOL/L	1H	ovary	Mutation in mammalian somatic cells.
Hamster	5 MG/L		Other cell types	Mutation in mammalian somatic cells.
Hamster	10 MG/L		kidney	Mutation in mammalian somatic cells.
Hamster	5 MG/L		fibroblast	Mutation in mammalian somatic cells.
Hamster	30 UMOL/L		Other cell types	Mutation in mammalian somatic cells.
Hamster	80 UG/KG	Parenteral	sperm	Heritable translocation test
Hamster	10 UMOL/L		ovary	Sister chromatid exchange
Monkey	30 UMOL/L		lymphocyte	DNA
Chicken	500 UG/L		Embryo	Cytogenetic analysis
Cattle, Horse	20 MG/L		lymphocyte	Cytogenetic analysis
Mammal	50 MG/L		lymphocyte	Sister chromatid exchange
Chicken	8475 UG/KG	Parenteral		Sister chromatid exchange
Cattle, Horse	2 MG/L		lymphocyte	Sister chromatid exchange
Pig	2 MG/L		lymphocyte	Sister chromatid exchange
Domestic Animals	2 MG/L		lymphocyte	Sister chromatid exchange
Mammal	1 GM/KG	Subcutaneous		Sister chromatid exchange
Mammal	30 UMOL/L		lymphocyte	Sister chromatid exchange
Mammal	100 UMOL/L		fibroblast	Sister chromatid exchange

Chronic Exposure - Reproductive Hazard

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
	Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.		
Rat	700 MG/KG	Intraperitoneal	(9-15D PREG)
	Result: Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).		
Mouse	600 MG/KG	Intraperitoneal	(8-13D PREG)
	Result: Effects on Newborn: Delayed effects.		
Mouse	400 MG/KG	Intraperitoneal	(9D PREG)
	Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).		
Mouse	400 MG/KG	Intraperitoneal	(8D PREG)
	Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).		
Mouse	1200 MG/KG	Parenteral	(9D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).		
Mouse	1 GM/KG	Parenteral	(7D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).		
Hamster	640 MG/KG	Intraperitoneal	(8D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).		
Hamster	400 MG/KG	Intravenous	(8D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).		

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

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. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None

Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

US Classification and Label Text

US Statements

Caution: Avoid contact and inhalation. Target organ(s): Immune system.

United States Regulatory Information

SARA Listed: No

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

RECEIVED
MAY 30 2006
Safety and Environmental
Health