

Chemical Safety Data Sheet MSDS / SDS

Bromacil SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Product name: Bromacil
CAS: 314-40-9

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.
Uses advised against: none

Company Identification

Company: Chemicalbook.in
Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090
Telephone: +91 9550333722

SECTION 2: Hazards identification**Classification of the substance or mixture**

Acute toxicity - Category 4, Oral
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Warning

Hazard statement(s)

H302 Harmful if swallowed

H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P391 Collect spillage.

Storage

none

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Bromacil
Common names and synonyms:	Bromacil
CAS number:	314-40-9
EC number:	206-245-1
Concentration:	100%

SECTION 4: First aid measures**Description of necessary first-aid measures****If inhaled**

Fresh air, rest.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, ingestion, skin and/or eye contact Symptoms: Irritation eyes, skin, upper respiratory system Target Organs: Eyes, skin, respiratory system, thyroid (NIOSH, 2016)

Indication of immediate medical attention and special treatment needed, if necessary

Skin decontamination: Skin contamination should be treated promptly by washing with soap and water. Contamination of the eyes should be treated immediately by prolonged flushing of the eyes with large amounts of clean water. If dermal or ocular irritation persists, medical attention should be obtained without delay. Herbicides

SECTION 5: Firefighting measures

Suitable extinguishing media

Bromacil may be ignited by heat or open flame. ... Use dry chemical, carbon dioxide, water spray, or foam extinguishers. ... From a secure, explosion-proof location, use water spray to coll exposed containers. ...

Specific hazards arising from the chemical

Not combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Personal protection: particulate filter respirator adapted to the airborne concentration of the substance.

Methods and materials for containment and cleaning up

Remove all ignition sources. Absorb liquid containing Bromacil in vermiculite, dry sand, earth, or similar material. Collect powdered material in the most convenient and safe manner adn deposit in sealed containers. Ventilate area of spill or leak after clean-up is complete. ...

SECTION 7: Handling and storage

Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Keep in a well-ventilated room. Separated from strong oxidants and strong acids. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in original container. Keep tightly closed in a dry, cool and wellventilated place. Keep out of the reach of children. DuPont Hyvar X Herbicide

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 10 mg/m³, as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans)

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles.

Skin protection

Protective gloves.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Bromacil is a colorless to white odorless crystalline solid. Used as an herbicide. Commercially available as a wettable powder or in liquid formulations. (NIOSH, 2016)
Colour:	White crystalline solid
Odour:	Odorless
Melting point/freezing point:	157-160°C
Boiling point or initial boiling point and boiling range:	411°C
Flammability:	Noncombustible Solid, but may be dissolved in flammable liquids.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	no data available
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	0.08 % at 77° F (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 2.11
Vapour pressure:	0.0008 mm Hg at 212° F (NIOSH, 2016)

Density and/or relative density:	1.55
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating. This produces toxic fumes including hydrogen bromide and nitrogen oxides. Decomposes on contact with acids or oxidants.

Chemical stability

Stable to 0 deg F, but water-soluble formulations become less soluble with exposed to air.

Possibility of hazardous reactions

Active ingredient and dry formulations are non-flammable; the liquid formulation (HYVAR-XL) is a combustible mixture which should be kept away from heat and open flame. BROMACIL is incompatible with the following: Strong acids (decomposes slowly), oxidizers, heat, sparks, open flames (NIOSH, 2016).

Conditions to avoid

no data available

Incompatible materials

Strong acids (decomposes slowly), oxidizers, heat, sparks, open flames.

Hazardous decomposition products

Decomposes slowly in strong acids.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat male oral 5200 mg/kg

Inhalation: LC50 Rat inhalation >4.8 mg/L air/4 hr

Dermal: LD50 Rabbit percutaneous >5000 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Cancer Classification: Group C Possible Human Carcinogen

Reproductive toxicity

no data available

STOT-single exposure

The substance is mildly irritating to the eyes, skin and respiratory tract.

STOT-repeated exposure

no data available

Aspiration hazard

Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: *Lepomis macrochirus* (Bluegill sunfish); Concentration: 71 ppm for 48 hr /Conditions of bioassay not specified in source examined

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water Flea) age <24 hr; Conditions: freshwater, static; Concentration: 121000 ug/L for 48 hr (95% confidence interval: 111000-148000 ug/L); Effect: intoxication, immobilization /96.6% purity

Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green Algae); Conditions: freshwater, static; Concentration: 6.8 ug/L for 5 days (95% confidence interval: 5.9-7.8 ug/L); Effect: population abundance /96.5% purity

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: The microbial degradation of bromacil in aerobic soil is slow with a half-life of 275 days in silty clay loam soil incubated for up to 12 months. Carbon dioxide was the major degradate with 5-bromo-6-methyluracil, 5-bromo-3-(alpha-hydroxymethylpropyl)-6-methyluracil, 5-bromo-3-sec-butyl-6-hydroxymethyluracil, 5-bromo-3-(2-hydroxy-1-methylpropyl)-6-methyluracil and 3-sec-butyl-6-methyluracil found as minor metabolites(1). Bromacil was degraded within 4 to 6 months when single applications were made to soil; however, when two applications were used, bromacil persisted in the top 75 mm of soil for nearly a year(2). The mineralization half-life of (14)C-labeled bromacil, incubated in loamy sand and mucky peat soils, was estimated to range from 5,429 to 46,200 days(3). Bromacil estimated half-life is 12-46 days in two New Zealand soils; Motupiko silt loam (pH 5.7, 24% sand, 57% silt, 19% clay, 2.4% organic content) Waikiwi silt loam (pH 5.5, 7% sand, 69% silt, 24% clay, 3.9% organic content)(4).

Bioaccumulative potential

The bioconcentration of bromacil in bluegill sunfish (*Lepomis macrochirus*) was studied over a 28-day period using flow-through conditions(1). Bluegill sunfish exposed to 10.6 ppm bromacil had BCF values for muscle, viscera, carcass, and whole fish of 49, 72, 22, and 26.5, respectively(1). At 1.0 ppm, maximum BCF values were 4.6, 8.3, 2.2, and 2.8 for muscle, viscera, carcass, and whole fish, respectively(1). Depuration was rapid, with >96% of the accumulated residues eliminated from the fish tissues by day 3 of the depuration period. A BCF of 3.2 was measured in fathead minnow(2). A log BCF of 0.35242 in bluegill sunfish exposed for 28 days has also been reported(3), corresponding to a BCF of 2.20(SRC). According to a classification scheme(4), these BCF values suggest that bioconcentration in aquatic organisms is low. [

Mobility in soil

Bromacil is very mobile in sand, sandy loam, clay loam and silt loam soils; aged bromacil residues are very mobile in silt loam soils(1). Extensive data exists as evidence that bromacil leaches to ground water as a result of normal agricultural use(1). An average Koc value of 23 was determined from experimental values determined in 8 soils and 4 sediments(2). Koc values of 25 to 50 for Israeli soils(3), 55 to 126(4), 46 to 93 for 7 sandy Florida soils(5), and 76 to 129 for a mucky peat and a loamy sand Oregon soils incubated at temperatures of 4 and 25 deg C(6) have been reported. Koc values in sand (FL), sandy loam (CA), clay loam (MD), and silt loam (DE) were 12, 33, 2.3, and 14, respectively(7). According to a classification scheme(8), these Koc values suggest that bromacil is expected to have very high to moderate mobility in soil. In soil column leaching studies, bromacil readily leached from loess and sandy soils, but was retained in organic-rich soils(6). As the pH increased from 3 to 12, less adsorption of bromacil to Ca-montmorillonite was measured(4). In 7 sandy soils, a rainfall of 20-23 cm displaced over 96% of applied bromacil(5). Koc values were slightly higher at lower temperatures(6). Maximum bromacil concentrations of 1.25 ppm were detected in groundwater (depths of 4.5-6 meters) three months after the herbicide was applied to a surface of Lakeland, FL sandy soil bearing scrub vegetation of small oaks and poor grasses(9). The pKa of bromacil is 9.30(10), indicating that this compound will exist partially in the anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(11). Desorption of bromacil from Cuban soils were reported as 51.98 and 67.00% from a red ferralitic soil and a brown plastic soil, respectively; the specific adsorption constants are 2.89 and 23.9 ug/g, respectively(12). Adsorption coefficients 1.79 and 4.59 for Motupiko topsoil (1-10 cm) and subsoil (40-50 cm), respectively, and 1.57 for Waikiwi topsoil (1-10 cm) have been reported for two Wakefield, Nelson, New Zealand soils. Soil characteristics are as follows: Motupiko silt loam (pH 5.7, 24% sand, 57% silt, 19% clay, 2.4% organic content) Waikiwi silt loam (pH 5.5, 7% sand, 69% silt, 24% clay, 3.9% organic content)(13).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Not Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Carrier solvents used in commercial formulations may change physical and toxicological properties.

Disclaimer: 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. We as supplier shall not be held liable for any