Chemical Safety Data Sheet MSDS / SDS

2,4,5-T SDS

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

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

Product identifier

Product name: 2,4,5-T

CAS: 93-76-5

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

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SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Skin irritation, Category 2

Eye irritation, Category 2
Specific target organ toxicity – single exposure, Category 3
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
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
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.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

Response

P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

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:	2,4,5-T
Common names and synonyms:	2,4,5-T
CAS number:	93-76-5
EC number:	202-273-3
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

Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Overexposure to dust by inhalation or ingestion may cause fatigue, nausea, vomiting, lowered blood pressure, convulsions, coma. Dust may irritate eyes and skin. (USCG, 1999)

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

Absorption, Distribution and Excretion

2,4,5-T given orally to ... volunteers in doses of 100-150 mg was readily absorbed and gradually eliminated from blood plasma, showing first-order elimination rate; more than 80% of dose was excreted in urine in intact form within 72 hr. Daily urinary excretion ... in exposed workers was found to range from 0.5-3.6 mg/day in 11/21 samples.

SECTION 5: Firefighting measures

Suitable extinguishing media

Wear/ self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode /when fighting fire/.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic hydrogen chloride and phosgene gases may be formed. (USCG, 1999)

Special protective actions for fire-fighters

Use water spray, powder.

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

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.

Methods and materials for containment and cleaning up

1. ventilate area of spill. 2. collect spilled material in the most convenient and safe manner and deposit in sealed containers for reclamation, or for disposal in a secured sanitary landfill. liquid containing 2,4,5-t should be absorbed in vermiculite, dry sand, earth, or a similar material.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. 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

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Store in an area without drain or sewer access.DO NOT STORE NEAR OTHER AGROCHEMICALS OR SEEDS. DO NOT STORE IN FREEZING TEMPERATURES.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 10 mg/m3, as TWA; A4 (not classifiable as a human carcinogen).MAK: (inhalable fraction): 2 mg/m3; peak limitation category: II(2); skin absorption (H); pregnancy risk group: C

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

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	2,4,5-trichlorophenoxyacetic acid is a light tan solid (melting point 153°C). Insoluble in water. Contact may irritate the skin.
Colour:	WHITE SOLID
Odour:	Odorless
Melting point/freezing point:	154-158°C
Boiling point or initial boiling point and boiling range:	376.3°C
Flammability:	Combustible Solid, but burns with difficulty.

Lower and upper explosion limit/flammability limit:	no data available
Flash point:	181.4°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	less than 0.1 mg/mL at 69.8° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow= 4
Vapour pressure:	0 mm Hg at 68° F approximately (NTP, 1992)
Density and/or relative density:	1.592
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating and on burning. This produces toxic and corrosive gases including phosgene (see ICSC 0007) and hydrogen chloride (see ICSC 0163). The solution in water is a weak acid.

Chemical stability

Stable @ its melting-point

Possibility of hazardous reactions

Material does not burn or burns with difficulty.2,4,5-TRICHLOROPHENOXYACETIC ACID is a weak acid. Reacts with organic and inorganic bases to form water-soluble salts and with alcohols to form esters. Incompatible with strong oxidizing agents and strong bases. Can corrode metals, especially if moist. May harm painted surfaces (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

STABILITY: This chemical is stable under normal laboratory conditions. It is stable in aqueous solution at pH 5-9. Solutions of this chemical in water, DMSO, 95% ethanol or acetone should be stable for 24 hours under normal laboratory conditions.REACTIVITY: This chemical forms water-soluble salts with alkali metals and amines. It reacts with organic and inorganic bases to form salts and with alcohols to form esters. It is incompatible with strong oxidizing agents and strong bases. It can be corrosive to common metals. It may be deleterious to painted surfaces. Precipitation occurs with hard water in the absence of sequestering agents. (NTP, 1992)

Hazardous decomposition products

Toxic gases and vapors /which include/: hydrogen chloride and carbon monoxide.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 389 mg/kg

Inhalation: no data available

Dermal: LD50 Rat 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

Classification of carcinogenicity: 1) evidence in humans: limited; Overall summary evaluation of carcinogenic risk to humans is Group 2B: The agent is possibly carcinogenic to humans. Chlorophenoxy herbicides; From table

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes and respiratory tract.

STOT-repeated exposure

Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly on spraying or when dispersed, especially if powdered.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 Lepomis macrochirus (bluegill) 0.50 mg/l/48 hr /Conditions of bioassay not specified

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

Aerobic degradation of 10 ug 2,4,5-T of soil was 5-35% in unsterilized tropical clay and silty clay soils and <1% in sterilized soils after 4 months incubation(1). In Vietnamese soils, 64-69% aerobic degradation of 1 ppm 2,4,5-T occurred in 49 days, 74-96% aerobic degradation of 15 ppm 2,4,5-T occurred in 168 days and no degradation was observed in sterilized soils(2). The primary degradation product of 2,4,5-T in aqueous and soil systems is 2,4,5-trichlorophenol(3). Aerobic metabolism of 2,4,5-T leads to formation of 2,4,5-trichlorophenol and 3,5-dichlorocatechol which may further degrade to 4-chlorocatechol or cis,cis-2,4-dichloromuconic acid, 2-chloro-4-carboxy-methylene-but-2-enolide, chlorosuccinic acid and succinic acid(2). Degradation under anaerobic conditions has led to the formation of di- and mono-chlorophenols and 2,5-dichlorophenoxyacetic acid(4,5). Anaerobic degradation occurs much more slowly than aerobic degradation(6).

Bioaccumulative potential

The bioconcentration factor (BCF) of 2,4,5-T in static ecosystem tests has been measured to be 23-25 in fish(1,2). Under flowing water conditions its estimated BCF in fish is 43(1). Based on these BCF values, bioconcentration in aquatic organisms should not be significant.

Mobility in soil

Measured soil adsorption coefficient (Koc) values for 2,4,5-T in various soils are as follows: 86-sand, 186-whole soil, 204-fines, 205-coarse clay, 206-coarse silt and 280-medium silt(1). Measured soil TLC Rf values are as follows: 0.17-muck, 0.48-clay, 0.54-silt clay loam and 0.73-0.89-sandy loam(2). These Koc and Rf values indicate that 2,4,5-T mobility in soil should vary from highly mobile in sandy soil to moderately mobile in clay and silt loams to slightly mobile in muck (3,4). Humic acids found in almost all water and soil systems have been shown to strongly adsorb 2,4,5-T from solution(5), and the tendency of 2,4,5-T to adsorb to soil has been observed to increase with increasing organic content in soil(6). When 11.2 kg/ha 2,4,5-T was applied to a large field lysimeter, 96-99% of the undegraded herbicide remained 0-10 cm deep and 0.33-3.7% remained between 10 to 30 cm deep after 2-3 winters(7). Up to 8 weeks following application of 1 g/cu m 2,4,5-T, 86-98% of the undegraded 2,4,5-T applied to arable land remained within the top 30 cm of the soil layer and 84-100% remained within the top 10 cm of forest soil(8).

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: UN3077 (For reference only, please check.)
IMDG: UN3077 (For reference only, please check.)
IATA: UN3077 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)
IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 9 (For reference only, please check.)
IMDG: 9 (For reference only, please check.)
IATA: 9 (For reference only, please check.)

Packing group, if applicable

ADR/RID: III (For reference only, please check.)
IMDG: III (For reference only, please check.)
IATA: III (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

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Not Listed.

Vietnam National Chemical Inventory

Not 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

Temperature of decomposition is unknown in the literature. Commercial products may contain toxic dioxin (see ICSC 1467 2,3,7,8-TCDD). If the substance is formulated with solvents also consult the ICSCs of these materials. Carrier solvents used in commercial formulations may change physical and toxicological properties. The recommendations on this card also apply to salts of 2,4,5-Trichlorophenoxyacetic acid.