

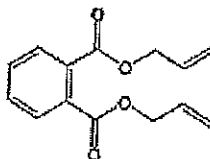
SAFETY DATA SHEET

SDS# 423100-11

Effective Jan 10, 2011

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

Commercial Product Name : DAISO DAP MONOMER
 SDS# : 423100-11
 Chemical Name : Diallyl phthalate



Formula : $C_{14}H_{14}O_4$
 Synonyms : 1,2-Benzendicarboxylic acid, di-2-propenyl ester
 Allyl phthalate
 Diallylester phthalic acid
 o-Phthalic acid diallyl ester
 DAP
 DAP Monomer

General Use : Monomer for poly(diallyl phthalate)

Reactive plasticizer

Crosslinking agent

Manufacturer : DAISO Co., Ltd.

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Content	Formula	EU#	CAS#	
Diallyl phthalate	≥ 99 % (GC)	C14H14O4	205-016-3	131-17-9	*1

*1: Xn; R22 - N; R50/63

3. HAZARDS IDENTIFICATION

Potential Health Effects
Harmful by inhalation and if swallowed. Moderate irritant and sensitizer. Possible mutagenicity and reproductive toxicity.

Potential Environmental Effects : This substance is very toxic to the aquatic organisms.
Physicochemical Effects : Combustion of this substance may produce harmful and irritating substance.
Classification : This substance is classified as a dangerous substance according to the Directive 67/548/EEC:
Xn; R22 (Harmful; Harmful if swallowed.)
N; R50/53 (Environmentally dangerous; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)

4. FIRST AID MEASURES

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

- Move victim to fresh air.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- If swallowed, immediately induce vomiting if victim completely conscious. Give lukewarm water and induce vomiting again.
- Consult a physician immediately.

5. FIRE FIGHTING MEASURES

Flammability : Flash point, 166° C.
Auto ignition temperature, 435° C.

This substance can be burned when preheated before ignition.
This chemical is not classified into the explosive substance based on the low oxygen balance (-201.4).

Extinguishing Media : Foam, powder, carbon dioxide.

Hazardous Combustion Products : Incomplete combustion may produce carbon monoxide, phthalic anhydride and acrid fumes of allylic compounds and other harmful products.

Fire-Fighter Protection : Wear a self-contained breathing apparatus and full protective clothes when fighting fires to prevent from

contacting or inhaling harmful and irritating decompositions such as phthalic anhydride.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions : Eliminate all sources of ignition. Do not touch or walk through spilled material. Wear appropriate respirator, chemical-resistant gloves, safety goggles, other protective clothing.

Environmental Precautions

: This material is very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Prevent entry into waterways, sewers, basements or confined areas.

Methods for Cleaning Up : Small Spills

- Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large Spills

- Dike far ahead of liquid spill for later disposal.

- Prevent entry into waterways, sewers, basements or confined areas.

7. HANDLING AND STORAGE

Handling

: Use blast-resistant type equipment and facilities only.

Storage

Safe condition

: Should be kept tightly sealed and stored indoors out of direct sunlight in a cool and at 25° C or below, and well ventilated place.

Keep away from sparks, open flames, and defective electrical wiring or equipment, etc.

8. EXPOSURE CONTROLS PERSONAL PROTECTION

Exposure Limit Values:

EC (Commission Directive 2000/39/EC) :

Not Established.

Others

JP MHLW-OEL : Not Established.

UK Workplace Exposure Limit (WEL): 5 mg/m³ [EH40/2005]

Exposure Controls

Engineering Controls : Control airborne concentrations below the local exposure guidelines. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Appearance	: Liquid (normal condition) [1]
Physical State	: Mild [2]
Odours	: Colourless, transparent
pH	: 6.9-7.3 (20° C) [1]
Boiling PointRange (° C)	: 157° C (6.7 hPa (Boiling point at 1013 hPa cannot be determined due to decomposition.)) [1]
Flash Point (° C)	: 166° C (closed cup) [2]
Melting PointRange (° C)	: -70° C [1]
Decomposition Temperature	: <300° C
Vapour Pressure (KPa)	: 0.0213 Pa (25° C) [1]
Relative Density	: 1.12 (20/20° C) [2]
Water Solubility	: 148 mg/L (20° C) [1]
Partition Coefficient (n-octanol/water)	: Log Pow = 3.23 [1]
Vapour Density	: 8.3 (25° C) [2]
Explosive	: Not Explosive.
Auto-ignition Temperature	: 435° C (19° C, 760 hPa, ASTM2155) [6]

9. PHYSICAL AND CHEMICAL PROPERTIES

Environmental Exposure Controls : Do not empty into drains. Observe all national and local environmental regulations.

Wash thoroughly after handling. Wash contaminated clothing before reuse.

Hygiene Considerations

: This chemical may be a sensitizer. Avoid repeated or prolonged contact or inhalation, or may sensitize the chemical.

SKIN & BODY PROTECTION : Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits, as appropriate.

EYE PROTECTION : Wear overall, chemical goggles and face shield when handling.

RESPIRATORY PROTECTION : This material has established national exposure limits in UK. Please refer to any other national and local regulations. An air purifying respirator with organic vapour cartridge or circumstances where airborne concentrations are expected to exceed local exposure limits.

Personal Protective Equipment

10. STABILITY AND REACTIVITY

- Stability : Stable.
- Conditions to Avoid : Exposure of ultraviolet light. High pressure. Heat, sparks, open flame, ignition sources and oxidizing conditions.
- Materials to Avoid : Strong acids, Strong alkalis, Strong oxidizing agents.
- Reactivity : Not Available
- Hazardous Polymerization : May occur.
- Hazardous Decomposition Products : In case of fire, the harmful and irritating substance such as phthalic anhydride can be produced.

11. TOXICOLOGICAL INFORMATION

- Acute Toxicity :
 - LD50 (Rat, Oral) 891 mg/kg
 - LD50 (Rat, Oral) 656 mg/kg
 - LD50 (Mouse, Oral) 1070 mg/kg
 - LD50 (Mouse, Oral) 1690 mg/kg
 - LD50 (Rat, Oral) 896 mg/kg
 - LD50 (Dog, Oral) 800 mg/kg
 - LC50 (Rat, Inhalation) 4470 mg/m³
- Local Effects
 - LD50 (Rabbit, Endermatic) 3,300 mg/kg
- Skin Irritation [4] : PI=0.5/8. Slight irritation by the method of 16CFR1500.41.
- Other Specific Effects
- Sensitization : Skin sensitizer by mouse Local lymph node assay [OECD TG 429] [5]
- Repeated Dose Toxicity :
 - The 13-weeks repeated dose oral NOAEL in female rats was 50 mg/kg bw/day. The NOAEL and the LOAEL were not determined in males. The liver was the primary target organ. The NOAEL in male and female mice was 400 mg/kg bw/day. [1]

Mobility : DAP would distribute mainly to soil if released to the air or soil compartments and to water if released to the water compartment by the estimation using EPIWIN 3.11. [1]

Chronic Toxicity :
 • NOEC(Aquatic plants, Green algae(Selenastrum capricornutum), 72 h) = 2.4 mg/L [1]

Ecotoxicity : Acute Toxicity:
 • LC50(Fish, Oncorhynchus mykiss, 96 h) = 0.23 mg/L
 • LC50(Fish, Oryzias latipes, 96 h) = 0.44 mg/L
 • EC50(Invertebrates, Water flea (Daphnia magna), 48 h) = 5.5 mg/L
 • EC50(Invertebrates, Water flea (Daphnia magna), 24 h) = 22 mg/L (nominal)
 • EC50(Aquatic plants, Green algae(Selenastrum capricornutum), 72 h) = 14.9 mg/L
 • EC50(Aquatic plants, Green algae(Selenastrum subspicatus), 72 h) = 5.5 mg/L (nominal) [1]

12. ECOLOGICAL INFORMATION

Reproduction/Developmental Toxicity : There were no treatment-related effects seen on the fertility of male or female rats as shown by the high pregnancy rate for all treatment groups. There were no treatment-related effects on offspring viability, growth and development from conception to early lactation. No macroscopic abnormalities were seen in offspring. The NOAELs for general toxicity in parent animals and for reproductive toxicity were 50 mg/kg bw/day. [1]

Carcinogenicity : There is equivocal evidence carcinogenic effect in male mice. The result, therefore, do not indicate that diallyl phthalate is carcinogenic in B6C3F1 mice. In rats, there is equivocal evidence of carcinogenic effect in females, but no evidence of carcinogenic effect in males. In both rats and mice the neoplasms were of lympho-recticular tissues. [1]

Mutagenicity : Diallyl phthalate monomer was weakly mutagenic in two strains of bacteria (WP2 with exogenous metabolic activation and TA1535 without metabolic activation). Clear positive responses were observed in L5178Y mouse lymphoma assay with and without exogenous metabolic activation. It induced chromosomal aberrations in CHO cells with and without exogenous metabolic activation and sister chromatid exchanges in CHO cells with exogenous metabolic activation. In addition, DAP induced micronucleus formation in CHL/IU cells with exogenous metabolic activation. [1]

Diallyl phthalate monomer was not mutagenic in vivo in either a mouse micronucleus test or SLRL (Drosophila melanogaster). It did not induce micronuclei in mouse bone marrow cells. Although diallyl phthalate monomer induced in vivo chromosome aberrations in mouse bone marrow cells at the highest dose group, the biological significance of the data is not clear.

ADR	: Class: 9 (Miscellaneous dangerous substances and articles) Packing Group: III UN Number: 3082 Proper Shipping Name: Environmentally Hazardous Substances and articles
RID	: Class: 9 (Miscellaneous dangerous substances and articles) Packing Group: III UN Number: 3082 Proper Shipping Name: Environmentally Hazardous Substances and articles
IMDG	: Class: 9 (Miscellaneous dangerous substances and articles) Packing Group: III UN Number: 3082 Proper Shipping Name: Environmentally Hazardous Substances and articles
ICAO/IATA	: Class: 9 (Miscellaneous dangerous substances and articles) Packing Group: III UN Number: 3082 Proper Shipping Name: Environmentally Hazardous Substances and articles Marine Pollutant: YES

14. TRANSPORT INFORMATION

Waste From Residues : Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated Package(s) : Contaminated container residues and spill cleanup materials may be hazardous wastes.

Comply with all EU, national and local regulations.

Do not dump this product into sewers, on the ground or into any body of water.

13. DISPOSAL CONSIDERATIONS

Persistence and Degradability : DAP is stable to hydrolysis at pH 4 and 7 (a half-life greater than 1 year at 25° C). At pH9 (at 25° C) the half-life was determined to be 217 hours with degradation products of phthalic acid and allyl alcohol. Diallyl phthalate monomer is readily biodegradable; 76-92% of the chemical was degraded based on BOD after 28 days. [1]

Bioaccumulative Potential : Log Pow = 3.23 (measured)
BCF = 61.25 (estimated by EPI Suite V3.11)
DAP is known to be metabolised in fish, there is low potential for bioaccumulation. [1]

Packing Group: III
UN Number: 3082
Proper Shipping Name: Environmentally Hazardous
Substances and articles

15. REGULATORY INFORMATION

Labelling Information:

The product is classified and labelled as a dangerous substance/preparation according to Directive 67/548/EEC and/or 1989/45/EC.

Indication(s) and Symbol:



Environmentally
Dangers



Harmful

Risk Phrase:

R 22: Harmful if swallowed.

R 50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrase:

S 2: Keep out of the reach of children.

S 24/25: Avoid contact with skin and eyes.

S 60: This material and its container must be disposed of as hazardous waste.

S 61: Avoid release to the environment. Refer to special instructions/safety data sheets.

Other Regulations:

Diallyl phthalate monomer is listed in the list of authorised monomers and other starting substances in Section A of Commission Directive 2002/72/EC of 6 August 2002 relating to plastic materials and articles intended to come into contact with foodstuffs:

• Ref. No: 23230,

• CAS No: 000131-17-9,

• Name: Phthalic acid, diallyl ester,

• Restriction and/or specifications: SML= ND (DL=0.01 mg/kg).

Where,

SML, Specific migration limit; ND, Not detectable; DL, Detection limit of the method of analysis.
We recommend you contact local authorities to determine if there may be other local reporting requirements.

16. OTHER INFORMATION

References:

1. SIDS Initial Assessment Report for SIAM 19 (Draft) (2004)
2. TOXNET/HSDS (examined: 8 June, 2005)
3. Estimated by EPI WIN 3.11 (2005)

4. Irritation test report sponsored by DAISO (GLP) (1998)

5. Sensitization test report sponsored by DAP Consortium under the ICGA HPV Initiative (GLP) (2003).

6. Osaka Municipal Fire Department (1984) Confirmative letter of dangerous substance for daily phthalate.

7. ICSC Card (1994) #0430

THE INFORMATION SUPPLIED HERE APPLIES ONLY TO THIS SPECIFIC MATERIAL. IT MAY NOT BE VALID FOR THIS MATERIAL IF USED IN COMBINATION WITH ANY OTHER MATERIALS. IT IS THE USER'S RESPONSIBILITY TO SATISFY ONESELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OWN PARTICULAR USE.

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