

 HARWICK S T A N D A R D	<i>SAFETY DATA SHEET</i>
	Product Name: <i>MERROL® DAP</i>

1. IDENTIFICATION

(a) Product identifier used on the label

Product name : MERROL® DAP

(b) Other means of identification

Synonym(s) : Diallyl phthalate monomer

Product code : -

(c) Recommended use and restrictions on use of the chemical

General use : Plasticizer

Restrictions : -

(d) Name, address, and telephone number of the chemical manufacturer

Manufactured for and supplied by: Harwick Standard Distribution Corporation

Address: 60 S. Seiberling Street, P.O. Box 9360, Akron Ohio 44305 USA

Website: www.harwickstandard.com

Telephone number: (330) 798-9300

(e) Emergency Contact Tel. Number

: Health, Safety & Environment

: (330) 798-9300

2. HAZARD(S) IDENTIFICATION

(a) Classification of the chemical in accordance with paragraph (d) of 29 CFR 1910.1200

: Acute toxicity (oral)	: Category 4, H302 (1)
Acute toxicity (inhalation)	: Category 4, H332 (1)
Skin Sensitizer	: Category 1, H317 (1)
Specific target organ toxicity (single exposure)	: Category 2, H371 (1)
Specific target organ toxicity (repeated exposure):	Category 2, H373 (1)

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Hazardous to the aquatic environment: Acute : Category 1, H400 (1)

(b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of 29 CFR 1910.1200

Signal word : Warning

Hazard statement(s) : H302 Harmful if swallowed
H332 Harmful if inhaled
H317 May cause an allergic skin reaction.
H373 May cause damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life.

Symbol(s) : 

Precautionary statement(s) : Obtain special instruction before use.
Do not breathing dust / fume / gas / mist / vapours / spray.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only out doors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves / protective clothing / eye protection / face protection.
IF SWALLOWED: Call a POISON CENTER / doctor if you feel unwell.
Rinse mouth.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER / doctor if you feel unwell.
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice / attention.
Specific treatment: see section 4 in this SDS.
Take off contaminated clothing and wash it before reuse.
Correct spillage.
Store locked up.
Dispose of contents/container in accordance with local / regional / national / international regulations.

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(c) Hazards not otherwise classified

: none

(d) Ingredient with unknown acute toxicity at a concentration $\geq 1\%$

: Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Wt%	CAS Registry No.	
Diallyl phthalate	>99	131-17-9	

4. FIRST-AID MEASURES

(a) Description of necessary measures

- Inhalation** : If inhaled, Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER / doctor if you feel unwell.
- Eye** : In case of contact, flush eyes with plenty of lukewarm water for at least 15 minutes. Get medical attention if irritation develops. Remove contact lenses if worn.
- Skin** : In case of skin contact, Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice / attention.
Take off contaminated clothing and wash it before reuse.
- Ingestion** : If ingested, do not induce vomiting unless directed to do so by medical personnel. Get medical attention.

(b) Most important symptoms/effects, acute and delayed

: See Section 11 and Information on toxicological effects.

(c) Immediate medical attention and special treatment

: Not applicable

5. FIRE-FIGHTING MEASURES

(a) Extinguishing media

- Suitable media** : All extinguishing media are suitable but method must take into account the surrounding area to minimize dispersion.

(b) Special hazards arising from the substance or mixture

: Decomposition products released in a fire (e.g. phthalic anhydride, oxides of carbon) should be considered as probably harmful if inhaled. Unknown risk of formation of toxic pyrolysis products.

(c) Special protective actions for precautions for fire-fighters.

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: No unusual fire explosion hazards are anticipated.

6. ACCIDENTAL RELEASE MEASURES

(a) Personal precautions, protective equipments, and emergency procedures.

: Avoid dust formation. Use breathing apparatus if exposed to dust.

(b) Methods and materials for containment and cleaning up.

: Avoid raising dust. Take up mechanically. Dispose of absorbed material in accordance with the regulation.

7. HANDLING AND STORAGE

(a) Precautions for safe handling

: Avoid the formation and deposition of dust.
 Provide vacuuming if dust raised.
 The product is combustible.
 Dust can form an explosive mixture with air.
 Use barrier skin cream. Wash hands before breaks and after work.
 Contaminated work clothing should not be allowed out of the workplace.
 Take off contaminated clothing and wash before reuse.

(b) Conditions for safe storage, including any incompatibilities

: Only use containers that are approved specifically for the substance / product.
 Do not store together with oxidizing agents.
 Keep container in a well-ventilated place.
 Keep container tightly closed.
 Keep in a cool place. Store in a dry place.
 Store in a dark place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

(a) Exposure guidelines

OSHA PEL : Not Established

ACGIH TLV : Not Established

Others : Not Established

(b) Appropriate engineering controls

: Provide adequate ventilation. Keep container tightly closed.

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

Eye protection : Wear safety goggles to prevent contact with eyes.

Skin protection : Wear protective gloves for organic solvent.

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Respiratory protection : Wear air-purifying respirator equipped with organic vapor cartridge or canisters.

9. PHYSICAL AND CHEMICAL PROPERTIES

(a) Appearance

Physical state : Liquid
Color : Colorless or slightly yellow liquid

(b) Odor : Characteristic odor 2)

(c) Odor threshold : -

(d) pH : 6.9-7.3 (20°C) 1)

(e) Melting point/freezing point : -70 °C 1)

(f) Initial boiling point and boiling range : 157 °C (6.7hPa) 1)

(g) Flash point : 166 °C (Closed cup)

(h) Evaporation rate : Not applicable

(i) Flammability (solid, gas) : Flammable

(j) Upper/lower flammability or explosive limits : Not available

(k) Vapor pressure : 0.213Pa(25°C) 1) 310Pa (150 °C) 3)

(l) Vapor density : 8.3(25 °C) (air = 1) 2)

(m) Relative density : 1.12 (20/20 °C) 2)

(n) Solubility : Soluble to most of organic solvent

(o) Partition coefficient (n-octanol / water) : 3.23 (OECD TG117) 1)

(p) Auto-ignition temperature : 435 °C (ASTM 2155)

(q) Decomposition temperature : Not available

(r) Viscosity : Not available

10. STABILITY AND REACTIVITY

(a) Reactivity : Stable at room temperature.

(b) Chemical stability : Stable at room temperature.

(c) Possibility of hazardous reactions : Hazardous polymerization may occur.

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- (d) Conditions to avoid** : Direct ultraviolet rays, high pressure, high temperature, sparks, open flames, source of heat and conditions of oxidization.
- (e) Incompatible materials** : Strong acid, strong base and strong oxidizer.
- (f) Hazardous decomposition products** : Thermal decomposition will produce phthalic anhydride, allyl compounds or CO. Emits toxic fumes under fire conditions. (See also section 5)

11. TOXICOLOGICAL INFORMATION

- (a) Acute dose effects** : LD50 (Oral) 656-891 mg/kg (rat) 1)
1070-1690 mg/kg (mice) 1)
800mg/kg (dogs) 1)
LD50 (Dermal) 3300-3900 mg/kg (rabbits) 1)
LC50 1Hrs (Inhalation) 8300 mg/m³ air (rat) 1)
LC50 4Hrs (Inhalation) 4470 mg/m³ air (rat) 1)
- (b) Aspiration hazard effects** : If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.
- (c) Repeated dose effects** : ORAL: NOAEL (90-day study): 25 mg/kg bw/day (subchronic; rat) Target organs: digestive: liver (histopathology: hepatocellular basophilia, cellular and nuclear hypertrophy, nuclear hyperchromatism). In rats, the liver appeared as the primary target organ with dose related histopathological effects at and above 50 mg/kg/day for males and 100 mg/kg/day for females in the 90-day study
DERMAL: No data available. INHALATION: No data available.
OTHER ROUTES: No data available
- (d) Irritation effects** : Skin irritation : Slightly irritating
Eye irritation : Slightly irritating
- (e) Corrosive effects** : Not applicable
- (f) Sensitization effects (skin and respiratory)** : Diallyl phthalate tested in the Local Lymph Node Assay appeared positive as a sensitizer at two out of three concentrations (5 and 50% w/v)
- (g) Carcinogenic effects** : Oral: Rat (Fischer 344) male/female: oral: gavage: No Neoplastic effects.
Mouse (B6C3F1) male/female: oral: gavage: NOAEL (toxicity): 150 mg/kg bw/day. In the two chronic studies in mice and rats, the evidence of DAP induced carcinogenicity is equivocal and the tumour types described are of limited significance to humans. DAP is not classified for carcinogenicity.
Inhalation: No data available. Dermal: No data available. Other routes: No data available.
- (h) Neurological effects** : Not applicable.

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- (i) Mutagenic effects** : In vivo : Genetic toxicity: positive.
In bacterial assays the mutagenicity of diallyl phthalate is ambiguous, but in assays with mammalian cells it appears to be clearly mutagenic in the presence of metabolic activation (S9 fraction)
- (j) Reproductive effects** : 1) Effects on fertility:
NOAEL (P): 50 mg/kg bw/day (nominal) (male/female) (clinical signs;mortality; histopathology)
NOAEL (F1): > 150 mg/kg bw/day (nominal) (male/female) (other: viability, growth and development from conception to early lactation)
NOAEL: 250 mg/kg bw/day
Based on two oral studies in rats no treatment-related effects recorded on fertility, offspring viability, growth or development. Maternal weight gain and food consumption significantly reduced at and above 200 mg/kg/day.
No significant increase in the incidence of resorptions, or malformations, at any dose in either of the two studies.
DAP caused foetal toxicity at doses which also produced maternal effects (> 150 mg DAP/kg/day), but which did not affect fertility or induce significant embryo-lethality or teratogenicity.
- (k) Developmental effects** : NOAEL: 150 mg/kg bw/day
Sexual function and fertility are not affected by oral DAP exposure at doses that induce parental and foetal toxicity.
Classification not considered, because only minor effects recorded in skeletal examinations, and foetal weights were affected at dose levels that also affected maternal body weights.
- (l) Target Organ effects** : See section 11 and repeated dose effects.

12. ECOLOGICAL INFORMATION

- (a) Ecotoxicity** : EC10 (72 h) (static) 1.6 mg/L (Scenedesmus subspicatus (Algae))
EC50 (48 h) (static) 5.5 mg/L (Daphnia Magna (Water Flea))
EC50 (72 h) (static) 3.8 mg/L (Scenedesmus subspicatus (Algae))
LC50 (96 h) 0.23 mg/L (Fish Onchorhynchus mykiss(Rainbow trout))
NOEC (21 d) 3.2 mg/L (Daphnia magna)
NOEC TGK (20 h) (static) 22 mg/L (Uronema parduzci (Aq. micro-org.))
- (b) Persistence and degradability** : (A) Abiotic degradation
(1) Phototransformation in air: Diallyl Phthalate atmospheric photo-oxidation half-life was found to be comprised between 0.04 and 0.4 days
(2) Phototransformation in water: No data available.
(3) Phototransformation in soil: No data available.
(4) Hydrolysis: The rate constant and estimated half-life for hydrolysis of diallyl phthalate was > 1 year at and below pH 7 at 25°C, while increasing the pH above 7 decreased the estimated half life to 217 hours at pH=9.

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(B) Biodegradation

(1.1) Screening tests: In the presence of activated sludge, diallyl phthalate degraded by more than 70% within 28 days, but failed the 10-day window criterion.

(1.2) Simulation tests (water and sediments): Diallyl phthalate is inherently biodegradable.

(2) Biodegradation in soil: No degradation data present for soil. However, considering the relatively low adsorption coefficient of diallyl phthalate, the aquatic degradation can be extrapolated to soil degradation.

(c) Bioaccumulative potential

: Aquatic bioaccumulation: BCF: QSAR values for BCF of 61 and 184 dimensionless

Diallyl phthalate is not considered to be bioaccumulative with estimated BCF values well below 500 based on QSAR calculations for aquatic bioaccumulation.

Terrestrial bioaccumulation: No data present. As the substance is readily metabolised in mammals, bioaccumulation in the food chain is no issue.

(d) Mobility in soil

: Adsorption coefficient: K_{oc} : 429 at 20°C

Absorption of diallyl phthalate is estimated to be relatively low ($\log K_{oc} = 2.63$) indicating a tendency to move through the soil easily.

(e) Other adverse effects

: • Secondary poisoning: Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant.

• Volatilisation: The relatively low value for the Henry's law constant shows that diallyl phthalate slowly evaporates out of a solution in water. This means that diallyl phthalate is mainly retained in the aquatic compartment.

• Henry's Law constant at 25 deg C = $3.86E-007 \text{ atm}\cdot\text{m}^3/\text{mole}$ = $1.58E-005$ unitless (Bond estimation method)

• Henry's Law constant at 25 deg C = $1.17E-007 \text{ atm}\cdot\text{m}^3/\text{mole}$ = $4.79E-006$ unit (Group estimation method)

• Henry's Law constant H: $0.039 \text{ Pa m}^3/\text{mol}$ at 25 °C

13. DISPOSAL CONSIDERATIONS

: **Waste treatment methods**

• **Recommendation**

In accordance with national and local authority regulations, e.g. The Hazardous Waste (England & Wales) Regulations 2005. EU Hazardous Waste Regulations.

• **Uncleaned packaging:**

• **Recommendation:**

Contaminated packaging: Treat empty containers in the same way as the product or if possible wash out thoroughly and recycle.

Comply with federal, state and local regulation.

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

14. TRANSPORT INFORMATION

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diallyl phthalate)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Diallyl phthalate)

Transport hazard class(es)

ADR/RID: 9

IMDG: 9

Packaging group

ADR/RID: III

IMDG: III

Environmental hazards

ADR/RID: yes

IMDG: Marine pollutant: no

15. REGULATORY INFORMATION

OSHA Status : Not Listed

TSCA Status : Listed

CERCLA Reportable Quantity (40 CFR 117,302) : Not regulated.

SARA Title III

Section 302 (40 CFR 355) : Not regulated

Section 311/312 (40 CFR 370) : Not regulated

Section 313 (40 CFR 372) : Not regulated

Please refer to any other federal, state and local regulations.

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

NFPA 704M Rating

Health	1
Flammability	1
Reactivity	1
Other	

0=Insignificant 1=Slight 2=Moderate 3=high 4=Extreme

HMIS Rating

Health	1
Flammability	1

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Physical Hazard	1
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0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

*=Chronic Health Hazard

Issue Date: 05/01/2015

Revision Date: 04/24/2024

Revision #: 02

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