

## International Agency for Research on Cancer (IARC) - Summaries & Evaluations

### PERMETHRIN (Group 3)

For definition of Groups, see [Preamble Evaluation](#).

**VOL.:** 53 (1991) (p. 329)

**Permethrin**

**CAS No.:** 52645-53-1

***trans*-Permethrin**

**CAS No.:** 61949-77-7

***cis*-Permethrin**

**CAS No.:** 61949-76-6

**(-)-*trans*-Permethrin**

**CAS No.:** 54774-47-9

**(-)-*cis*-Permethrin**

**CAS No.:** 54774-46-8

**(+)-*cis*-Permethrin**

**CAS No.:** 54774-45-7

**(±)-*cis*-Permethrin**

**CAS No.:** 52341-33-0

**(±)-*trans*-Permethrin**

**CAS No.:** 52341-32-9

**(+)-*trans*-Permethrin**

**CAS No.:** 51877-74-8

## 5. Summary of Data Reported and Evaluation

### 5.1 Exposure

Permethrin is a highly active contact insecticide, which was first marketed in 1977. It is used mainly on cotton and food crops. Other uses are in forestry and for public health purposes, in public buildings, residences and aircraft.

Permethrin has been formulated as granules, powders, emulsifiable concentrates, aerosols and other forms.

Exposure can occur during its production and application and, at much lower levels, from consumption of food containing residues.

### 5.2 Carcinogenicity data in humans

No data were available to the Working Group.

### 5.3 Carcinogenicity in experimental animals

One preparation of permethrin (*cis:trans*, 40:60) was tested for carcinogenicity in one study in mice and in one study in rats by oral administration in the diet. In mice, a marginal increase in the incidence of pulmonary adenomas was observed in males. No increased tumour incidence was observed in treated rats.

### 5.4 Other relevant data

Permethrin has caused dermal irritation after topical exposure. It induced microsomal enzymes in rats and mice.

No data were available on the genetic and related effects of permethrin in humans. No effect was observed in the limited number of short-term tests available.

### 5.5 Evaluation

No data were available from studies in humans.

There is *inadequate evidence* for the carcinogenicity of permethrin in experimental animals.

### Overall evaluation

Permethrin is *not classifiable as to its carcinogenicity to humans (Group 3)*.

For definition of the italicized terms, see [Preamble Evaluation](#).

### Synonyms for Permethrin

- Adion
- Ambush
- Ambushfog
- Anomethrin N
- Antiborer 3768
- Atroban
- BW-21-Z
- Cellutec
- Chinetrin
- Coopex
- Corsair
- 3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- Diffusil H
- Dragon
- Ecsumin
- Ectiban
- Efmethrin
- Eksmin
- Exmin
- FMC 33297
- FMC 41655
- ICI-PP 557
- Imperator
- Indoثرin
- Ipitox
- Kafil
- Kavil
- Kestrel

- LE 79-519
- MP 79
- NIA 33297
- NRDC 153
- OMS 1821
- Outflank
- Perigen
- Permanone
- Permasect
- Permit
- Perthrine
- *meta*-Phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate
- 3-Phenoxybenzyl(1RS)-*cis-trans*-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate
- 3-Phenoxybenzyl(1RS,3RS;1RS,3SR)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclo-3-(2,2-dichlorovinyl)cyclopropanecarboxylate
- 3-Phenoxybenzyl-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate
- Picket
- Pounce
- PP 557
- Pramex
- Pynosect
- Qamlin
- S 3151
- SBP 1513
- SBP 15131TEC
- Spartan
- Stockade
- Stomoxin
- Talcord
- Torpedo
- WL 43479

#### Synonyms for *trans*-Permethrin

- *trans*-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- *trans-meta*-Phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate

#### Synonyms for *cis*-Permethrin

- *cis*-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- *cis-meta*-Phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate

#### Synonyms for (-)-*trans*-Permethrin

- (1*S-trans*)-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- 1*S-trans*-Permethrin

#### Synonyms for (-)-*cis*-Permethrin

- (1*S-cis*)-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- 1*S-cis*-Permethrin

#### Synonyms for (+)-*cis*-Permethrin

- (1R-*cis*)-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- NRDC 167
- 1R-*cis*-Permethrin

#### Synonyms for (±)-*cis*-Permethrin

- *cis*-(±)-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- (±)-*cis*-FMC 33297
- FMC 35171
- NRDC 148
- 1RS-*cis*-Permethrin

#### Synonyms for (±)-*trans*-Permethrin

- *trans*-(±)-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- NRDC 146
- 1RS-*trans*-Permethrin

#### Synonyms for (+)-*trans*-Permethrin

- (1R-*trans*)-3-(2,2-Dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid, (3-phenoxyphenyl)methyl ester
- Biopermethrin
- NRDC 147
- 1R-*trans*-Permethrin
- RU 22090

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See Also:

[Toxicological Abbreviations](#)

[Permethrin \(EHC 94, 1990\)](#)

[Permethrin \(HSG 33, 1989\)](#)

[Permethrin \(ICSC\)](#)

[PERMETHRIN \(JECFA Evaluation\)](#)

[Permethrin \(Pesticide residues in food: 1979 evaluations\)](#)

[Permethrin \(Pesticide residues in food: 1980 evaluations\)](#)  
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[Permethrin \(Pesticide residues in food: 1983 evaluations\)](#)  
[Permethrin \(Pesticide residues in food: 1984 evaluations\)](#)  
[Permethrin \(Pesticide residues in food: 1987 evaluations Part II Toxicology\)](#)  
[Permethrin \(JMPR Evaluations 1999 Part II Toxicological\)](#)  
[Permethrin \(UKPID\)](#)