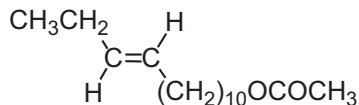


805 tetradec-11-enyl acetate

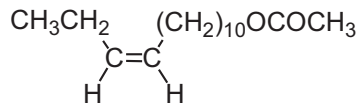
Insect pheromone

See also *The Manual of Biocontrol Agents*, 3rd Ed. of *The BioPesticide Manual*, entries: 4:351; 4:349; 4:350; 4:348

pheromone



(E)- isomer



(Z)- isomer

The (Z)- isomer is the main component of the sex pheromone of the oriental tea tortrix (*Homona magnanima*) and of the blackheaded fireworm (*Rhopobota naevana*); it is also a component of the sex pheromones of other tortrix (*Adoxophyes*) species (see under (Z)-tetradec-9-enyl acetate). A mixture of (E)- and (Z)- isomers constitutes the sex pheromone of the European corn borer (*Ostrinia nubilalis*), the ratio of isomers produced is highly dependent on strain; these isomers, together with the corresponding alcohols, also constitute the sex pheromone of the omnivorous leafroller (*Platynota stultana*). The (E)- isomer (with the corresponding (E)- alcohol) comprises the sex pheromone of the tufted apple bud moth (*Platynota idaeusalis*). The (E)- isomer is also the main component of the sex pheromone of the light brown apple moth (*Epiphyas postvittana*).

NOMENCLATURE: IUPAC name tetradec-11-en-1-yl acetate

Chemical Abstracts name 11-tetradecen-1-ol acetate

Other names Z11-14Ac; E11-14Ac **CAS RN** [20711-10-8] (Z)- isomer; [33189-72-9]

(E)- isomer; [26532-95-6] unspecified stereochemistry; [34010-15-6] corresponding (Z)- alcohol; [35153-18-5] corresponding (E)- alcohol **EC no.** 243-982-8 ((Z)- isomer)

Development codes BAS 280 I (BASF)

PHYSICAL CHEMISTRY: **Composition** Physico-chemical data are for the (Z)- isomer.

Mol. wt. 254.4 **M.f.** C₁₆H₃₀O₂ **Form** Colourless liquid. **B.p.** 117 °C/1 mmHg **K_{ow} logP** >4 **S.g./density** 0.875 (20 °C) **Solubility** Soluble in common organic solvents. **Stability** Unstable in alkali.

COMMERCIALISATION: **History** A mating disruption device including the pheromone was registered in Japan in 1983. In use since 1985. **Manufacturers** Shin-Etsu

APPLICATIONS: **Mode of action** Acts by mating disruption. **Uses** The (Z)- isomer is used for control of the European corn borer (*Ostrinia nubilalis*), tea tortrix (*Homona magnanima*), smaller tea tortrix (*Adoxophyes* sp.), and leafrollers, such as *Platynota stultana*; also used for control of the blackheaded fireworm (*Rhopobota naevana*) in cranberries. The (E)- isomer is also used for control of the tufted apple bud moth (*Platynota idaeusalis*). The (Z)- isomer is a minor component, used in mixture with the (Z)- isomer of dodec-9-enyl acetate (q.v.), for control of the grape berry moth (*Endopiza viteana*). **Formulation types** Microencapsulated concentrate; Spirals; Tubes.

Selected products 'Checkmate OLR' ((E)- + (Z)- isomers) (Suterra); 'NoMate OLR' (mainly (E)- isomer) (Scentry); **mixtures** 'Hamaki-con N' (+ (Z)-tetradec-9-enyl acetate + dodec-9-enyl acetate) (with dodec-11-enyl acetate; dodec-9-enyl acetate as (Z)- isomer) (Shin-Etsu);

tetradec-11-enyl acetate

'Confuser A' (+ (*E,Z*)-tetradeca-4,10-dienyl acetate + (*Z*)-icos-13-en-10-one + (*Z*)-tetradec-10-enyl acetate + dodec-8-enyl acetate) (apples; Japan; dodec-8-enyl acetate and tetradec-11-enyl acetate as (*Z*)- isomers) (Shin-Etsu); 'Isomate-C Special' (+ codlemone) (USA, Italy; (*Z*)- isomer) (Shin-Etsu); 'Confuser P' (+ (*Z*)-icos-13-en-10-one + 14-methyloctadecene + dodec-8-enyl acetate) (peaches; Japan; dodec-8-enyl acetate as (*Z*)- isomer) (Shin-Etsu); 'Confuser Z' (+ (*Z*)-icos-13-en-10-one + (*Z*)-tetradec-9-enyl acetate + dodec-8-enyl acetate + dodec-9-enyl acetate) (apples; with dodec-11-enyl acetate; dodec-9-enyl acetate as (*Z*)- isomer) (Shin-Etsu).

MAMMALIAN TOXICOLOGY: Oral Acute oral LD₅₀ for rats and mice >5000 mg/kg.

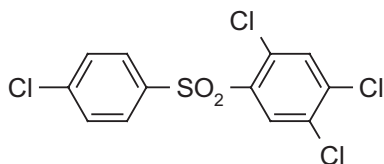
Skin and eye Acute percutaneous LD₅₀ >2000 mg/kg. Non-irritating to skin and eyes (rabbits). Not a skin sensitiser (guinea pigs). **Inhalation** LC₅₀ >5 mg/l.

ECOTOXICOLOGY: Fish LC₅₀ (96 h) for rainbow trout >10 mg/l. **Daphnia** EC/LC₅₀ (48 h) >10 mg/l. **Other aquatic spp.** LD₅₀ (48 h) >10 ppm. **Other beneficial spp.** EC/LC₅₀ (16 h) for bacteria >1000 mg/l.

806 tetradifon

Acaricide

IRAC 12C



NOMENCLATURE: Common name tetradifon (BSI, E-ISO, (*m*) F-ISO, ANSI, ESA, JMAF); tedion* (former name, Turkey and USSR); no name (Portugal)

IUPAC name 4-chlorophenyl 2,4,5-trichlorophenyl sulfone; 2,4,4',5-tetrachlorodiphenyl sulfone

Chemical Abstracts name 1,2,4-trichloro-5-[(4-chlorophenyl)sulfonyl]benzene

CAS RN [116-29-0] **EC no.** 204-134-2 **Development codes** V-18 (Duphar)

Official codes ENT 23 737

PHYSICAL CHEMISTRY: **Composition** Tech. grade tetradifon is ≥95% pure. **Mol. wt.** 356.0

M.f. C₁₂H₆Cl₄O₂S **Form** Colourless crystals; (tech., off-white powder, with a weak aromatic odour). **M.p.** 146 °C (pure); (tech., ≥144 °C) **V.p.** 9.4 × 10⁻⁷ mPa (25 °C) **K_{ow}** logP = 4.61

Henry 1.46 × 10⁻⁴ Pa m³ mol⁻¹ **S.g./density** 1.68 (20 °C) **Solubility** In water 0.078 mg/l (20 °C). In acetone 67.3, methanol 3.46, ethyl acetate 67.3, hexane 1.52, dichloromethane 297, xylene 105 (all in g/l, 20 °C) **Stability** Extremely stable, even in strong acids and alkalis. Stable to heat and to sunlight. Resistant to strong oxidising agents.

COMMERCIALISATION: **History** Acaricide reported by H. O. Huisman *et al.* (*Nature (London)*, 1955, 176, 515). Introduced by N. V. Philips-Roxane (now Chemtura Corp.). **Patents** NL 81359; US 2812281 **Manufacturers** Chemtura

APPLICATIONS: **Biochemistry** Inhibitor of oxidative phosphorylation; disruptor of ATP formation. **Mode of action** Non-systemic acaricide. Long-acting, penetrating through the plant tissue. Exhibits contact action on eggs and all non-adult stages, and also acts indirectly by sterilisation of females, leading to the development of non-viable eggs. **Uses** Larvicidal and ovicidal activity on