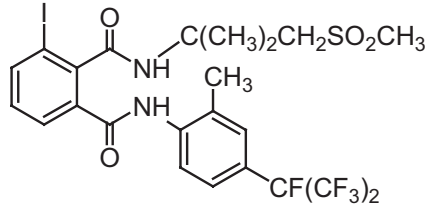
375 flubendiamide *Insecticide*

IRAC 28



NOMENCLATURE: **Common name** flubendiamide (BSI, pa ISO)
IUPAC name 3-iodo-*N*′-(2-mesyl-1,1-dimethylethyl)-*N*-{4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)=ethyl]-*o*-tolyl}phthalamide
Chemical Abstracts name N^2-[1,1-dimethyl-2-(methylsulfonyl)ethyl]-3-iodo-N^1-[2-methyl-=4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]phenyl]-1,2-benzenedicarboxamide
CAS RN *[272451–65–7]* **Development codes** NNI-0001; AMSI 0085; R-41576

PHYSICAL CHEMISTRY: **Mol. wt.** 682.4 **M.f.** $C_{23}H_{22}F_7IN_2O_4S$ **Form** White crystalline powder. **M.p.** 217.5–220.7 °C **V.p.** $<1 \times 10^{-1}$ mPa (25 °C) **K_{ow}** logP = 4.2 (25 °C)
Solubility In water 29.9 μg/l (20 °C).

COMMERCIALISATION: **History** Reported by T. Nishimatsu *et al.* (*Proc. Int. Conf. on Pesticides*, Kuala Lumpur, Malaysia, 2005 and *Proc. BCPC Int. Congr.,* Glasgow, 2005, **1**, 57). Discovered by Nihon Nohyaku Co., Ltd and under development jointly by Nihon Nohyaku and Bayer CropScience.

APPLICATIONS: **Biochemistry** Activates the ryanodine receptor, a calcium release channel which is involved in muscle contraction. **Mode of action** Active by ingestion. **Uses** For control of both adult and larval Lepidoptera. **Selected mixtures** 'Profiler' (+ fluopicolide) (Bayer CropScience).

MAMMALIAN TOXICOLOGY: **Oral** Acute oral LD_{50} for male and female rats >2000 mg/kg. **Skin and eye** Acute percutaneous LD_{50} for male and female rats >2000 mg/kg. Slight eye irritant; not a skin irritant. **Other** Negative in Ames test.

ECOTOXICOLOGY: **Birds** Acute oral LD_{50} for bobwhite quail >2000 mg/kg. **Fish** LC_{50} (96 h) for carp >548 μg/l. **Bees** LD_{50} (48 h, oral and contact) >200 μg/bee.
Other beneficial spp. Inactive against beneficial species; EC_{50} for *Encarsia formosa* and *Aphidius colemani* >400 mg/l, for *Coccinella septempunctata bruckii*, *Amblyseius cucumeris*, and *Phytoseiulus persimilis* >200 mg/l, for *Chrysoperla carnea* and *Aphidoletes aphidimyza* >100 mg/l.