# TECHNICAL DATA BULLETIN
# PYRAZOSULFURON-ETHYL TECHNICAL

## 1. INTRODUCTION

Pyrazosulfuron-ethyl is having broad-spectrum activity, absorbed by roots and translocated throughout plant by controlling the synthesis of amino acids. Inhibits plant amino acid synthesis - cetohydroxyacid synthase AHAS Mainly used to control broad-leaved weeds, grasses and sedges in rice.

## 2. ACTIVE INGREDIENT

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|---|---|---|
| Common name | : | Pyrazosulfuron (BSI, E-ISO, (*m*) F-ISO) |
| IUPAC name | : | 5-(4,6-dimethoxypyrimidin-2-ylcarbamoylsulfamoyl)-1-methylpyrazole-4-carboxylic acid |
| Chemical Abstracts name | : | 5-[(4,6-dimethoxy-2- pyrimidinyl)amino]carbonyl] amino]sulfonyl]-1-methyl-1*H*pyrazole- 4-carboxylic acid |
| CAS No | : | *[98389–04–9]* |
| Empirical formula | : | $C_{14}H_{18}N_6O_7S$ |
| Molecular weight | : | 414.4 |
| Structural formula | | |

## 3. PHYSICOCHEMICAL PROPERTIES

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| Technical Purity | : | Purity 97.0% min |
| Appearance | : | Colourless crystals. |
| Melting Point | : | 177.8–179.5 °C |
| Density | : | 1.46 (20 °C) |
| Vapour Pressure | : | 4.2 × 10-5 mPa (25 °C) |

| | | |
|---|---|---|
| Partition co-efficient | : | logP = 3.16 (hplc method) |
| Solubility in water | : | 9.76 mg/l (20 °C). |
| Solubility in solvents | : | In methanol 4.32, hexane 0.0185, benzene 15.6, chloroform 200, acetone 33.7 (all in g/l, 20 °C). |
| Stability | : | Stable at 50 °C for 6 months. Relatively stable at pH 7. Unstable in acidic or alkaline media. |

## 4. APPLICATIONS

**Biochemistry:**
Branched chain amino acid synthesis (ALS or AHAS) inhibitor. Acts by inhibiting biosynthesis of the essential amino acids valine and isoleucine, hence stopping cell division and plant growth. Selectivity derives from rapid metabolism (demethylation of methoxy group) in the crop.

**Mode of action:**
Systemic herbicide, absorbed by roots and/or leaves and translocated to the meristems

**Uses:**
Control of annual and perennial broad-leaved weeds and sedges, pre- or post-emergence, in wet-sown and transplanted rice crops, at 15–30 g/ha

**Formulation types:**
GR; SC; WG; WP.

## 5. TOXICITY

**Oral:** Acute oral $LD_{50}$ for rats >5000 mg/kg.

**Skin and eye:** Acute percutaneous $LD_{50}$ (24 h) for rats >2000 mg/kg.

**Inhalation:** $LC_{50}$ (4 h) for rats >3.9 mg/l.

**NOEL:** NOAEL (78 weeks) for mice 4.3 mg/kg daily

**ADI:** 0.043 mg/kg b.w.

**Toxicity class**: WHO (a.i) U

## 6. ECOTOXICITY

**Birds:** Dietary $LC_{50}$ (5 d) for bobwhite quail >2250 mg/kg.

**Fish:** $LC_{50}$ (96 h) for rainbow trout and bluegill sunfish > 180 mg/L

**Daphnia:** $EC_{50}$ (48 h) 700 mg/L

**Algae**: $EC_{50}$ (72 h) for *Scenedesmus acutus* 150 mg/l

**Bees:** $LD_{50}$ 48 h, contact and oral) >100 µg/bee.

**Worms:** $LC_{50}$ (14 d) for *Eisenia foetida* 8000 mg/kg soil

## 7. ENVIRONMENTAL FATE

**Animals:** In rats, after 48 hours, 80% of applied pyrazosulfuron-ethyl is excreted in urine and faeces. The major metabolic reaction is demethylation of the methoxy group.

**Soil/Environment:** In soil, DT50 <15 d.In water, DT50 in buffer solution (pH 7), paddy fields or river water *c.* 28 d.

## 8. HANDLING & STORAGE

**Handling:**
Keep away from food, drink, and animal feedstuff. KEEP OUT OF REACH OF CHILDREN. Wear suitable Personal protective equipment when handling and spraying.

**Storage:**
Store in the original container in a dry, cool, ventilated, LOCKED area. DO NOT store in prolonged sunlight. DO NOT store with food, seed, or animal feedstuff.

## 9. DISPOSAL CONSIDERATIONS

Packages or surplus material & washing from the machines & containers should be disposed of in a safe manner so as to prevent environmental water pollution. The used packages shall not be left outside to prevent their re-use. Packages shall be broken & buried away from habitation.