**HERBICIDE**

## FLUAZIFOP-P-BUTYL

Systemic grass herbicide

Fluazifop-p-butyl was developed and commercialized by ISK in the 1980’s and has been widely used numerous countries. Fluazifop-p-butyl is highly effective against annual and perennial grasses and is non-toxic to broadleaf crops such as soybean, peanut, cotton, oil palm, citrus, and vegetable, etc.

### Physico-Chemical Properties

**Chemical structure**

```
N  |   O  |   O  |   CH3
|   - |   - |   - |
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Class : aryloxyphenoxypropionate  
IUPAC name : butyl (R)-2-\{4-\{5-(tri/f_luoromethyl)-2-pyridyloxy\}phenoxy\}propionate  
Molecular weight : 383.4  
Molecular formula : C19H20F3NO4  
Vapour pressure : 4.14x10^{-4} Pa (25˚C)  
Water solubility : 1.75 mg/L (25˚C)  
Form : Pale yellow liquid  
Development code : SL-118

### Toxicology & Ecotoxicology

- **Rat LD50 (oral)** : > 3,680 mg/kg (m), 2,451 mg/kg (f)  
- **Rat LD50 (dermal)** : > 2,076 mg/kg (m/f)  
- **Rat LC50 (inhalation)** : > 5.24 mg/L (m/f)  
- **Skin irritation** : slight irritant (rabbit)  
- **Eye irritation** : slight irritant (rabbit)  
- **Skin sensitization** : not a sensitizer (guinea pig)  
- **Fish LC50** : 6.83 mg/L (trout, 96 h)  
- **Bees LD50 (oral)** : > 50 /uni03BCg/bee  
- **Bees LD50 (contact)** : > 100 /uni03BCg/bee  
- **Daphnia magna EC50** : 11.1 mg/L (48h)

### Mode of Action

**Plant Uptake**  
Fluazifop-P-butyl is quickly absorbed into the leaf surface, hydrolysed to fluazifop-P and translocated through the phloem and xylem, accumulating in the rhizomes and stolons of perennial grasses and the meristems of annual and perennial grasses.

**Symptoms**  
Weeds treated with fluazifop-p-butyl stop growing within a few hours, show gradual discoloration on newer growth in 3 to 4 days, and eventually necrosis, desiccation, and plant death occurs within 2 to 3 weeks.

**Selectivity**  
Fluazifop-p-butyl inhibits acetyl CoA carboxylase (ACCase), which is an essential plant enzyme that acts in fatty acid synthesis, and selectivity due to the difference of the enzyme sensitivity between gramineae and non-gramineae plants.

### Application

**Uses**  
Fluazifop-p-butyl is a post-emergence product and provides excellent control of annual and perennial grasses, including wild oat and volunteer cereals. Fluazifop-p-butyl is non-toxic to broadleaf plants and is therefore registered for use in a variety of broadleaf crops, such as soybean, oilseed rape, sugar beet, fodder beet, potatoes, vegetables, cotton, pome fruit, stone fruit, bush fruit, citrus fruit, vines, pineapples, bananas, strawberries, sunflowers, alfalfa, ornamentals, and other broadleaf crops. Application rate ranges from 125-375 g ai/ha.

### Product

<table>
<thead>
<tr>
<th>Trade Names</th>
<th>ONECIDE, NEW ONECIDE, HACHE UNO SUPER, 新薬剤, ワンサイドP, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulations</td>
<td>15%EC, 17.5%EC</td>
</tr>
</tbody>
</table>
| Registered Countries | Asia : Cambodia, China, Japan, South Korea, Philippines, Taiwan, Vietnam, etc.  
Americas : Argentina, Chile, Peru, Uruguay, etc. |
**Visual Effect of Herbicidal Activity**

<table>
<thead>
<tr>
<th>2 days after application</th>
<th>7 days after application</th>
<th>21 days after application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weed: Digitaria ciliaris</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Characteristics**

- Simple and convenient use instructions
- Selective and systemic post-emergent herbicide
- Controls annual and perennial weeds
- Non-toxic to broadleaf crops
- Resistant to wash-off by rain, due to systemic activity
- Safe to birds, fish, bees, and other beneficial insects

**Weed Spectrum**

Fluazifop-P-butyl has excellent efficacy against annual and perennial grass weeds.

**Application rate and timing by each weed species**

<table>
<thead>
<tr>
<th>Weed Species</th>
<th>Application Timing (Post-emergence)</th>
<th>Rate (g a.i./ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setaria viridis</td>
<td>up to 6 leaf-stage</td>
<td>131 – 175</td>
</tr>
<tr>
<td>Eleusine indica</td>
<td>up to 6 leaf-stage</td>
<td>131 – 175</td>
</tr>
<tr>
<td>Digitaria ciliaris</td>
<td>up to 6 leaf-stage</td>
<td>131 – 175</td>
</tr>
<tr>
<td>Echinochloa sp.</td>
<td>up to 6 leaf-stage</td>
<td>131 – 175</td>
</tr>
<tr>
<td>Bromus catharticus</td>
<td>up to 20 cm</td>
<td>175 – 263</td>
</tr>
<tr>
<td>Cynodon dactylon</td>
<td>up to 20 cm</td>
<td>175 – 263</td>
</tr>
<tr>
<td>Paspalum thunbergii</td>
<td>up to 20 cm</td>
<td>175 – 263</td>
</tr>
<tr>
<td>Imperata cylindrica</td>
<td>up to 30 cm</td>
<td>263</td>
</tr>
<tr>
<td>Miscanthus sinensis</td>
<td>up to 30 cm</td>
<td>263</td>
</tr>
<tr>
<td>Lolium perenne</td>
<td>up to 30 cm</td>
<td>263</td>
</tr>
<tr>
<td>Phragmites australis</td>
<td>up to 100 cm</td>
<td>263</td>
</tr>
</tbody>
</table>