HERBICIDE

FLAZASULFURON

Wide spectrum herbicide

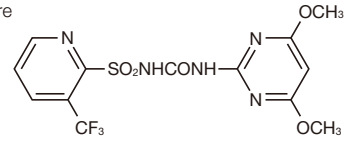
Flazasulfuron is a sulfonylurea herbicide which was discovered and developed by ISK in the late 1980's.

It controls a wide range of weeds covering both annual and perennial species. It is a selective systematic herbicide for pre-emergence and early post-emergence weed control.

Flazasulfuron has been registered in various countries for use in crops such as almonds and other tree nuts, citrus, conifers, grapes, sugarcane, warm season turfgrass, and in non-crop areas.

Physico-Chemical Properties

Chemical structure



Class : sulfonylurea
IUPAC name : 1-(4,6-dimethoxypyrimidin-2-yl)-3-(3-trifluoromethyl-2-pyridylsulfonyl)urea
Molecular weight : 407.3
Molecular formula : $C_{13}H_{12}F_3N_5O_5S$
Vapour pressure : < 0.013 mPa (25°C)
Water solubility : 2.1 g/L (25°C,pH7)
Form : white powder
Development code : SL-160

Toxicology & Ecotoxicology

Rat LD_{50} (oral) : > 5,000 mg/kg (m/f)
Rat LD_{50} (dermal) : > 2,000 mg/kg (m/f)
Rat LC_{50} (inhalation) : > 5.99 mg/L (m/f)

Skin irritation : non irritant (rabbit)
Eye irritation : slight irritant (rabbit)
Skin sensitization : not a sensitizer (guinea pig)

Avian LD_{50} (acute oral) : > 2,000 mg/kg (quail, m/f)
Avian LD_{50} (acute oral) : > 2,250 mg/kg (mallard duck, m/f)

Fish LC_{50} : > 20 mg/L (trout, 96 h)

Bees LD_{50} (acute contact) : > 100 µg/bee

Daphnia magna EC_{50} : > 20 mg/L (48 h)

Application

Uses Flazasulfuron can be applied PRE and POST to control broadleaf and grass weed control, including sedge control. Flazasulfuron can be applied in crops such as almonds and other tree nuts, citrus, conifers, grapes, sugarcane, warm season turfgrass, and in non-crop areas.

Mode of Action

Plant Uptake Flazasulfuron is rapidly absorbed by leaf and root tissue and is translocated, via the phloem and xylem, to meristem tissue. Flazasulfuron controls weeds by inhibiting acetolactate synthase (ALS), also called acetohydroxy acid synthase (AHAS). ALS is a necessary enzyme for the production of three branched-chain amino acids, isoleucine, leucine, and valine.

Symptoms Weeds treated with flazasulfuron will first begin to develop chlorosis in the new growth and then gradually, as the weed continues to be starved of the vital branched-chain amino acids, the chlorosis symptomology will develop in older growth. Chlorotic symptomology then turns to necrosis and desiccation of the plant tissue occurs. Control typically takes 3-4 weeks, from treatment to plant death.

Selectivity Crop selectivity of flazasulfuron exists based on the metabolic ability of some plants to breakdown flazasulfuron into inactive metabolites.

Product

Trade Names	CHIKARA, KATANA, MISSION, PARANDOL, FLAMARK, 芝草原, 秀百宮, シバゲンDF, etc.	
Formulations	25%WG, 10%WP	
Registered Countries	Asia	Taiwan, South Korea, Japan, Thailand, China
	Europe	Belgium, Bulgaria, France, Germany, Hungary, Italy, Romania, Serbia, Switzerland, etc.
	Americas	USA, Brazil, Colombia, etc.

ISK
ISHIHARA SANGYO KAISHA, LTD.
URL : http://www.iskweb.co.jp E-mail : isk.bio@iskweb.co.jp
1-3-15 Edobori, Nishi-ku, Osaka 550-0002 TEL +81-6-6444-7154

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Visual Effect of Herbicidal Activity (Weed: *Erigeron philadelphicus*)

At application | 7 days after application | 20 days after application

Characterisitics

ALS inhibitor

Excellent activity at low dosages (25–100 g a.i./ha)

Broad weed spectrum including grasses, broadleaf weeds and sedges

Safe to permanent crops such as grapevine and citrus, sugarcane and warm season turfgrass

Safe to birds, fish, bees and other beneficial insects

Weed Spectrum

	Weed Spectrum		Pre-emergence Application			Post-emergence Application		
	Scientific Name	Common Name	Rate (g a.i./ha)			Rate (g a.i./ha)		
			25	50	100	25	50	100
Grass weeds	*Alopecurus geniculatus*	Water foxtail	++	+++	+++	+++	+++	+++
	Briza minor	Little quakinggrass	+++	+++	+++	++	+++	+++
	Digitaria sanguinalis	Large crabgrass	++	+++	+++	++	+++	+++
	Echinochloa crus-galli	Bamyard grass	++	+++	+++	++	+++	+++
	Eleusine indica	Goosegrass	++	+++	+++	++	+++	+++
	Lolium multiflorum	Italian ryegrass	++	+++	+++	+++	+++	+++
	Poa annua	Annual bluegrass	+++	+++	+++	+++	+++	+++
	Setaria viridis	Green foxtail	+	+++	+++	++	+++	+++
Broadleaved weeds	*Amaranthus viridis*	Slender amaranth	+++	+++	+++	+++	+++	+++
	Capsella bursa-pastoris	Shepherd's-purse	++	+++	+++	+++	+++	+++
	Cerastium glomeratum	Sticky chickweed	+++	+++	+++	+++	+++	+++
	Chenopodium album	Common lamb's quarters	+++	+++	+++	+++	+++	+++
	Conyza canadensis	Horseweed	++	+++	+++	++	+++	+++
	Conyza sumatrensis	Fleabane	++	+++	+++	++	+++	+++
	Hydrocotyle sibthorpioides	Lawn pennywort	++	++	++	++	+++	+++
	Plantago asiatica	Chinese plantain	+	+	++	++	++	+++
	Polygonum lapathifolium	Pale smartweed	+++	+++	+++	++	++	+++
	Rorippa palustris	Marsh yellowcress	+++	+++	+++	+++	+++	+++
Sedges	*Cyperus microiria*	Asian flatsedge	+++	+++	+++	+++	+++	+++
	Cyperus brevifolius	Mullumbimby couch	++	+++	+++	+++	+++	+++
	Cyperus rotundus	Purple nutsedge	+	++	+++	++	+++	+++

+++: Excellent control, ++: Good to Fair control, +: Poor control

Application: Pre-emergence or post-emergence (3–4 leaf-stage or less than 10 cm) of weeds

Adjuvant: non-ionic surfactant

ISK

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URL : http://www.iskweb.co.jp E-mail : isk.bio@iskweb.co.jp

1-3-15 Edobori, Nishi-ku, Osaka 550-0002 TEL +81-6-6444-7154