

# FUNGICIDE

## FLUAZINAM

### Wide spectrum fungicide

Fluazinam, discovered and developed by ISK, is a highly active fungicide with broad spectrum activity, including soil borne diseases. Furthermore, it has acaricidal activity.

Fluazinam is a multi-site contact fungicide that belongs to the pyridinamine family.

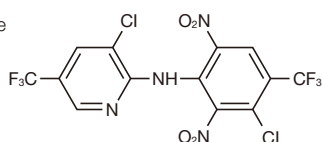
Fluazinam has launched in several countries since its commercialization in the early 1990's.

Now Fluazinam has established a strong presence in potato late blight, soybean white mold or turf fungicide market.



#### Physico-Chemical Properties

Chemical structure



Class : Phenyl-pyridinamine

IUPAC name : 3-Chloro-N-(3-chloro-5-trifluoromethyl-2-pyridyl)- $\alpha,\alpha,\alpha$ -trifluoro-2,6-dinitro-*p*-toluidine

Molecular weight : 465.1

Molecular formula : C<sub>13</sub>H<sub>4</sub>Cl<sub>2</sub>F<sub>6</sub>N<sub>4</sub>O<sub>4</sub>

Vapour pressure : 2.3x10<sup>-2</sup> mPa (25°C)

Water solubility : 0.157 mg/L (pH 7,20°C)

Form : yellow, crystalline solid

Development code : IKF-1216

#### Toxicology & Ecotoxicology

Rat LD<sub>50</sub> (oral) : 4,500 mg/kg (m), 4,100 mg/kg (f)

Rat LD<sub>50</sub> (dermal) : > 2,000 mg/kg bw (m/f)

Rat LC<sub>50</sub> (inhalation) : > 1.1 mg/L (m/f)

Skin irritation : mild irritant (rabbit)

Eye irritation : irritant (rabbit)

Skin sensitization : sensitizer (guinea pig)

Avian LD<sub>50</sub> (acute oral) : > 4,190 mg/kg (mallard duck, m/f)

Avian LD<sub>50</sub> (acute oral) : > 1,782 mg/kg (quail, m/f)

Fish LC<sub>50</sub> : 0.11 mg/L (rainbow trout, 96h)

Bee LD<sub>50</sub> (oral) : > 100 µg/bee

Bee LD<sub>50</sub> (contact) : > 100 µg/bee

*Daphnia magna* EC<sub>50</sub> : 0.19 mg/L (48 h)

#### Application

Foliar sprays, applied at 150 – 750 g a.i./ha, controls: late blight, tuber blight, and Sclerotinia rot on potatoes; gray mold and downy mildew on grapevines; scab and Alternaria blotch on apples; gray mold, melanose (*Diaporthe*), and mites on citrus; Sclerotinia rot and southern blight on peanuts. Soil applications at the rate of 2-2.5 kg a.i./ha controls: Clubroot on crucifers, scab and powdery scab on potatoes, and white root rot and violet root rot on fruit trees.

#### Mode of Action

Fluazinam has a multi-site mode of action that disrupts energy production in fungi. Fluazinam has great protective activity, and while it has limited curative or systemic activity, it possesses very good residual effect and rain fastness. FRAC code: 29

#### Product

<b>Trade Names</b>	FROWNCIDE, SHIRLAN, OHAYO, SEKOYA, ALTIMA, LEGACY, WINBY, OMEGA, ALLEGRO, SHOGUN, 福師得, フロンサイド, KUNSHI, EPOK, etc.	
<b>Formulations</b>	50%SC, 50%WP, 0.5%D, 62.5%WG (Premixture), 60%SC (Premixture)	
<b>Registered Countries</b>	Asia	Japan, South Korea, China, Taiwan, etc.
	Europe	Belgium, Czech Republic, France, Germany, Greece, Italy, Netherlands, Poland, Russian Fed., Sweden, Switzerland, Ukraine, UK, etc.
	Americas	Argentina, Brazil, Canada, Chile, Mexico, USA, etc.
<b>Crops</b>	Potatoes, Grapes, Vegetables, Onions, Top fruits, Soybean, etc.	



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## Spectrum

Eukaryote	Plasmodiophoromycota	<i>Plasmodiophora spp.</i>
		Oomycota
	<i>Peronospora spp.</i>	
	<i>Pseudoperonospora spp.</i>	
	Ascomycota	<i>Sclerotinia spp.</i>
		<i>Monilinia spp.</i>
		<i>Mycosphaerella spp.</i>
		<i>Rosellinia spp.</i>
	Basidiomycota	<i>Helicobasidium spp.</i>
		<i>Rhizoctonia spp.</i>
	Mitosporic fungi	<i>Sclerotium spp.</i>
		<i>Botrytis spp.</i>
		<i>Alternaria spp.</i>
<i>Fusarium spp.</i>		
<i>Colletotrichum spp.</i>		
Prokaryote	<i>Streptomyces spp.</i>	

## Characteristics

Broad fungicidal spectrum  
 Good persistence and rain fastness  
 Long spray interval (7 to 10 days)  
 Multi-site action and no cross-resistance to other fungicides  
 Control every stage of fungal life cycle  
 Safe to beneficials  
 Efficacy against soil borne disease (e.g. club root, soft rot, white root rot, etc.)

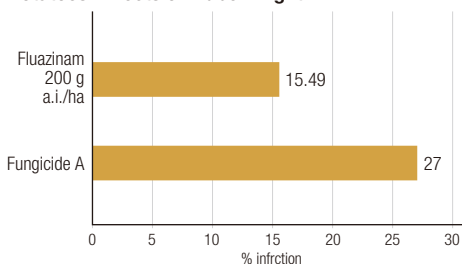


Chinese Cabbage Clubroot (*Plasmodiophora brassicae*)



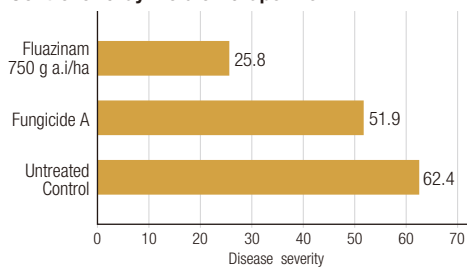
## Highly active fungicide with broad spectrum

### Potatoes: Effects on Tuber Blight



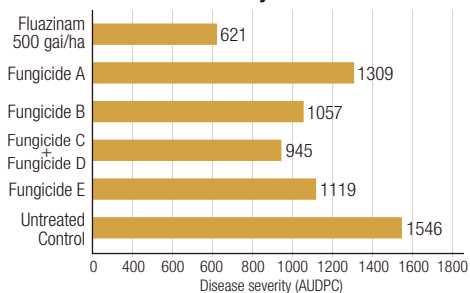
Potato Tuber Blight (*Phytophthora infestans*)

### Control of Gray Mold on Grapevine



Grapevine Gray Mold (*Botrytis cinerea*)

### Control of White Mold on Soybean



### Control of Clubroot on Cabbage

