Overview

Rinskor™ active is a new arylicolinate herbicide from Dow AgroSciences. Rinskor has global utility in water-seeded, dry direct-seeded and transplanted rice along with utility in several other cropping systems. The product has broad spectrum activity on important grasses, sedges, and broadleaf weed species in rice.

This highly active molecule was discovered by and is proprietary to Dow AgroSciences. Rinskor is a member of the arylicolinate family of chemistry, also known as 6-APs, a new structural class of synthetic auxin herbicides.

Rinskor is active in post-emergence applications against a broad spectrum of economically important weeds at low use rates. Rate is dependent upon the target weed species and geography.

The unique chemical characteristics of Rinskor will provide an alternative weed management tool in rice, including the control of ALS, ACCase, HPPD, propanil, quinclorac, glyphosate and triazine target site resistant species.

Rinskor is being evaluated and characterized globally in all major rice crop markets, and in other crops for secondary uses. Rinskor will provide growers with a new powerful and differentiated alternative for broad spectrum weed control, with safety to the crop and with a very favorable environmental and toxicological profile.

Rinskor™ active Key Attributes

- Effective post-emergence control of economically important grasses, broadleaf and sedge weeds, including ALS, ACCase, HPPD, propanil, quinclorac, glyphosate and triazine target site resistant biotypes.
- Alternative mode of action to be used in rice and other registered cropping systems.
- Low use rates resulting in low environmental load of the herbicide.
- Consistent weed control across variable conditions/water management systems.
- Both Japonica and Indica rice types exhibit tolerance to Rinskor when applied under the recommended rates and use patterns.
- Rapid degradation in soil and tolerant plant tissue with low persistence in the environment.
- Favorable environmental fate, toxicology, and ecotoxicology profiles.

Product Formulations

- Rinskor can be formulated as liquid emulsifiable concentrate (NeoEC™), suspension concentrate (SC) and oil dispersable (OD) and solid granular formulations (GR), depending on market needs.
- All formulations have been designed to provide excellent tank mix dilution and compatibility properties. A key feature of the NeoEC™ formulation is that it contains no petroleum distillates, is low in volatile organic compounds (VOCs), and has been developed to conveniently deliver the optimal type and level of built-in adjuvant. A straight SC formulation has also been developed offering the attributes of a water-based, solvent-free product with high active ingredient loading. Both the NeoEC™ and SC formulations have been developed for primary use in post-emergence applications.
- Other formulations powered by Rinskor™ active containing additional Dow AgroSciences herbicides, such as penoxsulam and cyhalofop, will be available to offer tools to support broader spectrum weed control and robust resistance management strategies for Rinskor and the entire Dow AgroSciences herbicides portfolio.

Registrations

Dow AgroSciences is working towards registering Rinskor for use in all major rice producing countries as well as obtaining registrations in countries where utility in additional crops is anticipated. Initial Rinskor registrations are expected in the 2017-2018 timeframe.

Rinskor is not currently registered and is not available for sale. The registration dossier for Rinskor was submitted for joint review in China and the United States in September 2015. Because of the overall favorable risk profile of the product, USEPA granted Reduced Risk Pesticide Designation to Rinskor uses on rice and aquatics, and this designation is to be confirmed after the registration dossier review.

This educational material is provided for informational purposes only and is not intended to promote the sale of product. Any sale of this product following registration shall be solely on the basis of approved product labels, and any claims regarding product safety and efficacy shall be addressed solely by the label.
Physical and Chemical Properties

Rinskor™ active belongs to the synthetic auxins or growth regulators chemical group (HRAC Group O / WSSA Class 4). However, Rinskor is unique because it binds preferentially to different auxin receptors as compared to other auxin types (e.g. 2,4-D and MCPA).

### Description of Chemistry

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Florpyrauxifen-benzyl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Name</td>
<td>Rinskor™ active</td>
</tr>
<tr>
<td>Code Names Tested</td>
<td>DE-848 BE, XDE-848 BE, XDE-848 benzyl, XR-848</td>
</tr>
<tr>
<td>Chemical Family</td>
<td>Arylpicolinate</td>
</tr>
<tr>
<td>Chemical Name (IUPAC)</td>
<td>benzyl 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoropyridine-2-carboxylate</td>
</tr>
<tr>
<td>Chemical Name (CAS)</td>
<td>2-Pyridinecarboxylic acid, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxyphenyl)-5-fluoro-, phenylmethyl ester</td>
</tr>
<tr>
<td>CAS No.</td>
<td>1390661-72-9</td>
</tr>
</tbody>
</table>

**Chemical Structure**

![Chemical Structure Image]

- **Empirical Formula**: C20H14Cl2F2N2O3
- **Molecular Weight**: 439.24
- **Melting Point**: 137.07°C
- **Flammability**: Not flammable
- **Explosive Properties**: Not explosive
- **Vapor Pressure**: 3.2 x 10^-5 Pa at 20°C
- **Octanol/Water Partition Co-Efficient (Log Pow)**: 5.5 at pH 7 and 10
- **Solubility in Water**: 0.015 mg/L at 20°C
- **Half-life in Water (DT50)**: 0.07 days (summer sunlight at 40°N latitude)

**Weed Control and Integrated Weed Management**

Rinskor™ active is an effective herbicide that enables diversified weed management. A multiple mode of action herbicide program must contain two or more herbicide modes of action during the crop growing cycle to provide effective control of weeds and to manage resistance. Rinskor is a broad spectrum herbicide with an alternative mode of action, which offers effective control of driver grass, broadleaf and sedge weeds, including resistant biotypes that have developed target site resistance to currently used herbicides. Differentiated characteristics of Rinskor make it a valuable tool for use in an integrated weed management (IWM) program. Its high post-emergence efficiency, alternative mode of action, low use rates and broad spectrum of activity (including resistant and susceptible weeds) make Rinskor an excellent fit in IWM programs. It represents the latest member of the unique synthetic auxin herbicide chemotype, the arylpicolinates. As an arylpicolinate, Rinskor exhibits unique molecular interaction to auxin receptors as compared to other auxin herbicides and offers an alternate mode of action for use in rice and other registered crops.
Resistance Management

Rinskor™ active is classified as an auxin herbicide (WSSA Group 4; HRAC Group O). Weed populations may develop biotypes that are resistant to different herbicides with the same mode of action. If herbicides with the same mode of action are used repeatedly in the same field, resistant biotypes may eventually dominate the weed population and may not be controlled by these products.

Rinskor should be used as part of an IWM program that may include biological, cultural, and chemical practices aimed at preventing economic pest damage. Application of Rinskor should be based on appropriate IWM and resistance management strategies and practices that delay or reduce the development of herbicide-resistant weed biotypes. Such practices include, but are not limited to, field scouting, using weed-free crop seed, proper water management, correct weed pest identification, following rotational practices outlined on pesticide labels, and treating when target weed populations are at the correct stage and economic thresholds for control.

To help prevent weed resistance, the following practices are recommended:

- Use an herbicide program approach with multiple modes of action.
  - Rinskor can be tank mixed or used sequentially with other approved herbicides to broaden the spectrum of weed control, providing multiple modes of action. The use of a soil residual herbicide followed by timely post-emergence application of Rinskor alone or in mixtures is a recommended practice.
  - If resistance is suspected, treat weed escapes with an herbicide with a mode of action other than Group O (WSSA group 4) and/or use non-chemical methods to remove escapes, with the goal of preventing seed production.
  - Utilize sequential application of herbicides with alternative modes of action.
  - Rotate the use of Rinskor with Non-Group O herbicides.
  - Do not use more than two applications of Rinskor and any other Group O herbicide within a single rice growing season.

- Make timely applications of Rinskor and other herbicides.
  - Apply labeled rates of Rinskor for the most difficult-to-control weed in the field at the specified time (correct weed size) to minimize weed escapes.
  - Monitor treated areas for weeds before and after application.
    - Scout fields before application to ensure herbicide and use rates are appropriate for the weed spectrum and weed size present, and after application to detect weed escapes or shifts in the weed spectrum.
    - Control escaped weeds chemically with a different mode of action or with mechanical methods.
    - The early detection of possible resistant weed species can limit the spread of these weed populations and allow for the implementation of alternative weed management practices.

- Incorporate agronomic and cultural practices.
  - Use non-chemical weed control practices, such as mechanical or hand weed removal, crop rotation, and use of weed-free certified seed as part of an integrated weed control program.
  - Manage weeds in and around fields, during and after harvest, to reduce weed seed production.
  - Start with a clean field before planting the rice, using either burndown herbicide applications, field tillage or both to minimize early weed competition.
  - Rotate crops and cultural practices to allow for a wider range of weed control practices.
  - Thoroughly clean plant residues from equipment before leaving fields suspected to contain resistant weeds.
  - Contact local extension or a crop advisor for IWM and resistance management information, or report any incidence of nonperformance of Rinskor™ active against a particular weed species to your local Dow AgroSciences representative.
Herbicidal Action

Absorption and Translocation
Rinskor™ active is a systemic post-emergence herbicide mainly absorbed by plant foliage. It is metabolized to the active form and translocated symplastically through the vascular system. It accumulates in the plant’s growing points or meristematic tissue where it exerts herbicidal action.

Herbicide Activity and Symptomatology
• Rinskor molecules are rapidly absorbed into the plant’s cells where the herbicide mimics naturally occurring hormones by binding with specific auxin receptors in the cell’s nucleus. In fact, Rinskor’s affinity to bind with specific receptors differentiates it from other synthetic auxin herbicides.
• Within hours after application there is uncontrolled growth in treated plants, which disrupts multiple plant processes and causes a loss of normal growth function. Within hours to days, visual symptoms appear and continue to develop, leading to death in susceptible species from days to weeks after application.
• Rinskor causes abnormal growth at the crown of susceptible plants which results in disruption of the vascular tissue and ultimately in plant death. Susceptible grasses and sedges display swelling of the crown tissue followed by necrosis and death, while broadleaves display epinastic growth similar to other synthetic auxins. The rate of death is comparable to other systemic herbicides and is accelerated by flooding conditions.

Mode of Action
• Rinskor represents the latest member of the unique and newest synthetic auxin herbicide chemotype discovered by Dow AgroSciences (HRAC group O, WSSA Class 4), the arylpicolinates.
• This chemotype shares many of the same characteristics of existing synthetic auxins, but also differs in several key ways.
• Arylpicolinates, like other synthetic auxin herbicides, disrupt the plant growth regulation processes through binding to auxin receptors. However, the affinity of arylpicolinates to bind with specific receptors differentiates it from other synthetic auxin herbicides. A unique pattern in the different binding affinities is demonstrated between the arylpicolinates and other auxin chemistries.
• Auxin herbicides bind to specific receptors that activate multiple lethal processes in plants. There are several auxin receptors in plants, which are referred to as TIR1 or AFB proteins. The diverse auxin herbicide chemical classes exhibit distinct binding preferences for the different receptors. Rinskor demonstrates a high affinity for binding with the AFB5 receptor and a low affinity for binding with the TIR1 receptor in the cell nucleus, which makes it different than other auxin chemistries.

Weed Control
• Crop types: Concepts are being developed in seeded and transplanted rice in all major rice production areas globally. Rinskor™ active can be used for weed control on Indica, Japonica and hybrid rice types and most important production systems, showing good selectivity over a wide window of rice stages; other crop and non-crop uses for Rinskor are under evaluation.
• Rates: Rates range from 5 to 50 g ai/ha, depending on use patterns and target weed species.
• For broad spectrum foliar weed control in rice, recommended rates of Rinskor will be between 20 to 30 g ai/ha.
• Tank mixes
  • Rinskor can be applied in tank mix combinations with the most common pre-emergence and post-emergence herbicides in rice, to get residual weed control and to broaden the weed control spectrum. When tank mixing, follow label directions, including application rates as well as precautions and limitations of use on each herbicide label.
Key Controlled Species

The following tables provide a listing of weeds that, based upon field trials results, have been found to be susceptible to Rinskor™ active at anticipated label use rates. These tables should be used as a guide and are not an endorsement of weed control.

### Grass Efficacy

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinochloa crus-galli</td>
<td>Barnyardgrass</td>
</tr>
<tr>
<td>Echinochloa colona</td>
<td>Junglerice</td>
</tr>
<tr>
<td>Echinochloa oryzoides</td>
<td>Early watergrass</td>
</tr>
<tr>
<td>Urochloa plantaginea</td>
<td>Alexandergrass</td>
</tr>
<tr>
<td>Urochloa platyphylla</td>
<td>Broadleaf signalgrass</td>
</tr>
</tbody>
</table>

Partial listing of grass weeds susceptible to Rinskor when used at recommended label instructions.

### Sedge Efficacy

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyperus difformis</td>
<td>Smallflower umbrellaseedge</td>
</tr>
<tr>
<td>Cyperus esculentos</td>
<td>Yellow nutsedge</td>
</tr>
<tr>
<td>Cyperus iria</td>
<td>Rice flatseedge</td>
</tr>
<tr>
<td>Cyperus rotundus</td>
<td>Purple nutsedge</td>
</tr>
</tbody>
</table>

Partial listing of sedge weeds susceptible to Rinskor when used at recommended label instructions.

### Broadleaf Weed Control

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abutilon theophrasti</td>
<td>Velvetleaf</td>
</tr>
<tr>
<td>Alisma plantago-aquatica</td>
<td>Alisma</td>
</tr>
<tr>
<td>Aeschynomene sp.</td>
<td>Aeschynomene</td>
</tr>
<tr>
<td>Ammanna sp.</td>
<td>Redstem</td>
</tr>
<tr>
<td>Amananthus sp.</td>
<td>Pigweed</td>
</tr>
<tr>
<td>Ambrosia sp.</td>
<td>Ragweed</td>
</tr>
<tr>
<td>Chenopodium album</td>
<td>Common lambquaters</td>
</tr>
<tr>
<td>Commelinea sp.</td>
<td>Dayflower</td>
</tr>
<tr>
<td>Conyza sp.</td>
<td>Conyza</td>
</tr>
<tr>
<td>Eclipta alba</td>
<td>False daisy</td>
</tr>
<tr>
<td>Heteranthera sp.</td>
<td>Heterathera</td>
</tr>
<tr>
<td>Lindernia pyxidaria</td>
<td>Lindernia</td>
</tr>
<tr>
<td>Ludwigia linifolia</td>
<td>Primrose willow</td>
</tr>
<tr>
<td>Ludwigia octovalis</td>
<td>Long-fruited primrose</td>
</tr>
<tr>
<td>Monochoria sp.</td>
<td>Monochoria</td>
</tr>
<tr>
<td>Murdannia nudiflora</td>
<td>Murdania</td>
</tr>
<tr>
<td>Phyllanthus niruri</td>
<td>Gale of the wind</td>
</tr>
<tr>
<td>Sagittaria sp.</td>
<td>Sagittaria</td>
</tr>
<tr>
<td>Sesbania exaltata</td>
<td>Hemp sesbania</td>
</tr>
<tr>
<td>Xanthium atrumarium</td>
<td>Cocklebur</td>
</tr>
</tbody>
</table>

Partial listing of broadleaf weeds susceptible to Rinskor when used at recommended label instructions.

### Control of Resistant Weeds

Rinskor™ active has demonstrated control of grass, sedge and broadleaf weed species that have shown tolerance or have developed target site resistance to other actives:

- **ALS Chemistry:** bispyribac, imazamox, imazethapyr, imazapic, penoxsulam, halosulfuron, bensulfuron, metaosulfuron, metsulfuron, pyrazosulfuron, pyrifenoxim, propisulfuron.
- **ACCase Chemistry:** cyhalofop-butyl, fenoxaprop, profoxydim, metamifop.
- **HPPD Chemistry:** mesotrione, tebufuraline, tembotrione, benzosulfonylnicotin.
- **Other chemistries:** glyphosate, propanil, quinclorac, clomazone, atrazine.

### Crop Safety

- **When used at anticipated label instructions, rice shows excellent crop tolerance.**
- **Any crop stress or environmental factors which influence plant health may impact crop tolerance to Rinskor. Rice crops grown under adverse environmental conditions may express temporary crop response. Overdose resulting from spray overlapping can cause similar effects. Such crop effects are transient and do not affect yield.**
- **Rinskor may be used on all rice varieties and hybrids, including herbicide tolerant varieties.**
Application Conditions

Factors for effective weed control with Rinskor™ active include proper application rate, weed size, daytime and nighttime temperatures, and the appropriate soil moisture prior to and following application. Best weed control results are obtained when Rinskor is applied to actively growing weeds, in warm temperature conditions, and when soil moisture is adequate to support active weed growth. Establishment of permanent flood within 5 days after application of Rinskor can benefit weed control.

Rinskor may be applied to rice from 3 leaf stage with no exposed roots up to 60 days before harvest or approximately at late boot stage. Weed stage is species-dependent: In general grasses should be treated from 2 leaf to post-tillered stages, broadleaves up to 20 cm height and seedheads up to 5-8 cm height.

Rinskor should be applied only when the potential for drift to adjacent sensitive areas (e.g. residential areas, known habitat for threatened or endangered species, bodies of water or non-target crops) is minimal. The most effective way to reduce drift potential is to apply the largest droplets that provide sufficient coverage and control.

Ground Applications
To minimize spray drift, apply Rinskor in a total spray volume of 10 gallons or more per acre (100 liters / hectare), using spray equipment designed to produce large droplet, low pressure sprays. Refer to the spray equipment manufacturer’s recommendations for detailed information on nozzle types, arrangement spacing and operating height and pressure. Operate equipment at spray pressures no greater than is necessary to produce a uniform spray pattern. Operate the spray boom no higher than is necessary to produce a uniformly overlapping pattern between spray nozzles. Do not apply with hollow cone-type insecticide nozzles or other nozzles that produce a fine-droplet spray.

Aerial Applications
To minimize spray drift, apply Rinskor in a total spray volume of 10 gallons or more per acre (100 liters per hectare). Drift potential is lowest between wind speeds of 2 to 10 mph (approximately 3 to 16 km/h). However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Avoid applications below 2 mph (approximately 3 km/h) due to variable wind direction and high potential for temperature inversion. Minimize spray drift from aerial applications by applying a coarse spray at spray boom pressure no greater than 30 psi; by using straight-stream nozzles directed straight back; and by using a spray boom no longer than 3/4 of the rotor or wing span of the aircraft.

Do not apply under conditions of a low level air temperature inversion. A temperature inversion is characterized by little or no wind and lower air temperature near the ground than at higher levels. Application height is a factor that could also influence drift potential. Applications at lowest safe height reduce exposure of droplets to evaporation and wind. Applications at a height greater than 3 m (10 feet) above top of the largest plant are not recommended.

To minimize potential for spray drift consider these factors when deciding when and how to apply Rinskor:
- All weather conditions, such as wind direction, wind speed, temperature and relative humidity are consistent with the label.
- Application method and application equipment settings are consistent with the label.
- Ground or aerial application equipment are properly calibrated.
- Always read and follow product label, as well as local regulations and requirements related to application of pesticides.

Toxicology and Environmental Profile

Rinskor™ active technical material and its formulations (straight and pre-mixtures with cyhalofop and penoxsulam) will be registered in all rice growing countries. It will also be registered for the control of invasive weeds in aquatic environments in the US. First submissions took place in September 2015, and first registrations in rice and aquatics environments are expected in 2017. Field terrestrial dissipation data and plant metabolism data on terrestrial crops are available. Future registrations in those crops are also possible.

Mammalian Toxicology

Rinskor has a very favorable mammalian toxicity profile. The acute mammalian toxicity of Rinskor is low by the oral, dermal and inhalation routes of exposure. There was no evidence of skin irritation. Minimal eye irritation was observed which cleared by 72 hours; there were no corneal effects at any time in any animal. It has weak dermal sensitization potential with an EC3 of 19.1. There was no evidence of genotoxicity and there was no toxicity up to the limit dose or the highest doses tested in short-term, sub-chronic or chronic toxicity studies. There was no evidence of reproductive or developmental toxicity up to the highest doses tested. Long-term toxicity and carcinogenicity studies with Rinskor in rats and mice did not demonstrate any potential for chronic toxicity or carcinogenicity. The results of these studies are summarized in the following table.

### Selected Mammalian Toxicological Endpoints for Rinskor

<table>
<thead>
<tr>
<th>Study</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral, rat</td>
<td>LD50&gt;5000 mg/kg</td>
</tr>
<tr>
<td>Acute dermal</td>
<td>LD50&gt;5000 mg/kg</td>
</tr>
<tr>
<td>Acute inhalation</td>
<td>LC50&gt;5.23mg/L</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>None</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>None</td>
</tr>
<tr>
<td>Skin sensitization (LLNA)</td>
<td>Weak dermal sensitization (EC3=19.1%)</td>
</tr>
<tr>
<td>Chronic Toxicity/Carcinogenicity: Rats</td>
<td>No evidence of long term toxicity or carcinogenicity up to the highest dose tested, 300 mg/kg bw/day. Chronic NOAEL= 300 mg/kg bw/day</td>
</tr>
<tr>
<td>Carcinogenicity: Mice</td>
<td>No evidence of carcinogenic potential. NOEL/NOAEL= 1000 mg/kg/day (M/800 mg/kg/day)(F)</td>
</tr>
<tr>
<td>Developmental Toxicity: Rat</td>
<td>Maternal NOAEL= 1000 mg/kg/day Litter NOAEL = 1000 mg/kg/day</td>
</tr>
<tr>
<td>Developmental Toxicity: Rabbit</td>
<td>No evidence of developmental toxicity up to the limit dose. Maternal NOAEL= 1000 mg/kg/day Litter NOAEL = 1000 mg/kg/day</td>
</tr>
<tr>
<td>2-Generation Reproduction: Rat</td>
<td>Maternal NOAEL= 300 mg/kg/day Parental NOAEL = 300 mg/kg/day Pup NOAEL = 300 mg/kg/day</td>
</tr>
</tbody>
</table>
Ecotoxicology

The environmental toxicity profile of Rinskor™ active is highly favorable for both terrestrial and aquatic animals. As expected for an herbicidal product, Rinskor showed toxicity to some highly sensitive aquatic and terrestrial plants.

For avian species, LC/LD50 or No Effect Level Concentrations (NOEC) and the endpoints were set at, or above, the highest concentration tested in the acute oral, 5-day dietary and reproductive toxicity studies (i.e. >2250 mg/kg bw, >5600 mg/kg feed and 1000 mg/kg feed), respectively. Similarly for honeybees (adult acute oral and contact toxicity), LD50 values were found to be higher than the highest test concentration of 100 µg/bee. Acute and chronic studies on earthworms indicate a low toxicity to soil dwelling-organisms (LC50 >2000 mg/kg soil and chronic NOEC = 135 mg/kg soil). Soil microbial activity was shown to be low at concentrations up to 17.0 mg/kg soil.

Rinskor was shown to be of low toxicity to aquatic animals. Acute and/or chronic endpoints (LC/EC50 and NOEC values) were at, or above, the limit of functional solubility of Rinskor in water (measured ranges: 37.0-78.5 and 24.5-40.1 µg/L in freshwater and marine studies, respectively) for fish, tadpole and aquatic invertebrates. The only exception is represented by the mysid shrimp as some adverse effects were observed in the long-term study, resulting in a NOEC of 7.8 µg/L.

In terrestrial plant studies a range of sensitivities has been observed: some species (e.g. carrot and soybean) are highly sensitive to Rinskor with ER25 values around 0.06-0.07 g ai/ha in post-emergence exposure, while other species (e.g. oat) are tolerant with ER25 values above 60 g ai/ha. In addition, in pre-emergence studies a lower susceptibility has been observed with ER25 values for sensitive species being between 13 and 915x higher than in vegetative vigor studies. A range of sensitivities to Rinskor has been observed also for aquatic plants: EC50 values were higher than the limit of functional solubility for non-vascular plants and duckweed, but other aquatic vascular plants (i.e. Myriophyllum spicatum, Ceratophyllum demersum and Cabomba caroliniana) showed a range of susceptibility to Rinskor with EC50 values based on yield inhibition spanning from 0.0547 to 4.52 µg/L.

Environmental Fate

In the environment, the primary degradation pathway for Rinskor™ active is through cleavage of the benzyl ester to form the acid metabolite. Further degradation results in metabolites that have no biological activity. As the primary use of Rinskor is in rice paddies, the laboratory rice paddy study showed rapid partitioning of the test compound from the water layer to the soil with a dissipation half-life of less than 1 day. Rinskor was then quickly degraded in the entire flooded paddy system, with half-lives ranging between 8 to 10 days. The acid metabolite had an average half-life of 8.5 days.

In aerobic soil, Rinskor moderately degraded with half-lives ranging from 2.5 to 34 days. Anaerobic soil metabolism studies showed rapid degradation with half-lives ranging from 7 to 15 days. Rinskor can be classified as immobile based on soil Koc values ranging from 23,028 to 47,763 mL/g. The acid metabolite exhibits moderate mobility potential, with an average Koc value of 115 mL/g.

In aerobic and anaerobic aquatic environments Rinskor is short lived with half-lives ranging from 4 to 6 days and 2 days, respectively, in the total water sediment system. Degradation in surface water is accelerated when exposed to sunlight as the Rinskor photolytic half-life is less than 2 hours.

The low vapor pressure of Rinskor, together with the low Henry’s law constant and the estimated photochemical oxidation half life in air of 1.1 days, indicate that levels of Rinskor in air following normal usage will be very low.

As seen in both laboratory and field studies, Rinskor undergoes rapid degradation in soil and aqueous environments. The potential for off-site transport is minimized by the short half-life as well as by strong soil sorption.

For more information about Rinskor™ active please visit our web site at www.rinskor.com.
Disclaimers

The Rinskor™ active Technical Bulletin is provided for reference purposes only and is not a substitute for or an addition to a product label or Material Safety Data Sheet (MSDS). Always read and follow label directions for the country of use for registered pesticides. The information and any recommendations in this bulletin ("information") are presented in good faith; however, Dow AgroSciences makes no representations as to the completeness or accuracy of the information. The information is supplied upon the conditions that the persons receiving it will make their own determinations as to its suitability for their purposes prior to use and consult with their advisors to ensure compliance with all federal, state, and local regulations. In no event will Dow AgroSciences be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information.

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Rinskor is not yet registered for sale or use. Registration is pending. The information presented here is not an offer for sale.

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