



We create chemistry

Saflufenacil	Group	14	Herbicide
Pyroxasulfone	Group	15	Herbicide

SPECIMEN

Surtain™

Herbicide

For residual preemergence weed control in field corn

Active Ingredients*:

saflufenacil: N'-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3,6-dihydro-1(2H)-pyrimidinyl)benzoyl]-N-isopropyl-N-methylsulfamide. 6.82%

pyroxasulfone: 3-[[[5-(difluoromethoxy)-1-methyl-3-(trifluoromethyl)-1H-pyrazol-4-yl]methyl]sulfonyl]-4,5-dihydro-5,5-dimethylisoxazole 10.91%

Other Ingredients: 82.27%

Total: 100.00%

* Contains 0.626 pound of saflufenacil formulated as a water-based capsule suspension mixed with 1.002 pounds of pyroxasulfone per gallon formulated as a water-based suspension concentrate

EPA Reg. No. 7969-501

EPA Est. No.

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCIÓN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See inside for complete **First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty**, and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

**Shake container well before use.
Recirculation is advised for bulk tanks or totes.**

Net Contents:

BASF Corporation
26 Davis Drive, Research Triangle Park, NC 27709

FIRST AID	
If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • DO NOT induce vomiting unless told to by a poison control center or doctor. • Have a person sip a glass of water if able to swallow. • DO NOT give anything to an unconscious person.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth to mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If in eyes	<ul style="list-style-type: none"> • Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes; then continue rinsing. • Call a poison control center for treatment advice.
If on skin	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).	

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed or if inhaled. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, natural rubber ≥ 14 mils, polyethylene, polyvinyl chloride ≥ 14 mils, or Viton ≥ 14 mils

For aerial application, mixers and loaders must also wear a minimum of a NIOSH approved filtering face piece respirator with any N filter (TC-84A). You can also use other NIOSH approved particulate respirators that offer more protection, including a half face or full face respirator with any filter or a powered air purifying respirator with an HE filter. For more information about these options, see www.epa.gov/pesticide-respirators.

Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** reuse them.

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.607(d-f)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. If pesticide gets on skin, wash immediately with soap and water.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards

DO NOT apply directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

Groundwater Advisory. Saflufenacil and pyroxasulfone have properties and characteristics associated with chemicals detected in groundwater. These chemicals may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

Surface Water Advisory. This product may impact surface water quality due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface water via runoff for several months or more after application. A level, well-maintained buffer strip between areas to which this product is applied and surface water features including ponds, streams, and springs will reduce the potential loading of saflufenacil, pyroxasulfone, and pyroxasulfone's degradation product, [5-(difluoromethoxy)-1-methyl-3-(trifluoromethyl)-1H-pyrazol-4-yl]methanesulfonic acid (M1), from runoff water and sediment. Runoff of this product will be reduced by avoiding application when rainfall is forecast to occur within 48 hours.

Point-source Contamination. To prevent point-source contamination, **DO NOT** mix or load this or any other pesticide product within 50 feet of wells (including abandoned wells and drainage wells), sinkholes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or dike mixing/loading areas described as follows.

Mixing, loading, rinsing, or washing operations performed within 50 feet of a well are allowed only when conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be on or move across the pad. The pad must be self-contained to prevent surface water flow over or from the pad. The pad capacity must be maintained at 110% that of the largest pesticide container or application equipment used on the pad and have sufficient capacity to contain all product spills, equipment or container leaks, equipment washwater, and rainwater that may fall on the pad. The containment capacity does not apply to vehicles delivering pesticide shipments to the mixing and/or loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.

Care must be taken when using this product to prevent:

- Back-siphoning into wells
- Spills
- Improper disposal of excess pesticide, spray mixes, or rinsates

Check valves or anti-siphoning devices must be used on all mixing equipment.

Endangered Species Protection Requirements

This product may have effects on federally listed threatened or endangered plant species or their critical habitat. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the county or parish in which you are applying the pesticide. To determine whether your county or parish has a Bulletin, and to obtain that Bulletin, consult <http://www.epa.gov/espp/>, or call 1-844-447-3813 no more than 6 months before using this product. Applicators must use Bulletins that are in effect in the month in which the pesticide will be applied. New Bulletins will be available from the above sources 6 months before their effective dates.

Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. This label must be in the possession of the user at time of herbicide application.

DO NOT apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Observe all restrictions and precautions in this label and the labels of products used in combination with **Surtain™ herbicide**. The use of this product not consistent with this label can result in injury to crops, animals, or persons. Keep containers closed to avoid spills and contamination.

BASF Corporation does not recommend or authorize the use of this product in manufacturing, processing, or preparing custom blends with other products for application in crops.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

DO NOT enter or allow worker entry into treated areas during the restricted-entry interval (REI) of **12 hours**.

EXCEPTION: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, including plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of barrier laminate, butyl rubber \geq 14 mils, nitrile rubber \geq 14 mils, neoprene rubber \geq 14 mils, natural rubber \geq 14 mils, polyethylene, polyvinyl chloride \geq 14 mils, or Viton \geq 14 mils
- Shoes plus socks

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage

DO NOT use or store near heat or open flame. Store in original container in a well ventilated area separately from fertilizer, feed, or foodstuffs and away from other pesticides. Avoid cross-contamination with other pesticides. Groundwater contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material.

Pesticide Disposal

Wastes resulting from this product must be disposed of on-site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity \leq 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Triple rinse containers too large to shake (capacity $>$ 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

(continued)

STORAGE AND DISPOSAL *(continued)*

Container Handling *(continued)*

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage including cracks, punctures, abrasions, worn out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

Product Information

Surtain™ herbicide provides rate-dependent residual preemergence control of annual grass weeds, sedges, and annual broadleaf weeds (including biotypes resistant to ACCase inhibitors, ALS inhibitors, HPPD inhibitors, PSII inhibitors, and glyphosate) (refer to **Table 1** for list). It can be used in field corn (grain, seed, silage), fallow, and post-harvest croplands.

Periods of dry weather following application of **Surtain** may reduce herbicidal effectiveness. Residual preemergence application of **Surtain** must be activated by at least 1/2 inch of rainfall or sprinkler irrigation before weed seedling emergence. When **Surtain** is not activated, a labeled postemergence herbicide or cultivation may be needed to control weed escapes. **Surtain** does not control emerged weeds.

Herbicidal activity of **Surtain** may be reduced if excessive trash from the previous crop covers the soil surface during application. Manage trash levels if needed with combine straw shredder/spreaders, earlier burndown of emerged weeds, or light tillage.

In Case of Emergency

In case of large-scale spill of this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital) or hotline at 1-800-222-1222
- BASF Corporation 1-800-832-HELP (4357)

Steps to take if material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

Table 1. Weeds Controlled by a Residual Preemergence Application of Surtain™ herbicide

Common Name	Scientific Name	C = Control S = Suppression¹
Annual Broadleaf Weeds		
Amaranth, Palmer	<i>Amaranthus palmeri</i>	C
Amaranth, Powell	<i>Amaranthus powellii</i>	C
Beggarweed, Florida	<i>Desmodium tortuosum</i>	C
Buckwheat, wild	<i>Polygonum convolvulus</i>	C
Burcucumber	<i>Sicyos angulatus</i>	S
Canola, volunteer (rapeseed), all types	<i>Brassica</i> spp.	C
Carpetweed	<i>Mollugo verticillata</i>	C
Chickweed, common	<i>Stellaria media</i>	C
Cocklebur, common	<i>Xanthium strumarium</i>	C
Copperleaf, Virginia	<i>Acalypha virginica</i>	C
Galinsoga, smallflower	<i>Galinsoga parviflora</i>	C
Groundcherry, cutleaf	<i>Physalis angulata</i>	C
Groundsel, common	<i>Senecio vulgaris</i>	S
Henbit	<i>Lamium amplexicaule</i>	S
Horseweed (marestail)	<i>Conyza canadensis</i>	C
Jimsonweed	<i>Datura stramonium</i>	C
Kochia	<i>Kochia scoparia</i>	C
Ladysthumb	<i>Polygonum persicaria</i>	C
Lambsquarters, common	<i>Chenopodium album</i>	C
Mallow, Venice	<i>Hibiscus trionum</i>	C
Marestail (horseweed)	<i>Conyza canadensis</i>	C
Morningglory, entireleaf	<i>Ipomoea hederacea</i> var. <i>integriuscula</i>	C
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>	C
Morningglory, pitted	<i>Ipomoea lacunosa</i>	C
Morningglory, tall	<i>Ipomoea purpurea</i>	C
Mustard, wild	<i>Sinapis arvensis</i>	C
Nightshade, black	<i>Solanum nigrum</i>	C
Nightshade, cutleaf	<i>Solanum triflorum</i>	C
Nightshade, Eastern black	<i>Solanum ptycanthum</i>	C
Nightshade, hairy	<i>Solanum sarrachoides</i>	C
Pennycress, field	<i>Thlaspi arvense</i>	C
Pigweed, prostrate	<i>Amaranthus blitoides</i>	C
Pigweed, redroot	<i>Amaranthus retroflexus</i>	C
Pigweed, smooth	<i>Amaranthus hybridus</i>	C
Pigweed, tumble	<i>Amaranthus albus</i>	C
Puncturevine	<i>Tribulus terrestris</i>	S
Purslane, common	<i>Portulaca oleracea</i>	C
Pusley, Florida	<i>Richardia scabra</i>	C
Ragweed, common	<i>Ambrosia artemisiifolia</i>	C
Ragweed, giant	<i>Ambrosia trifida</i>	C
Shepherds-purse	<i>Capsella bursa-pastoris</i>	S
Sida, prickly	<i>Sida spinosa</i>	C
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	C
Sowthistle, annual	<i>Sonchus arvensis</i>	C
Starbur, bristly	<i>Acanthospermum hispidum</i>	C
Sunflower, common	<i>Helianthus annuus</i>	C

Table 1. Weeds Controlled by a Residual Preemergence Application of Surtain™ herbicide (continued)

Common Name	Scientific Name	C = Control S = Suppression ¹
Annual Broadleaf Weeds (continued)		
Texasweed	<i>Caperonia palustris</i>	C
Thistle, Russian	<i>Salsola kali</i>	C
Velvetleaf	<i>Abutilon theophrasti</i>	C
Waterhemp	<i>Amaranthus tuberculatus</i>	C
Annual Grass Weeds		
Barley, hare	<i>Hordeum murinum</i> spp. <i>leporinum</i>	C
Barnyardgrass	<i>Echinochloa crus-galli</i>	C
Bluegrass, annual	<i>Poa annua</i>	C
Brome, downy	<i>Bromus tectorum</i>	C
Brome, Japanese	<i>Bromus japonicus</i>	S
Canarygrass	<i>Phalaris canariensis</i>	C
Cheat	<i>Bromus secalinus</i>	S
Crabgrass, large	<i>Digitaria sanguinalis</i>	C
Crabgrass, smooth	<i>Digitaria ischaemum</i>	C
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	C
Cupgrass, Southwestern	<i>Eriochloa gracilis</i>	C
Cupgrass, woolly	<i>Eriochloa villosa</i>	S
Foxtail, giant	<i>Setaria faberi</i>	C
Foxtail, green	<i>Setaria viridis</i>	C
Foxtail, yellow	<i>Setaria pumila</i>	C
Goosegrass	<i>Eleusine indica</i>	C
Johnsongrass (seedling)	<i>Sorghum halepense</i>	S
Millet, Texas	<i>Urochloa texana</i>	S
Millet, wild proso	<i>Panicum miliaceum</i>	S
Oat, wild	<i>Avena fatua</i>	S
Panicum, fall	<i>Panicum dichotomiflorum</i>	C
Rice, red	<i>Oryza sativa</i>	C
Ryegrass, Italian	<i>Lolium multiflorum</i>	C
Ryegrass, rigid	<i>Lolium rigidum</i>	C
Sandbur	<i>Cenchrus</i> spp.	S
Shattercane	<i>Sorghum bicolor</i>	S
Signalgrass, broadleaf	<i>Brachiaria platyphylla</i>	S
Sedges		
Flatsedge, rice	<i>Cyperus iria</i>	C
Nutsedge, yellow	<i>Cyperus esculentus</i>	S

¹ **Surtain** must be used in tank mixes or sequential applications with other labeled herbicides that provide additional control of noted weeds.

Mode of Action

Surtain contains two active herbicide ingredients. Saflufenacil is a potent inhibitor of protoporphyrinogenoxidase belonging to herbicide mode-of-action **Group 14**. Pyroxasulfone is a potent inhibitor of very long chain fatty acid (VLCFA) synthesis, belonging to herbicide mode-of-action **Group 15**. Saflufenacil is rapidly absorbed by roots and foliage. Following inhibition of the protoporphyrinogen-oxidase, plant death is the result of membrane damage. Under active growing conditions, susceptible emerging weed seedlings usually develop

chlorotic and necrotic injury symptoms within hours and die within a few days. Susceptible germinating weed seeds usually die as they reach the soil surface or shortly after emergence. Pyroxasulfone is a root-and-shoot inhibitor that controls susceptible weed seedlings before or soon after they emerge from the soil.

Herbicide Resistance Management

For resistance management, **Surtain** contains both a **Group 14** herbicide and **Group 15** herbicide. Any weed population may contain plants naturally resistant to

Group 14 and/or **Group 15** herbicides. The resistant individuals may dominate the weed population if these herbicides are used repeatedly in the same fields. Appropriate resistant-management strategies should be followed.

To delay herbicide resistance consider:

- Avoiding the consecutive use of herbicides that have a similar target-site-of-action on the same weed species.
- Using tank mixes or premixes with herbicides from different target-site-of-action groups as long as the involved products are all registered for the same use, have different sites of action, and are both effective at the tank mix or prepack rate on the weed(s) of concern.
- Basing herbicide use on a comprehensive IPM (Integrated Pest Management) program including cultural and mechanical methods.
- Monitoring treated weed populations for loss of field efficacy, and control of escapes with effective alternative herbicides or mechanical methods.
- Identify weeds present in the field through scouting and field history and understand their biology. The weed-control program needs to consider all of the weeds present.
- Scout fields prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective.
- Scout fields after application to verify the treatment was effective.
- Suspected herbicide-resistance weeds may be identified by these indicators:
 1. Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
 2. A spreading patch of non-controlled plants of a particular weed species; or
 3. Surviving plants mixed with controlled individuals of the same species.
- If resistance is suspected, treat weed escapes with a herbicide with a different MOA and/or use non-chemical methods to remove escapes, as practicable, with the goal of preventing further seed production.
- Report any incidence of non-performance of this product against a particular weed species to your BASF representative.
- Contacting your local extension specialist, certified crop advisors, and/or manufacturer for herbicide resistance management and/or integrated weed management directions for specific crops and resistant weed biotypes.

Crop Response

Crops listed on this label are tolerant to **Surtain™ herbicide** when applied according to label directions and under normal environmental conditions. Crop injury may occur when application is made under stressful growing conditions (e.g. mechanical injury, drought or excessive moisture for normal crop development, extreme hot or cold temperatures, widely fluctuating temperatures, seedling disease, low soil fertility, high soil pH, high soil salt concentration, or other pesticide injury).

Application Instructions

Surtain may be applied before or after crop emergence.

Application Rate

Application rates of **Surtain** may vary depending on soil texture and organic matter. Refer to **Table 2** for soil texture groups used in this label.

Table 2. Soil Texture Groups

Coarse	Medium	Fine
Sand Loamy sand Sandy loam	Silt Silt loam Loam Sandy clay loam	Sandy clay Silty clay Silty clay loam Clay loam Clay

Use **Table 3** to determine the corresponding amounts of active ingredients (saflufenacil, pyroxasulfone) from **Surtain** product use rates.

Table 3. Use Rate Equivalency

Amount of Surtain (fl ozs/A)	Amount of Saflufenacil (lb ai/A)	Amount of Pyroxasulfone (lb ai/A)
9.2	0.045	0.072
11.0	0.054	0.086
14.0	0.068	0.110
17.0	0.083	0.133
27.0	0.132	0.211

Application Timing

Surtain may be applied preplant surface, preplant incorporated, preemergence, or early postemergence. Refer to the **Crop-specific Information** section for specific application instructions (timings, rates, restrictions and precautions) by crop.

Preplant Surface Application. Apply **Surtain** alone or in tank mix within 30 days of planting. If weeds are present at the time of application, use additional weed control methods, for example a tank mix with an appropriate postemergence herbicide(s), to control emerged weeds.

Preplant Incorporated (PPI) Application. Incorporate **Surtain** into the upper (1 to 2 inches) soil surface within 14 days of planting. Deeper incorporation may increase the potential for crop injury and also may result in reduced weed control. Use appropriate equipment for uniform shallow incorporation, including a field cultivator, harrow, rolling cultivator, or finishing disc.

Preemergence Surface Application. After planting and before crop emergence, apply a uniform broadcast treatment to the soil surface. Apply **Surtain** only to a uniform seedbed which is firm and free of clods, cracks, excess trash (previous crop residue), and weed growth. If weeds are present, apply **Surtain** in a tank mix with an

appropriate postemergence herbicide, for example a glyphosate-containing product.

Early Postemergence Application. Surtain™ herbicide must be applied and activated before weed seedling emergence or in a tank mixture that controls emerged weeds. **Surtain** will not control emerged weeds. Weeds that are already emerged at the time of application must be controlled with cultivation, tank mix or sequential application of another herbicide labeled for postemergence control of the target weeds in the crop.

Application Methods and Equipment

Surtain may be applied by ground or air (fixed-wing aircraft only, **DO NOT** apply by helicopter).

Thorough spray coverage is required for optimum weed control and can be improved with proper adjuvant, nozzle, and spray volume selection. Use and configure application equipment to provide an adequate spray volume, an accurate and uniform distribution of spray droplets over the treated area, and to avoid spray drift to nontarget areas. Adjust equipment to maintain continuous agitation during spraying with good mechanical or bypass agitation. Avoid overlaps that increase rates above the use rates specified in this label.

Surtain may be applied using water or sprayable fluid nitrogen fertilizer solutions as the spray carrier. Additionally, **Surtain** may be impregnated on and applied with dry bulk fertilizer.

Aerial Spray Carrier Volume. Use 3 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area.

Ground Spray Carrier Volume. Use 3 or more gallons of water per treated acre or 20 or more gallons of sprayable fluid nitrogen fertilizer per treated acre.

Mandatory Spray Drift Management

Aerial Applications

- **DO NOT** release spray at a height greater than 10 ft above the ground or crop canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to select a nozzle and pressure that deliver a medium or coarser droplet size (ASABE S572).
- When applying by airplane, use low-drift nozzles (straight-stream nozzles, D-8 or larger). **DO NOT** use nozzles producing a mist droplet spray.
- The boom length must not exceed 75% of the wingspan for airplanes.
- Applicators must use 1/2 swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so spray is directed towards the back of the aircraft, parallel with the airstream, and never point downward more than 45 degrees.

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Mandatory Spray Drift Management

(continued)

Aerial Applications (continued)

- **DO NOT** apply when wind speeds exceed 10 mph at the application site.
- **DO NOT** apply during temperature inversions.

Ground Applications

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 ft above the ground or crop canopy.
- Applicators are required to select a nozzle and pressure that deliver a medium or coarser droplet size (ASABE S572). Flood-jet type nozzles are recommended for residual soil surface application. Nozzles that deliver coarse spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of target (i.e. soil surface). **DO NOT** use nozzles that produce fine (e.g. cone) spray droplets.
- **DO NOT** apply when wind speeds exceed 10 mph at the application site.
- **DO NOT** apply during temperature inversions.

Buffer Restrictions

Aerial Applications

To avoid potential adverse effects to nontarget areas, applicators **must maintain a 160-foot buffer** between the application area and the **closest downwind edge** of nontarget terrestrial habitats (including grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, shrub lands, and crop lands).

Ground Applications

To avoid potential adverse effects to nontarget areas, applicators **must maintain a 75-foot buffer** between the application area and the **closest downwind edge** of nontarget terrestrial habitats (including grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, shrub lands, and crop lands).

Spray Drift Advisories

The applicator is responsible for avoiding off-site spray drift. Be aware of nearby nontarget sites and environmental conditions.

Importance of Droplet Size

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size - Ground Boom Volume

Volume. Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray

volume is needed, consider using a nozzle with a higher flow rate.

Pressure. Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.

Spray Nozzle. Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Controlling Droplet Size - Aircraft Adjust Nozzles

Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles must be oriented parallel with the airflow in flight.

Boom Height - Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom must remain level with the crop and have minimal bounce.

Release Height - Aircraft

Higher release heights increase the potential for spray drift. When applying aurally to crops, **DO NOT** release spray at a height greater than 10 feet above the crop canopy, unless a greater application height is necessary for pilot safety.

Shielded Sprayers

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

Temperature and Humidity

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

Temperature Inversion

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Wind

Drift potential generally increases with wind speed. **AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.**

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

Ground Application (dry bulk fertilizer)

Surtain™ herbicide may be impregnated or coated onto dry bulk granular fertilizer carriers for residual soil surface application. Impregnation or coating may be conducted by in-plant bulk or on-board systems. Perform the mixing operation in well-ventilated areas.

Addition of a drying agent may be necessary if the fertilizer and herbicide blend is too wet for uniform application because of high humidity, high urea concentration, or low fertilizer use rate. Slowly add the drying agent to the blend until a flowable mixture is obtained. Drying agents are not recommended for use with on-board impregnation systems.

Under some conditions, fertilizer impregnated with **Surtain** may clog air tubes or deflector plates on pneumatic application systems. Mineral oil may be added to **Surtain** before blending with fertilizer to reduce plugging. **DO NOT** use drying agents when mineral oil is used. To avoid separation of **Surtain** and mineral oil mixes in cold temperatures, keep mixture heated or agitated before blending with fertilizer. Mineral oil may be used at in-plant blending stations or on-board injection systems.

Generally, fertilizer application rates of at least 200 lbs to 700 lbs per acre of herbicide and fertilizer blend provide adequate distribution or coverage for **Surtain** across the soil surface. Refer to **Table 5** in this label for use rates of **Surtain** to be applied on per acre basis when impregnated with fertilizer to create the dry bulk fertilizer blend for application. Apply uniformly to the soil to prevent possible crop injury and offer satisfactory weed control. Impregnated fertilizer spread at 1/2 rate and overlapped for a full rate offer a more uniform distribution. Use shallow (less than 2 inches) incorporation for improved weed control. Deeper incorporation dilutes the herbicide layer near the soil surface and may result in unsatisfactory weed control.

To calculate the herbicide rate when using dry bulk fertilizer applications:

$$\frac{\text{fl ozs herbicide per acre}}{\text{pounds fertilizer per acre}} \times 2000 = \frac{\text{fl ozs herbicide}}{\text{per ton of fertilizer}}$$

Cleaning Spray Equipment

Clean application equipment thoroughly by using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions, followed by triple rinsing the equipment before and after applying this product.

Additives

Surtain is formulated to provide optimal residual pre-emergence weed control. No additive is needed when **Surtain** is applied alone.

However, several herbicide tank mixes with **Surtain** may require an adjuvant to improve burndown of emerged weeds. Therefore, depending on the timing of application relative to crop emergence, the following adjuvants may be used with **Surtain** tank mixes:

For applications made before crop emergence (i.e., pre-plant surface, preplant incorporated, or preemergence): non-ionic surfactant (NIS), crop oil concentrate (COC), methylated seed oil (MSO), urea ammonium nitrate (UAN).

For applications made after crop emergence (i.e., early postemergence): NIS at 0.25% v/v (1 qt/100 gal) optionally with a spray grade ammonium sulfate (AMS) at 8.5 to

17 lbs/100 gallons of water. If using liquid AMS product, use a rate that delivers an AMS equivalent of 8.5 to 17 lbs/100 gallons of water. The use of COC may result in temporary crop injury. **DO NOT** add MSO or UAN to a **Surtain™ herbicide** spray mix.

When an adjuvant is to be used with this product, BASF recommends the use of a Chemical Producers and Distributors Association (CPDA) certified adjuvant.

DO NOT add acidifying agents to the spray tank when applying **Surtain**.

Tank Mixing Information

It is the pesticide user's responsibility to ensure that all products in the mixtures are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Surtain may be tank mixed or applied sequentially with other herbicide products registered for use in any labeled crop found in this label for a broader spectrum of residual weed control and/or control of emerged weeds. Refer to the tank mix product labels to confirm that the respective tank mix products are registered for use on the labeled crop. Read and follow tank mix product labels for application instructions, use restrictions and precautions, and rotational cropping guidance.

Compatibility Test for Mix Components

Before mixing components, always perform a compatibility jar test.

1. For 20 gallons per acre spray volume, use 3.3 cups (800 mL) of water. For other spray volumes, adjust rates accordingly. Only use water from the intended source at the source temperature.
2. Add components in the sequence indicated in the **Mixing Order** section using 2 teaspoons for each pound or 1 teaspoon for each pint of labeled use rate per acre.
3. Always cap the jar and invert 10 cycles between component additions.
4. When the components have all been added to the jar, let the solution stand for 15 minutes.
5. Evaluate the solution for uniformity and stability. The spray solution must not have free oil on the surface, or fine particles that precipitate to the bottom, or thick (clabbered) texture. If the spray solution is not compatible, repeat the compatibility test with the addition of a suitable compatibility agent. If the solution is then compatible, use the compatibility agent as directed on its label. If the solution is still incompatible, **DO NOT** mix the ingredients in the same tank.

Mixing Order

Maintain constant agitation throughout mixing and application until spraying is completed.

1. **Water** - Fill tank 1/2 to 3/4 full with clean water and start agitation.
2. **Inductor** - If an inductor is used, rinse it thoroughly after each component has been added.
3. **Products in PVA bags** - Place any product contained in water-soluble PVA bags into the mixing tank. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
4. **Water-soluble additives** (including dry and liquid fertilizers AMS or UAN)
5. **Water-dispersible products** (dry flowables, wettable powders, suspension concentrates, or suspo-emulsions - Add **Surtain** at this point in the mixing process)
6. **Water-soluble products** (including certain glyphosate formulated products)
7. **Emulsifiable concentrates** (including MSO adjuvants)
8. **Remaining quantity of water**

If the spray mixture is allowed to settle for any period of time, thorough agitation is essential to resuspend spray mixture before spraying is resumed. Continue agitation while spraying.

Use Restrictions

- **Maximum use rate** - Refer to **Crop-specific Information** section for the maximum application use rates of **Surtain** in each crop.
- If additional saflufenacil or pyroxasulfone are applied from other product sources, refer to the **Crop-specific Restrictions** section for each crop use for the maximum cumulative amount per year for each active ingredient.
- **DO NOT** contaminate water used for irrigation or domestic purposes.
- **DO NOT** apply **Surtain** through any type of irrigation system (e.g. chemigation).
- **Surtain is not for sale, distribution, or use in Nassau and Suffolk counties in New York State.**

Crop Rotation Intervals

- Use **Table 4** to determine the proper interval between **Surtain** application and the planting of rotational crops. Determine the rotational crop interval for tank mix products and use the most restrictive interval of all products applied.

Table 4. Rotational Crop Planting Intervals for Surtain™ herbicide

	Surtain Use Rate (fl ozs/A)				
	9.2	11.0	14.0	17.0	> 17.0 to 27.0
	Rotational Crop Interval (months after application) ¹				
Alfalfa	10	10	10	10	10
Beans (edible)	11	11	11	11	11
Canola (rapeseed)	12	12	12	12	15
Chickpea	1	1	2	4	6
Corn, field	0	0	0	0	0
Corn, pop and sweet	1	2	2	3	4
Cotton	3	4	4	6	9
Fruit and nut trees	18	18	18	18	24
Grass (forage, seed) establishment	18	18	18	18	18
Lentil	4	4	4	4	6
Peas (dry field)	4	4	4	4	6
Peas (edible)	9	9	9	9	11
Peanut	5	6	7	8	9
Potato	5	6	7	8	9
Rice	10	10	12	18	24
Small grains² (other than wheat)	11	11	11	11	18
Sorghum (grain)	6	6	6	10	12
Soybean	1	2	3	4	6
Sugarbeet	12	12	15	15	15
Sugarcane	4	5	6	7	9
Sunflower	5	5	6	7	9
Wheat	1	1	1	4	6
Cover crops (winter, spring)³	4	4	4	4	6
Other crops	18	18	18	18	18

¹ **DO NOT** include time when the soil is frozen.

² Small grains (barley, oats, pearl millet, proso millet, rye, triticale)

³ Cover crops (winter, spring) may be planted after application of **Surtain**, either inter-seeded into the current crop before harvest or after harvest of the current crop. Depending on the sensitivity of the sown cover crop to **Surtain**, stand establishment may be reduced. If cover crops are sown for conservation purposes less than 4 months after **Surtain** application, **DO NOT** harvest as a food or feed crop, and **DO NOT** allow livestock to graze cover crops.

Emergency Replanting Intervals

Field corn (according to application rates in **Crop-specific Information**) may be replanted immediately after crop failure (because of environmental factors, including drought, frost, hail, etc.).

Crop-specific Information

Read product information, mixing, application, weeds controlled, and adjuvant instructions in preceding sections of the label.

Field Corn (grain, seed, silage)

Surtain™ herbicide may be applied preplant surface, preplant incorporated, preemergence, or early post-emergence to corn for residual preemergence control of listed weeds (**Table 1**). Corn in this label refers to field corn (grown for grain, seed, or silage). Before applying **Surtain** to seed corn, verify the selectivity of **Surtain** on your inbred line or hybrid with your local seed company (supplier) to help avoid potential injury to sensitive inbreds or hybrids.

Application Rate

Use **Surtain** as a part of a weed control program in field corn either in combination or sequentially with other herbicides for a broader spectrum of weed control.

Apply **Surtain** in field corn at the residual rates provided in **Table 5**.

Table 5. Residual Rates of Surtain in Field Corn

Application Timing	Use Rate ¹ by Soil Texture ² (fl ozs/A)		
	Coarse	Medium	Fine
Preplant Surface	9.2 to 11.0	11.0 to 14.0	11.0 to 17.0
Preplant Incorporated			
Preemergence			
Early Postemergence			11.0 to 14.0

¹ Application rates in **Table 5** eliminate early season broadleaf weed interference until cultivation or a labeled postemergence herbicide is applied.

² Refer to **Table 2** for definition of soil texture groups.

Application Timing

Surtain may be applied in a single application or in sequential applications.

Early Preplant Surface Application (within 15 to 30 days of planting)

Use application rates in **Table 5** when making early preplant surface applications, using the highest application rate for a given soil texture. Early preplant surface applications are not advised on coarse soils, or in areas where average annual rainfall (or rainfall plus irrigation) typically exceeds 40 inches.

Early preplant surface applications may be applied as part of a split application program where applications are made as part of the application timings described in this label. However, the cumulative total of sequential application rates must not exceed the maximum labeled rate for a given soil texture.

Preplant Surface and Preplant Incorporated Application (within 14 days of planting)

Apply **Surtain** at use rates specified in **Table 5** as a broadcast spray to the soil surface or incorporated before planting on all soil types.

Preemergence Surface Application

Apply **Surtain** at use rates specified in **Table 5** as a broadcast spray to the soil surface after planting and before crop emergence.

Early Postemergence Application

Apply **Surtain** at use rates specified in **Table 5** as a broadcast spray to field corn at spiking up to the V3 stage (visible third leaf collar).

Sequential Application

If a sequential application program of **Surtain** is used (e.g. preplant followed by preemergence application, or preplant or preemergence followed by an early postemergence application), the maximum combined rate of **Surtain** that may be applied in field corn per year is 27.0 fl ozs/A.

Crop-specific Restrictions

- **DO NOT** apply **Surtain** to popcorn or sweet corn.
- **DO NOT** apply more than 17.0 fl ozs/A of **Surtain** (0.083 lb ai/A of saflufenacil, 0.133 lb ai/A pyroxasulfone) in a single application.
- **DO NOT** apply more than a maximum cumulative amount of 27.0 fl ozs/A of **Surtain** (0.132 lb ai/A of saflufenacil, 0.211 lb ai/A pyroxasulfone) from sequential applications in field corn per year.
- **DO NOT** apply **Surtain** where an at-planting application of an organophosphate or carbamate insecticide(s) is planned and/or has occurred because severe injury may result. **Surtain** may be applied with all other classes of at-planting insecticides including neonicotinoids and pyrethroids.

EXCEPTION: Surtain™ herbicide may be applied when **Aztec® 2.1% Granular Insecticide**, **AZTEC® 4.67 G granular insecticide**, or **SmartChoice® 5G granular insecticide** is applied at planting as a band, T-band, or in furrow.

- Maximum number of applications per year: 2
- Separate sequential applications by at least 14 days.
- If additional saflufenacil is applied from other product sources, **DO NOT** apply more than the following maximum cumulative amount of saflufenacil per year in corn: 0.134 lb ai/A on all soils.
- If additional pyroxasulfone is applied from other product sources, **DO NOT** apply more than the following maximum cumulative amounts of pyroxasulfone per year in corn: 0.146 lb ai/A on coarse soils, 0.266 lb ai/A on medium soils, and 0.266 lb ai/A on fine soils.
- There is no required (preharvest) interval between a pre-plant surface, preplant incorporated, or preemergence application of **Surtain** and the harvest of field corn. Corn forage and stover may be fed to livestock after harvest.
- There is no required (preharvest or grazing) interval between an early postemergence application of **Surtain** made to field corn at V4 stage or earlier and the harvest of field corn. Corn forage and stover may be fed to livestock after harvest.

Crop-specific Precautions

- When applied before crop emergence, **Surtain** application may result in delayed corn emergence and stunting under certain environmental conditions including cool temperatures, excessive rainfall/irrigation, and/or persistent wet soil conditions occurring after application.
- Ensure the corn seed row is closed. Soil conditions that cause poor seed furrow closure and coverage may result in delayed corn emergence or stunting.
- Application of this product with other postemergence or residual herbicides may increase the potential for crop injury after corn has emerged.
- Early postemergence applications of **Surtain** may result in crop response symptoms consisting of foliar spotting on emerged leaves. Use of an adjuvant can increase the level of foliar spotting on emerged leaves. Refer to **Additives** section for more details on adjuvants.

- Tank mixing of **Surtain** with Glufosinate formulations for early postemergence applications is **NOT** advised as corn injury could result.
- Early postemergence applications of **Surtain** should be made with water as the carrier. Sprayable fluid fertilizer as an herbicide carrier for early postemergence applications in corn can typically cause corn injury up to and including tissue burn (necrosis). Sprayable fluid fertilizer as a carrier is **NOT** advised for use with **Surtain** after crop emergence unless typical fertilizer burn symptoms are acceptable.
- Make applications of **Surtain** promptly after preparing the spray mixture. Avoid use of spray solutions of **Surtain** which have been allowed to stand or have been stored in application equipment or the mix tank for an extended period of time as corn injury could result.

Fallow and Postharvest Croplands

Surtain may be used for residual control of weeds at any time of the year during the fallow period following crop harvest and before the following crop is planted.

Application Rate and Timing

Surtain may be applied in a single application or in sequential applications.

For residual weed control, apply **Surtain** at 9.2 to 17.0 fl ozs/A.

Specific rotational crop intervals must be observed between an application of **Surtain** and planting of the following crop (see **Crop Rotation Intervals** section for crop rotation restrictions).

Crop-specific Restrictions

- **DO NOT** apply more than 17.0 fl ozs/A of **Surtain** (0.083 lb ai/A of saflufenacil, 0.133 lb ai/A pyroxasulfone) in a single application.
- **DO NOT** apply more than 27.0 fl ozs/A of **Surtain** (0.132 lb ai/A of saflufenacil, 0.211 lb ai/A pyroxasulfone) as a maximum cumulative amount from sequential applications in fallow and post harvest croplands per year.
- Maximum number of applications per year: 3
- Separate sequential applications by at least 30 days.

Conditions of Sale and Warranty

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

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TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709


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