

 <p>U.S. ENVIRONMENTAL PROTECTION AGENCY Office of Pesticide Programs Registration Division (7505P) 1200 Pennsylvania Ave., NW Washington, D.C. 20460</p>	EPA Reg. Number: 7969-281	Date of Issuance: 16 MAR 2009
	Term of Issuance: Conditional	
	Name of Pesticide Product: Topramezone 2.8 SC specialty products herbicide	
Name and Address of Registrant (include ZIP Code): BASF Corporation P.O. Box 13528 Research Triangle Park, NC 27709-3528		
<p>Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.</p>		
<p>On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act. Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.</p> <p>This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(B) provided that you:</p> <ol style="list-style-type: none"> 1. Submit and/or cite all data required for registration/reregistration of your product when the Agency requires all registrants of similar products to submit data. 2. Submit by April 1, 2013 the following Studies conducted on accordance with the Good Laboratory Practice Standards, 40 CFR Part 160 and appropriate test guidelines as referenced in EPA's Data Requirements for Registration Regulations, 40 CFR Part 158: 		
Signature of Approving Official: Joanne I. Miller Product Manager 23 Herbicide Branch Registration Division (7505P)	Date: 16 MAR 2009	

a. Guideline immunotoxicity study (OPPTS 780.7800). An immunotoxicity study is now a data requirement in the 40 CFR revised Part 158.

b. Avian Reproduction 71-4(b) study tested at lower concentrations to establish a NOAEC level.

c. Aquatic Invertebrate Life-Cycle 72-4(b) data on daphnia total lengths.

d. Aquatic Plant Growth (Tier II) 123-2 study.

e. Seedling Emergence (Tier II) (123-1(a)) study on degradates of topamezone.

f. Vegetative Vigor (Tier II) 123-1(B) on this end use product with both the adjuvant and surfactant.

g. Submit the good management practices program BASF Corporation intends to use to mitigate risk to endangered and non-target aquatic and terrestrial plants.

3. Make the following label changes listed below before you release the product for shipment:

a. Add the phrase, "EPA Reg. No. 7969-281".

b. On the front panel delete "and for the establishment and maintenance of wildlife openings". There are no directions for use for application to this site in the proposed labeling and this site does not appear to be applicable to any of the listed non-crop sites.

c. On the front panel delete "including areas within these sites that may be grazed or cut for hay". On page 7 delete "Do not graze or feed treated grass forage, silage or fodder for at least 45 days after an application". Appropriate tolerances have not been established for Topamezone in grasses.

d. Add "Do not apply to areas that can be grazed or cut for hay." Refer to the enclosed copies of the scientific reviews.

e. Please note that 40 CFR 156.10(i)(1)(ii) states that only the Directions For Use may appear on printed or graphic matter which accompanies the pesticide. The referral statement "For additional Precautionary Statements see inside booklet" "See Inside For First Aid, Precautionary Statements..." implies that the precautionary statements are inside a booklet. If all of the Precautionary Statements and First Aid Statements cannot appear on the outside container label due to size constraints, you should formally submit a request for a size exemption from the regulations.

f. In the Hazards to Humans section delete "Wash thoroughly with soap and handling". This duplicates required text in the PPE Section

g. In the PPE section add "Goggles, face shield, or safety glasses."

h. In the Environmental Hazards section delete the paragraph "Do not discharge effluent...or the Regional Office of the EPA" This text is required for manufacturing use products not end use products like this one. Add the following text to this section:

This product is toxic to aquatic and terrestrial plants. Minimize exposure to non target plants and do not apply when weather conditions favor drift from target areas.

i. Add a Non-Agricultural Use Requirements box below the Agricultural Use Requirements box.

The following statements must be contained in the Non-Agricultural Use Requirements box:

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

In addition, place into the Non-Agricultural Use Requirements box all the entry restrictions, notification requirements, or other statements and instructions (except personal protective equipment requirements) that apply to the non-WPS uses on the label:

Do not enter or allow people (or pets) to enter the treated area until sprays have dried. 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.

j. On page 9 revise the text to delete the term "safe". Safety claims are prohibited on pesticide labeling.

4. Submit the results of one year storage stability and corrosion characteristic studies to EPA within one year of this date of registration. Submit a hard copy and an electronic copy also.

5. Submit one (1) copy of your final printed labeling before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

A stamped copy of the label is enclosed for your records.

Topramezone 2.8 SC

specialty products herbicide

For preemergence and postemergence weed control in Christmas tree, conifer, and hardwood plantations; field-grown ornamental production; and noncropland areas such as railroad, utility, highway, and pipeline rights-of-way; highway guardrails, delineators, and sign posts; utility substations, petroleum tank farms, pumping installations, farmyards and around farm buildings; fence rows, storage areas, airports, nonirrigation ditchbanks, and for the establishment and maintenance of wildlife openings, including areas within these sites that may be grazed or cut for hay.

Active Ingredient:

topramezone: [3-(4,5-dihydro-isoxazolyl)-2-methyl-4-(methylsulfonyl)phenyl](5-hydroxy-1-methyl-1H-pyrazol-4-yl)methanone	29.7%
Other Ingredients:	70.3%
Total:	100.0%

(1 gallon contains 2.8 pounds of topramezone free acid)

EPA Reg No. 7969-xxx

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.)

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

See inside for **First Aid, Precautionary Statements, Directions For Use, and Conditions of Sale and Warranty.**

Net Contents:

**ACCEPTED
with COMMENTS
In EPA Letter Dated:
16 MAR 2009**
Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No.

7969-281

FIRST AID	
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 first 5 minutes; then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have a person sip a glass of water if able to swallow. • DO NOT induce vomiting unless told to do so by a poison control center or doctor. • DO NOT give anything by mouth to an unconscious person.
If on skin or clothing	<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.
HOT LINE NUMBER	
<p>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).</p>	

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Harmful if swallowed or absorbed through the skin. Wash thoroughly with soap and water after handling.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves **Category A**
- Shoes plus socks

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** reuse them. Follow 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.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 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 CONTROLS STATEMENT

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 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

ENVIRONMENTAL HAZARDS

DO NOT apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater. **DO NOT** apply this product through any type of irrigation system.

DO NOT discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. **DO NOT** discharge effluent containing this product into sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

Product must be used in a manner that will prevent back siphoning in wells, spills or improper disposal of excess pesticide, spray mixtures or rinsate.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. **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.

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**.

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, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves **Category A**
- Shoes plus socks

All applicable directions, restrictions, precautions and **Conditions of Sale and Warranty** are to be followed. This labeling must be in the user's possession during application.

STORAGE AND DISPOSAL

DO NOT contaminate water, food or feed by storage or disposal.

Pesticide Storage. Store product in original container only. Store product in a cool, dry place. **DO NOT** store this product under wet conditions. If this product has been stored where freezing temperatures have occurred, agitate or mix contents of container well before use. Avoid cross-contamination with other pesticides.

Pesticide Disposal. Wastes resulting from the use of this product may 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 Disposal

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 ≤ 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. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

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. **DO NOT** reuse the container for any other purpose. Prior to refilling, inspect carefully for damage such as 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.

In Case of Emergency

In case of large-scale spillage regarding 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)
- BASF Corporation 1-800-832-HELP (4357)

GENERAL INFORMATION

Topramezone 2.8 SC specialty products herbicide is a broad-spectrum preemergence and systemic postemergence herbicide for control or growth suppression of broadleaf and grass weeds in noncropland areas. When applied as directed, **Topramezone 2.8 SC** will control or suppress the broadleaf weeds listed in **Table 1** and the grass weeds listed in **Table 2**. **Topramezone 2.8 SC** may be used for the control of these weeds in bareground programs; Christmas tree, conifer, and hardwood plantations; field ornamental production and selective weeding in areas such as utility, highway, and pipeline rights-of-way, etc. Postemergence applications of **Topramezone 2.8 SC** must include spray additives (see **ADDITIVES** section and **MIXING ORDER** section of this label for details).

Mode of Action

Topramezone 2.8 SC is absorbed by leaves, roots, and shoots and translocated to the growing points of sensitive weeds to provide control of emerged weeds.

Topramezone 2.8 SC controls weeds by inhibiting carotenoid biosynthesis (HPPD inhibitor). Temperatures and moisture conditions for active plant growth are important for optimum **Topramezone 2.8 SC** activity.

Topramezone 2.8 SC applications to weeds during periods of stress conditions, such as cold temperatures and/or drought, may result in reduced performance.

Herbicide Resistance

Repeated applications of a single mode of action in a weed management plan increase the probability of selecting for naturally occurring biotypes* with less susceptibility to herbicides using that mode of action. Therefore,

Topramezone 2.8 SC should be tank mixed with a herbicide having a different mode of action and/or be used in a rotation with herbicides having a different mode of action.

*A weed biotype is a naturally occurring individual within a given species that has a slightly different but distinct genetic makeup from other plants.

Table 1. BROADLEAF WEEDS CONTROLLED
(apply at 1 to 4 fl ozs/A)

Broadleaf Weeds	Maximum Size (inches) ¹
Amaranth, Palmer	6
Amaranth, Powell	6
Burcucumber	6
Carpetweed	6
Chickweed, common	4
Cocklebur, common	8
Dandelion	6
Galinsoga, hairy	6
Horseweed (Marestail)	6
Jimsonweed	6
Kochia	6
Lambsquarters, common	6
Mallow, common	3
Mallow, Venice	3 ²
Morningglory sp.	6 ²
Mustard sp.	6
Nightshade, black	6
Nightshade, Eastern black	6
Nightshade, hairy	6
Pigweed, prostrate	6
Pigweed, redroot	6
Pigweed, smooth	6
Pigweed, tumble	4
Prickly lettuce	4
Ragweed, common	6
Ragweed, giant	8
Shepherdspurse	4
Sida, prickly	3
Smartweed, ladythumb	3
Smartweed, Pennsylvania	3
Sunflower, volunteer	8
Sunflower, wild (common)	8
Thistle, Canada	6 ²
Thistle, Russian	4
Velvetleaf	8
Waterhemp, common	6
Waterhemp, tall	6
White clover	3

¹ For best control, apply before weeds reach maximum size listed.

² Growth suppression only.

Table 2. GRASSES CONTROLLED
(apply at 1 to 4 fl ozs/A)

Grass Weeds	Maximum Leaf Stage ¹	Maximum Size (inches) ¹
Barnyardgrass	4	4
Crabgrass, large	4	3
Crabgrass, smooth	4	3
Cupgrass, woolly	3	3
Dallisgrass ²	3	3
Foxtail, giant	4	4
Foxtail, green	3	3
Foxtail, yellow	3	3
Goosegrass	4	3
Johnsongrass, seedling	3	4
Millet, wild proso	3	3
Panicum, fall	3	3
Shattercane	3	4
Signalgrass, broadleaf	3	3

¹ For best control, apply before weeds reach maximum size listed.

² Growth suppression only.

APPLICATION METHODS AND EQUIPMENT

Topramezone 2.8 SC specialty products herbicide

may be applied by either ground or air. Use adequate spray volume to provide accurate and uniform distribution of spray droplets over the treated area and to avoid spray drift to nontarget areas. Equipment should be adjusted to maintain continuous agitation during spraying with good mechanical or bypass agitation. Avoid overlaps that will increase rates above the maximum use rates specified in this label.

DO NOT exceed a total of 4 fluid ounces per treated acre per season.

The applicator is responsible for any loss or damage that results from spraying **Topramezone 2.8 SC** in a manner other than that specified in this label. In addition, applicator must follow all applicable state and local regulations and ordinances in regard to spraying.

Coverage

For postemergence applications, weeds must be thoroughly covered with spray. Dense leaf canopies shelter small weeds and can prevent adequate spray coverage.

For optimal weed control, apply **Topramezone 2.8 SC** before weeds exceed labeled height.

Postemergence applications of **Topramezone 2.8 SC** should be applied a minimum of 1 hour before rainfall and require the use of spray additives (see **ADDITIVES** section).

Spray Drift

DO NOT apply when weather conditions may cause drift to adjacent crops and vegetation; injury may result if this occurs. To avoid spray drift from treated areas, **DO NOT** make applications when wind speed exceeds 10 mph or during periods of temperature inversions. Use of larger droplet sizes will reduce spray drift. Agriculturally approved drift-reducing additives may also be used.

Ground Application (Broadcast)

Uniformly apply with properly calibrated ground equipment in 10 or more gallons of water per acre. Use higher water volumes treating larger weeds and/or high-density weed infestations.

Ground Application (Banding)

Uniformly apply with properly calibrated ground equipment in 10 or more gallons of water per acre. Use higher water volumes treating larger weeds and/or high-density weed infestations.

For banded applications, use the following formulas to calculate the banded herbicide rate and water volume per acre:

$$\frac{\text{Bandwidth in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Banded herbicide rate per acre}$$

$$\frac{\text{Bandwidth in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Banded water volume per acre}$$

Spot Treatment

To prepare the spray solutions, thoroughly mix in water 0.25 to 0.5% (0.32 to 0.64 oz/gallon water)

Topramezone 2.8 SC plus an adjuvant (see **ADDITIVES** section). A methylated seed oil at 1% by spray volume is the suggested spray adjuvant. When making spot applications, spray coverage should be sufficient to moisten the leaves of the target vegetation, but not to the point of runoff. See section on desired species.

Aerial Application

Uniformly apply with properly calibrated aerial equipment in 2 or more gallons of water per acre. Adequate spray volume must be used to provide accurate and uniform distribution of spray particles over the treated area and to avoid drift of spray particles to nontarget areas. To avoid injury to sensitive crops from drift, aerial applicators must adhere to the following:

Special Aerial Use Directions and Precautions

Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.

Nozzles must be pointed toward the rear of the aircraft. The downward angle of the nozzle should not be greater than 20 degrees.

The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.

DO NOT apply when wind speed is greater than 10 mph.

Cleaning Spray Equipment

To avoid injury to sensitive crops, drain and clean application equipment thoroughly using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions; then triple rinse the equipment before and after applying this product.

MANAGING OFF-TARGET MOVEMENT

The following information is provided as general guidance for managing off-target movement. Specific use recommendations for **Topramezone 2.8 SC specialty products herbicide** may differ depending on the application technique used and the vegetation management objective.

Spray Drift

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or nontarget crops) is minimal.

DO NOT apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

To minimize spray drift, the applicator should be familiar with and take into account the following drift reduction advisory information. Additional information may be available from state enforcement agencies or the Cooperative Extension on the application of this product.

The best drift management strategy and most effective way to reduce drift potential is to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions (see **Wind; Temperature and Humidity; and Temperature Inversions**).

Controlling Droplet Size

Volume. Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

Pressure. DO NOT exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates

are needed, use higher flow rate nozzles instead of increasing pressure.

Number of Nozzles. Use the minimum number of nozzles that provide uniform coverage.

Nozzle Orientation. Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

Nozzle Type. Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid-stream nozzles oriented straight back produce the largest droplets and the lowest drift. **DO NOT** use nozzles producing a mist droplet spray.

Application Height

Making applications at the lowest possible height (aircraft, ground-driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

Wind

Drift potential is lowest between wind speeds of 3 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential.

NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud that can move in unpredictable directions due to the light, variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light-to-no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified 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 Erosion

Avoid treating powdery, dry, or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

ADDITIVES

Postemergence applications of **Topramezone 2.8 SC specialty products herbicide** require the addition of an adjuvant to achieve optimum weed control.

Always use a methylated seed oil (MSO) or a petroleum-based or vegetable seed-based oil concentrate (COC) with **Topramezone 2.8 SC**. For best performance across a wide range of environmental conditions, including when weeds are under moisture and/or temperature stress, use of an MSO adjuvant is suggested. Apply these oil-based adjuvant concentrates at the rate of 1.0 to 1.5 gallons per 100 gallons of water (1.0% to 1.5% volume-to-volume [v/v]). Use the higher rate when making an application during periods of hot, dry weather. A nitrogen-based surfactant blend may be used as an alternative or additive to COC or MSO.

Agriculturally approved drift-reducing additives may be used in applications with **Topramezone 2.8 SC**.

MIXING ORDER

Use only water as a carrier.

WATER

1. Fill the spray tank 1/2 to 3/4 full with clean water.
2. Add the required amount of **Topramezone 2.8 SC** to the spray tank while agitating.
3. After the **Topramezone 2.8 SC** has visibly dispersed, add spray additives and fill the remainder of the tank with water.

TANK MIX PREPARATION

When tank mixing **Topramezone 2.8 SC** with registered herbicides, add the other herbicides and other components in the following order while agitating:

1. Fill spray tank 1/2 to 3/4 full with clean water.
2. Add soluble-packet products and thoroughly mix.
3. Add **Topramezone 2.8 SC** and thoroughly mix.
4. Add WP (wetable powder), DG (dispersible granule), DF (dry flowable), or LF (liquid flowable) formulations.
5. Add EC (emulsifiable concentrate) products.
6. Add spray adjuvants to the spray tank.
7. While agitating, fill the remainder of the tank with water.

GENERAL TANK MIX INFORMATION

Topramezone 2.8 SC may be used sequentially or tank mixed with other herbicides as part of a complete weed control program. **Topramezone 2.8 SC** may be tank mixed only in states where the sequential or tank mix product and application site are registered. Refer to **NONCROP USE DIRECTIONS** for more details and for specific tank mix restrictions. Read and follow the applicable restrictions and limitations and **DIRECTIONS FOR USE** on all products included in any tank mix. **The most restrictive labeling applies to tank mixes.**

GENERAL RESTRICTIONS AND LIMITATIONS

- No more than 4 fl ozs per acre (0.089 lbs ai/acre) of **Topramezone 2.8 SC** may be applied during the growing season.
- **DO NOT** graze or feed treated grass forage, silage, or fodder for at least 45 days after an application of **Topramezone 2.8 SC**.

NONCROP USE DIRECTIONS

BAREGROUND

Topramezone 2.8 SC can be used as part of a program for nonselective vegetation control to maintain bareground in noncrop areas that must be kept weed free such as railroad, utility, highway, and pipeline rights-of-way; highway guardrails, delineators, and sign posts; utility substations, petroleum tank farms, pumping installations, fence rows, storage areas, farmyards and around farm buildings and nonirrigation ditchbanks.

Topramezone 2.8 SC offers residual and postemergence control of susceptible annual broadleaf and grass weeds. Adequate moisture is necessary to activate **Topramezone 2.8 SC**. Dry weather following application may reduce effectiveness. The actual length of residual control is dependent on factors such as soil type, organic matter, weed pressure and rainfall amounts after application.

Preemergence Applications

Apply **Topramezone 2.8 SC** at 4 fl ozs per acre prior to weed emergence to control susceptible weeds listed in **Table 1** and **Table 2**. For best performance, tank mix **Topramezone 2.8 SC** with other residual herbicides such as **Arsenal® PowerLine™ herbicide**, **Pendulum® AquaCap™ herbicide**, **Plateau® herbicide**, **Journey® herbicide**, or diuron.

Early Postemergence Applications

For areas where weed emergence has already occurred, apply **Topramezone 2.8 SC** at 4 fl ozs per acre prior to weeds reaching the maximum size listed in **Table 1** and **Table 2**. Postemergence applications of **Topramezone 2.8 SC** require the use of an adjuvant to achieve optimum weed control (see **ADDITIVES** section).

To increase postemergence spectrum, **Topramezone 2.8 SC specialty products herbicide** can be tank mixed with **Roundup®** (glyphosate). For best residual effects, tank mix with **Arsenal® PowerLine™ herbicide**, **Pendulum® AquaCap™ herbicide**, **Plateau® herbicide**, **Journey® herbicide**, or diuron (refer to respective labels for appropriate use rates).

CHRISTMAS TREE, CONIFER AND HARDWOOD TREE PLANTINGS AND PLANTATIONS

Topramezone 2.8 SC may be used for selective weed control in Christmas tree plantations and conifer and hardwood plantations. See the following sections for more information on specific uses.

Christmas Tree Plantations

Topramezone 2.8 SC may be used as a preemergence or directed postemergence application in Christmas tree plantations to control broadleaf and grass weeds listed in **Table 1** and **Table 2**. Apply **Topramezone 2.8 SC** as a directed spray application either as a uniform broadcast application or as a uniform banded application directed at the base of the trees. If targeting emerged weeds, include spray additives (see **ADDITIVES** section). Spray contact of the needles or buds either directly via improper nozzle orientation or indirectly via physical drift may result in crop injury. **Topramezone 2.8 SC** may be applied in a single application at a maximum rate of 4 fl ozs/A or in sequential applications up to a maximum seasonal total of 4 fl ozs/A.

DO NOT make over-the-top applications to Christmas trees or injury may occur.

Conifer and Hardwood Plantations

Apply **Topramezone 2.8 SC** plus the recommended adjuvant (see **ADDITIVES** section for details) for the control of undesirable plants during site preparation operations conducted prior to the planting and establishment of conifer and hardwood plantations and in the year following transplanting.

Site Preparation Application

Topramezone 2.8 SC may be applied as either a broadcast application or spot treatment during preplant site preparation for the control of undesirable herbaceous broadleaf weed species in plantations at a rate of 4 fl ozs/A in combination with **Chopper® Gen2™ herbicide** at the specified site preparation rate (see **Chopper Gen2** label). Refer to **Table 1** and **Table 2** for specific weed species controlled.

Herbaceous Weed Control

Topramezone 2.8 SC may be used for selective weeding in conifer and hardwood plantations at a rate of 4 fl ozs/A. Apply 4 fl ozs/A of **Topramezone 2.8 SC** as a broadcast treatment, banded over tree rows, or as a directed spray for release of young trees from herbaceous weeds (see species controlled in **Table 1** and **Table 2**) in the year following transplanting. For conifers, tank mix with the

herbaceous weed control rate of **Arsenal® herbicide Applicators Concentrate** (see **Arsenal herbicide Applicators Concentrate** label). To prevent the possibility of crop tree injury, **DO NOT** apply **Topramezone 2.8 SC** when trees are under stress from drought, diseases, animal or winter injury, planting shock, or other stresses reducing vigor.

FIELD-GROWN ORNAMENTALS

Topramezone 2.8 SC may be used to provide control of labeled species in field-grown ornamental production.

Topramezone 2.8 SC sprays are safe as directed applications to established plants listed in **Table 3** of this label. However, not all varieties or strains of the plant species listed have been tested. Refer to **INSTRUCTIONS AND RESTRICTIONS IN PRODUCTION ORNAMENTALS**

section in this label prior to any application of **Topramezone 2.8 SC**. Unintentional consequences such as crop injury may result because of certain environmental or growing conditions, manner of use, or application.

Therefore, before treating a large number of plants, spray a few plants and observe for plant damage prior to full-scale application. **Topramezone 2.8 SC** may be applied as a preemergence or directed postemergence application to control weeds listed in **Table 1** and **Table 2**. For improved preemergence spectrum, **Topramezone 2.8 SC** may be tank mixed with **Pendulum AquaCap** (see respective label for specific rate information). Postemergence applications of **Topramezone 2.8 SC** must include spray additives (see **ADDITIVES** section). **Topramezone 2.8 SC** may be used in conjunction with herbicides registered for directed postemergence use in ornamentals. Consult the labels of those herbicides for suggested treatments, rates to be used, and precautions or restrictions for use in these areas.

The preemergence efficacy of **Topramezone 2.8 SC** will improve if the application is followed by 1/2 inch of rainfall or its equivalent in sprinkler irrigation. If **Topramezone 2.8 SC** is not activated by rainfall or irrigation within 30 days, erratic weed control may result.

Applied according to label directions and under normal growing conditions, **Topramezone 2.8 SC** solo or tank mix combinations will not cause crop injury. Overapplication can result in crop stand loss, crop injury, or soil residues. Uneven application can decrease weed control or cause crop injury.

Diseases, cold weather, excessive moisture, high soil pH, high soil salt concentration, or drought can weaken plants and increase the possibility of plant damage from **Topramezone 2.8 SC**.

INSTRUCTIONS AND RESTRICTIONS¹ IN PRODUCTION ORNAMENTALS (Directed applications only)

Site	Application Instructions and Restrictions
Newly transplanted field-grown nursery stock ^{2,3}	<ol style="list-style-type: none"> 1. Use shielded sprayer until plantings have been established for 1 year or more in the field. 2. DO NOT apply until transplants have been watered and soil has been thoroughly settled around transplants. Care must be taken to ensure there are no cracks in the soil where Topramezone 2.8 SC specialty products herbicide could come into contact with the roots. 3. DO NOT apply during bud swell, bud break or at time of first flush of new growth. 4. Direct sprays away from graphed or budded tissue on transplants at all times.
Established container or field-grown nursery stock ^{2,3}	<ol style="list-style-type: none"> 1. DO NOT apply during bud swell, bud break or at time of first flush of new growth. 2. Apply as a directed spray. 3. If newly budded or graphed rootstock, make an application using a shielded sprayer. 4. Care must be taken to ensure there are no cracks in the soil where Topramezone 2.8 SC could come into contact with the roots.
Greenhouses, shadehouses or other enclosed structures	DO NOT APPLY in greenhouses, shadehouses or other enclosed structures.

¹ Plant only those desirable plant species listed on this label into soil treated the previous season with **Topramezone 2.8 SC** or injury may occur.

² Before treating a large number of plants, spray a few plants and observe for 1 to 2 months for plant damage prior to full-scale application.

³ **DO NOT** treat plants grown for food or feed. **DO NOT** use treated plants for food or feed.

Table 3. TOLERANT ORNAMENTAL SPECIES

Topramezone 2.8 SC sprays are safe as directed applications to the following list of established plants. Refer to **INSTRUCTIONS AND RESTRICTIONS IN PRODUCTION ORNAMENTALS** prior to application.

TREES

Common Name	Scientific Name
Eucalyptus (Silver-dollar) tree	<i>Eucalyptus cinerea</i>
Fir, Balsam	<i>Abies balsamiae</i>
Fir, Douglas	<i>Pseudotsuga menziesii</i>
Fir, Fraser	<i>Abies fraseri</i>
Fir, white	<i>Abies concolor</i>
Pine, Austrian	<i>Pinus nigra</i>
Pine, Italian stone	<i>Pinus pinea</i>
Pine, loblolly	<i>Pinus taeda</i>
Pine, Monterey	<i>Pinus radiata</i>
Pine, red	<i>Pinus resinosa</i>

Table 3. TOLERANT ORNAMENTAL SPECIES (continued)

TREES

Common Name	Scientific Name
Pine, Scotch	<i>Pinus sylvestris</i>
Pine, Virginia	<i>Pinus virginiana</i>
Pine, white	<i>Pinus strobus</i>
Spruce, Colorado blue	<i>Picea pungens</i>
Spruce, dwarf Alberta	<i>Picea glauca 'albertiana'</i>
Spruce, Norway	<i>Picea abies</i>
Spruce, white	<i>Picea glauca</i>

SELECTIVE WEEDING

Topramezone 2.8 SC may be used for selective weed control in unimproved and native cool season grass (such as bluegrass and fescue) and select native warm season grass (such as little and big bluestem) in highway roadsides, utility rights-of-way, railroad crossings, airports, nonirrigation drainage ditches, and other industrial noncropland sites. Refer to **Table 4** for a complete list of tolerant perennial grass species. For best control, apply as an early postemergence application before weeds reach the maximum sizes listed in **Table 1** and **Table 2**. Postemergence applications of **Topramezone 2.8 SC** must include spray additives (see **ADDITIVES** section). For increased residual weed control, use the 4 fl ozs/A rate. Sequential applications may be made up to a maximum seasonal total of 4 fl ozs/A. For improved spectrum, **Topramezone 2.8 SC** may be tank mixed with other registered products such as **Overdrive® herbicide** to broaden the weed control spectrum.

Perennial Grass Tolerance

Topramezone 2.8 SC should be applied during favorable growing conditions for optimum grass tolerance and weed control. Grass under environmental stress is more likely to show injury from any herbicide application. Rarely, plants under these conditions treated with **Topramezone 2.8 SC** may show some transient bleaching of the portion of the leaves intercepting the spray application. These symptoms are temporary and occur infrequently; growth is not affected.

Applications of **Topramezone 2.8 SC** on Bermudagrass will result in bleaching and severe injury. If treating grasses not listed in **Table 4**, it is suggested that applications be made on a small area to test grass response and tolerance.

Table 4. TOLERANT PERENNIAL GRASS SPECIES

Common Name	Scientific Name
Big bluestem	<i>Andropogon gerardii</i>
Centipedegrass	<i>Eremochloa ophiuroides</i>
Chewings fescue	<i>Festuca rubra</i>
Creeping red fescue	<i>Festuca rubra</i>
Hard fescue	<i>Festuca longifolia</i>
Indiangrass	<i>Sorghastrum nutans</i>
Kentucky bluegrass	<i>Poa pratensis</i>
Little bluestem	<i>Schizachyrium scoparium</i>
Perennial ryegrass	<i>Lolium perenne</i>
Tall fescue	<i>Festuca arundinacea</i>
Eastern gamagrass	<i>Tripsacum dactyloides</i>

Pests Listed in this Label	
Common Name	Scientific Name
Amaranth, Palmer	<i>Amaranthus palmeri</i>
Amaranth, Powell	<i>Amaranthus powellii</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Burcucumber	<i>Sicyos angulatus</i>
Carpetweed	<i>Mollugo verticillata</i>
Chickweed, common	<i>Stellaria media</i>
Cocklebur, common	<i>Xanthium strumarium</i>
Crabgrass, large	<i>Digitaria sanguinalis</i>
Crabgrass, smooth	<i>Digitaria ischaemum</i>
Cupgrass, woolly	<i>Eriochloa villosa</i>
Dallisgrass	<i>Paspalum dilatatum</i>
Dandelion	<i>Taraxacum officinale</i>
Foxtail, giant	<i>Setaria faberi</i>
Foxtail, green	<i>Setaria viridis</i>
Foxtail, yellow	<i>Setaria lutescens</i>
Galinsoga, hairy	<i>Galinsoga ciliata</i>
Goosegrass	<i>Eleusine indica</i>
Horseweed (Marestail)	<i>Conyza canadensis</i>
Jimsonweed	<i>Datura stramonium</i>
Johnsongrass	<i>Sorghum halepense</i>
Kochia	<i>Kochia scoparia</i>
Lambsquarters, common	<i>Chenopodium album</i>
Mallow, common	<i>Malva neglecta</i>
Mallow, Venice	<i>Hibiscus trionum</i>
Millet, wild proso	<i>Panicum miliaceum</i>
Morningglory	<i>Ipomoea sp.</i>
Mustard	<i>Brassica sp.</i>
Nightshade, black	<i>Solanum nigrum</i>
Nightshade, Eastern black	<i>Solanum ptycanthum</i>
Nightshade, hairy	<i>Solanum sarrachoides</i>
Panicum, fall	<i>Panicum dichotomiflorum</i>
Pigweed, prostrate	<i>Amaranthus blitoides</i>
Pigweed, redroot	<i>Amaranthus retroflexus</i>
Pigweed, smooth	<i>Amaranthus hybridus</i>
Pigweed, tumble	<i>Amaranthus album</i>
Prickly lettuce	<i>Lactuca scariola</i>
Ragweed, common	<i>Ambrosia artemisiifolia</i>
Ragweed, giant	<i>Ambrosia trifida</i>
Shattercane	<i>Sorghum bicolor</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Sida, prickly	<i>Sida spinosa</i>
Signalgrass, broadleaf	<i>Brachiaria platyphylla</i>
Smartweed, ladysthumb	<i>Polygonum persicaria</i>
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>
Sunflower, volunteer	<i>Helianthus sp.</i>
Sunflower, wild (common)	<i>Helianthus annuus</i>
Thistle, Canada	<i>Cirsium arvense</i>
Thistle, Russian	<i>Salsola iberica</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Waterhemp, common	<i>Amaranthus rudis</i>
Waterhemp, tall	<i>Amaranthus tuberculatus</i>
White clover	<i>Trifolium repens</i>

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.

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