

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF PESTICIDES PROGRAMS  
REGISTRATION DIVISION (WH-567)  
WASHINGTON, D.C. 20460

EPA REGISTRATION NO.

11275-37

DATE OF ISSUANCE

JUN 29 1983

TERM OF ISSUANCE

CONTINUOUS

NAME OF PESTICIDE PRODUCT

SORIAL FLOWABLE HERBICIDE

**NOTICE OF PESTICIDE:**  REGISTRATION  
 REREGISTRATION  
(Under the Federal Insecticide, Fungicide,  
and Rodenticide Act, as amended)

NAME AND ADDRESS OF REGISTRANT (Include ZIP code)

Sandoz, Inc.  
Crop Protection  
160 Camino del Rio South  
San Diego, CA 92108

4-35-71

NOTE: Changes in labeling formula 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 U.S. EPA registration number.

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.

A copy of the labeling accepted in connection with this Registration/Reregistration is returned herewith.

Registration is in no way to be construed as an indorsement or approval of this product by this 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.

- add the phrase "EPA REGISTRATION NO. 11275-37."
- revise the precautionary statements to include "AVOID CONTACT WITH EYES. Wash thoroughly with soap and water after use.".
- on the labeling: "Always use this product in accordance with the label directions."

4. Submit an initial information sheet to describe the nature, contents and use of the product for which the label is being submitted for registration or label revision.

5. Submit an initial information sheet to describe the nature, contents and use of the product for which the label is being submitted for registration or label revision.

ATTACHMENT IS APPLICABLE

SIGNATURE OF APPROVING OFFICIAL

DATE JUN 29 1983

The submitted data are acceptable to support this registration and have been assigned the following accession numbers:

<u>STUDY</u>	<u>ACCESSION</u>
Rat acute oral LD50	249690
Rabbit acute dermal LD50	249692
Rabbit primary eye irritation	249691
Rabbit primary skin irritation	249689

For future submissions, for acute oral and dermal studies, individual necropsy reports for all animals must be submitted. In this particular dermal study, were 10 or 6 animals used?

We are accepting the formula statements submitted September 17 and March 4, 1983 for this product.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 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.

Richard F. Mountfort *RFM*  
Product Manager (23)  
Fungicide-Herbicide Branch  
Registration Division (TS-767)

Enclosure



# FLOWABLE HERBICIDE

FOR CONTROL OF GRASS AND BROADLEAF WEEDS IN COTTON AND SOYBEANS

### ACTIVE INGREDIENT:

norflurazon [4-chloro-5-(methylamino)-2-(alpha, alpha, alpha-trifluoro-m-tolyl)-3(2H)-pyridazinone]...	56.7%
INERT INGREDIENTS:.....	43.3%
	<u>100.0%</u>

(1 gallon contains 6 lbs. of norflurazon)

KEEP OUT OF REACH OF CHILDREN

WEEDS CONTROLLED

## CAUTION

PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

If in eyes: Flush with plenty of water. Get medical attention if irritation persists.

### ENVIRONMENTAL HAZARDS

Do not apply directly to any body of water. Do not apply when weather conditions favor runoff or drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes.

**NOTICE:** Sandoz, Inc. makes no warranty, expressed or implied, including the warranties of merchantability and/or fitness for any particular purpose concerning this material, except those which are contained on this label.

### LOCATION OF USE

For use in cotton and soybeans in the states of Alabama, Arkansas, Illinois, North Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

NET WT. Gal.

Zorial Herbicide at recommended rate effective for:

A. Controlling the following weeds in cotton or soybeans:

- |                         |                            |
|-------------------------|----------------------------|
| Barnyardgrass           | Carpetweed                 |
| Crabgrass               | Cocklebur                  |
| Foxtail                 | Florida Pusley             |
| Goosegrass              | Morningglory               |
| Signalgrass             | Pennsylvania Smartweed     |
| Panicum spp.            | Pigweeds                   |
| Johnsongrass (seedling) | Prickly Sida               |
|                         | Purslane                   |
|                         | Sicklepod                  |
|                         | Spotted Spurge             |
|                         | Spurred Anoda (cottonweed) |
|                         | Velvetleaf                 |

1 ZORIAL SPLIT™ in cotton only

B. Suppressing the following weeds in cotton or soybeans:

- |                              |                           |
|------------------------------|---------------------------|
| Bermudagrass                 | Cocklebur                 |
| Johnsongrass (rhizome)       | Hemp Sesbania             |
| Nutsedge (yellow and purple) | Kochia                    |
|                              | Lanceleaf sage (milkweed) |
|                              | Morningglory              |
|                              | Ragweed                   |
|                              | Russian thistle           |
|                              | Other Smartweeds          |
|                              | Venice mallow             |

ACCEPTED  
with comments  
JUN 29 1983  
11273-37

EPA Reg. No. 112

# CAUTION ✓

## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

**If in eyes:** Flush with plenty of water. Get medical attention if irritation persists.

## ENVIRONMENTAL HAZARDS

Do not apply directly to any body of water. Do not apply when weather conditions favor runoff or drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes. ✓

**NOTICE:** Sandoz, Inc. makes no warranty, expressed or implied, including the warranties of merchantability and/or fitness for any particular purpose concerning this material, except those which are contained on this label. ✓

## LOCATION OF USE

For use in cotton and soybeans in the states of Alabama, Arkansas, Illinois, North Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

NET WT. Gal.

SANDOZ, Inc., Crop Protection  
480 Camino Del Rio So., San Diego, California 92108

Zorial Herbicide at recommended rates is effective for:

A. Controlling the following weeds in cotton or soybeans:

Barnyardgrass	Carpetweed
Crabgrass	Cocklebur
Foxtail	Florida Pusley
Goosegrass	Morningglory
Signalgrass	Pennsylvania Smartweed
Panicum spp.	Pigweeds
Johnsongrass (seedling)	Prickly Sida
	Purslane
	Sicklepod
	Spotted Spurge
	Spurred Anoda (cottonweed)
	Velvetleaf

1 ZORIAL SPLIT™ in cotton only

B. Suppressing the following weeds in cotton or soybeans:

Bermudagrass	Cocklebur
Johnsongrass (rhizome)	Hemp Sesbania
Nutsedge (yellow and purple)	Kochia
	Lanceleaf sage (smartweed)
	Morningglory
	Ragweed
	Russian thistle
	Other Smartweeds
	Venice mallow

ACCEPTED  
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EPA Reg. No. 11273-

BEST MANAGEMENT AVAILABLE

It is a violation of Federal law to use this product in a manner inconsistent with its labelling.

### GENERAL INFORMATION

Zorial is a herbicide for control of certain grasses and broadleaf weeds in cotton and soybeans. Apply Zorial before weeds emerge. Zorial can be applied preplant incorporated, preemergence surface, or as a split application in areas with 40 inches or more annual rainfall. In areas with less than 40 inches rainfall, apply as a preplant incorporated or split application only. Zorial when applied ppi or in a split application will provide adequate control of all specified annual grasses; therefore, a preemergence DNA-type herbicide is not required.

The soil surface should be free of clods and existing weeds prior to application.

If replanting of cotton or soybeans is necessary, a light reworking of the topsoil will retain the herbicidal activity of Zorial.

Peanuts can be planted as a replacement crop 30 days after Zorial application. Prior to planting, a light reworking of the topsoil is recommended to remove existing plant material and to retain herbicidal activity.

Do not graze treated cotton fields with livestock or feed treated cotton forage to livestock. Cover crops planted after harvest should be plowed under and not grazed or harvested. To minimize injury to small grain cover crops, they should be broadcast planted rather than drilled.

Quantity of Zorial applied in any one year must not exceed the broadcast rate in pounds per acre for a given soil type.

For one year following Zorial application, treated acreage may only be rotated to cotton, soybeans, and peanuts.

**COMPATIBILITY:** Zorial has been found compatible with those DNA-type herbicides registered for use in cotton and soybeans and with metribuzin when used in soybeans. Zorial is also compatible with other PPI herbicides, soil insecticides and seed treatments commonly used in cotton and soybeans.

**TOP SAFETY:** If the cotton or soybean plant is stressed during early development.

**Aerial Application:** Apply the recommended rate of Zorial in 5 or more gallons of water per acre. To minimize drift, use Zorial with a drift control agent such as Falco-Trol and Ortho-Trol. Do not apply during periods of gusty winds or winds in excess of 5 mph. Aerial spray equipment, flying speed and flying height should be carefully adjusted to provide a uniform application to the soil surface. Use markers to avoid overlapping and possible crop injury.

**Preplant incorporated application (PPI):** Apply Zorial at the recommended rate from 30 days to just prior to planting. In West Texas and Southwest Oklahoma, Zorial may be applied up to 60 days prior to planting. Incorporate not deeper than 2-3 inches with commonly used equipment. Incorporation should occur within one week after application.

**Preemergence surface application (PRE):** Apply Zorial at the recommended rate at the time of planting and preemergence to weeds.

**Split application - THE ZORIAL SPLIT™:** Apply Zorial preplant incorporated, as indicated above, at one half the recommended rate. Apply the other half preemergence surface as recommended above.

### SOYBEAN INFORMATION

Do not use in soybeans in West Texas or Southwest Oklahoma. Do not use when the soil type is sand, loamy sand, or sandy loam. Do not use the PPI treatment in soybeans unless as part of the split application treatment. Soybeans should be planted to a depth of 1-2 inches and soil firmly packed above and around the seed bed.

Broadcast rates in quarts of Zorial Flowable per acre:

SOIL TYPE	PRE	Split	
		ppi	pre
loam, silty loam, silt, sandy clay loam	1	1/2	1/2
sandy clay, clay loam, silty clay loam, silty clay, clay	1 1/3	2/3	2/3

### COTTON INFORMATION

necessary, a light reworking of the topsoil will retain the herbicidal activity of Zorial.

Peanuts can be planted as a replacement crop 30 days after Zorial application. Prior to planting, a light reworking of the topsoil is recommended to remove existing plant material and to retain herbicidal activity.

Do not graze treated cotton fields with livestock or feed treated cotton forage to livestock. Cover crops planted after harvest should be plowed under and not grazed or harvested. To minimize injury to small grain cover crops, they should be broadcast planted rather than drilled.

Quantity of Zorial applied in any one year must not exceed the broadcast rate in pounds per acre for a given soil type.

For one year following Zorial application, treated acreage may only be rotated to cotton, soybeans, and peanuts.

**COMPATIBILITY:** Zorial has been found compatible with those DNA-type herbicides registered for use in cotton and soybeans and with metribuzin when used in soybeans. Zorial is also compatible with other PPI herbicides, soil insecticides and seed treatments commonly used in cotton and soybeans.

**CROP SAFETY:** If the cotton or soybean plant is stressed during early development, application of Zorial at the label rate may result in temporary bleaching or chlorosis of the leaves from which the plant will recover.

**APPLICATION DIRECTIONS**

**Ground Application:** Apply the recommended rate of Zorial in 10-20 gallons of water per acre. Apply accurately with a fixed boom sprayer. Equip sprayer with 8002 to 8006 fan-jet nozzle tips or equivalent for broadcast application. Use 8002E to 8006E nozzle tips or equivalent for band applications. Use screen size 50 mesh or larger.

should occur within one week after application.

651

**Preemergence surface application (PRE):** Apply Zorial at the recommended rate at the time of planting and preemergence to weeds.

**Split application - THE ZORIAL SPLIT™:** Apply Zorial preplant incorporated, as indicated above, at one half the recommended rate. Apply the other half preemergence surface as recommended above.

**SOYBEAN INFORMATION**

Do not use in soybeans in West Texas or Southwest Oklahoma. Do not use when the soil type is sand, loamy sand, or sandy loam. Do not use the PPI treatment in soybeans unless as part of the split application treatment. Soybeans should be planted to a depth of 1-2 inches and soil firmly packed above and around the seed bed.

Broadcast rates in quarts of Zorial Flowable per acre:

SOIL TYPE	PRE	Split	
		ppi	pre
loam, silty loam, silt, sandy clay loam	1	1/2	1/2
sandy clay, clay loam, silty clay loam, silty clay, clay	1 1/3	2/3	2/3

**COTTON INFORMATION**

Broadcast rates in quarts of Zorial Flowable per acre:

SOIL TYPE	PPI	PRE	Split	
			ppi	pre
sand, loamy sand, sandy loam	2/3	2/3	1/3	1/3
loam, silty loam, silt, sandy clay loam	1	1	1/2	1/2
sandy clay, clay loam, silty clay loam, silty clay, clay	1 1/3	1 1/3	2/3	2/3

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7-11

Prior to application of Zorial, completely destroy the weed beds of the previous year by "cross-discing". Apply Zorial PPI only. To prevent removal of the herbicide application by wind, immediate incorporation is recommended. Soybeans can be planted as a replacement crop 45 days after the first planting of cotton. Do not plant peanuts as a replacement crop. Do not use Zorial on furrow planted cotton or on glandless cotton varieties. Do not use on sand or loamy sand (soils with greater than 70% sand content).



Band Treatment: When applying a band treatment of Zorial Flowable the following formula may be used to calculate the amount per acre:



$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \frac{\text{Rate in qts. per acre}}{\text{broadcast treatment}} = \frac{\text{quarts per acre}}{\text{for band treatment}}$$

MIXING INSTRUCTIONS: Clean and calibrate the sprayer. Fill the spray tank with one-half the required amount of clean water and add the recommended amount of Zorial flowable while maintaining agitation. Triple rinse empty container and add all rinsate to spray tank. Maintain agitation while filling and spraying. If a by-pass line is used, discharge at the bottom of the tank to minimize foaming.



Do not allow Zorial spray mixture to remain in the spray tank overnight because settling could occur and resuspension would be difficult.

Storage: Do not store near or contaminate feed or foodstuffs.

Pesticide Disposal: Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of according to applicable Federal, state, or local procedures.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or dispose of in a sanitary landfill, or by incineration if allowed by state and local authorities.



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Ortho-Trol® is a registered trademark of Chevron Chemical Co.

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