



Crop Protection Department

P. O. Box 1489

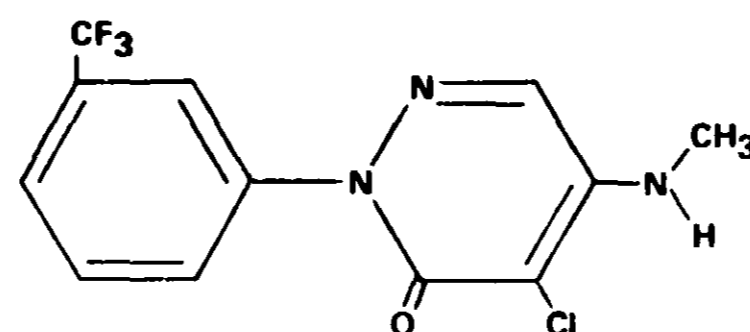
Homestead, Florida 33030

EXPERIMENTAL HERBICIDE SAN 9789

SAN 9789 is a fluorinated pyridazinone herbicide used for control of certain grasses and annual broadleaf weeds. It has been evaluated in small-scale field trials throughout the United States.

CHEMICAL AND PHYSICAL PROPERTIES

The active compound is 4-chloro-5-(methylamino)-2-(alpha,alpha,alpha-trifluoro-*m*-tolyl)-3-(2*H*)-pyridazinone with the structural formula:



Empirical formula: $C_{12}H_9ClF_3N_3O$

Molecular weight: 303.67

Melting point: $177^{\circ}C. + 3^{\circ}C.$

Solubility ($25^{\circ}C.$):

<u>Solvent</u>	<u>g/100 ml</u>	<u>ppm/wt</u>
Acetone	5	
Carbon disulfide	insol	
Ethyl alcohol	14.2	
Xylol	0.25	
Water		40

TOXICOLOGY

Acute toxicity LD_{50} :

Oral	Rats	> 10,000 mg/kg (80WP) > 8,000 mg/kg (Tech)
Dermal	Rabbits	> 20,000 mg/kg (Tech)

Primary eye irritation: Rabbits Not an irritant (80WP)
Inhalation exposure: Rats 200 mg/l for 1 hour nontoxic (80WP)

Subacute toxicity:

28 day oral	Rats	50 mg/kg/day-no effect level (Tech)
21 day dermal	Rabbits	400 mg/kg/day-no adverse systemic or local affect (80WP)
90 day oral	Rats	• 50 mg/kg/day-no effect level (Tech)
90 day oral	Dogs	15 mg/kg/day-no effect level (Tech)

TOXICOLOGY cont'd.

Rainbow trout	LC ₅₀ 6.0 ppm (80WP)
Catfish	LC ₅₀ Greater than 200 ppm (80WP)
Goldfish fingerlings	LC ₅₀ Greater than 200 ppm (80WP)
Mallard Ducks	LD ₅₀ Greater than 1250 mg/kg (80WP)
Bobwhite Quail	LD ₅₀ Greater than 1250 mg/kg (80WP)

WEEDS CONTROLLED BY SAN 9789

ANNUAL GRASSES

<i>Bracharia</i> spp.	Signalgrass
<i>Digitaria</i> spp.	Crabgrass
<i>Echinochloa colomura</i> (L.) Link.	Jungleweed
<i>Echinochloa crusgalli</i> (L.) Beauv.	Barnyardgrass
<i>Eleusine indica</i> (L.) Gaertn.	Goosegrass
<i>Eragrostis</i> spp.	Lovegrass
<i>Eriochloa</i> spp.	Cupgrass
<i>Leptochloa</i> spp.	Sprangletop
<i>Lolium multiflorum</i> Lam.	Italian ryegrass
<i>Panicum</i> spp.	Panicum
<i>Poa annua</i> L.	Annual bluegrass
<i>Setaria</i> spp.	Foxtail

ANNUAL BROADLEAVES

<i>Amaranthus</i> spp.	Pigweed
<i>Ariola cristata</i> (L.) Schlecht.	Cottonweed
<i>Brassica</i> spp.	Mustard
<i>Cassia obtusifolia</i> L.	Sicklepod
<i>Chenopodium</i> spp.	Lambsquarters
<i>Conyza canadensis</i> (L.) Cronq.	Horseweed
<i>Desmodium</i> spp.	Beggarweed
<i>Malva parviflora</i> L.	Little Mallow
<i>Mollugo verticillata</i> L.	Carpetweed
<i>Physalis</i> spp.	Groundcherry
<i>Polygonum</i> spp.	Smartweed
<i>Portulaca oleracea</i> L.	Common Purslane
<i>Sesbania</i> spp.	Sesbania
<i>Senecio vulgaris</i> L.	Common Groundsel
<i>Sida spinosa</i> L.	Prickly Sida
<i>Sisymbrium irio</i> L.	London Rocket
<i>Sonchus oleraceus</i> L.	Sowthistle
<i>Rhynchos scabra</i> L.	Florida Purslane
<i>Veronica</i> spp.	Horseweed

PERENNIAL WEEDS

<i>Achillea millefolium</i> (L.) Moench	Little Blue Fern
<i>Cirsium</i> spp.	Sage
<i>Cypripedium</i> spp.	Noddy
<i>Dactylis glomerata</i> (L.) Gaertn.	Serpentine Knotgrass
<i>Erigeron</i> spp.	Rache
<i>Erigeron annuus</i> (L.) Link.	Pine Catfoot
<i>Muhlenbergia latifolia</i> (L.) Link.	Spikegrass
<i>Parthenocissus vitacea</i> (L.) Thunberg	Bittersweet
<i>Syntherisma pycnanthum</i> (L.) Poir.	Chinese Tuber

WEEDS WHOSE GROWTH IS RETARDED BY SAN 9789

ANNUAL AND PERENNIAL

<i>Agraria repens</i> (L.) B. & P.	Quackgrass
<i>Cynodon dactylon</i> (L.) P.	Bermudagrass
<i>Iperoxylon</i> spp.	Annual Morningglory
<i>Marrubium vulgare</i> (L.) Link.	White Fl. of the Vine
<i>Syntherisma pycnanthum</i> (L.) Poir.	Chinese Tuber

CROP TOLERANCE

ANNUAL CROPS

Cotton is the main crop to which SAN 9789 is applied.

Soybeans, peanuts, and sorghum are tolerant to SAN 9789 applied at the rate of 1.0 lb. per acre. Late replanting of land from cotton.

THE FOLLOWING CROPS EXHIBIT NO TOLERANCE

Alfalfa (from seed)	Corn	Kale	P.	Soybean
Barley	Cornlage	Lentils	Rape	Sugar Beets
Beans	Chick	Lupine	R.	Squash
Beets	Corn	Onion	R.	Turnip
Broccoli	Cornlage	Onion	Soybean	Vegetable

METHOD OF APPLICATION

Application should be broadcast or banded. Spray application is recommended when precipitation is above 40-44 inches. Apply SAN 9789 at the rate of 1.0 lb. per acre, banded or broadcast.

SUGGESTED RATES IN ANNUAL CROPS*

Light soil (sandy, silty, etc.)	A
Medium soil	A
Heavy soil (clay, etc.)	A

*Desirable for the control of weeds in the following crops:

PERENNIAL CROPS

The safety of SAN 9789 to alfalfa, corn, sorghum, asparagus, cranberries, citrus, apples, pears, etc., according to present knowledge.

The safety to peaches, apricots, cherries, plums, prunes, grapes, almonds, pecans, etc., according to present knowledge. In these crops some caution should be exercised.

METHOD OF APPLICATION

In groves and orchards, the application of SAN 9789 should be followed following application to the crop.

Alfalfa should be sprayed at the dormant stage, granules are recommended for use on growing alfalfa.

Cranberries should be treated with the granular formulation during the dormant stage or prior to the onset of new growth.

Asparagus may be treated during the dormant season prior to the working of the soil in dry areas or after working of the soil in wet areas. It can also be applied after the harvest. Slight incorporation is recommended for furrow irrigated asparagus.

SUGGESTED RATES IN PERENNIAL CROPS

	lbs. ai/A Annual Weeds	lbs. ai/A Perennial Weeds
Light soil	1 - 2	4
Medium soil	1.5 - 3.0	6
Heavy soil	2 - 4	8

SUBJECTS FOR CONTINUED EVALUATION

ANNUAL CROPS

Further evaluation of the effect of residual activity on succeeding crops.

Effect of OM on activity of SAN 9789.

PERENNIAL CROPS

Assessment of relative activity of SAN 9789 using various methods of application by observing:

- a. Effect of soil moisture and weed coverage at application time.
- b. Effect of different amounts of rainfall or irrigation after application.
- c. Effect of different periods of delay between spraying and first appreciable rainfall.

Testing to evaluate safety and efficacy of initial high rate treatment followed by low rate booster treatments for eradication of perennial weed problems.

FORMULATIONS AVAILABLE

- 80% Wettable Powder
- 5% Granular

SAMPLE REQUESTS

Samples of 80% wettable powder and 5% granular formulations for experimental use by qualified research personnel may be obtained by contacting your local Sandoz-Wander Technical Representative, or by writing

SANDOZ-WANDER, INC.
CROP PROTECTION DEPARTMENT
P.O. BOX 1489
HOMESTEAD, FLORIDA 33030

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ZORIAL[®]

80WP COTTON HERBICIDE

ACTIVE INGREDIENT:

norflurazon [4-chloro-5-(methylamino)-2-(alpha,
alpha, alpha-trifluoro-m-tolyl)-3(2H)-pyridazinone] 80%

INERT INGREDIENTS 20%
100%

KEEP OUT OF REACH OF CHILDREN

CAUTION

PRECAUTIONARY STATEMENTS

Environmental Hazards: Keep out of lakes, streams and ponds. 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: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use. The manufacturer makes no other warranties of any kind, express or implied, including warranties of merchantability or fitness for a particular use.

LOCATION OF USE

For use in the rainy cotton belt (40 inches or more annual rainfall) including Alabama, Arkansas, North Florida, Georgia, Kentucky, Illinois, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, East Texas, and Virginia.

WEEDS CONTROLLED

ZORIAL 80 WP Herbicide at recommended rates is effective for:

A. Controlling the following weeds in cotton:

Barnyard grass	Carpetweed	Ragweed
Crabgrass	Florida pusley	Sicklepod
Goosegrass	Pennsylvania smartweed	Spurge
Signalgrass	Prickly sida	Spurred Anoda
Panicum sp.	Pigweed	
Johnsongrass (seedling)	Purslane	

B. Suppressing the following weeds in cotton:

Annual Morningglory	Nutsedge	Cocklebur
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Lot _____

Net Weight 5 lbs.



Sandoz, Inc.
Crop Protection
Homestead, Florida 33030

EPA Est. No. 35982-TX-1
EPA Reg. No. 11273-13

● BREWER ●



1300 STOKES AVENUE

CHEMICAL

TRENTON, NEW JERSEY

SWIMMING POOL ALGAECIDE QR-9

ACCEPTED

FOR USE IN SWIMMING POOLS
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The presence of algae in outdoor swimming pools is objectionable because of the color, cloudiness, odor, and increased chlorine demand of the water. The use of QR-9 Algaecide will help to maintain the water in a clean condition.

QR-9 Algaecide is compatible with the usual water treatment chemicals. By controlling algae growth with QR-9 Algaecide, the chlorine demand of the pool may be significantly reduced.

DIRECTIONS

1. In freshly filled pools or pools showing no visible algae growth add one gallon QR-9 Algaecide per 50,000 gallons of water to prevent algae growth.

2. If algae growth is observed, add one gallon QR-9 Algaecide for each 20,000 gallons of water to kill and control those algae species most commonly found in swimming pools. When necessary,

3. If the pool water treated as in (1) or (2) is recycled, add one gallon of QR-9 Algaecide per 50,000 gallons of water every five to seven days to maintain between two and five parts per million of active ingredient. See serviceman for test kit.

4. If the pool water treated as in (1) or (2) above is not recycled or not filtered, it should be tested periodically to determine the active ingredient content. When necessary, one gallon QR-9 Algaecide per 50,000 gallons of water should be added to maintain two to five parts per million of active ingredient.

ACTIVE INGREDIENTS

n-Alkyl-150 E. Cl. 40% C₁₂ 10% C₁₄ methyl benzyl ammonium chloride 10%

INERT INGREDIENTS

DANGER

KEEP OUT OF REACH OF CHILDREN

Do not get in eyes. Wear goggles or face shield when handling.

QR-9 swimming pool algaecide may cause skin irritation or damage to eyes. In case of skin contact, flush the skin with copious quantities of water. In case of eye contact, wash eyes thoroughly with water for 15 minutes and obtain medical attention promptly. Harmful if swallowed. If taken internally, induce vomiting. Keep subject warm with blankets and obtain medical attention promptly. Avoid contamination of food or feed.

This product is toxic to fish. Do not discharge treated effluent into lakes, streams or ponds.

Container Disposal

Rinse empty container thoroughly with water and discard it.