

100 13 1990

Mr. Robert Manlen  
E.I. Du Pont de Nemours & Company, Inc.  
Walker's Mill  
Barley Mill Plaza  
Wilmington, DE 19880

Dear Mr. Manlen:

Subject: Amended Labeling  
TERSAN 1991 DE Turf Fungicide  
EPA Registration No. 352-507  
Your Submission Dated February 20, 1990

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable. A stamped copy is enclosed for your records.

Sincerely yours,



Susan Lewis  
Product Manager (21)  
Fungicide-Herbicide Branch  
Registration Division (H7503C)

Enclosure

54321:I:A-4:Stone:LR-19:KENCO:07/10/90:08/06/90:CL:VO:DD:CL

CONCURRENCES

SYMBOL								
SURNAME								
DATE								

**PACKAGE SIZE**  
**6 - 2 POUND BAGS / CARTON**

# TERSAN<sup>®</sup> 1991 DF

## TURF FUNGICIDE

DISPERSIBLE GRANULES

ACTIVE INGREDIENT	BY WEIGHT
Benomyl [Methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate].....	50%
INERT INGREDIENTS.....	50%
TOTAL.....	100%

EPA Reg. No. 352-507

**KEEP OUT OF REACH OF CHILDREN** **ACCEPTED**

### CAUTION

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION! MAY IRRITATE EYES, NOSE, THROAT AND SKIN.**

Avoid breathing dust or spray mist. Avoid contact with skin, eyes and clothing. Wash thoroughly after using.

Do not apply this product in such a manner as to directly or through drift, expose workers or other persons. The area being treated must be vacated by unprotected persons.

Protective clothing must be worn during periods of exposure. See Directions for Use.

This product may cause a temporary allergic skin reaction in a few susceptible persons. This condition should be treated as an allergic dermatitis. There is no evidence of aftereffects or permanent injury.

First Aid: In case of contact, flush skin or eyes with plenty of water; for eyes, get medical attention.

For medical emergencies involving this product, call toll free 1-800-441-3637.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to water. Do not apply where runoff is likely to occur. Drift and runoff from treated areas may be hazardous to fish in adjacent areas. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift from areas treated.

### PHYSICAL OR CHEMICAL HAZARDS

Keep away from fire or sparks.

### DIRECTIONS FOR USE

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

Du Pont "Tersan" 1991 DF should be used only in accordance with recommendations on this label, or in separate published Du Pont recommendations available through local dealers.

Du Pont will not be responsible for losses or damages resulting from use of this product in any manner not specifically recommended by Du Pont. User assumes all risks associated with such nonrecommended use.

Do not enter treated areas without protective clothing until sprays have dried. Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Warnings must include the following information: "CAUTION. Area treated with 'Tersan' 1991 DF on (date of application). Do not enter without appropriate protective clothing until sprays have dried. In case of contact, flush skin or eyes with plenty of water; for eyes, get medical attention."

"Tersan" 1991 DF Turf Fungicide is intended for professional use as a spray for the control of dollar spot, large brown patch, Fusarium patch (pink snow mold), Fusarium blight and stripe smut on golf courses, parks, athletic fields, commercial turf areas and lawns. It is also recommended for the control of certain diseases of roses, flowers, ornamentals, shade trees, and bulbs.

If treatment is not effective following use of "Tersan" 1991 DF as recommended, a resistant strain of the fungus may be present. If treatment is ineffective due to the presence of a benomyl resistant strain, then neither "Tersan" 1991 DF nor any other benzimidazole or thiophanate type fungicide will effectively control that disease; consideration should be given to prompt use of other types of suitable fungicides.

The repeated exclusive use of "Tersan" 1991 DF may lead to buildup of resistant strains of fungi and loss of disease control. A spray program using other fungicides may delay resistant strain buildup. Consult your state extension specialist or official state recommendations for guidance on your particular crop and disease control situation.

NOTE: do not tank mix or alternate "Tersan" 1991 DF with benzimidazole or thiophanate products such as Mertect<sup>1</sup>, Topsin<sup>2</sup>, Fungo<sup>3</sup>, or 3336<sup>4</sup>.

#### Work Safety Rules

Keep all unprotected persons, children, livestock and pets away from treated area or where there is danger of drift.

During mixing and loading of the concentrated product wear the following protective clothing and equipment:

Long sleeve shirt and long legged pants; chemical resistant gloves, chemical resistant apron; chemical resistant shoes, shoe coverings, or boots.

Wear the following protective clothing during application, equipment repair and equipment cleaning:

Long sleeve shirt and long legged pants; chemical resistant gloves; chemical resistant shoes, shoe coverings, or boots.

Important! Before removing gloves, wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating, drinking or toileting.

After work, take off all clothes and shoes. Shower using soap and water. Wear only clean clothes. Do not use contaminated clothing. Wash protective clothing and protective equipment with soap/detergent and water after each use. Personal and protective clothing worn during use must be laundered separately from household articles. Clothing or protective equipment heavily contaminated or drenched with benomyl must be destroyed according to state or local regulations. Heavily contaminated or drenched clothing cannot be adequately decontaminated.

**CHEMIGATION:** Apply "Tersan" 1991 DF only through sprinkler including center pivot, lateral move, end row, side (wheel) roll, traveler, big gun, solid set or hand move irrigation systems only on crops specifically designated in the "Directions for Use" for that particular crop. Do not apply "Tersan" 1991 DF through any other type of irrigation system or on any other crops.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

A person knowledgeable of the chemigation systems and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

#### Specific Instructions for Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

#### Specific Instructions for Sprinkler Irrigation Systems:

1. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

7. Do not apply when wind speed favors drift beyond the area intended for treatment.
8. Good agitation is required in the injection tank.
9. In moving systems, apply specified dosage of "Tersan" 1991 DF as a continuous injection. In nonmoving systems inject "Tersan" 1991 DF for 15 to 30 minutes at end of cycle. Use the least amount of water possible consistent with uniform coverage.
10. Mix the amount of "Tersan" 1991 DF needed for acreage to be treated into the quantity of water determined during prior calibration. For moving systems inject into system continuously for one complete revolution of the field. For nonmoving systems inject into system for the time established during calibration.
11. Stop injection equipment after treatment is completed and continue to operate irrigation equipment until all "Tersan" 1991 DF is flushed from system.

## TURF

**NOTE:** The repeated and exclusive use of "Tersan" 1991 DF has led to the development of resistant strains of dollar spot in some locations and may lead to the development of resistance in other strains of fungi. The use of "Tersan" 1991 DF as a tank mixture with Daconil<sup>5</sup> 2787 Fungicide, "Daconil" 2787 Flowable Fungicide or Du Pont "Manzate" 200 DF Fungicide may delay the development of resistant strains of fungi. Apply recommended amounts of "Tersan" 1991 DF plus either "Daconil" 2787 or "Manzate" 200 DF in sufficient water to obtain thorough coverage, usually 3 to 5 gals per 1,000 sq ft. When treating golf greens, always treat aprons and approaches.

"Tersan" 1991 DF plus "Daconil" 2787: Helminthosporium leafspot, Brown Patch, Anthracnose and Dollar Spot - Apply 1 oz "Tersan" 1991 DF plus 3 to 6 fl oz "Daconil" 2787 Flowable (or 2 to 4 oz "Daconil" 2787 - 75% wettable powder) per 1,000 sq ft. Make the initial application when conditions favor disease development and repeat the treatment on 7- to 21-day intervals as needed. Use the higher rate of "Daconil" 2787 in the combination if disease conditions are particularly severe.

"Tersan" 1991 DF plus "Manzate" 200 DF: Helminthosporium leafspot, dollar spot, Anthracnose, and brown patch - Apply 1 oz "Tersan" 1991 DF plus 3-4 ozs "Manzate" 200 DF for each 1,000 sq ft of turfgrass area to be treated. Make initial application when disease first appears and continue applications on 7- to 21-day intervals for as long as needed. Use the shorter intervals and higher use rate when conditions are unusually favorable for disease development.

"Tersan" 1991 DF in other spray programs- Apply recommended amounts of "Tersan" 1991 DF in sufficient water to obtain thorough coverage, usually 2 to 5 gals per 1,000 sq ft. When treating golf greens, always treat aprons and approaches.

Dollar Spot (*Sclerotinia homocarpa*) - Apply at rate of 1 oz per 1,000 sq ft at earliest appearance of disease and continue at 10- to 14-day intervals as long as needed.

Large Brown Patch (*Rhizoctonia solani*)- Apply at rate of 2 oz per 1,000 sq ft at earliest appearance of disease and continue at 10- to 14-day intervals as long as needed. When conditions are unusually favorable for development of disease, reduce interval to 5 to 7 days.

Pink Snow Mold (*Fusarium nivale*)- A cool season disease- Apply at rate of 2 oz per 1,000 sq ft at earliest appearance of disease and continue at 10- to 14-day intervals as long as needed.

**PATCH DISEASES** Summer Patch (*Phytophthora* spp.), **NECROTIC RING SPOT** (*Leptospheria korrae*), **TAKE-ALL PATCH** (*Gaeumannomyces graminis*), and **FUSARIUM BLIGHT** (*Fusarium* spp.) — Apply at rate of 5 to 8 oz per 1,000 sq ft at earliest appearance of disease and repeat 10 to 14 days later. Immediately after application, water sufficiently to thoroughly wet soil to a depth of 1 inch below any mat or thatch present.

**Spring Dead Spot of Bermudagrass**— Apply 1 oz. per 1000 sq. ft. at the earliest appearance of disease and continue at 10- to 14-day intervals as needed.

**Stripe Smut** (*Ustilago striiformis*)- Make a single application at rate of 6 oz per 1,000 sq ft in October or in early spring before grass begins growth. After application, water turf sufficiently to carry product to base of plants.

**NOTE:** Where Helminthosporium diseases are a problem, apply "Manzate" 200 DF Fungicide two or three times in the early spring at rate of 3 to 4 oz per 1,000 sq ft at 7- to 10-day intervals.

Do not graze or feed clippings from treated areas to livestock.

## ROSES, FLOWERS, ORNAMENTALS, SHADE TREES

**Field and Greenhouse: Foller Spray-** Begin applications when disease first appears and repeat at 10- to 14-day intervals throughout the growing season; shorten interval during humid, rainy weather. Use at the following rates: 1/2 lb per 100 gals (1 tablespoonful per 2 gals)- for Powdery Mildew, Botrytis Gray Mold, 1 lb per 100 gals- for Anthracnose (for shade trees and woody ornamentals, begin at bud break and make 2 or 3 additional applications at 10- to 14-day intervals); Black Spot of roses; Cercospora, Entomosporium, Ramularia, and Septoria Leafspots; Ascochyta and Phomopsis blights; Didymella Leafspot of iris; Comynaspora, Leafspot of Ligustrum; Oculinia Blight of azalea and rhododendron (begin as flowers open); Scab of pyracantha and flowering crab. Addition of a surfactant to the spray mixture improves distribution of the spray on hard-to-wet plants such as roses. For aerial application, use 1/2 to 1 lb per acre.

**Drench Treatment-** Botrytis, Fusarium, Rhizoctonia and Sclerotinia stem, crown and root rots on herbaceous annuals, perennials and bedding plants; Cythrodium and Thielaviopsis rots on woody ornamentals such as azaleas, rhododendrons, conifers, and poinsettias- Use 1 lb per 100 gals; apply as a drench or heavy spray (1 to 2 pts per sq ft) after transplanting into propagation beds or containers. Repeat at 2- to 4-week intervals during periods favorable for disease. "Tersan" 1991 DF does not control Pythium spp. or Phytophthora spp.

**Preplant Dip Treatment-** For diseases listed under Drench Treatment, use 1 lb per 100 gals of water; immerse plants or cuttings for 10 to 15 min; remove and allow to drain.

**Diplodia Tip Blight** (*Diplodia pinea*) on Austrian, Red and Scotch Pine: Apply 16 oz. per 100 gals. of water along with a compatible spreader/sticker at recommended rates to entire trees. Thorough coverage of new growth (developing buds and elongating candles) is essential for optimum control. Begin applications in the spring at bud break. Make a second application 10 to 14 days later just prior to needles emerging from the sheath; make a third application 10 to 14 days later.

**Rhabdocline needle-cast** (*Ribdocline* spp.) and **Swiss needle-cast** (*Phaeocryptopus gaumannii*): Apply 1 lb. of "Tersan" 1991 DF per 100 gallons along with a compatible spreader/sticker at recommended rates to entire tree. Thorough coverage is essential for optimum disease control. Begin application in the spring when new growth starts. Make three additional applications 21 days apart.

**BULBS** (Easter Lily, Tulip, Gladiolus, Daffodil, Iris): **Fusarium and Penicillium Rots-** Use 1 2/3 lbs per 100 gals of water (2 tablespoons per gal). Soak cleaned bulbs for 15 to 30 minutes in warm dip (80 to 85 degrees F.), preferably within 48 hours after digging. Dry bulbs after treatment. If bulbs are for forcing, treat after bulbs have been heat-cured.

## STORAGE AND DISPOSAL

**STORAGE:** Never allow "Tersan" 1991 DF to become wet during storage. This may lead to certain chemical changes which will reduce the effectiveness of "Tersan" 1991 DF as a fungicide. Keep container tightly closed when not in use. Store product in original container only, away from other pesticides, fertilizer, food or feed.

**PRODUCT DISPOSAL:** Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## NOTICE OF WARRANTY

Du Pont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with the directions under normal use conditions. It is impossible to eliminate all risks inherently associated with the use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application all of which are beyond the control of Du Pont. In no case shall Du Pont be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. DU PONT MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

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