

# Specimen Label



**Herbicide**

®Trademark of Dow AgroSciences LLC

**A herbicide for preemergence control of certain annual grasses and broadleaf weeds in canola and crambe, dry beans, dry peas, peanuts, safflower, soybeans, and sunflowers**

Active Ingredient:

ethalfuralin: *N*-ethyl-*N*-(2-methyl-2-propenyl)-2, 6-dinitro-4-(trifluoromethyl)benzenamine..... 31.5%

Inert Ingredients..... 68.5%

Total..... 100.0%

Contains 3 pounds active ingredient per gallon.

EPA Reg. No. 62719-188

**Keep Out of Reach of Children**

**DANGER PELIGRO**

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.)

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**Corrosive • Causes Skin Burns And Irreversible Eye Damage • Harmful If Swallowed Or Inhaled • Prolonged or Frequently Repeated Skin Contact May Cause Allergic Reactions in Some Individuals**

**Do not get in eyes, on skin or on clothing. Avoid breathing vapor or spray mist.**

## 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 "H" on an EPA chemical resistance category selections chart.

### Applicators and other handlers must wear:

- Coveralls worn over long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate or Viton
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

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/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

## Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, 40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS.

## 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.

## First Aid

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If swallowed:** Call a poison control center or doctor immediately for treatment advice. Have 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 inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

**Note to physician:** Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

## Environmental Hazards

This pesticide is toxic to fish and aquatic invertebrates. 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 cleaning equipment or disposing of equipment washwaters or rinsate. Runoff or erosion from treated areas may be hazardous to fish in neighboring areas.

## Physical or Chemical Hazards

**Combustible. Do not use or store near heat or open flame.**

**Notice:** Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies elsewhere on this label. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at [www.dowagro.com](http://www.dowagro.com).

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

## Avoid Freezing -- Store Above 40°F

### Directions for Use

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

Read all Directions for Use carefully before applying.

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 24 hours.

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

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

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves such as Barrier Laminate or Viton
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

### Storage and Disposal

Do not contaminate water, food, or feed by storage or disposal.

**Pesticide Storage:** Avoid freezing. Store above 40°F (5°C). If frozen, poor weed control may result. Do not use or store near heat or open flame. Store in original container only. In case of leak or spill, use absorbent materials to contain liquids and dispose as waste.

**Pesticide Disposal:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

**Plastic Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Metal Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

**Bulk/Mini-Bulk Tank Handling:** Tanks that have been used for phenoxy-type herbicides should not be used for Sonalan HFP. To clean, triple rinse (or equivalent) and wash with appropriate cleaners before reusing.

### General Information

Sonalan® HFP is a preemergence herbicide that controls many annual grasses and broadleaf weeds in canola and crambe, dry beans, dry peas, peanuts, safflower, soybeans and sunflower. Sonalan HFP controls weeds as they germinate. Sonalan HFP will not control established weeds.

### Use Precautions and Restrictions

Poor weed control and/or crop injury may result if directions are not followed. Uneven application, over application, or improper incorporation can result in erratic weed control or injury to the treated or rotational crops.

Do not graze or forage crop grown in treated soil or cut for hay or silage.

Do not apply Sonalan HFP to soils which are wet, cloddy, or subject to prolonged periods of flooding because poor weed control or crop injury may result.

Do not apply to any area not specified on the label.

Sonalan HFP will not control DNA (dinitroaniline) resistant goosegrass.

**Chemigation:** Apply Sonalan HFP through properly equipped chemigation systems to dry beans (does not include soybean) and sunflower. Follow use directions for these crops under the crop specific use directions of this label. Do not apply this product through any type of irrigation system to other labeled crops, unless otherwise specified by a Dow AgroSciences product bulletin or supplemental label.

## Rotational Crop Restrictions

### Replanting

If replanting is required, replant only crops listed on this label.

### Sugar Beets or Red Beets

Do not plant sugar beets or red beets within 13 months following an application of 3 pints per acre or more of Sonalan HFP. Where less than 3 pints per acre of Sonalan HFP have been applied, sugar beets or red beets may be planted no earlier than 8 months after an application and then only if the soil treated with Sonalan HFP is moldboard plowed to a depth of at least 12 inches prior to planting.

### Spinach or Oats

In California and Arizona, do not plant spinach or oats within 8 months following an application of 3 pints per acre or more of Sonalan HFP.

### Small-Seeded Grasses (Bluegrass, Ryegrass, etc.)

Do not plant small-seeded grasses in the fall following a spring application of Sonalan HFP. Perennial grass crops or grass mixtures should not be planted for 12 months after application of Sonalan HFP to avoid the possibility of crop injury. If land has not been irrigated, these crops should not be planted for 18 months after a spring application of Sonalan HFP. Moldboard plowing to a depth of 12 inches before planting these crops will reduce the possibility of crop injury.

### Special Rotational Crop Restrictions for the States of Montana and Wyoming

Plant only rapeseed (canola), safflower or sunflower as rotational crops in the crop year following the crop treated with 3 pints per acre of Sonalan HFP. In addition to rapeseed (canola), safflower or sunflower, spring seeded barley grown under irrigated conditions can be planted in the crop year following the crop treated with a 2 pint per acre rate of Sonalan HFP. If one of these specified crops is not planted, the land should be left idle or fallow for the entire year following the crop treated with Sonalan HFP.

## Mixing Directions

### Sonalan HFP - Alone

Start with a clean spray tank. Fill sprayer one-third (1/3) to one-half (1/2) full with clean water or liquid fertilizer. Start agitation. Add correct quantity of Sonalan HFP, continue agitation and finish filling the tank.

### Sonalan HFP - Tank Mix

Vigorous continuous agitation is required for all tank mixes. Sparger pipe agitators generally provide the best agitation in spray tanks.

**Mixing Order:** Fill the tank one-fourth (1/4) to one-third (1/3) full with clean water or liquid fertilizer. (See page 3 for additional liquid fertilizer mixing instructions.) Start the agitation. Add different formulation types to the spray tank in the following order: dry flowables (DF), wettable powders (WP), aqueous suspensions (AS), flowables (F), or liquids (L). Allow each product type to completely disperse before adding another. Allow additional mixing and dispersion time when using dry flowable (DF) products. Continue agitation and fill tank to three-fourths (3/4) full, add the Sonalan HFP or other emulsifiable concentrates (EC) and mix thoroughly. Then add any solution (S) formulations, agitate and finish filling. Maintain agitation during filling and through application. If spraying and agitation must be stopped before the tank is empty, the materials may settle to the bottom. In this case, it is important to resuspend all of the material in the bottom of the tank before continuing the spray application. A sparger agitator is particularly useful for this purpose. Sometimes it is more difficult to resuspend settled material than it is to suspend it originally.

Carefully follow all mixing instructions for each material added to the tank. Initial dispersion of dry or flowable formulations can be improved by mixing with a small amount of water (slurrying) and pouring the slurry through a 20 or 35 mesh wetting screen in the top of the spray tank. Line screens in the tank should be no finer than 50 mesh (100 mesh is finer than 50 mesh).

If a buildup of material on the walls of the spray tank is observed, wash the tank with soapy water between fillings. Rinse and continue the spraying operation. Clean the tank, lines and screens thoroughly after use. Check the sprayer daily to ensure proper calibration and uniform application. Do not apply Sonalan HFP under wind conditions which may cause spray drift to nontarget areas or non-uniform application.

## Application Directions

**Ground Application:** Apply Sonalan HFP in at least 5 gallons of water or liquid fertilizer per acre (broadcast basis). Use any properly calibrated, low pressure herbicide sprayer that will apply the spray uniformly.

### Application with Liquid Fertilizer

Sonalan HFP may be mixed with most liquid fertilizer materials. Combinations of Sonalan HFP with solutions and suspension type fertilizers provide weed and grass control equal to the same rates of Sonalan HFP applied in water. For application in liquid fertilizer, follow label recommendations regarding crops, application rates, incorporation directions and precautions for Sonalan HFP alone.

Compliance with individual state regulations relating to liquid fertilizer mixing, registration, labeling and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale.

**Liquid Fertilizer Mixing Instructions:** Emulsifiable concentrates, such as Sonalan HFP, can be mixed with liquid fertilizers. In all cases, continuous agitation is required to prevent the Sonalan HFP from rising to the surface as an oily layer. When necessary, (see Testing for Tank Mix Compatibility in Liquid Fertilizers) a compatibility agent (a phosphate ester type surfactant designed to be used with liquid fertilizers) can be used to ensure that the Sonalan HFP emulsifies properly (i.e., forms a uniform mixture with a milky appearance rather than an oily layer). Compatibility agents can be used at rates as low as one and one-half (1 1/2) to two (2) pints per ton of liquid fertilizer and should be mixed well with the fertilizer before adding any emulsifiable concentrate product. The use of compatibility agents is especially important when tank mixing emulsifiable concentrates (EC) with dry flowables (DF), wettable powders (WP), flowables (F), liquids (L), aqueous suspensions (AS), or solutions (S) in liquid fertilizer. If the emulsion is not properly formed and the EC rises to the surface of the fertilizer as an oil ("oils out"), the oil may combine with the wettable powder, flowable, or suspension to form oily curds (viscous phase) which are difficult to disperse.

**Testing for Tank Mix Compatibility in Liquid Fertilizers:** Emulsifiable concentrates alone or in tank mixture with dry flowables (DF), wettable powders (WP), liquids (L), flowables (F), aqueous suspensions (AS), or solutions (S) may not combine properly with some fluid fertilizer materials. Small quantities should always be tested before full-scale mixing. This will determine whether a compatibility agent is needed and which agent does the best job. Use only a phosphate ester type surfactant designed to be used with liquid fertilizers.

Use the following test to select the correct agent for your mixture.

1. Add 1 pint of the liquid fertilizer to a quart jar.
2. Add 1 to 4 teaspoonful(s) of the DF, WP, L, F, or AS formulations (depending on the recommended rate per acre) to the liquid fertilizer. Close jar and agitate until dispersed evenly in the fertilizer. If the materials do not disperse well, it may be necessary to slurry the chemicals in water before adding to the fertilizer.
3. After dispersing the materials (Step 2), add 3 to 4 teaspoonfuls of the Sonalan HFP to the jar and shake well. Add solution herbicides to the mixture last and agitate. Observe the jar for about 10 minutes. If the materials rise to the surface and form a thick layer (oily curds) which will not disperse when agitated, a compatibility agent is needed. If the mixture is easily dispersed to its original state with slight agitation, no agent is needed, but good agitation must be provided in the fertilizer spray tank.
4. If the need for a compatibility agent is shown in Step 3, use a clean quart jar, and starting at Step 1 above, add one-half (1/2) teaspoonful of the compatibility agent to the liquid fertilizer. Mix well. Repeat Steps 2 and 3.

An effective compatibility agent will cause the mixture to remain uniformly mixed with little or no separating or oil rising to the surface for one-half (1/2) hour or longer. If slight separation does occur, 2 to 3 inversions of the jar should give a uniform remix. If oily curds form which will not disperse, more agent or another agent should be tried.

Use a clean jar for each test. The compatible mixture will have a uniform appearance and will be relatively easy to keep mixed with gentle agitation of the jar.

#### **Application with Dry Bulk Fertilizer**

Dry bulk fertilizer may be impregnated or coated with Sonalan HFP. Application of dry bulk fertilizer impregnated with Sonalan HFP provides weed and grass control equal to the same rates of Sonalan HFP applied in liquid carriers. Follow label recommendations regarding crops, application rates, and precautions for Sonalan HFP alone. Spread the fertilizer/chemical mixture with properly calibrated application equipment. Be certain the material is applied uniformly to the soil surface. When impregnated on dry bulk fertilizer, Sonalan HFP must be incorporated 2 times (see Soil-Incorporation Directions).

**Limitations:** Apply a minimum of 200 lb per acre of dry fertilizer impregnated with Sonalan HFP at the recommended rate. Most dry fertilizers can be used for impregnation with Sonalan HFP. When coated ammonium nitrate and/or limestone are used alone, do not impregnate with Sonalan HFP. These materials will not absorb the herbicide. Blends containing a mixture of these materials can be impregnated.

**Impregnation:** Use any closed drum, belt, ribbon or other commonly used dry bulk fertilizer blender. Nozzles used to spray the Sonalan HFP onto the fertilizer should be placed to provide uniform spray coverage. Add water to the Sonalan HFP to give a total volume of at least 6 pints per ton of fertilizer.

**Compliance with individual state regulations** relating to dry bulk fertilizer blending, registration, labeling and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale.

## **Chemigation Application**

Sonalan HFP may be applied through properly equipped chemigation systems for weed control in dry beans (does not include soybeans) and sunflowers. Refer to instructions below for use directions for chemigation. Do not apply Sonalan HFP through any type of irrigation system unless these directions are carefully followed.

**Application Timing:** Planting and application should occur as soon as possible after the last tillage operation. Sonalan HFP must be applied within 2 days after planting prior to crop emergence. Sonalan HFP does not control established weeds. Soil incorporation is not required when Sonalan HFP is applied through chemigation systems.

**Broadcast Application Rates for Chemigation Application:** Use application rates recommended for Sonalan HFP - Alone in the Dry Beans and Sunflowers sections of the product label. Apply Sonalan HFP in overhead sprinkler irrigation equal to 1/2 to 1 inch of water and use the maximum recommended application rate for the soil texture class and weed species to be controlled.

**Cultivation:** Soil treated by chemigation with Sonalan HFP may be shallow cultivated without reducing weed control activity.

#### **General Chemigation Directions:**

Thoroughly clean the injection system and tank of any fertilizer or chemical residues, and dispose of the residues according to state and federal laws. Flush the injector with soap and water.

Certain environmental conditions may cause crystallization on nozzles or guns. To minimize crystallization and/or nozzle plugging, or if nozzle plugging is experienced during chemigation application, tank mix Sonalan HFP with 2 pints per acre of non-emulsifiable oil or diesel fuel. Residues from previous pesticide or fertilizer application by chemigation may loosen and cause nozzle plugging. Maintain vigorous tank agitation to assure uniformity of the Sonalan HFP plus oil mixture throughout the injection period.

Apply this product only through continuously moving center pivot, lateral move, or end tow sprinkler irrigation systems equipped for chemigation. Do not apply this product through any other type of irrigation system.

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

If you have questions about calibration you should contact state extension specialists, equipment manufacturers, or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.

Only a person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, should make system adjustments.

#### **Posting Requirement**

Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes, or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads; or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated area and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The sign shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2 1/2 inches tall, and all letters and the symbol shall be a color that sharply contrasts with their immediate background. At the top of the sign shall be the words "KEEP OUT," followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word "STOP." Below the symbol shall be the words "PESTICIDES IN IRRIGATION WATER."

#### **Sprinkler Chemigation Directions:**

The following directions must be followed for all recommended sprinkler irrigation systems (center pivot, lateral move, or end tow):

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 back-flow.
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 that will stop the water pump motor when the water pressure decreases to the point that 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. Sonalan HFP should be injected continuously throughout the chemigation period. The chemigation metering pump should be checked periodically during application to insure proper operation.
9. The injection metering pump must be calibrated as specified by the manufacturer.
10. Pesticide injection hoses which connect chemigation metering equipment to the sprinkler irrigation system should be of braided reinforced construction with an internal tube made of nylon, cross-linked polyethylene, or high density polyethylene.
11. Apply Sonalan HFP in sprinkler irrigation equal to 1/2 to 1 inch of water.
12. During chemigation, maintain agitation in supply tank at all times.

**Note:** Sonalan HFP may cause staining of plastic hoses and tanks.

#### **Chemigation System Calibration:**

Sample calculation for use of Sonalan HFP in a chemigation system:

- Assume, in this example, 133 acres are to be covered by a chemigation treatment.
- Product required, assuming 3.0 pints per acre, is 399 pints (133 acres X 3.0 pt/acre = 399 pt = 50 gallons)
- Add 50 gallons of product directly to the injection supply tank.
- Adjust the injection system to deliver 50 gallons during the time required to apply 1 inch of water to 133 acres.

If the irrigation system requires 20 hours to apply 1 inch of water to 133 acres, the injection rate is 2.5 gal/hr and is calculated as follows:

- $50 \text{ gal} \div 20 \text{ hr} = 2.5 \text{ gal/hr}$   
 $2.5 \text{ gal/hr} = 320 \text{ fl oz/hr}$

Proper calibration of the injection pump requires that it be adjusted to deliver 5.33 fl oz per minute and is calculated as follows:

- $320 \text{ fl oz/hr} \div 60 \text{ min./hr} = 5.33 \text{ fl oz per min}$

#### **Chemigation Mixing Directions:**

**Undiluted Sonalan HFP:** When used alone, the injection of undiluted Sonalan HFP is recommended in chemigation systems. For undiluted use, the metering pump, supply tank, and any associated equipment must be thoroughly clean and dry before Sonalan HFP is added to the system for injection. When injecting undiluted Sonalan HFP, maintain continuous agitation in the supply tank. If nozzle plugging is encountered, please refer to General Chemigation Directions on page 4.

**Diluted Sonalan HFP:** Sonalan HFP may be diluted if required to achieve accurate calibration for existing equipment. Partially fill the injection supply tank with a volume of water equal to the amount of Sonalan HFP required (do not add water to Sonalan HFP). Start agitation. Add the required amount of Sonalan HFP to water in the supply tank and continue mixing while filling the tank to the final volume required by the injection pump calibration. When injecting diluted Sonalan HFP, maintain continuous agitation in supply tank.

#### **General Precautions:**

Sonalan HFP, applied in cool, wet conditions, has the potential to cause crop injury as seeds germinate. For best results, apply when weather is warm.

#### **Soil Preparation**

Factors influencing the uniform application and incorporation of Sonalan HFP:

**Crop Residues or Existing Weeds** - Excessive amounts of crop residues or existing weeds may interfere with the incorporation of Sonalan HFP into the soil. A manageable level of such ground cover will allow Sonalan HFP to be uniformly mixed into the top 2 to 3 inches of the final seedbed. If the level of the ground cover is such that this cannot be done, the soil must be tilled prior to the application of Sonalan HFP.

**Soil Roughness** - The soil surface should be smooth enough so that you can operate a sprayer and incorporation equipment without wheel slippage and at speeds sufficient to ensure uniform application and incorporation of Sonalan HFP.

**General Soil Conditions** - To assure uniform incorporation of Sonalan HFP, soil moisture conditions should be such that large clods can be broken up during the incorporation process.

## Application Timing

### Spring Application

Apply and incorporate Sonalan HFP any time after January 1 when soil can be worked and is in a condition which allows thorough mixing to insure uniform incorporation.

### Fall Application

When applied with dry bulk fertilizer, Sonalan HFP may be applied and incorporated in the fall prior to a spring planting of dry beans or sunflowers. Apply Sonalan HFP with dry bulk fertilizer anytime between October 1 and December 31 at the recommended rates for crops and soil textures listed in the Crop-Specific Use Directions section of this label. Fall application of Sonalan HFP is not recommended on fields which remain wet or are subject to periods of flooding.

## Soil-Incorporation Directions

Use incorporation equipment that thoroughly and uniformly mixes Sonalan HFP into the top 2 to 3 inches of the final seedbed or erratic weed control and/or crop injury may result. Incorporation should occur as soon as possible after application and, to prevent loss of herbicidal activity, should not be delayed more than 48 hours after application.

### Incorporation in Bedded Culture

**Application prior to bedding:** Apply Sonalan HFP and mix thoroughly into the top 2 to 3 inches of soil. The bedding operation provides additional mixing. Do not expose untreated soil during post-bedding operations. †

**Application after bedding:** Knock off beds to planting height before applying Sonalan HFP. Apply Sonalan HFP and mix thoroughly with equipment that will conform to the bed shape. Do not expose untreated soil during the incorporation process. †

† Avoid removal of treated soil from the seedbed before or during the planting operation. Exposure of untreated soil during planting will allow weeds to germinate in the drill row.

**Incorporation When Applied with Dry Bulk Fertilizer:** When impregnated on dry bulk fertilizer, Sonalan HFP must be incorporated 2 times. The first incorporation should occur as soon as possible after application, but not delayed more than 48 hours after application. For best weed control results, the second incorporation should be delayed at least 5 days after the first and occur before planting. When fall applied, the second incorporation may occur in the spring as a part of tillage associated with seedbed preparation. The second incorporation should be made in a different direction, and to avoid bringing untreated soil to the surface, should not be deeper than the first.

**Optional Methods of Incorporation for Soybeans, Dry Beans and Peanuts on Medium and Coarse Textured Soils:** Sonalan HFP may be applied as a surface application and incorporated by rainfall or sprinkler irrigation. Soil should be in good tilth and free of clods. Make applications to tilled land and/or standing or chopped stubble from the previous season's crop. Conditions should permit thorough movement into the top 2 to 3 inches of the final seedbed. Application should be made immediately after tillage and after planting, but prior to rainfall or irrigation. Rainfall or sprinkler irrigation prior to application will tend to consolidate and seal the soil surface and prevent the downward movement of Sonalan HFP that is expected under porous, open, recently tilled conditions.

If continuous rainfall in the amount of at least 1/2 to 1 inch occurs within 2 days after application of Sonalan HFP, no further incorporation is required. If the prescribed amount of rainfall is not anticipated, supplemental overhead sprinkler irrigation of at least 1/2 to 1 inch of water may be applied within 2 days after application. Supplemental irrigation can be applied through a center pivot, solid set or hand moved sprinkler system. Furrow irrigation is prohibited. Mechanical incorporation methods should be used to incorporate Sonalan HFP if the required amount of rainfall or supplemental irrigation does not occur within 2 days after application. If mechanical incorporation is used, adjust equipment so as to not disturb planted seed.

**Note:** For crops with application rates that exceed 3.7 pints per acre, do not apply more than 3.7 pints (1.4 lb a.i.) per acre, regardless of the application rate in the specific use directions, if incorporation is to be accomplished by supplemental overhead sprinkler irrigation. Do not apply more than 2.0 pints (0.75 lb a.i.) per acre, regardless of the application rate in the specific use directions, if incorporation is to be accomplished by rainfall only.

### Cultivation after Planting

Soil treated with Sonalan HFP may be shallowly cultivated without reducing the weed control activity of Sonalan HFP. Do not cultivate deeper than the treated soil since weeds may germinate where untreated soil is brought to the surface.

## Soil Texture Guide for Application Rates

Use rates of Sonalan HFP for specific crops are based on the Soil Texture Class (coarse, medium, or fine) of the soil to be treated and organic matter content. A fine-textured soil (clay loam) requires a higher use rate than a coarse-textured soil (loamy sand). Field soil textures, grouped according to Soil Texture Class, are listed in the table below and should be used to determine if the soil to be treated is coarse, medium or fine. Do not exceed recommended use rates for specific crops or target weed species.

Soil Texture Class	Field Soil Texture Group
Coarse soils: (light)	Sand, loamy sand, sandy loam
Medium soils:	Loam, silty clay loam <sup>†</sup> , silt loam, silt, sandy clay loam <sup>†</sup>
Fine soils: (heavy)	Clay, clay loam, silty clay loam <sup>†</sup> , silty clay, sandy clay, sandy clay loam <sup>†</sup>

† Silty clay loam and sandy clay loam soils are transitional soils and may be classified as either medium or fine textured soils. If silty clay loam or sandy clay loam soils are predominantly sand or silt, they are usually classified as medium textured soils. If they are predominantly clay, they are usually classified as fine textured soils.

**Application Rate Ranges:** Where a rate range is shown, use the lower rate for more coarse-textured soils in the Field Soil Texture Group or soils with low organic matter content. Use the higher rate in the rate range for more fine-textured soils in the Field Soil Texture Group and soils containing more than 5% organic matter. Where soil texture is variable within the same field, use the lower recommended rate for Sonalan HFP. Sonalan HFP is not recommended for use on soils containing more than 10% organic matter.

## Grasses and Broadleaf Weeds Controlled by Sonalan HFP

Sonalan HFP applied preplant soil incorporated will control the following weeds:

### Grasses:

#### Common Name

annual bluegrass  
barnyardgrass  
crabgrass  
(large crabgrass)  
(small crabgrass)  
cupgrass, woolly  
foxtail  
(giant foxtail)  
(green foxtail) <sup>††††</sup>  
(foxtail millet)  
(pigeongrass)  
(yellow foxtail)  
johnsongrass (from seed)  
junglerice  
oat, wild <sup>†</sup>  
panicum, fall  
panicum, Texas  
(buffalograss)  
(Colorado grass)  
ryegrass, Italian  
(annual ryegrass)  
sandbur, field  
(sandbur, coast)  
volunteer sorghum  
(wild cane)  
signalgrass, broadleaf  
(brachiaria)  
witchgrass

#### Scientific Name

*Poa annua*  
*Echinochloa crus-galli*  
*Digitaria* spp.  
  
*Eriochloa villosa*  
*Setaria* spp.  
  
*Sorghum halepense*  
*Echinochloa colonum*  
*Avena fatua*  
*Brachiaria fasciculata*  
*Panicum texanum*  
  
*Lolium multiflorum*  
  
*Cenchrus incertus*  
  
*Sorghum vulgare*  
  
*Brachiaria platyphylla*  
  
*Panicum capillare*

### Broadleaf Weeds:

#### Common Name

buckwheat, wild  
carpetweed  
catchfly, conical  
chickweed, common  
fiddleneck tarweed  
groundcherry (annual) <sup>††</sup>  
(lanceleaf groundcherry)  
(Wright's groundcherry)  
henbit  
kochia  
lambsquarters, common  
nightshade (annual) <sup>††</sup>  
(black nightshade)  
(eastern black nightshade) <sup>†††</sup>  
(hairy nightshade)

#### Scientific Name

*Polygonum convolvulus*  
*Mollugo verticillata*  
*Silene conica*  
*Stellaria media*  
*Amsinckia lycopsoides*  
  
*Physalis lanceifolia*  
*Physalis wrightii*  
*Lamium amplexicaule*  
*Kochia scoparia*  
*Chenopodium album*  
*Solanum* spp.

pigweed <sup>††††</sup>

(prostrate pigweed)  
(redroot pigweed)  
(smooth pigweed)  
(tumble pigweed)  
(Palmer amaranth)

*Amaranthus* spp.

purslane, common

pusley, Florida  
rockpurslane, redmaids  
thistle, Russian

*Portulaca oleracea*

*Richardia scabra*  
*Calandrinia ciliata*  
*Salsola kali*

<sup>†</sup> Sonalan HFP will provide wild oat control except those germinating below the zone treated with Sonalan HFP.

<sup>††</sup> See special instructions for control in dry bean.

<sup>†††</sup> See special instructions for partial control in soybean.

<sup>††††</sup> Sonalan HFP will not control DNA (dinitroaniline) tolerant biotypes of this weed species

## Crop-Specific Use Directions

### Canola and Crambe

#### Sonalan HFP - Alone

Apply and incorporate Sonalan HFP before planting. Application may be made in the fall or in the spring prior to planting canola or crambe. See instructions for fall application, application directions and soil-incorporation directions in the General Information section of this label.

Use the correct rate for each soil type to avoid crop injury. Prolonged wet or cold soils, deep seed placement, soil crusting, or application overlaps may combine to cause slowed or reduced emergence.

#### Broadcast Application Rates:

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2
Medium	2
Fine	2 1/2

### Tank Mix or Overlay Recommendations

For broader spectrum weed control, other products registered for use in canola or crambe may be applied in tank mix combination or as a sequential overlay treatment following application of Sonalan HFP. Consult the manufacturer's label for additional weeds controlled, directions for use, cautions and limitations before use. See detailed information for tank mixing in the General Information section of this label.

#### Precautions and Restrictions

- Do not graze or forage crop grown in treated soil.
- In Montana and Wyoming:** Refer to Special Rotational Crop Restrictions for the States of Montana and Wyoming in the Rotational Crop Restrictions section of this label.

**Dry Beans**  
(Does not include soybean)

**Sonalan HFP - Alone**

Apply and incorporate Sonalan HFP in the spring before planting or in the fall. Fall application may be made only with dry bulk fertilizer. See instructions for fall application of Sonalan HFP under the heading Application Timing in the General Information section of this label. Follow soil preparation, application, and incorporation procedures recommended in the General Information section of this label.

**Broadcast Application Rates:** General weed control, except groundcherry and nightshade.

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2 - 2 1/2
Fine	2 1/2 - 3

**Broadcast Application Rates:** General weed control, including groundcherry and nightshade from seed. Two incorporation passes are required for control of ground cherry and eastern black nightshade.

Soil Texture	Sonalan HFP (pt/acre)
Coarse	3 - 3 1/2
Medium	3 1/2 - 4
Fine	4 - 4 1/2

**Precaution:** When high rates for control of nightshade and groundcherry are applied, rotate only to crops listed on this label.

**Chemigation:** Sonalan HFP may be applied to dry beans by chemigation at labeled rates. Refer to Chemigation Application section for application guidelines for chemigation.

**Tank Mix, Overlay or Postemergence Recommendations**

For broader spectrum weed control, other products registered for use in dry beans may be applied in tank mix combination or as a sequential overlay or postemergence treatment following application of Sonalan HFP. Consult the manufacturer's label for additional weeds controlled, directions for use, cautions and limitations before use. See detailed information for tank mixing in the General Information section of this label.

**Dry Peas**  
(Not for Use in California)

**General Weed Control - Except Groundcherry and Nightshade:** Apply and incorporate Sonalan HFP in the spring before planting or in the fall. Fall application may be made only with dry bulk fertilizer. See instructions for fall application of Sonalan HFP under the heading Application Timing in the General Information section of this label. Follow soil preparation, application, and incorporation procedures recommended in the General Information section of this label.

**Broadcast Application Rates:**

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2

**Precaution:** Do not exceed these rates of Sonalan HFP for weed control in dry peas or crop injury may occur. Not all varieties of peas have been tested for tolerance to Sonalan HFP. Consult your seed contractor before applying Sonalan HFP to determine the tolerance of a particular pea variety. Application of Sonalan HFP to non-tolerant pea varieties may result in crop injury and reduced yields.

**Restriction:** Do not graze or forage crop grown in treated soil or cut for hay or silage.

**Peanut**

**Sonalan HFP - Alone**

Apply Sonalan HFP in the spring as a preplant incorporated treatment. Follow soil preparation, application, and incorporation procedures recommended in the General Information section of this label.

**Broadcast Application Rates:**

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2 - 2 1/2
Fine	2 1/2 - 3

**Restriction:** Do not graze or forage crop grown in treated soil or cut for hay or silage.

**Tank Mix or Overlay Recommendations**

For broader spectrum weed control, other products registered for use in peanuts may be applied in tank mix combination or as at-cracking, sequential or overlay treatments following application of Sonalan HFP. Consult the manufacturer's label for additional weeds controlled, directions for use, cautions and limitations before use. See detailed information for tank mixing in the General Information section of this label.

## Safflower

Apply Sonalan HFP as a preplant incorporated treatment in the fall or in the spring prior to planting safflower. Refer to the General Information of this label for mixing directions, application methods, soil incorporation, and application timing. In addition to weeds listed on this label, Sonalan HFP is useful for control of ALS resistant kochia. Use the higher rate in the rate range where difficult to control weeds or high weed populations are anticipated.

### Broadcast Application Rates:

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2 - 2 1/2
Fine	2 1/2 - 3

**Precautions:** To avoid crop injury, use the correct rate for the soil texture of the treatment area. Prolonged wet or cold soils, deep seed placement, soil crusting, or application overlaps may combine to cause slowed or reduced emergence.

### Restrictions:

- Make only 1 application per crop season using ground broadcast equipment.
- Do not exceed 3.0 pint per acre per crop year.
- Do not allow grazing or harvest crop from treated soil for hay or silage.
- **In Montana and Wyoming:** Refer to Special Rotational Crop Restrictions for the States of Montana and Wyoming in the Rotational Crop Restrictions section of this label.

## Soybean

### Sonalan HFP - Alone

Apply and incorporate Sonalan HFP in the spring before planting or in the fall. Fall application may be made only with dry bulk fertilizer. See instructions for fall application of Sonalan HFP under the heading Application Timing in the General Information section of this label. Follow soil preparation, application, and incorporation procedures recommended in the General Information section of this label.

**Broadcast Application Rates:** General weed control, except groundcherry and nightshade.

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2 - 2 1/2
Fine	2 1/2 - 3

**Broadcast Application Rates:** General weed control, including partial control of eastern black nightshade and groundcherry. Two incorporation passes are required for partial control of ground cherry and eastern black nightshade.

Soil Texture	Sonalan HFP (pt/acre)
Medium	3
Fine	3 1/2

### Precautions:

- When high rates for control of nightshade and groundcherry are applied, rotate only to crops listed on this label.
- Soybeans should be planted no more than 2 inches deep after early season adverse weather conditions have passed, especially when using higher rate programs. Excessively deep planting or cool, wet weather early in the growth cycle causes additional stress to the soybean plant. These factors may result in reduced stands, delayed maturity and reduced yields.

### Tank Mix, Overlay or Postemergence Recommendations

For broader spectrum weed control, other products registered for use in soybean may be applied in tank mix combination or as a sequential overlay or postemergence treatment following application of Sonalan HFP<sup>†</sup>. Consult the manufacturer's label for additional weeds controlled, directions for use, cautions and limitations before use. See detailed information for tank mixing in the General Information section of this label.

<sup>†</sup>Do not use Scepter in tank mix combination with Sonalan HFP or as a sequential overlay or postemergence application following Sonalan HFP.

## Sunflower

### Sonalan HFP - Alone

Apply and incorporate Sonalan HFP in the spring before planting or in the fall. Fall application may be made only with dry bulk fertilizer. See instructions for fall application of Sonalan HFP under the heading Application Timing in the General Information section of this label. Follow soil preparation, application, and incorporation procedures recommended in the General Information section of this label.

**Broadcast Application Rates:** General weed control, except groundcherry and nightshade.

Soil Texture	Sonalan HFP (pt/acre)
Coarse	1 1/2 - 2
Medium	2 - 2 1/2
Fine	2 1/2 - 3

**Broadcast Application Rates:** General weed control, including groundcherry and nightshade from seed.

Soil Texture	Sonalan HFP (pt/acre)
Coarse	3 - 3 1/2
Medium	3 1/2 - 4
Fine	4 - 4 1/2

**Chemigation:** Sonalan HFP may be applied to sunflower by chemigation at labeled rates. Refer to Chemigation Application section for application guidelines for chemigation.

### Precautions and Restrictions:

- Do not graze or forage crop grown in treated soil or cut for hay or silage.
- When high rates for control of nightshade and groundcherry are applied, rotate only to crops listed on this label.

### **Tank Mix or Overlay Recommendations**

For broader spectrum weed control, other products registered for use in sunflower may be applied in tank mix combination or as a sequential overlay treatment following application of Sonalan HFP. Consult the manufacturer's label for additional weeds controlled, directions for use, cautions and limitations before use. See detailed information for tank mixing in the General Information section of this label.

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It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

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### **Revisions:**

1. Added restriction that Sonalan will not control DNA (dinitroaniline) resistant green foxtail.
2. Added Palmer amaranth.
3. Added chemigation instructions.
4. Added use directions for canola, crambe and safflower.