

Specimen Label



Dow AgroSciences



HERBICIDE

®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

A herbicide for preemergence control of certain annual grasses and broadleaf weeds in, crambe, dry beans, dry peas, gold of pleasure, peanuts, rapeseed, safflower, soybeans, and sunflower

Active Ingredient:

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

Other Ingredients	35.4%
Total	64.6%
	100.0%

Contains 3 lb active ingredient per gallon.

Precautionary Statements

Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-188

DANGER

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 Lamine 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.

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 Lamine 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 by use 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.

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers 5 gallons or larger:

Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Product Information

Sonalan® HFP herbicide is a preemergence herbicide that controls many annual grasses and broadleaf weeds in in crambe, dry beans, dry peas, gold of pleasure, peanuts, rapeseed, 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 of Sonalan HFP or more per acre. Where less than 3 pints of Sonalan HFP per acre 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 of Sonalan HFP or more per acre.

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 of Sonalan HFP per acre. 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 of Sonalan HFP rate per acre. 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 Application Directions 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 build up 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 non-target 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 directions 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 specified 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 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, two to three 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 directions 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 two times (see Soil Incorporation Directions).

Limitations: Apply a minimum of 200 lb of dry fertilizer impregnated with Sonalan HFP per acre 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

Sonalan® HFP herbicide 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 specified 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 specified 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 of non-emulsifiable oil or diesel fuel per acre. 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 specified 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 pints per acre, is 399 pints (133 acres X 3 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, refer to General Chemigation Directions.

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 specified 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 herbicide 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.¹

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.[†]

¹ 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 two 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 ai) 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 pints (0.75 lb ai) 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 specified 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 ¹ , silt loam, silt,
fine soils (heavy):	sandy clay loam ¹
	clay, clay loam, silty clay loam ¹ , silty clay,
	sandy clay, sandy clay loam [†]

¹Silty 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 specified rate for Sonalan HFP. Sonalan HFP is not recommended for use on soils containing more than 10% organic matter.

Grasses and Broadleaf Weeds Controlled

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

Common Name	Scientific Name
Grasses	
annual bluegrass	<i>Poa annua</i>
barnyardgrass	<i>Echinochloa crus-galli</i>
crabgrass	<i>Digitaria</i> spp.
(large crabgrass)	
(small crabgrass)	
cupgrass, woolly	<i>Eriochloa villosa</i>
foxtail	<i>Setaria</i> spp.
(foxtail millet)	
(giant foxtail)	
(green foxtail) ⁴	
(pigeongrass)	
(yellow foxtail)	
johnsongrass (from seed)	<i>Sorghum halepense</i>
jungerice	<i>Echinochloa colonum</i>
oat, wild ¹	<i>Avena fatua</i>
panicum, fall	<i>Brachiaria fasciculata</i>
panicum, Texas	<i>Panicum texanum</i>
(buffalograss)	
(Coloradograss)	
ryegrass, Italian	<i>Lolium multiflorum</i>
(annual ryegrass)	

Common Name (Cont.)

Grasses

sandbur, field
(sandbur, coast)
signalgrass, broadleaf
(brachiaria)
volunteer sorghum
(wild cane)
witchgrass

Broadleaf Weeds

buckwheat, wild
carpetweed
catchfly, conical
chickweed, common
fiddleneck tarweed
groundcherry (annual)²
(lanceleaf groundcherry)
(wright's groundcherry)
henbit
kochia
lambquarters, common
nightshade (annual)²
(black nightshade)
(eastern black nightshade)³
(hairy nightshade)
pigweed⁴
(palmer amaranth)
(prostrate pigweed)
(redroot pigweed)
(smooth pigweed)
(tumble pigweed)
purslane, common
pusley, Florida
rockpurslane, redmaids
thistle, Russian

Scientific Name

Cenchrus incertus
Brachiaria platyphylla
Sorghum vulgare
Panicum capillare
Polygonum convolvulus
Mollugo verticillata
Silene conica
Stellaria media
Amsinckia lycopsoides
Physalis lanceifolia
Physalis wrightii
Lamium amplexicaule
Kochia scoparia
Chenopodium album
Solanum spp.

Amaranthus spp.

Portulaca oleracea
Richardia scabra
Calandrinia ciliata
Salsola kali

¹ Sonalan HFP will provide wild oat control except those germinating below the zone treated with Sonalan HFP.

² See special instructions for control in dry bean.

³ See special instructions for partial control in soybean.

⁴ Sonalan HFP will not control DNA (dinitroaniline) tolerant biotypes of this weed species

Uses

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 Product Information section of this label. Follow soil preparation, application, and incorporation procedures in the Product Information section of this label.

Broadcast Application Rates for 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 for 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

Two incorporation passes are required for control of ground cherry and eastern black nightshade.

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 Product 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 Product Information section of this label. Follow soil preparation, application, and incorporation procedures in the Product 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.

Oilseed – Crambe, Gold of pleasure (Camelina), Rapeseed (Canola Varieties Only)

(Not for use in California)

Sonalan HFP - Alone

Apply and incorporate Sonalan[®] HFP herbicide 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 Product 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 Product Information section of this label.

Restriction:

- Do not graze or forage crop grown in treated soil.

Precaution:

- 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.
- Gold of Pleasure (Camelina) crops exhibit marginal tolerance to Sonalan HFP. Stunting or reduced stands may occur.

Oilseed – Sunflower

Sonalan HFP - Alone

Apply and incorporate Sonalan[®] HFP herbicide 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 Product Information section of this label. Follow soil preparation, application, and incorporation procedures specified in the Product Information section of this label.

Broadcast Application Rates for 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 for 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 Product Information section of this label.

Oilseed – Safflower

Apply Sonalan HFP as a preplant incorporated treatment in the fall or in the spring prior to planting safflower. Refer to the Product 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 one application per crop season using ground broadcast equipment.
- Do not exceed 3 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.

Peanut

Sonalan HFP - Alone

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

Potatoes

(For use in the States of AZ, CO, NE (West of Rt. 281), ID, KS (West of Rt. 281), MT, ND (West of Rt. 281), NV, NM, OK (West of Rt. 281/283), OR, SD (West of Rt. 281), TX (West of Rt. 281 and Northwest of Rt. 377), UT, WA and WY)

Broadcast apply and incorporate Sonalan HFP after planting but prior to crop emergence.

Broadcast Application Rates

Soil Texture	Sonalan HFP (pt/acre)
coarse	1 1/3 - 2
medium	2 - 2 2/3
fine	2 2/3

Mechanical Incorporation

Mechanically incorporate Sonalan HFP if recommended rainfall or irrigation does not occur within 2 days after application. Mix thoroughly into the top 2 to 3 inches of soil. Do not expose untreated soil during the incorporation process. Set incorporation equipment so that the bed and furrow will be uniformly covered with a layer of treated soil. Adjust equipment to avoid disturbance of seed pieces and/or unemerged shoots.

Incorporation by Rainfall or Irrigation in Coarse or Medium Textured Soils

Apply immediately after planting if incorporation by rainfall or using sprinkler irrigation is intended. Rainfall or sprinkler irrigation prior to application tends to consolidate and seal the soil surface. Movement of Sonalan HFP into the zone of weed germination is more effective if application occurs immediately after tillage and planting. If continuous rainfall or irrigation of 1/2 to 1 inch occurs within 2 days after application of Sonalan HFP, no further incorporation is required. Do not incorporate using furrow irrigation.

Chemigation

Sonalan HFP may be applied through sprinkler irrigation equipment using the maximum recommended rate for the soil texture class of the treatment site. Refer to the Chemigation Application section in General Information in the main product label for Sonalan HFP for specific use directions for chemigation.

Cultivation

Sonalan HFP may be shallowly cultivated without reducing weed control activity. Avoid exposure of untreated soil.

Restrictions:

- Do not apply after crop emergence or exceed 2 2/3 pint per acre per season.

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 Product Information section of this label. Follow soil preparation, application, and incorporation procedures specified in the Product Information section of this label.

Broadcast Application Rates for 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 for General Weed Control Including Partial Control of Eastern Black Nightshade and Groundcherry:

Soil Texture	Sonalan HFP (pt/acre)
medium	3
fine	3 1/2

Two incorporation passes are required for partial control of ground cherry and eastern black nightshade.

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 HFP¹. 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 Product Information section of this label.

¹ Do not use Scepter in tank mix combination with Sonalan HFP or as a sequential overlay or postemergence application following Sonalan HFP.

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If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

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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. To the extent permitted by law, all such risks shall be assumed by buyer.

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- Replacement of amount of product used.

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Revisions:

1. Updated trademark line
2. Added use directions for: Weed Control in Potatoes - For Distribution and Use in the States of AZ, CO, NE (West of Rt. 281), ID, KS (West of Rt. 281), MT, ND (West of Rt. 281), NV, NM, OK (West of Rt. 281/283), OR, SD (West of Rt. 281), TX (West of Rt. 281 and Northwest of Rt. 377), UT, WA and WY. Sec. 3
 - a. Supplemental Label R042-001 Sonalan HFP Weed Control in Potatoes
3. Revised Storage and Disposal
4. Marketing claims: delete "canola and"; add "gold of pleasure" and "rapeseed"
5. Canola and Crambe, Safflower, and Sunflower: move sections to Oilseed section
6. Revised sale copy to include the commodities listed in the Directions for Use
7. Revised warranty section
8. Revised heading "General Information" to "Product Information"
9. Revised "recommended" to "specified" throughout label
10. Marketing claims: delete "canola and"; add "gold of pleasure" and "rapeseed"
11. Canola and Crambe: move section to Oilseed section
12. Added Oilseed section: Borage, Crambe, Cuphea, Echium, Flax seed, Gold of pleasure (Camelina), Hare's ear mustard, Lesquerella, Lunaria, Meadowfoam, Milkweed, Mustard seed, Oil radish, Poppy seed, Rapeseed (Canola Varieties Only), Sesame, and Sweet rocket
13. Added Oilseed section: Calendula, Castor oil plant, Chinese tallowtree, Euphorbia, Evening primrose, Jojoba, Niger seed, Rose hip, Stokes aster, Sunflower, Tallowwood, Tea oil plant, and Vernonia
14. Safflower: move section to Oilseed section.
15. Sunflower: move section to Oilseed section