

ETHALFLURALIN	GROUP	3	HERBICIDE
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# Sonalan<sup>®</sup> HFP

## Herbicide

A herbicide for preemergence control of certain annual grasses and broadleaf weeds in dried shelled bean, except soybean, crop subgroup 6-22E; dry shelled pea crop subgroup 6-22F; hemp; oilseed - rapeseed crop subgroup 20A; oilseed – sunflower crop subgroup 20B; onion, bulb crop subgroup 3-07A; peanuts; vegetable, tuberous and corm, crop subgroup 1C; soybeans; and stevia.

<b>ACTIVE INGREDIENT:</b>	<b>% BY WT.</b>
Ethalfluralin: N-ethyl-N-(2-methyl-2-propenyl)-2, 6-dinitro-4-(trifluoromethyl)benzenamine .....	35.4%
<b>OTHER INGREDIENTS</b> .....	64.6%
Total .....	100.0%

Contains 3 lb active ingredient per gallon.

## 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.)

FIRST AID	
<b>IF IN EYES</b>	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 Poison Control or a doctor for treatment advice.
<b>IF ON SKIN OR CLOTHING</b>	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Poison Control or a doctor for treatment advice.
<b>IF SWALLOWED</b>	Call Poison Control or a 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.
<b>IF INHALED</b>	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 Poison Control or a doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling Poison Control or a doctor, or going for treatment. You may also contact <b>1-888-478-0798</b> for emergency medical treatment information.	
NOTE TO PHYSICIAN	
Probable mucosal damage may contraindicate the use of gastric lavage.	

**Refer to inside of label booklet for additional precautionary information and Directions for Use.**

**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 at end of label booklet. If terms are unacceptable, return at once unopened.**

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

**Avoid Freezing – Store Above 40°F**

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### 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.

**NET CONTENTS** \_\_\_\_

For Spanish translation /  
Para traducción al Español:



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Gowan Company, LLC  
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**Gowan<sup>®</sup>**

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### Applicators and other handlers must wear:

- Coveralls worn over long-sleeved shirt and long pants
- Chemical-resistant gloves made of barrier laminate or Viton  $\geq 14$  mils
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

In addition to the above PPE, all handlers for uses on bulb onions (crop subgroup 3-07A), hemp, and stevia must also wear:

- A minimum of a NIOSH-approved particulate filtering facepiece respirator with any N, R, or P filter; OR a NIOSH-approved elastomeric particulate respirator with any N, R, or P filter; OR a NIOSH-approved powered air-purifying respirator with an HE filter

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 exist, 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 170.607(d-f)], 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.

### 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.

**Non-Target Organism Advisory Statement:** This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated area. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

### 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 made of barrier laminate or Viton  $\geq 14$  mils
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

### PRODUCT INFORMATION

Sonalan® HFP herbicide is a preemergence herbicide that controls certain annual grasses and broadleaf weeds. Sonalan HFP controls weeds as they germinate. Sonalan HFP will not control established weeds.

### USE PRECAUTIONS

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.

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

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.

### USE RESTRICTIONS

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

Do not apply to any area not specified on the 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:**

After a 3.0 pint per acre or greater application of Sonalan HFP, plant only rapeseed (canola), safflower or sunflower the following crop year.

After an application of rates of 2.0 pints per acre or less, to a Spring planted registered crop, in areas with adequate moisture and temperature for normal crop production in addition to the crops noted above, wheat, durum or barley grown under irrigated conditions, can be planted the following Spring in soils with organic matter 2% or greater. **Caution:** In drought conditions, crops (other than rapeseed (canola), safflower, sunflower, or barley under irrigated conditions) should not be planted for a period of one 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

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions, limitations, and directions for use on all product labels involved in the tank mixture. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

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 Methods 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 nontarget areas or non-uniform application.

#### WEED RESISTANCE MANAGEMENT

For resistance management, Sonalan HFP is a Group 3 herbicide. Any weed population may contain or develop plants naturally resistant to Sonalan HFP and Group 3 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Appropriate resistance-management strategies should be followed.

##### Best Management Practices

To delay herbicide resistance take one or more of the following steps:

- Rotate the use of Sonalan HFP or other Group 3 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g., higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Scout before and after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include:
  - (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
  - (2) a spreading patch of non-controlled plants of a particular weed species;
  - (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- If a weed pest population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.
- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.

- For further information or to report suspected resistance, contact Gowan Company representative.

## APPLICATION METHODS

### 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 labeled 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 dried shelled bean, except soybean, crop subgroup 6-22E, oilseed –sunflower crop subgroup 20B, and vegetable, tuberous and corm crop subgroup 1C. Refer to instructions below, and the crop specific use directions section for individual crops, for use directions for chemigation. Do not apply Sonalan via chemigation to crops unless chemigation is specified in the crop specific use directions. Do not apply Sonalan HFP through any type of irrigation system unless these directions are carefully followed. Prior to chemigation operations, ensure field is in good tillth and clod free. The Sonalan HFP must be applied with adequate water in order for the product to move 2" below the soil surface.

**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:** Apply Sonalan HFP at labeled rates 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 ensure 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.

## MANDATORY SPRAY DRIFT MANAGEMENT

### Ground Applications

- For ground applications, applicators are required to select nozzle and pressure that results in a Coarse or larger spray droplet size, in accordance with ASABE Standards S572.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- When using ground boom application equipment, apply with nozzle height no more than 3 feet above the ground or crop canopy. For all other ground applications, the nozzle must be no more than 4 feet from the target vegetation.
- Do not apply during temperature inversions.

### Aerial Applications

- Do not release spray at a height greater than 10 feet above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety.
- Applicators are required to use a coarse, or coarser droplet size (ASABE S572).
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- Do not apply during temperature inversions.

### Spray Drift Advisories

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

### Importance of droplet size

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

### Controlling Droplet Size – Ground Boom

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

### Boom Height – Ground Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

### Release Height – Aircraft

Higher release heights increase the potential for spray drift.

### Shielded Sprayers

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

### Temperature and Humidity

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

### Temperature Inversions

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

### Wind

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

## 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 ensure 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 labeled crops. 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 Uses 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.

**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 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 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 or 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 <sup>1</sup> , silt loam, silt, sandy clay loam <sup>1</sup>
fine soils (heavy):	clay, clay loam, silty clay loam <sup>1</sup> , silty clay, sandy clay, sandy clay loam

<sup>1</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 specified rate for Sonalan HFP. Do not use Sonalan HFP 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
<b>Grasses</b>	
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) <sup>4</sup>	
(pigeongrass)	
(yellow foxtail)	
johnsongrass (from seed)	<i>Sorghum halepense</i>
junglerice	<i>Echinochloa colonum</i>

oat, wild <sup>1</sup>	<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)	
sandbur, field	<i>Cenchrus incertus</i>
(sandbur, coast)	
signalgrass, broadleaf	<i>Brachiaria platyphylla</i>
(brachiaria)	
volunteer sorghum	<i>Sorghum vulgare</i>
(wild cane)	
witchgrass	<i>Panicum capillare</i>

**Broadleaf Weeds**

buckwheat, wild	<i>Polygonum convolvulus</i>
carpetweed	<i>Mollugo verticillata</i>
catchfly, conical	<i>Silene conica</i>
chickweed, common	<i>Stellaria media</i>
fiddleneck tarweed	<i>Amsinckia lycopsoides</i>
groundcherry (annual) <sup>2</sup>	
(lanceleaf groundcherry)	<i>Physalis lanceifolia</i>
(wright's groundcherry)	<i>Physalis wrightii</i>
henbit	<i>Lamium amplexicaule</i>
kochia	<i>Kochia scoparia</i>
lambsquarters, common	<i>Chenopodium album</i>
nightshade (annual) <sup>2</sup>	<i>Solanum</i> spp.
(black nightshade)	
(eastern black nightshade) <sup>3</sup>	
(hairy nightshade)	
pigweed <sup>4</sup>	<i>Amaranthus</i> spp.
(palmer amaranth)	
(prostrate pigweed)	
(redroot pigweed)	
(smooth pigweed)	
(tumble pigweed)	
(waterhemp)	
purslane, common	<i>Portulaca oleracea</i>
pusley, Florida	<i>Richardia scabra</i>
rockpurslane, redmaids	<i>Calandrinia ciliata</i>
thistle, Russian	<i>Salsola kali</i>

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

<sup>2</sup> See special instructions for control in dried shelled bean, except soybean, crop subgroup 6-22E

<sup>3</sup> See special instructions for partial control in soybean.

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

**USES**

**DRIED SHELLLED BEAN, EXCEPT SOYBEAN, CROP SUBGROUP 6-22E** - African yam-bean; American potato bean; Bean (*Lupinus* spp.; includes Andean lupin, blue lupin, grain lupin, sweet lupin, white lupin, white sweet lupin, and yellow lupin); Bean (*Phaseolus* spp.; includes black bean, cranberry bean, dry bean, field bean, French bean, garden bean, great northern bean, green bean, kidney bean, lima bean, navy bean, pink bean, pinto bean, red bean, scarlet runner bean, tepary bean, and yellow bean); Bean (*Vigna* spp.; includes adzuki bean, blackeyed pea, asparagus bean, catjang bean, Chinese longbean, cowpea, crowder pea, mung bean, moth bean, rice bean, southern pea, urd bean, yardlong bean); broad bean; guar bean; goa bean; horse gram; Jackbean; lablab bean; morama bean; sword bean; winged pea; velvetbean, seed; cultivars, varieties, and/or hybrids of these commodities.

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 section of this label. Follow Soil Preparation, Application Timing and Soil Incorporation Directions sections of this label.

**Broadcast Application Rates for General Weed Control Except Groundcherry and Nightshade:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb Al/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2 - 2 1/2	0.75 - 0.9375
fine	2 1/2 - 3	0.9375 - 1.125

**Broadcast Application Rates for General Weed Control Including Groundcherry and Nightshade From Seed:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb Al/acre)
coarse	3 - 3 1/2	1.125 - 1.3125
medium	3 1/2 - 4	1.3125 - 1.5
fine	4 - 4 1/2	1.5 - 1.6875

**Chemigation:** Sonalan HFP may be applied 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 same use 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, precautions and limitations before use. See detailed information for tank mixing in the Mixing Directions section of this label.

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.

**DRY SHELLLED PEA CROP SUBGROUP 6-22F** - Pea (*Pisum* spp.; includes field pea, dry pea, green pea, garden pea); chickpea; lentil\*; grass-pea; pigeon pea; cultivars, varieties, and/or hybrids of these commodities

**(Not for Use in California)**

**General Weed Control:** 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 Timing, and Soil Incorporation Directions sections of this label.

Sonalan HFP does not control groundcherry or nightshade in dry shelled pea crop subgroup 6-22F.

**Broadcast Application Rates:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2	0.75

**Precaution:** Do not exceed these rates of Sonalan HFP for weed control 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.

\*To avoid crop injury to lentils only apply in the fall with dry bulk fertilizer

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

**HEMP****Sonalan HFP – Alone**

Apply and incorporate Sonalan® HFP herbicide before planting to the soil surface with incorporation via mechanical methods or irrigation.

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)	Sonalan HFP (lb AI/acre)
Coarse / Medium	1 1/2 - 3	0.5625 – 1.125

**Application Timing:**

**Direct Seeded** - Preplant incorporated, or Post plant pre-emergence with incorporation.

**Transplant** - Apply as a single application and incorporate prior to transplanting.

Use lower rates in coarse soils.

**Precautions:**

- Product must be incorporated for proper weed control.
- 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.
- Sonalan HFP will not control DNA (dinitroaniline) resistant goosegrass.
- Sonalan HFP has not been tested on all hemp varieties in all soil conditions. Test Sonalan HFP on your specific variety and soil condition on a small area first.

**Restrictions:**

- 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 product label.
- Do not make more than one application per year.
- Do not apply more than 3 pints (1.125 lb ai) per acre per application.
- Do not exceed 3 pints (1.125 lb AI) per acre per year.
- Do not apply by any type of handgun sprayers including backpack sprayers.
- Do not apply aerially.
- Do not apply using chemigation.
- Do not apply Sonalan HFP on dry bulk fertilizer to hemp.

**OILSEED – RAPESEED CROP SUBGROUP 20A** - 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*) including Brassica carinata, Sesame, Sweet rocket, cultivars, varieties, and/or hybrids of these

**(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 oilseed crops. Follow Directions for Use, Soil Preparation, Application Timing and Soil Incorporation Directions sections 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)	Sonalan HFP (lb AI/acre)
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coarse	1 1/2	0.5625
medium	2	0.75
fine	2 1/2	0.9375

**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, precautions and limitations before use. See detailed information for tank mixing in the Product Information section of this label.

**Precaution:**

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

**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.

**OILSEED – SUNFLOWER CROP SUBGROUP 20B (Except Safflower)** Calendula, Castor oil plant, Chinese tallowtree, Euphorbia, Evening primrose, Jojoba, Niger seed, Rose hip, Stokes aster, Sunflower, Tallowwood, Tea oil plant, Vernonia, cultivars, varieties, and/or hybrids of these

**Sonalan HFP - Alone**

Apply and incorporate Sonalan® HFP herbicide in the fall with dry bulk fertilizer or in the spring before planting. See specific instructions for fall application of Sonalan HFP under the heading Application Timing section of this label. Follow Soil Preparation, Soil Application, and Soil Incorporation Directions sections of this label.

**Broadcast Application Rates for General Weed Control Except Groundcherry and Nightshade:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2 - 2 1/2	0.75 - 0.9375
fine	2 1/2 - 3	0.9375 - 1.125

**Broadcast Application Rates for General Weed Control Including Groundcherry and Nightshade From Seed:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	3 - 3 1/2	1.125 - 1.3125
medium	3 1/2 - 4	1.3125 - 1.5
fine	4 - 4 1/2	1.5 - 1.6875

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

**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 Mixing Directions section of this label.

**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.

**OILSEED – SAFFLOWER**

Apply Sonalan HFP as a preplant incorporated treatment in the fall or in the spring prior to planting safflower. Follow Mixing Directions, Soil Preparation, Application Timing, and Soil Incorporation Directions sections of this label. 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)	Sonalan HFP (lb AI/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2 - 2 1/2	0.75 - 0.9375
fine	2 1/2 - 3	0.9375 - 1.125

**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 (1.125 lb AI) per acre per 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.

**ONION, BULB CROP SUBGROUP 3-07A** - Daylily, bulb; fritillaria, bulb; garlic, bulb; garlic, great-headed, bulb; garlic, serpent, bulb; lily, bulb; onion, bulb; onion, Chinese, bulb; onion, pearl; onion, potato, bulb; shallot, bulb; cultivars, varieties, and/or hybrids of these.

**Broadcast Application Rates for General Weed Control Except Groundcherry and Nightshade:****Direct seeded and transplanted – onion, bulb crop subgroup 3-07A except garlic**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
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coarse	1 - 2	0.375 - 0.75
medium	1.5 - 2.5	0.5625 - 0.9375
fine	1.5 - 3.2	0.5625 - 1.2

**Direct seeded and transplanted – garlic only**

Soil Texture	Broadcast Rate (pt/acre)	Sonalan HFP (lb AI/acre)
Coarse	1.5	0.5625
Medium	2.0	0.75
Fine	3.2	1.2

**Muck soil rate chart - onion, bulb crop subgroup 3-07A**

Application timing and growth stage for Muck Soils (> 10% organic matter)	Rate (pt/acre)	Sonalan HFP (lb AI/acre)
Pre-emergence through loop stage prior to emergence	4.0	1.5

**Direct seeded** – Follow soil preparation, application and incorporation directions located in the Product Information section of this label.

**Delayed pre-emergence (loop stage – when 75% of the radicles have developed on the onion seedling) incorporated** –Direct seeded. Apply with 10 or more gallons of water per acre with ground equipment.

**Incorporation Directions** – Incorporate with rainfall or irrigation (no more than 0.25 inch of initial overhead irrigation) within 48 hours following application.

**Pre-transplants** – Apply and shallow incorporate no more than 2 inches into preformed beds, prior to transplanting. Apply with 10 or more gallons of water per acre with ground equipment.

**Restrictions:**

- Do not apply at loop stage prior to emergence if heavy rains are forecasted – Severe crop injury may occur.
- Do not apply more than 3.2 pints (1.2 lb ai) per acre per application.
- Do not apply more than 3.2 pints (1.2 lb AI) per acre per year.
- For muck soil, do not apply more than 4 pints (1.5 lb AI) per acre per application.
- For muck soil, do not apply more than 4 pints (1.5 lb AI) per acre per year.
- Do not make post-emergent applications.
- Do not apply by handgun sprayers.
- Do not apply using chemigation.
- Do not apply aerially.
- In Texas and Georgia, only for use on transplants.
- Do not apply Sonalan HFP on dry bulk fertilizer to onion, bulb crop subgroup 3-07A.

**PEANUT****Sonalan HFP - Alone**

Apply Sonalan HFP in the spring as a preplant incorporated treatment. Follow Soil Preparation, Application Timing, and Soil Incorporation Directions sections of this label.

**Broadcast Application Rates:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2 - 2 1/2	0.75 - 0.9375
fine	2 1/2 - 3	0.9375 - 1.125

**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, precautions and limitations before use. See detailed information for tank mixing in the Mixing Directions section of this label.

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

**VEGETABLE, TUBEROUS and CORM CROP SUBGROUP 1C** - Arracacha; arrowroot; artichoke, Chinese; artichoke, Jerusalem; canna, edible; cassava, bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; potato; sweet potato; tanier; turmeric; yam bean; yam, true

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

**Broadcast Application Rates**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	1 1/3 - 2	0.499 - 0.75
medium	2 - 2 2/3	0.75 - 1
fine	2 2/3	1

Nightshade and Ground Cherry = suppression only at labeled rates

**Mechanical Incorporation**

Mechanically incorporate Sonalan HFP if 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 labeled rate for the soil texture class of the treatment site. Refer to the Chemigation section under Directions for Use listed above.

**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 pints (1 lb AI) per acre per crop 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 section of this label. Follow Soil Preparation, Application Timing, and Soil Incorporation Directions sections of this label.

**Broadcast Application Rates for General Weed Control Except Groundcherry and Nightshade:**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse	1 1/2 - 2	0.5625 - 0.75
medium	2 - 2 1/2	0.75 - 0.9375
fine	2 1/2 - 3	0.9375 - 1.125

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

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
medium	3	1.125
fine	3 1/2	1.3125

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 HFP. Consult the manufacturer's label for additional weeds controlled, directions for use, precautions and limitations before use. See detailed information for tank mixing in the Product Information section of this label. Do not use Scepter in tank mix combination with Sonalan HFP or as a sequential overlay or postemergence application following Sonalan HFP.

**STEVIA****Sonalan HFP – Alone**

Apply Sonalan HFP herbicide as a broadcast, pre-transplant, incorporated application. Use incorporation equipment that will uniformly mix the herbicide into the top 2-3 inches of the soil within 48 hours of application. Transplant stevia within 7 days.

Or alternatively, apply Sonalan HFP as a broadcast, pre-transplant, surface application and incorporate by sprinkler irrigation with the amount of 0.5 to 1.0 inch of water within 2 days after the application. Transplant stevia within 7 days.

Apply in a minimum spray volume of 10 gallons per acre

**Broadcast Application Rates**

Soil Texture	Sonalan HFP (pt/acre)	Sonalan HFP (lb AI/acre)
coarse / medium / fine	2	0.75

**Restrictions:**

- Do not apply more than 2 pints (0.75 lb ai) per acre per application.
- Do not make more than 2 applications per year.
- Do not apply more than 4 pints (1.5 lb AI) per acre per year.
- Do not make post-emergent applications.
- Do not apply by handgun sprayers.
- Do not apply aerially.
- Do not apply using chemigation.

(Storage and Disposal for rigid containers 5 gal or less)

**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.

**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 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.

(Storage and Disposal for refillable rigid containers larger than 5 gal)

### STORAGE AND DISPOSAL

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**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.

**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.

(Storage and Disposal for nonrefillable rigid containers larger than 5 gal)

### 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.

**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 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.

**FOR 24-HOUR EMERGENCY ASSISTANCE (SPILL, LEAK OR FIRE), CALL CHEMTREC® (800) 424-9300.**

**For other product information, contact Gowan Company or see Safety Data Sheet.**

### NOTICE OF CONDITIONS OF SALE AND WARRANTY AND LIABILITY LIMITATIONS

**Important:** Read the entire Directions for Use and Notice of Conditions of Sale and Warranty and Liability Limitations before using this product. If terms are not acceptable return the unopened container for a full refund.

Our directions for use of this product are based on tests believed to be reliable. However, it is impossible to eliminate all risk associated with the use of this product. Crop injury, inadequate performance, or other unintended consequences may result due to soil or weather conditions, off target movement, presence of other materials, method of use or application, and other factors, all of which are beyond the control of Gowan Company. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer and User.

Gowan Company warrants that this product conforms to the specifications on the label when used in strict conformance with Directions for Use, subject to the above stated risk limitations. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, GOWAN COMPANY MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, GOWAN COMPANY'S EXCLUSIVE LIABILITY FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, OR ANY OTHER LEGAL THEORY IS STRICTLY LIMITED TO THE PURCHASE PRICE PAID OR REPLACEMENT OF PRODUCT, AT GOWAN COMPANY'S SOLE DISCRETION.

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