

AUG - 4 1992

Judy Oldham
Manager, Registration Services
Helena Chemical Company
6075 Poplar Avenue, Suite 500
Memphis, Tennessee 38119

Dear Ms. Oldham:

Subject: Atrazine 4L
EPA Reg. No. 5905-470
RE: Amended Labeling (Risk Reduction Measures)
Your Resubmission Dated July 1, 1992

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable subject to the comments listed below. A Stamped label is enclosed for your records. Five copies of the finished label must be submitted prior to releasing the product for shipment.

On page 8 of the subject label, please delete the section entitled "Quackgrass control on land going into corn production".

Sincerely yours,

Robert J. Taylor
Product Manager (25)
Fungicide-Herbicide Branch
Registration Division (H7505C)

BEST AVAILABLE COPY

CONCURRENCES							
SYMBOL	H7505C						
SURNAME	mo/ll						
DATE	7/30/92						

RESTRICTED USE PESTICIDE

(GROUND AND SURFACE WATER CONCERNS)

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

THIS PRODUCT IS A RESTRICTED USE HERBICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRAZINE TO REACH GROUND AND SURFACE WATER.

ATRAZINE 4L

HERBICIDE

For Season-long Weed Control in Corn and Sorghum

For Weed Control in Certain Other Crops and Industrial Sites

ACTIVE INGREDIENTS:

Atrazine (2-chloro-4-ethylamino)-6-(isopropylamino)-s-triazine 40.8%

Related Compounds 2.2%

INERT INGREDIENTS: 57.0%

TOTAL 100.0%

This product contains 4 lbs. of atrazine per gallon.

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KEEP OUT OF REACH OF CHILDREN

CAUTION

See Inside Panel for Additional Precautionary Statements

PRECAUCION AL USUARIO: Si usted no lee ingles no use este producto hasta que le etiqueta haya sido explicado ampliamente.

EPA REG. NO. 5905-470

EPA EST. NO.: First two letters of batch

code indicate producing establishment -

5905-FL-1=TF 5905-GA-1=CG 5905-CA-1=KC

5905-IA-1=DI 5905-AR-1=WA

NET CONTENTS:

ACCEPTED
with COMMENTS
in EPA Letter Dated:

AUG - 4 1992

MANUFACTURED BY
HELENA CHEMICAL COMPANY
MEMPHIS, TN 38119

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.

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

CAUTION: Harmful or fatal if swallowed. Causes moderate eye irritation. Do not get in eyes, on skin, or on clothing. Wear goggles. Harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating. Remove contaminated clothing and wash before reuse. Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

Users are required to wear long sleeve shirts and long pants or equivalent, chemical resistant gloves, and boots (waterproofed). In addition, persons involved in mixing/loading operations are required to use heavy-duty chemical resistant gloves or neoprene gloves and a face shield or goggles.

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Call a physician or poison control center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

IF IN EYES: Immediately flush eyes with plenty of water. Get medical attention if irritation develops.

IF ON SKIN: Immediately flush skin with plenty of soap and water while removing contaminated clothing and shoes. If irritation develops, seek medical attention.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. Get medical attention.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic invertebrates. Do not apply directly to water or wetlands. Runoff and drift from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

ATRAZINE can travel (seep or leach) through soil and can enter groundwater which may be used as drinking water. ATRAZINE has been found in groundwater. Users are advised not to apply ATRAZINE to sand and loamy sand soils where the water table (groundwater) is close to the surface and where these soils are very permeable. i.e. well-drained. Your local agricultural agencies can provide further information on the type of soil in your area and the location of groundwater.

This product may not be mixed/loaded, or used within 50 feet of all wells including abandoned wells, drainage wells, and sink holes. This product may not be mixed or loaded within 50 feet of intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be applied aerially or by ground within 66 feet of the points where field surface water runoff enters perennial or intermittent streams and rivers or within 200 ft. around natural or impounded lakes and reservoirs. If this product is applied to highly erodible land, the 66 foot buffer or set-back from runoff points must be planted to crop or seeded with grass or other suitable crop.

Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material.

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RE-ENTRY STATEMENT

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

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

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information. "CAUTION. Area treated with atrazine on (date of application). Do not enter without appropriate protective clothing until sprays have dried. In case of accidental exposure, flush eyes or skin with plenty of water. If irritation persists, consult a physician. Contaminated clothing should be washed before reuse."

DIRECTIONS FOR USE

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

CHEMIGATION PROHIBITION

Do not apply this product through any type of irrigation system.

STORAGE AND DISPOSAL

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

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

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

GENERAL INFORMATION

This herbicide controls many annual broadleaf and grass weeds in corn, sorghum, sugarcane, and certain other crops specified on this label. It is also effective in industrial sites for control of most annual and many perennial broadleaf and grass weeds. This product may be applied before or after weeds emerge.

Following many years of continuous use of this product and chemically related products, biotypes of some of the weeds listed on this label have been reported which cannot be effectively controlled by this and related herbicides. Where this is known or suspected and weeds controlled by this product are expected to be present along with resistant biotypes, we recommend the use of this product in combinations or in sequence with other registered herbicides which are not triazines. If only resistant biotypes are expected to be present, use a registered non-triazine herbicide. Consult with your state Agricultural Extension Service for specific recommendations.

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Since this product acts mainly through root absorption, its effectiveness depends on moisture to move it into the root zone. If weeds develop, a shallow cultivation or rotary hoeing will generally result in better weed control.

This product is nonflammable.

Avoid using near adjacent desirable plants or in green houses, or injury may occur.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap as crop injury may result.

Where the use directions give a range of rates, use the lower rate on coarse-textured soil and soil low in organic matter; use the higher rate on fine-textured soil and soil high in organic matter.

Note: Helena Chemical Company does not recommend applications in combination with other herbicides or oils, except as specifically described on this label.

APPLICATION PROCEDURES

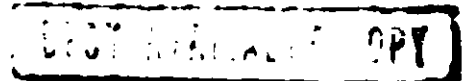
Ground application: Use conventional ground sprayers equipped with nozzles that provide accurate and uniform application. Be certain that nozzles are uniformly spaced and are the same size. Calibrate sprayer before use and recalibrate at the start of each season and when changing carriers. Unless otherwise specified, use a minimum of 10 gals. of spray mixture A for all preplant incorporated, preplant surface, preemergence, and postemergence application (with or without oil or surfactant) with ground equipment.

Use a pump with capacity to (1) maintain 35-40 psi at nozzles, (2) provide sufficient agitation in tank to keep mixture in suspension, and (3) to provide a minimum of 20% bypass at all times. Use centrifugal pumps which provide propeller shear action for dispersing and mixing this product. The pump should provide a minimum of 10 gals/minute/100 gal. tank size circulated through a correctly positioned sparger tube or jets.

Use screen to protect the pump and to prevent nozzles from clogging. Screens placed on the suction side of the pump should be 18-mesh or coarser. Do not place a screen in the recirculation line. Use 50-mesh or coarser screens between the pump and boom, and where required, at the nozzles. Check nozzle manufacturers recommendations.

Aerial application: Use aerial application only where broadcast applications are specified. Apply in a minimum of 1 qt. of water for each quart of this product applied per acre. For postemergence treatments on corn and sorghum, apply recommended rate in a minimum of 2 gals. of water. A. Avoid applications under conditions where coverage cannot be obtained or where excessive spray drift may occur.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin and should wash thoroughly before eating and at the end of each day's operation.



Application in water or liquid fertilizer: Nitrogen solution or complete liquid fertilizer may replace all or part of the water as a carrier for preemergence, preplant incorporated, or preplant surface ground application on corn and sorghum. Check the compatibility of this product with liquid fertilizer and or nitrogen solution as shown below before use. Do not apply in nitrogen solution or complete liquid fertilizer after corn or sorghum emerges, except as noted under Lay-by treatment for corn, or crop injury may occur.

For band applications, calculate amount to be applied per acre as follows:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{Broadcast rate per acre} = \text{amount needed per acre of field}$$

Compatibility Test: Since liquid fertilizers can vary, even within the same analysis, always check compatibility with herbicides(s) each time before use. Be especially careful when using complete suspension or fluid fertilizer as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gals. per acre. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure:

Within rate ranges in all tables on this label, use the lower rate on soil relatively coarse-textured or low in organic matter; use the higher rate on soil relatively fine-textured or high in organic matter.

Rotation Crops: (1) Do not rotate to any crop except corn or sorghum until the following year, or injury may occur. (2) If applied after June 10, do not rotate with crops other than corn or sorghum the next year or crop injury may occur. (3) In the High Plains and Intermountain areas of the West where rainfall is sparse and erratic or where irrigation is required, use only when corn or sorghum is to follow corn or sorghum or when a crop of untreated corn or sorghum is to precede other rotational crops. (4) In eastern parts of the Dakotas, KS, western MN, and NE, do not rotate to soybeans if the rate applied to corn or sorghum was more than 4 pts./A or equivalent band application rate, or soybean injury may occur. (5) Injury may occur to soybeans planted the year following application on soils having a calcareous surface layer. (6) Do not plant sugar beets, tobacco, vegetables (including dry beans), spring-seeded small grains, or small-seeded legumes and grasses the year following application, or injury may occur.

ATRAZINE 4L APPLIED ALONE - CORN OR GRAIN SORGHUM*

The maximum application rate of corn and sorghum is 2.5 lbs. a.i. (5 pts. ATRAZINE 4L) per acre per calendar year. Application for quackgrass suppression in corn and sorghum are restricted to a spring application only. No fall applications are permitted. Postemergence application to corn and sorghum must be made before corn and sorghum reaches 12 inches in height.

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Preplant surface - Applied, Preplant Incorporated, or Preemergence (or Postemergence at 4 pts./A with Oil).

Broadleaf or Grass Weeds Controlled

barnyard grass*** (watergrass)	cocklebur**	nightshade
giant foxtail**	groundcherry	pigweed
green foxtail***	jimsonweed	purslane
large (hairy) crabgrass**	kochia	ragweed
wild oats	lambsquarters	sicklepod**
witchgrass	annual morningglory	velvetleaf
(panicum capillare)***	mustards	(buttonweed)***
yellow foxtail***		

Postemergence with Emulsifiable Oil or Oil Concentrate in Water (2 + 2.4 pts./A)

Broadleaf Weeds Controlled

annual morningglory	lambsquarters	ragweed
cocklebur	mustards	smartweed
jimsonweed	pigweed	wild buckwheat
		velvetleaf**

*Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or higher set-backs) which are different from the label, the more restrictive/protective requirements apply. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

**Partial control only

***Partial control only on medium and fine-textured soils.

CORN

Preplant Surface-Applied (Broadleaf and grass control): Use on medium and fine-textured soil with minimum-tillage or no-tillage systems only in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE ND, SD, WI, and WY. Apply 2/3 the recommended rate of ATRAZINE 4L shown in Table 1 for the soil texture as a split treatment 30-45 days prior to planting and the remainder at planting. Applications made less than 30 days prior to planting may be as either a split or single treatment. On coarse-textured soils, do not apply more than two weeks prior to planting.

If weeds are present at the time of treatment, apply in tank mix combination with a contact herbicide, (for example, Gramoxone® or Roundup®). Observe directions for use, precautions, and restrictions on the label of the contact herbicide. Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

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Preplant Incorporated (Broadleaf and grass control): Broadcast in spring after plowing at rate in Table 1. Apply to the soil and incorporate before, during, or after final seedbed preparation. Avoid deep incorporation. For best results, apply within two weeks prior to planting.

Preemergence or At-Planting (Broadleaf and grass control): Apply during or shortly after planting before weed emergence at rate in Table 1.

Postemergence (Broadleaf and grass control): Apply before weeds exceed 1.5 inches in height, and before corn exceeds 12 inches in height at rate in Table 1.

Table 1: Broadleaf and Grass Weed Control on Corn*

FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE

On Highly Erodible Soils (as defined by SCS)

If conservation tillage is practiced, leaving at least 30% of the soil covered with plant residues at planting, apply 4 pints/A as a broadcast spray.

If the soil coverage with plant residue is less than 30% at planting, a maximum of 3.2 pints/A may be applied.

On Soils Not Highly Erodible

Apply 4 pints/A as a broadcast spray.

FOR POSTEMERGENCE APPLICATION

If no atrazine was applied prior to corn emergence, apply 4 pints/A broadcast apply. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 5 pints per acre per calendar year.

*Where there are state/local requirements regarding atrazine use (including lower maximum rates and/or higher set-backs) which are different from the label, the more restrictive/protective requirements apply. Certain states may have established rate limitations within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

*Broadleaf control (eastern CO, western KS, western NE, NM, OK Pan Handle, west TX, and eastern WY): On sand, loamy sand, sandy loam, mild to strongly alkaline soil, and all recently leveled soil, apply no more than 2.4 pts./A, either preplant surface, preplant incorporated, or preemergence. On other soils in these areas, apply rate in Table 1 for broadleaf and grass control.

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Lay-by treatment (Broadleaf and grass control): Broadcast 2-4 pts./A before weeds are 1.5 inches tall and before corn is 12 inches tall. When using nitrogen solutions, direct the spray to lower 3-4 inches of cornstalks to avoid corn foliage injury.

Postemergence with emulsifiable oil or oil concentrate in water: Add the following volume of one of the type oils indicated for aerial or ground application unless the oil label specifies otherwise:

<u>TYPE OIL</u>	<u>GROUND APPLICATION</u>	<u>AERIAL APPLICATION</u>
Oil concentrate (Crop or Petroleum-derived)	1 qt./A	1/2 - 1 qt./A
Petroleum-derived oil	1 gal./A	2 qts./A

Note: Crop-derived or petroleum-derived oil concentrates should contain at least 1% but not more than 20% suitable emulsifier or surfactant blend. Petroleum-derived oils should contain at least 1% suitable emulsifier.

Broadleaf and grass control: For postemergence control of those weeds listed under Preplant Incorporated and Preemergence, broadcast 4 pts./A plus emulsifiable oil or oil concentrate after weed emergence, but before weeds reach 1.5 inches in height.

Broadleaf control: For postemergence control of those weeds listed under Post-emergence with emulsifiable oil or oil concentrate in water, broadcast 2.4 pts./A plus emulsifiable oil or oil concentrate before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

Precautions for applications with emulsifiable oil or oil concentrate in water: (1) Inbred lines or any breeding stock may be severely injured by applications with emulsifiable oil or oil concentrate. (2) Adding other insecticides, herbicides, liquid fertilizers, or other materials is not recommended, because they may cause compatibility problems or crop injury. (3) Store and handle emulsifiable oil and oil concentrate carefully. Oil contaminated with even a small amount of water may not emulsify properly when added to the tank. To avoid crop injury, (4) Do not apply when crop is under stress from prolonged cold, wet weather, poor fertility, or other factors, or when crop is wet and succulent from recent rainfall. (5) Do not exceed 2.5 lbs. active ingredient (or 5 pts. of this product) per acre per calendar year. (6) Postemergence applications to corn must be made before corn exceeds 12 inches in height.

Quackgrass control on land going into corn production

Split application: Broadcast 2.5 pts./A in spring. Plow 1-3 weeks later. Apply a second application at 2.5 pts./A in spring before, during or after planting, but before weeds are 1.5 inches high. This split application will control quackgrass and most annual broadleaf and grass weeds.

Single application: Broadcast 5 pts./A in spring. Plow 1-3 weeks later. Applications for quackgrass suppression in corn and sorghum are restricted to a spring application only. No fall applications are permitted.

TANK MIXTURES FOR CORN

This product may be tank mixed with these herbicides for control of certain broadleaf and grass weeds in corn.

Dual® (metolachlor)	Lasso or Lasso EC + Roundup
Dual + Gramoxone	Lasso or Lasso EC + Gramoxone
Dual + Roundup (glyphosate)	Gramoxone
Dual + Princep®	Princep
Dual + Princep + Gramoxone	Princep + Gramoxone
Dual + Princep + Roundup	Princep + Roundup
Bexton® or Ramrod® (propachlor)	Roundup
Lasso® or Lasso EC (alachlor)	Sutan + ®

Use tank mix direction appearing on the labels of the above herbicides when tank mixing with this product. Observe all precautions and limitations on labeling of products used in a particular tank mix.

Note: When the labels of the above herbicides refer to Atrazine 80W, use equivalent rates of ATRAZINE 4L. One lb. of 80W equals 1.6 pts. of 4L.

Princep 80W, Princep 4L, or Princep Carber® 90

In addition to the weeds listed under ATRAZINE 4L Applied Alone - Corn and Grain Sorghum - Preplant Surface-Applied, Preplant Incorporated, or Pre-emergence, this combination also controls crabgrass, fall panicum, and carpetweed.

Broadcast tank mix before planting, at planting, or after planting, but before crop and weeds emerge, at rates in Table 2. Use the 1:1 ratio for control of most weeds. Use the 1:2 ratio for expected heavy infestations of crabgrass and fall panicum. Cultivate shallowly if weeds develop.

Pre-plant Surface-Applied: Use on medium- and fine-textured soils with minimum-tillage or no-tillage systems only in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE, ND, SD, WI, and WY. Apply 2/3 the recommended rate of ATRAZINE 4L and Princep shown in Table 2 for the soil texture as a split treatment 30-45 days prior to planting and the remainder at planting. Applications made less than 30 days prior to planting may be as either a split or single treatment. On coarse-textured soils, do not apply more than two weeks prior to planting. Refer to the ATRAZINE 4L Alone - Preplant Surface-Applied section of the corn label for additional details.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (for example, Gramoxone or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated: Apply to the soil and incorporate in the spring before, during or after final seedbed preparation. Avoid deep incorporation. For best results, apply within two weeks prior to planting.

Preemergence: Apply during or shortly after planting, but before crop and weeds emerge.

Refer to Corn sections of this label and to Princep 80W, Princep Caliber 90, or Princep 4L labels for further directions, limitations, and precautions.

Table 2: Tank Mixtures with Princep on Corn

<u>Soil Texture</u>	<u>Broadcast Rate/A</u>			
	<u>1:1 Ratio*</u>		<u>1:2 Ratio**</u>	
	<u>This Product</u>	<u>Princep 80W¹</u>	<u>This Product</u>	<u>Princep 80W¹</u>
Sand, loamy sand, sandy loam	2 pts.	1.25 lbs.	1.32 pts.	1.67 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with low organic matter	2.4 pts.	1.5 lbs.	1.6 pts.	2 lbs.
Loam, silt loam, silt, clay loam, sandy clay loam, silty clay loam, sandy clay, or silty clay with medium to high organic matter, and clay (including dark prairie soils of the Corn Belt)	3 pts.	1.8 lbs.	1.92 pts.	2.4 lbs.

*For control of most weeds

**For control of expected heavy infestations of crabgrass and fall panicum.

¹When using Princep Caliber 90 or Princep 4L use equivalent rates. One lb. of Princep 80W equals 0.9 lb. of Princep Caliber 90 or 1.6 pts. of Princep 4L.

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For soil applications prior to crop emergence (i.e., early preplant, preplant incorporated, preplant surface, at planting or preemergence) the following applies:

- a. On highly erodible soils, as defined by the Soil Conservation Service (SCS), if conservation tillage is utilized ($\geq 30\%$ plant residue), the maximum rate is 2 pounds a.i./A. If plant residue is $< 30\%$, the maximum rate is 1.6 pounds a.i./A.
- b. On soils not highly erodible, the maximum rate is 2 pounds a.i./A.

For postemergence applications, if there has been no previous soil application to that crop, the maximum rate is 2 pounds a.i./A. If there has been a previous soil application to that crop, do not exceed a total of 2.5 pounds a.i./A per calendar year.

Princep 80W, Princep 4L or Princep Caliber 90 plus Roundup: Use as tank mixture for preemergence and postemergence control of certain broadleaf and grass weeds where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Refer to Roundup label for all directions, weeds controlled, precautions, and limitations.

Princep 80W, Princep 4L or Princep Caliber 90 plus Gramoxone: Use as tank mixture with Princep and Gramoxone to kill existing vegetation and for residual weed control where corn will be planted directly into a cover crop, established sod, or in previous crop residues. Add this product and Princep to water in spray tank, agitating until thoroughly mixed. Then add Gramoxone and a nonionic surfactant, such as X-77TM. Continue agitation during application. Broadcast 2-4 pts. of this product plus 1.25-2.5 lbs. Princep 80W [or 2-4 pts. Princep 4L, or 1.1-2.2 lbs. Princep Caliber 90] plus 1.5-2.5 pts. Gramoxone in 20-60 gals. of water per sprayed acre. Apply before, during, or after planting, but before corn emerges. Add 0.5 pt. of a nonionic surfactant, such as X-77, per 100 gals. of spray mixture. Use the 2.5 pt. rate of Gramoxone if existing vegetation is 4-6 inches tall. This mixture will not control weeds taller than 6 inches.

Refer to further limitations and precautions on labels for this product, Princep and Gramoxone.

Precautions for all applications to corn: (1) To avoid crop injury and illegal residues, do not apply more than 5 pts./A of this product per year. For postemergence applications, if there has been no previous soil application to that crop, the maximum rate is 2 lbs. a.i./A. If there has been a previous soil application to that crop, do not exceed a total of 2.5 lbs. a.i./A per calendar year. (2) Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-sown rotational crops, regardless of rate used.

Note for all applications to corn: Do not graze or feed forage from treated areas for 21 days following application, or illegal residues may result.

SORGHUM AND SORGHUM-SUDAN HYBRIDS (GRAIN AND FORAGE TYPES)

Preplant Surface-Applied (Broadleaf and grass control): Use on medium- and fine-textured soil with minimum tillage or no-tillage systems only in CO, IL, IN, IA, KS, KY, MN, MO, MT, NE, ND, SD, WI, and WY. Apply 2/3 the recommended rate of ATRAZINE 4L shown in Table 3 for the soil texture as a split treatment 30-45 days prior to planting and the remainder at planting.

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Applications made less than 30 days prior to planting may be as either a split or single treatment. Under dry conditions, irrigation after application is recommended to move ATRAZINE 4L into the soil.

If weeds are present at time of treatment, apply in a tank mix combination with a contact herbicide (for example, Gramoxone or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide.

Note: To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated (Broadleaf and grass control): Broadcast in spring after plowing at rate shown in Table 3. Apply before, during, or after final seedbed preparation. If soil is tilled or worked after application, avoid deep incorporation. For best results, apply within two weeks prior to planting.

Preemergence (Broadleaf and grass control): Apply during or shortly after planting but prior to weed or crop emergence at rate shown in Table 3.

Table 3: Broadleaf and Grass Weed control in Sorghum*

FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE

On Highly Erodible Soils (as defined by SCS)

If conservation tillage is practiced, leaving at least 30% of the soil covered with plant residues at planting, apply 4 pints/A as a broadcast spray.

If the soil coverage with plant residue is less than 30% at planting, a maximum of 3.2 pints/A may be applied.

On Soils Not Highly Erodible

Apply 4 pints/A as a broadcast spray.

FOR ALL POSTEMERGENCE APPLICATION

If no atrazine was applied prior to sorghum emergence, apply 4 pints/A broadcast. If a postemergence treatment is required following an earlier herbicide application, the total atrazine applied may not exceed 5 pints per acre per calendar year.

***Do not apply preplant surface or preplant incorporated in AL, AR, FL, GA, LA, MS, NC, NM, OK, SC, TN, or TX. Do not apply preemergence in NM, OK, or TX, except in northeast OK and the TX Gulf Coast.**

In case of planting failure, sorghum or corn may be replanted. Do not make a second broadcast application, or injury may occur. If originally applied in a band and sorghum or corn is replanted in untreated row middles, this product may be applied in a band to the second planting. However, the maximum application rate for sorghum is 5 pts. per acre per calendar year.

Preemergence broadleaf weed control in furrow irrigated bedded sorghum (AZ and CA only): For preemergence control of many broadleaf weeds, broadcast 1.6-2.4 pts./A after bed preparation, during or after planting, but before sorghum and weeds emerge and before the first furrow irrigation. Follow with several regular irrigations, making sure to thoroughly wet all soil.

Precautions for preemergence application to furrow irrigated bedded sorghum in AZ and CA: To avoid possible sorghum injury, do not use on sand or loamy sand soil or on sorghum planted in furrows. Applications to sorghum growing in alkali soils or where cuts, fills, or erosion have exposed calcareous or alkali subsoils may cause crop injury. In case of crop failure, do not replant sorghum for 8 months following application. Corn may be planted immediately.

Postemergence (Broadleaf and grass control): Apply at rate shown in Table 3 before weeds exceed 1.5 inches in height. Postemergence application to sorghum must be made before sorghum reaches 12 inches in height.

Postemergence broadleaf weed control with emulsifiable oil or oil concentrate in water: Broadcast 2.4 pts./A for control of many broadleaf weeds. Apply before pigweed and lambsquarters reach 6 inches in height and before all other weeds reach 4 inches in height. In CO, western KS, NM, OK, TX, and desert regions of AZ and CA, apply when sorghum is 6-10 inches in height, but before it reaches boot stage or no higher than 12". Add 1 gal. of emulsifiable oil/A for ground application and 0.5 gal./A for aerial application, or add 1 qt./A of oil concentrate for ground application. A cultivation may be necessary if all weeds are not controlled or if weeds regrow.

For the list of weeds controlled, see ATRAZINE 4L, Applied Alone - Corn or Grain Sorghum - Postemergence with Emulsifiable Oil or Oil Concentrate in Water.

Precautions for applications with emulsifiable oil or oil concentrate in water: See "Precautions for applications with emulsifiable oil or oil concentrate in water" in Corn section.

Postemergence broadleaf weed control with surfactant (CO, western KS, NM, OK, TX, and desert regions of AZ and CA only): Broadcast 2-4 pts./A plus 0.75-1.5 pts. of surfactant after sorghum reaches 6 inches in height, but before weeds exceed 1.5 inches in height. Apply only on sandy loam and finer textured soil.

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Precautions for all applications to sorghum: (1) Heavy rain immediately following application tends to cause excessive concentrations of herbicide in seed furrow, resulting in possible crop injury. Do not apply to furrow-planted sorghum until furrows are leveled (plowed in). Level deep planter marks or seed furrows before application. (2) Application to sorghum growing under stress caused by minor element deficiency or to sorghum growing on highly calcareous soil may result in crop injury. (3) Following harvest, plow (moldboard or disk-plow) and thoroughly till soil in fall or spring to minimize possible injury to spring-seeded rotational crops, regardless of rate used. (4) Injury may occur if both this herbicide, preplant surface, preplant incorporated, or preemergence, and an at-planting systemic insecticide applied in-furrow are used.

Note: Do not graze or feed forage from treated areas for 21 days following application, or illegal residues may result.

TANK MIXTURES FOR GRAIN SORGHUM

Dual 8E: Use as tank mixture with Dual 8E for control of those weeds listed on the Dual label, as well as on this label. Use this tank mixture only on sorghum seed treated with Concep®. Refer to the Dual 8E label for all directions, precautions, and limitations.

WINTER WEED CONTROL IN TEXAS

For post emergence control of winter weeds only, such as henbit, seedling dock, and annual thistle on fall bedded land in the Gulf Coast and Blackland of Texas. Apply 0.8-1 qt./A postemergence to the weeds in November or December to land that will be planted to corn, grain, or sorghum, or forage sorghum the following spring. For best results, add a suitable surfactant, such as X-77, at the rate of 0.5% of the spray volume, an emulsifiable oil at the rate of 1.0% of the spray volume, or an oil concentrate at the rate of 1 qt. per acre.

Normal weed control programs may be used in the following corn, grain sorghum or forage sorghum crop.

Note: Do not plant any crops except corn, grain sorghum, or forage sorghum the spring following this treatment, or illegal residues may result.

ATRAZINE 4L ALONE - CHEMICAL FALLOW

Wheat-Sorghum-Fallow: To control annual broadleaf and grass weeds following wheat harvest and in the following sorghum crop when grown under minimum tillage, broadcast 6 pts./A to wheat stubble immediately following wheat harvest. If weeds are present at application, remove them with a sweep plow or other suitable implement after application, or use an approved contact herbicide before or after the application of ATRAZINE 4L. Plant sorghum into wheat stubble the following spring with minimum soil disturbance. Use a surface planter or a planter leaving a shallow furrow. If weeds are present at planting, remove them with a sweep plow or other suitable implement before planting.

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For the list of weeds controlled, see ATRAZINE 4L Applied Alone - Corn or Grain Sorghum-Preplant Surface-Applied, Preplant Incorporated, or Preemergence.

Precautions: (1) Use only on silt loam or finer textured soil, or crop injury may result. (2) Wheat-Sorghum-fallow cropping sequence must be followed. (3) Do not apply following sorghum harvest.

Note: To avoid illegal residues, do not graze or feed forage from treated area to livestock. To avoid illegal residues and crop injury, do not plant any crop other than those on this label within 18 months following treatment.

Wheat-Corn-Fallow (KS, NE): This product controls cheatgrass (downy brome, chess), kochia, mustards, pigweed, Russian thistle, wild lettuce, wild sunflower, and volunteer wheat during period after wheat harvest. Weed control may extend into following corn crop grown under minimum tillage.

Follow directions for use, notes, and precautions in the "Wheat-Sorghum-Fallow" section above, substituting corn for references to sorghum.

Wheat-Fallow-Wheat (CO, KS, MT, NE, ND, SD, and WY): For preemergence control of cheatgrass (downy brome, chess), common lambsquarters, field pennycress, kochia, mustard, Russian thistle, wild lettuce, and suppression of volunteer wheat during fallow period of a wheat-fallow-wheat rotation, broadcast 1-2 pts./A on all soils except those listed under "Precautions." For control of pigweed and wild sunflower, use the higher rate. Apply to stubble ground. Treat only once during same fallow period.

TANK MIXTURES FOR CHEMICAL FALLOW

Wheat-Sorghum-Fallow or Wheat-Corn-Fallow (KS, NE)

Gramoxone: If weeds are present at application, a tank mix with Gramoxone may be used. Broadcast 6 pts. of ATRAZINE 4L plus 1.5-2.5 pts. of Gramoxone in 20-60 gals. of water/A by ground equipment. Add 0.5-1 pt. of a nonionic surfactant, such as X-77 per 100 gals. of spray mixture. Add ATRAZINE 4L to spray tank first and thoroughly mix with water. Then add Gramoxone, followed by surfactant. Use the 2.5 pt. rate of Gramoxone if weeds are 4-6 inches tall. This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone label for further directions, precautions, and limitations.

Wheat-Fallow-Wheat (CO, KS, MT, NE, ND, SD, and WY)

Gramoxone: If weeds are present at application, a tank mix with Gramoxone may be used. Broadcast 1-2 pts. of ATRAZINE 4L plus 1.5-2.5 pts. of Gramoxone in 20-60 gals. of water A by ground equipment. Add 0.5-1 pts. of a nonionic surfactant, such as X-77, per 100 gals. of spray mixture. Add ATRAZINE to spray tank first and thoroughly mix with water. Then add Gramoxone, followed by surfactant. Use the 2.5 pt. rate of Gramoxone if weeds are 4-6 inches tall.



This mixture will not control weeds taller than 6 inches. Apply to stubble ground. Treat only once during same fallow period. Refer to Gramoxone label for further directions, precautions, and limitations.

If weeds are present at application and this product is used alone, use either an approved contact herbicide before or after treatment, or tillage after treatment.

Use tillage to control weeds which escape during fallow period. Till before planting. For this product applied alone or in tank mixture with Gramoxone, plant at least 2 inches deep and 12 months or more after application.

Precautions: To avoid crop injury, (1) Do not use on sand soil. (2) Do not treat eroded hillsides, caliche and rocky outcroppings. or exposed calcareous subsoil. (3) Do not treat soils of the Rosebud and Canyon Series in western NE and adjoining counties in CO and WY. (4) Do not treat soils with calcareous surface layers. (5) Avoid spray overlap.

Note: Do not graze treated areas within 6 months after application, or illegal residues may result.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply ATRAZINE 4L alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

ROADSIDES

To control certain annual weeds in established perennial grasses along roadsides in CO, KS, MT, NE, ND, SD, and WY, including cheatgrass (downy brome, chess), common (annual) broomweed, little barley, medusahead, sagewort, and tumble mustard, broadcast 2 pts./A in a minimum of 10 gallons of water by ground equipment in the fall before ground freezes, or after thawing in the spring, but before the established grasses green-up and before weeds emerge. Examples of desirable established grasses include big bluestem, side-oats grama, switchgrass, and Western wheatgrass.

Apply only once per year. Temporary discoloration or other form of injury to the desirable perennial grasses may occur following application.

Notes: To avoid illegal residues, (1) Do not cut or feed roadside grass hay, (2) Do not allow livestock to graze treated areas.

SUGARCANE

For control of many broadleaf and grass weeds, including amaranths, crabgrass, fireweed, Flora's paintbrush, foxtails, junglerice and wiregrass, broadcast 4-8 pts./A of ATRAZINE 4L at time of planting or ratooning, but before sugarcane emerges.

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Broadcast aerially in a minimum of 5 gals. of spray per acre, or broadcast or band by ground equipment in a minimum of 20 gals. per acre, unless indicated otherwise. One additional application may be made over the sugarcane as it emerges, and two additional applications may be made interline after emergence as directed sprays. Repeat treatments, where needed, may be applied broadcast, band, or interline as suggested with the final application being prior to close-in. Do not exceed the rate of herbicide suggested for any one crop of sugarcane.

Note: Where high rates of ATRAZINE are used alone, apply in a minimum of 1 qt. of water for each 1 qt. of ATRAZINE 4L applied per acre.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply ATRAZINE 4L alone by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

Florida

For control of emerged pellitory weed: Apply 0.8-1.2 pts./A in at least 40 gals. of water as a directed spray by ground equipment prior to close-in. Add 4 qts. of surfactant for each 100 gals. of spray. Thoroughly cover weed foliage.

For control of alexandergrass, large crabgrass, pellitory (artillery) weed, and spiny amaranth, use one of the following methods at planting or ratooning:

1. Apply 8 pts./A preemergence. Follow with one or two applications, as needed, postemergence to sugarcane and weeds, at 4 pts./A. Treat before weeds exceed 1.5 inches in height.
2. Apply 1-3 times, as needed, at 4 pts./A postemergence to sugarcane and weeds. Treat before weeds exceed 1.5 inches in height.

Louisiana

For control of annual weeds during the summer fallow period, apply 4 pts./A to weed free beds immediately after bed formation. Follow normal weed control after planting.

Precautions: To avoid crop injury, (1) Do not apply more than 10 qts./A to any one crop of sugarcane. (2) If making 4 pts./A application during summer fallow period, do not exceed 3 qts./A during the remainder of the growing season, or illegal residues may result.

Texas

Use ATRAZINE 4L for control of barnyardgrass, pigweed purslane and sunflower, in plant or ratoon sugarcane.

Apply 8 pts./A of ATRAZINE 4L preemergence. Follow with one or two applications, as needed, at 6 pts./A postemergence to sugarcane and weeds.

For best results when weeds are emerged, add a nonionic surfactant at a concentration of 2 qts./100 gals. to the spray and apply before weeds exceed 1.5 inches in height.

Precautions: (1) Injury to sugarcane may occur when under moisture stress, when soil is of low adsorptive capacity, or when land is first cropped to sugarcane. (2) Do not apply after close-in. (3) Do not apply more than 20 pts./A to any one crop of sugarcane, or crop injury may result.

TURFGRASSES FOR SOD (FLORIDA ONLY)

St. Augustinegrass, Centipedegrass, and Zoysia Grass
Broadcast 4-8 pts./A according to soil texture to control those weeds listed under ATRAZINE 4L Applied Alone - Corn or Grain Sorghum-Preplant Surface-Applied, or Preplant Incorporated, or Preemergence.

Muck or peat	8 pts.	Old beds: Within 2 days after lifting sod New beds: 3-4 days after sprigging or plugging
Sandy soil	4 pts.	Old beds: Within 2 days after lifting sod New beds: 7-10 days after sprigging or plugging

If weeds regrow, apply an additional 4 pts./A on muck or peat, or 2 pts./A on sandy soil.

Precautions: To avoid crop injury, (1) Do not apply within 30 days prior to cutting or lifting. (2) Do not apply in combination with surfactants or other spray additives. (3) Use only on turfgrass reasonably free of infestation of insects, nematodes, and diseases. (4) On newly sprigged turfgrass, temporary slowing of growth may follow application.

TURFGRASSES FOR FAIRWAYS, LAWNS, SOD PRODUCTION* AND SIMILAR AREAS

*In states other than Florida. For use on turfgrass for sod in Florida, see "Turfgrasses for Sod (Florida only)" section above.

Bermudagrass, Centipedegrass, St. Augustinegrass, and Zoysia Grass
Apply ATRAZINE 4L after October 1 before emergence of winter annual weeds for control of annual bluegrass, burclover, carpet burweed, chickweed, corn speedwell, henbit, hop clover, and spurweed. ATRAZINE 4L will control annual bluegrass even if it is emerged at time of treatment. For control of summer annual weeds listed in the preemergence portion of the ATRAZINE 4L Applied Alone-Corn or Grain Sorghum section of the label, also apply ATRAZINE 4L in late winter before the weeds emerge. Apply in a minimum of 15 gals. of water per acre or 1 gal. per 1,000 sq. ft. Where annual bluegrass is the major weed, use 1 qt./A (22 ml or 0.75 fl. oz. per 1,000 sq. ft.). Use 2 qts./A (44 ml or 1.5 fl. oz. per 1,000 sq. ft.) for control of the other weeds named above. Do not exceed 1 qt./A per treatment on newly sprigged turfgrass or on hybrid bermudagrass such as Tiflawn, Tifway, and Ormond.

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For continued summer annual weed control, apply another 1 qt./A at least 30 days after the previous application, but not after April 15. However, do not make more than two applications of this product per year.

Precautions: On newly sprigged turfgrass and hybrid bermudagrass, temporary slowing of growth and yellowing may occur following application. To avoid turf injury, (1) Use only on turfgrass reasonably free of infestations of insects, nematodes, and diseases. (2) Do not use on golf greens. (3) Do not use north of NC (except may be used in Virginia Coastal Plains) or west of the high rainfall areas of eastern OK and eastern TX. (4) Do not use on muck or alkaline soils. (5) Do not apply over the rooting area of trees or ornamentals not listed on this label. (6) Do not overseed with desirable turfgrass within 4 months before or 6 months after treatment. (7) Do not apply this product to newly seeded bermudagrass until it has overwintered and has a well-developed rhizome system. Do not exceed 2 qts. product/A within 12 months of seeding bermudagrass.

Note: Do not graze or feed turf clippings to animals, or illegal residues may result.

MACADAMIA NUTS

For preemergence control of many broadleaf and grass weeds, including crabgrass, foxtail, siredgrass, Flora's paintbrush, spanishneedles, and fireweed, broadcast 4-8 pts./A before harvest and before weeds emerge. Repeat as necessary. Do not spray when nuts are on ground during harvest period. Do not apply air.

GUAVA

Use only on established plantings which are at least 18 months old. Apply as a directed spray at 4-8 pts./A ATRAZINE 4L in 20-50 gals. of spray mix preemergence or early postemergence to weeds. When applying postemergence, the use of a surfactant and greater spray volume (80-100 gals. of spray mix per acre) may enhance weed control. This product controls many annual broadleaf and grass weeds, including fireweed, purslane, scarlet pimpernel, spanishneedles and sowthistle.

Notes: To avoid illegal residues, (1) Do not allow spray to contact foliage or fruit. (2) Do not apply more frequently than at 4 months intervals. (3) Do not apply more than 16 pts. of ATRAZINE 4L per year.

CONIFERS

For control of annual broadleaf and grass weeds prior to transplanting, after transplanting or in established conifers [including Douglas fir, grand fir, noble fir, white fir, Austrian pine, bishop pine, Jeffrey pine, knobcone pine, loblolly pine, lodgepole pine (shore pine), monterey pine, ponderosa pine, Scotch pine, slash pine, blue spruce, and Sitka spruce]: Broadcast 4-8 pts. in a minimum of 5 gals. of water per acre by air or 10 gals. by ground before weeds are 1.5 inches tall. Apply to established trees between fall and early spring while trees are dormant. For new transplants, apply during or soon after transplanting. For applications prior to transplanting allow sufficient precipitation to activate ATRAZINE 4L before transplanting. In areas where spring and summer rainfall is inadequate to active ATRAZINE 4L, apply during fall prior to spring transplanting.

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For the list of weeds controlled, see ATRAZINE 4L Applied Alone-Corn or Grain Sorghum-Preplant Surface-Applied, Preplant Incorporated, or Preemergence.

Quackgrass control: Broadcast 8 pts. in a minimum of 5 gals. of water per acre by air or 10 gals. by ground between fall and early spring while trees are dormant and before quackgrass is more than 1.5 inches tall.

Precautions: (1) In areas west of the Rocky Mountains (except the Great Basin), grazing may begin 7 months after a fall application or 3 months after a winter or spring application. (2) To prevent illegal residues, do not graze treated areas of the Great Basin, or areas east of the Rocky Mountains. (3) Temporary injury to trees may occur following use of ATRAZINE on coarse-textured soil. (4) To avoid crop injury, do not apply to seedbeds. (5) Also apply only once per year.

Aerial application: In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft. above vegetation, using low drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply ATRAZINE 4L by aircraft at a minimum upwind distance of 400 ft. from sensitive plants.

CONDITIONS OF SALE - LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

The directions on this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to the crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions, the failure to follow the label directions, or good application practices, all of which are beyond the control of Helena Chemical Company (the "Company") or seller. In addition, failure to follow label directions may cause injury to crops, animals, man or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind, express or implied, concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law.

The exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against the Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. The Company shall not be liable and any and all claims against the Company are waived for special, indirect, incidental, or consequential damages or expense of any nature, including, but not limited to, loss of profits or income.

The Company and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitation of warranty, liability and remedies.

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