

## GENERAL INFORMATION

AQUATHOL under field test conditions has shown to be effective against a broad range of aquatic plants with a margin of safety to fish. Dosage rates indicated for the application of AQUATHOL are measured in "Parts Per Million" (ppm). 1 ppm as a dosage rate means that there would be 1 part of AQUATHOL'S active ingredient in 1,000,000 parts of water. Only 1/2 to 5 ppm are generally required for aquatic weed control, whereas some fish species are tolerant to approximately 100 ppm or over.

### HOW TO DETERMINE DOSAGE RATE (Active Ingredient)

AQUATHOL is recommended for the control of the following aquatic weeds at the rates indicated. Since AQUATHOL'S active ingredient is water soluble and tends to diffuse from the area treated, select the dosage rate applicable to the area to be treated. Use the lower rate in each range of rates when the growth is young and growing and/or where the weed stand is not heavy. Marginal treatments of large bodies of water require highest rates as indicated.

### WEEDS CONTROLLED AND AQUATHOL DOSAGE RATE CHART

| Common Name      | Latin Name                | Entire Pond Or Large Area Treatment | Spot Or Lake Margin Treatment |
|------------------|---------------------------|-------------------------------------|-------------------------------|
| Bass Weed        | Potamogeton amplifolius   | 2-3 ppm                             | 3-4 ppm                       |
| Bar Reed         | Sparganium spp.           | 3-4 ppm                             | 4-5 ppm                       |
| Cootail          | Ceratophyllum spp.        | 1-2 ppm                             | 2-3 ppm                       |
| Milfoil          | Myriophyllum spp.         | 2-3 ppm                             | 3-4 ppm                       |
| Landweed         |                           |                                     |                               |
| Bushy            | Naies spp.                | 5-15 ppm                            | 2-3 ppm                       |
| Curly Leaf       | Potamogeton crispus       | 5-15 ppm                            | 2-3 ppm                       |
| Flat-Stem        | Potamogeton zosteriformis | 2-3 ppm                             | 3-4 ppm                       |
| Floating-Leaf    | Potamogeton natans        | 1-2 ppm                             | 2-3 ppm                       |
| Horned           | Zannichellia spp.         | 1-2 ppm                             | 2-3 ppm                       |
| Sago             | Potamogeton pectinatus    | 1-2 ppm                             | 2-3 ppm                       |
|                  | Potamogeton nodosus       | 2-3 ppm                             | 3-4 ppm                       |
|                  | Potamogeton diversifolius | 1-2 ppm                             | 2-3 ppm                       |
|                  | Potamogeton filiformis    | 2-3 ppm                             | 3-4 ppm                       |
|                  | Potamogeton pusillus      | 1-2 ppm                             | 2-3 ppm                       |
| Water Star Grass | Heteranthera spp.         | 2-3 ppm                             | 3-4 ppm                       |

In northern areas, Pithophora, Cladophora, and Spirogyra Algae can be controlled at the 2-5 ppm rate. However, due to the short residual life of AQUATHOL, treated areas which have all the conditions favorable for algae development may be subject to regrowth within the season.

### HOW TO DETERMINE QUANTITY TO BE APPLIED

The following chart indicates the total quantity of material to be applied for certain size areas.

#### APPROXIMATE GALLONS OF AQUATHOL FOR ONE ACRE\* TREATMENT

| DEPTH      | DOSAGE IN GALLONS FOR VARIOUS CONCENTRATIONS IN PPM |          |           |           |            |           |           |           |
|------------|-----------------------------------------------------|----------|-----------|-----------|------------|-----------|-----------|-----------|
|            | 0.5 ppm                                             | 1.0 ppm  | 1.5 ppm   | 2.0 ppm   | 2.5 ppm    | 3.0 ppm   | 4.0 ppm   | 5.0 ppm   |
| 1 Ft. Deep | .65 gal.                                            | 1.3 gal. | 1.95 gal. | 2.6 gal.  | 3.25 gal.  | 3.9 gal.  | 5.2 gal.  | 6.5 gal.  |
| 2 Ft. Deep | 1.3 gal.                                            | 2.6 gal. | 3.9 gal.  | 5.2 gal.  | 6.5 gal.   | 7.8 gal.  | 10.4 gal. | 13.0 gal. |
| 3 Ft. Deep | 1.95 gal.                                           | 3.9 gal. | 5.85 gal. | 7.8 gal.  | 9.75 gal.  | 11.7 gal. | 15.6 gal. | 19.5 gal. |
| 4 Ft. Deep | 2.6 gal.                                            | 5.2 gal. | 7.8 gal.  | 10.7 gal. | 13.0 gal.  | 15.6 gal. | 20.8 gal. | 26.0 gal. |
| 5 Ft. Deep | 3.25 gal.                                           | 6.5 gal. | 9.75 gal. | 13.0 gal. | 16.25 gal. | 19.5 gal. | 26.0 gal. | 32.5 gal. |
| 6 Ft. Deep | 3.9 gal.                                            | 7.8 gal. | 11.7 gal. | 15.6 gal. | 19.5 gal.  | 23.4 gal. | 31.2 gal. | 39.0 gal. |

\*One acre equals approximately 208' x 208'

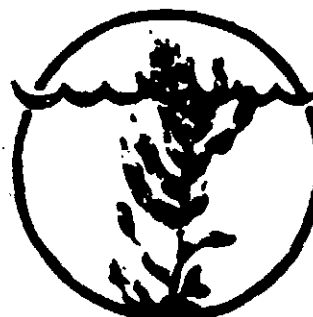
Where the area to be treated is greater than those listed in the chart proceed as follows:

- Compute the approximate surface acreage.
- Compute the average depth.
- Multiply a. by b. to determine the total number of acre/feet.
- Multiply the gallonage required at the 1 foot depth under the rate to be used by the number of acre/feet to determine total quantity to be used.

Net Contents ..... U.S. Gal.



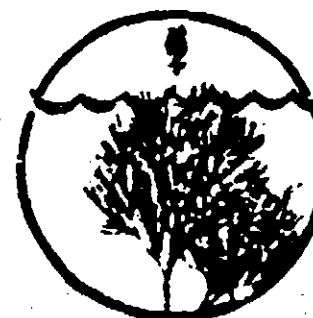
Ceratophyllum Demersum



Potamogeton Crispus



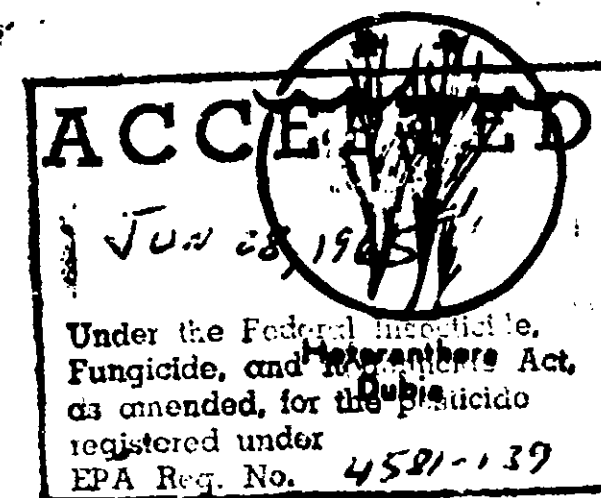
Potamogeton Amplifolius



Potamogeton Pectinatus



Myriophyllum Heterophyllum



Under the Federal Insecticide, Fungicide, and Plant Repellent Act, as amended, for the pesticide registered under EPA Reg. No. 4581-139

# AQUATHOL®

## FOR AQUATIC WEED CONTROL

Contains 1.8 pounds Disodium Endothall 100% per gallon (or 1.46 pounds Endothall (acid) per gallon)

### ACTIVE INGREDIENT

Disodium Salt of Endothall\*

19.2%

### INERT INGREDIENTS

80.8%

### TOTAL

100.0%

\*3,6-endoxohexahydrophthalic acid equivalent 15.5%

U. S. Patents: 2,550,494; 2,576,080; 2,576,083; other patents pending.

### WARNING

SEE SPECIFIC WARNING AND CAUTION STATEMENTS ON SIDE PANEL

KEEP OUT OF REACH OF CHILDREN

USDA Registration No. 4581-139

## PENNSALT

CHEMICALS • EQUIPMENT

AGRICULTURAL CHEMICALS DIVISION

## PENNSALT CHEMICALS CORPORATION

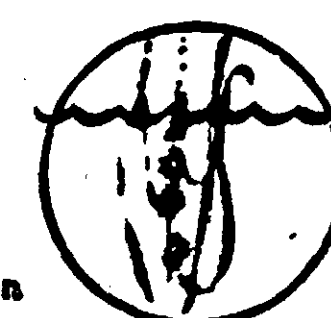
TACOMA, WASH.  
AURORA, ILL. MONTGOMERY, ALA. BRYAN, TEXAS  
PESNO, CALIF. PHILADELPHIA, PA.



Naies Flexilis



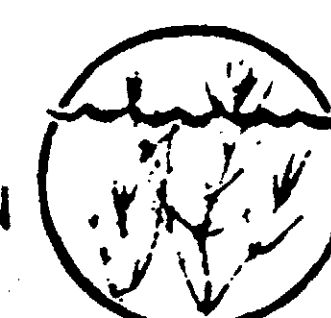
Potamogeton Natans



Sparganium Americanum



Potamogeton Pusillus



Zannichellia Palustris

## GENERAL INFORMATION

**HYDROTHOL 191 Granular** is a highly effective algicide and aquatic weed killer for use in irrigation and drainage canals, lakes and ponds to control the following weeds and algae: *Najas*, *Elodea*, *Ceratophyllum*, *Potamogeton*, *Milfoil*, sp., *Zanichella*, *Vallisneria*, *Cladophora*, *Spirogyra*, *Pithophora* and *Chara* when weeds are actively growing. Dosage rates indicated are measured in "Parts per Million" (ppm). 1 ppm as a dosage rate means that there would be 1 part endothall (acid) in 1,000,000 parts of water.

## IRRIGATION and DRAINAGE CANALS

**HEAVY INFESTATIONS**—Evenly spread 160 to 270 lbs. Hydrothol 191 Granular per acre foot of water (3 to 5 ppm) with suitable aerial or ground equipment.

**MODERATE OR LIGHT INFESTATIONS**—Use 55 to 110 lbs. per acre foot Hydrothol 191 Granular (1 to 2 ppm) applied evenly.

**POUNDS OF HYDROTHOL 191 GRANULAR REQUIRED PER MILE OF CANAL OR SWATH, 1 FT. DEEP**

| Width of Canal, Ditch or Swath |     |     |     |     |      |  |
|--------------------------------|-----|-----|-----|-----|------|--|
| ppm                            | 10  | 15  | 20  | 30  | 40   |  |
| 0.5                            | 33  | 49  | 65  | 95  | 130  |  |
| 1.0                            | 65  | 98  | 130 | 190 | 260  |  |
| 2.0                            | 130 | 195 | 260 | 380 | 520  |  |
| 3.0                            | 195 | 294 | 390 | 570 | 780  |  |
| 4.0                            | 260 | 392 | 520 | 760 | 1040 |  |
| 5.0                            | 325 | 490 | 650 | 950 | 1300 |  |

Note: 5.5 lbs. per acre foot equals 0.1 ppm of Endothall (acid)

Do not use treated water for irrigation of crops

## LAKES and PONDS

**ALGAE CONTROL**—*Cladophora*, *Pithophora*, *Spirogyra*, and *Chara* can be controlled by even applications of 3 lbs. to 11 lbs. Hydrothol 191 Granular per acre foot (0.05 to 0.2 ppm) applied by suitable air or water equipment. Hydrothol 191 Granular is especially effective on bottom growth control. *Pithophora* may require 0.2 ppm or higher. Dosages may be increased to 27-82 lbs. of Hydrothol 191 Granular (.5 to 1.5 ppm) where greater longevity of control is desired and for marginal treatments. For floating mats Hydrothol 191 Granular should be scattered as evenly as possible over the mat. Repeat treatments when algal growth reappears.

**SUBMERGED AQUATICS**—Due to the toxicity to fish, the use of Hydrothol 191 Granular for submerged aquatics is suggested only by commercial

CONTINUED ON RIGHT PANEL

50 Lbs. Net Weight

ACCEPTED

MAY 3 1968

UNDER THE FEDERAL INSECTICIDE  
FUNGICIDE AND RODENTICIDE ACT  
FOR ECONOMIC INSECT REGISTRATION  
ED UNDER NO. 4581-172

# HYDROTHOL 191 GRANULAR

## ACTIVE INGREDIENT

Mono (N,N-dimethylalkylamine\*) salt of  
Endothall\*\*

## INERT INGREDIENTS

TOTAL

11.2%  
88.8%  
100.0%

\*Alkyl groups as derived from Coconut Oil

\*\*7-oxabicyclo (2.2.1) heptane-2,3-dicarboxylic acid equivalent 5%

U.S. patent 2,900,411

## WARNING

SEE SPECIFIC WARNING AND CAUTION STATEMENTS ON SIDE PANEL

KEEP OUT OF REACH OF CHILDREN

USDA Registration No. 4581-172



AGRICULTURAL CHEMICALS DIVISION  
**PENNSALT CHEMICALS CORPORATION**

AURORA, ILL.

MONTGOMERY, ALA.

BRYAN, TEXAS

PHILADELPHIA, PA.

FRESNO, CALIF.

applications. Original or sectional treatment basis. Use 27 to 110 lbs. Hydrothol 191 Granular per acre foot (0.05 to 0.2 ppm) scattered evenly as possible. Use dosages over 1 ppm on narrow margins or in areas where some fish kill is not objectionable.

Do not treat more than 1/10 of the lake or pond at one time with doses in excess of 1 ppm.

APPROXIMATE POUNDS OF HYDROTHOL 191 FOR ONE ACRE\* TREATMENT AT VARIOUS DEPTHS and PPM CONCENTRATIONS

| Depth | PPM Concentrations |         |         |         |         |         |         |
|-------|--------------------|---------|---------|---------|---------|---------|---------|
|       | 0.05 ppm           | 0.1 ppm | 0.2 ppm | 0.5 ppm | 1.0 ppm | 1.5 ppm | 2.5 ppm |
| 1 ft. | 3                  | 5       | 11      | 27      | 54      | 82      | 136     |
| 2 ft. | 5                  | 11      | 22      | 54      | 109     | 163     | 272     |
| 4 ft. | 11                 | 22      | 44      | 109     | 217     | 326     | 544     |
| 6 ft. | 16                 | 33      | 65      | 163     | 326     | 489     | 815     |

\*One acre equals approximately 208 x 208'

## CAUTION

Fish will be killed by dosages in excess of 0.3 ppm. Do not use where fish are important resources.

Avoid contact with or drift to desirable plants or crops as injury may occur.

Do not store this material where it may contaminate seeds, feeds or foodstuffs.

Clear out applicator after each operation.

Do not use fish from treated water for food or feed within three days after treatment.

Do not use treated water for watering livestock or domestic purposes within the following periods:

Up to 0.3 ppm—7 days after application

Up to 3.0 ppm—14 days after application

Up to 5.0 ppm—25 days after application

Necessary approval and/or permits should be obtained in States where required. Consult state water or conservation authorities before applying to public waters or to ponds, canals or streams which flow into public waters.

## WARNING

May be fatal if swallowed. Irritating to skin, nose, eyes, and throat. May be absorbed through skin. Do not get in eyes, on skin, or on clothing. In case of skin contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes get medical attention. If swallowed, give cold milk or cold water. Call a doctor immediately. Bathe and change clothing at least daily while using.

## NOTICE

Pennsalt Chemicals Corporation warrants that this material conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the risks referred to therein. Pennsalt Chemicals Corporation makes no other express or implied warranty, including any other express or implied warranty of FITNESS or MERCHANTABILITY, and no agent of Pennsalt Chemicals Corporation is authorized to do so except in writing, with a specific reference to this warranty. Any damages arising from a breach of this warranty shall be limited to direct damages, and shall not include consequential commercial damages such as loss of profits or values.

MADE IN U.S.A. 5-022-048

PRINTED IN U.S.A.

**ACCEPTED**

Hydrothol 191 Granular EPA Reg. No. 4581-172

**DIRECTIONS FOR USE IN CALIFORNIA ONLY**

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

HYDROTHOL 191 GRANULAR is a formulation of a submerged aquatic weed killer for use in rice fields to control Southern Naiad (*Najas guadalupensis*), American Pondweed (*Potamogeton nodosus*), Horned Pondweed (*Zannichellia palustris*), Sago Pondweed (*Potamogeton pectinatus*), and Coontail (*Ceratophyllum demersum*).

**TIME OF APPLICATION**

Apply 25 to 60 days after sowing, when aquatic weeds are present. Do not apply before rice emerges above surface of water. Do not apply after rice starts heading. Do not apply HYDROTHOL 191 GRANULAR more than once yearly.

**RATE OF APPLICATION**

The ideal average depth of water at time of application is 6 to 8 inches; however, based on depth, use rates as follows:

| Depth of Water in Inches | Lbs. HYDROTHOL 191 GRANULAR Per Acre | ppm Acid Equivalent |
|--------------------------|--------------------------------------|---------------------|
| 4 - 6                    | 40                                   | 2.2 - 1.5           |
| 6 - 8                    | 50                                   | 1.9 - 1.4           |
| 8 - 10                   | 60                                   | 1.7 - 1.4           |

**APPLICATION EQUIPMENT**

Apply with ground or air equipment designed for uniform distribution of granules. Clean out application equipment after each use.

Necessary approval and/or permits should be obtained if required. Consult State Fish and Game agencies before applying this product.

**CAUTION**

Do not release water from flooded fields within 10 days of application. Carefully read regular product label and follow appropriate precautions and directions.

PENNWALT - Agchem Division-Pennwalt Corporation  
Tacoma, WA      Fresno, CA      Bryan, TX  
Philadelphia, PA      Columbus, OH