

Pesticide Education Program Fact Sheet

MP-93.5

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Cold Weather Storage and Handling of Liquid Pesticides

This guide explains procedures for proper winter storage and handling of leftover liquid pesticides. Freezing of liquid pesticides can result in separation of the active ingredient from the solvents or emulsifiers or inactivation of emulsifiers, which may lead to crystallization or coagulation of the pesticide. Applicators should know which pesticides can be frozen and which cannot. Techniques for thawing and redissolving are also important since a pesticide, once frozen, can plug spray equipment, result in poor product performance, and/or damage crops if the proper thawing and mixing procedures are not followed.

Many pesticides can freeze with no adverse effects to the pesticide, although separation of the active ingredient and solvent will occur. Certain steps must be followed before using a pesticide that has been frozen. First, the product must be thawed. Before attempting to thaw a frozen pesticide, however, the container should be checked to make sure it is not ruptured or cracked from the expansion of the frozen liquid. If sound, the container should be brought to room temperature (placed in a heated room or the south side of a sunny building away from children, livestock, and pets) for the thawing process, which may take several days. Once the liquid has thawed, the container can be rolled, shaken, or otherwise agi-

tated to get the contents into a uniform suspension. The container should also be inverted several times to ensure the product is completely dissolved. Pesticide manufacturers caution that if a pesticide cannot be totally redissolved (crystals are still present), the pesticide should not be used.

Storage Conditions

The freezing point of many pesticides is lower than 32 degrees Fahrenheit due to the hydrocarbon solvents or inert ingredients. Pesticides that cannot be frozen should be placed in a heated or adequately insulated area to avoid low temperatures. Wettable powders and granules, as a rule, are not affected by low temperatures. These formulations should be stored in a dry place as moisture may promote caking or lead to certain chemical changes reducing their effectiveness. Products formulated in water-soluble bags require special winter storage. These bags have a high affinity for moisture and become brittle when frozen. They will break open if handled when brittle. It is important that they be stored in heated facilities.

Before storing pesticides for the winter, the applicator needs to read the pesticide label. Care was taken to assure the accuracy of the information in this guide; however, labels continue to be amended and are the final guide.

Pesticide Storage And Temperature Guide

Do not store above 100°F

Abate 1-SG¹ (Cyanamid)
Abate 2-CG¹ (Cyanamid)
Abate 4E¹ (Cyanamid)
Abate 5-CG¹ (Cyanamid)
Amdro (Cyanamid)
Concep II 70W⁶ (Ciba-Geigy)
Cythion ULV⁵ (Cyanamid)
Cythion 57% EC⁵ (Cyanamid)
Dash (BASF)
DeVine (Abbott)
DiPel 2X (Abbott)
DiPel 4L (Abbott)
DiPel 6AF (Abbott)
DiPel 8AF (Abbott)
DiPel 6L (Abbott)
DiPel 8L (Abbott)
DiPel 10G (Abbott)
DiPel ES (Abbott)
Ethion 4 Miscible (FMC)
Gnatrol (Abbott)
Horizon 1 EC (Hoechst-Roussel)
Kelthane MF¹² (Rohm and Haas)
Option IEC (Hoechst-Roussel)
Orthene Turf, Tree & Ornamental Spray (Valent)
Poast (BASF)
Poast Plus (BASF)
ProGibb 4% (Abbott)
Promalin (Abbott)
ProVide (Abbott)
Ramrod Flowable (Monsanto)
Ramrod and Atrazine (Monsanto)
Release LC (Abbott)

RyzUp (Abbott)
Scout X-TRA (Hoechst-Roussel)
Sevin 4-Oil (Rhone-Poulenc)
Sevin 4F (Rhone-Poulenc)
Sevin 50 W (Rhone-Poulenc)
Sevin 80 S (Rhone-Poulenc)
Sevin XLR Plus (Rhone-Poulenc)
Temik 15G (Gypsum)¹⁵ (Rhone-Poulenc)
Temik 1 5G (Citrus)¹⁵ (Rhone-Poulenc)
Temik 15G (CA)¹⁵ (Rhone-Poulenc)
Tiller EC (Hoechst-Roussel)
Trident II¹⁶ (Sandoz)
VectoBac-G (Abbott)
VectoBac-12 AS (Abbott)
Whip 1 EC (Hoechst-Roussel)

Do not store below 40° F

Acrobe² (Cyanamid)
Assert (Cyanamid)
Avenge (Cyanamid)
Balan E.C. (DowElanco)
Basagran (BASF)
Blazer (BASF)
Bronco (Monsanto)
Capture 2 EC (FMC)
Command 4 EC (FMC)
Crossbow (DowElanco)
Curtail (DowElanco)
Curtail M (DowElanco)
Cygon 400⁴ (Cyanamid)
Dash (BASF)
Dibrom 8 Emulsive¹⁴ (Valent)
Dibrom Concentrate¹⁴ (Valent)

Dyfonate 4-EC (ICI)
Furadan 4F (FMC)
Fusilade 2000 (ICI)
Galaxy (BASF)
Image (Cyanamid)
Karate (ICI)
Laddok (BASF)
Landmaster (Monsanto)
Landmaster II (Monsanto)
Lock-On (DowElanco)
Lorsban 4E (DowElanco)
Lorsban 50W (DowElanco)
N-Serve 24 Nitrogen Stabilizer (DowElanco)
N-Serve 24 E Nitrogen Stabilizer (DowElanco)
Paarlan E.C. (DowElanco)
Passport (Cyanamid)
Pix (BASF)
Pix Concentrate (BASF)
Prefar 4-E (ICI)
Prowl (Cyanamid)
Prowl 3.3 (Cyanamid)
Pursuit Plus (Cyanamid)
Pursuit Plus EC (Cyanamid)
Pyramin FL (BASF)
Redeem (DowElanco)
Ridomil 2E¹⁰ (Ciba-Geigy)
Ronilan FL (BASF)
Rubigan E.C. (DowElanco)
Sonalan E.C. (DowElanco)
Squadron (Cyanamid)
Stinger (DowElanco)
Stomp (Cyanamid)
Stomp 3.3EC (Cyanamid)
Storm (BASF)
Supracide 2E¹⁰ (Ciba-Geigy)
Surflan A.S. (DowElanco)

Tandem (DowElanco)
Telone II (DowElanco)
Telone C-17 (DowElanco)
Tordon 22K (DowElanco)
Tordon RTU (DowElanco)
Treflan 5 (DowElanco)
Treflan M.T.F. (DowElanco)
Treflan E.C. (DowElanco)
Tri-4 (Cyanamid)
Tri-Scept (Cyanamid)

Do not store below 32° F

Acrobe (Cyanamid)
Ambush (ICI)
Asana XL (Du Pont)
Assure (Du Pont)
Asulox¹³ (Rhone-Poulenc)
Banvel (Sandoz)
Banvel 720 (Sandoz)
Banvel SGF (Sandoz)
Bidrin 8 (Du Pont)
Biobit Flowable Concentrate
(Du Pont)
Biobit Wetable Powder (Du
Pont)
Bolero 8 EC (Valent)
Bravo 720 (ISK Biotech)
Cyclone (ICI)
Cycocel 11.8%(Cyanamid)
Cropstar GB (Monsanto)
Dacamine 4D (ISK Biotech)
DeVine (Abbott)
Devrinol 2-E (ICI)
DiPel 6AF (Abbott)
DiPel 8AF (Abbott)
Dithane F-45 (Rohm and Haas)
Dual Herbicide⁷ (Ciba-
Geigy)
Extrazine II 4L (Du Pont)
Far-Go (Monsanto)

Freedom (Monsanto)
Funginex (Ciba-Geigy)
Gnatrol (Abbott)
Goal 1.6E (Rohm and Haas)
Gramoxone Extra (ICI)
Guthion 35% WP WSP
(Mobay)
Guthion 50% WP WSP
(Mobay)
Hyvar L Citrus (Du Pont)
Hycar X-L (Du Pont)
Javelin WG (Sandoz)
Kelthane MF (Rohm and Haas)
Kerb 50-W (Rohm and Haas)
Krenite S (Du Pont)
Lannate L (Du Pont)
Lannate LV (Du Pont)
Lariat Flowable (Monsanto)
Lasso (Monsanto)
Lasso II Granular (Monsanto)
Latron AG-44M¹¹ (Rohm
and Haas)
Latron AG-98¹¹(Rohm and
Haas)
Latron B- 1956¹¹(Rohm and
Haas)
Latron CS-7¹¹ (Rohm and
Haas)
Lorox DF (Du Pont)
Lorox L (Du Pont)
Morestan 25% WP WSP
(Mobay)
Nemacur 3 Citrus (Mobay)
Nova 40W (Rohm and Haas)
Pramitol 25E⁹ (Ciba-Geigy)
Prime + ⁹ (Ciba-Geigy)
Promalin (Abbott)
Prostar 4E (Rohm and Haas)
Pro Vide (Abbott)
Pursuit (Cyanamid)

Rally 40W (Rohm and Haas)
Rally 40W AZ, CA, HI
(Rohm and Haas)
Ramrod Flowable
(Monsanto)
Ramrod and Atrazine
(Monsanto)
Reflex 2LC (ICI)
Ro-Neet 6-E (ICI)
Scepter (Cyanamid)
Scepter O.T. (Cyanamid)
Stam M-4 (Rohm and Haas)
Stampede CM¹¹ (Rohm and
Haas)
Starfire (ICI)
Strel 4E (Rohm and Haas)
SUMAGIC Plant Growth
Regulator (Valent)
Tornado (ICI)
Trident II (Sandoz)
VALENT Diquat Herbicide-
H/A (Valent)
VectoBac-G (Abbott)
VectoBac-12 AS (Abbott)
Velpar L (Du Pont)
Vendex 4L (Du Pont)
Vydate L (Du Pont)
Vydate C-LV (Du Pont)

Do not store below 0° F

Amitrol T (Rhone-Poulenc)
Ammo 2.5 EC³ (FMC)
Arsenal³ (Cyanamid)
Arsenal Applicators Concen-
trate³ (Cyanamid)
Banvel CST (Sandoz)
Bronate (Rhone-Poulenc)
Buctril (Rhone-Poulenc)
Buctril + Atrazine (Rholle-
Poulenc)

Butyrac 175 (Rhone-Poulenc)
Butyrac 200 (Rhone-Poulenc)
Chippox MCPA Sodium Salt (Rhone-Poulenc)
Chopper3 (Cyanamid)
Commence EC (FMC)
DeVine (Abbott)
Ethion 4 Miscible (FMC)
Formula 40 (Rhone-Poulenc)
Frigate (ISK Biotech)
Golden Leaf Tobacco Spray¹³ (FMC)
Hoelon 3EC¹³ (Hoechst-Roussel)
Horizon IEC³ (Hoechst-Roussel)
Kelthane 35 (Rohm and Haas)
Larvin 3.2 (Rhone-Poulenc)
Mocap EC (Rhone-Poulenc)
Mocap Plus 4-2 EC (Rhone-Poulenc)
Monitor 4 Spray¹³ (Valent)
Option 1 EC³ (Hoechst-Roussel)
Orbit⁸ (Ciba-Geigy)
Pounce 1.5G (FMC)
Pounce 3.2 EC³ (FMC)
Probe (Sandoz)
Promalin (Abbott)
ProVide (Abbott)
Scout X-TRA³ (Hoechst-Roussel)
Solicam DF (Sandoz)
Thiodan 3 EC¹³ (FMC)
Thistrol (Rhone-Poulenc)
Tiller EC³ (Hoechst-Roussel)
Tilt⁸ (Ciba-Geigy)
Z Plus 2 (MCP + 2,4-D Amine) (ISK Biotech)

Vapam (ICI)
Weedar 64 (Rhone-Poulenc)
Weedmaster (Sandoz)
Whip IEC³ (Hoechst-Roussel)
Zorial Rapid 80 (Sandoz)

No freezing problem

Aatrex 4L (Ciba-Geigy)
Aatrex Nine-O (Ciba-Geigy)
Accelerate (Atochem)
Accent (Du Pont)
Accord (Monsanto)
Ally (Du Pont)
Aliette (Rhone-Poulenc)
Amdro (Cyanamid)
Ambush 25W (ICI)
Arnbush 25W WSP (ICI)
Arnizol Industrial (Rhone-Poulenc)
Ansar 6.6 (ISK Biotech)
Apron 25W (Ciba-Geigy)
Aqua Kleen (Rhone-Poulenc)
Aquathol Granular (Atochem)
Aquathol K (Atochem)
Aquazine 90WDG (Ciba-Geigy)
Arrosolo 3-3E (ICI)
Arsenal 0.5 G (Cyanamid)
Arsenal Forestry Granule 5-G (Cyanamid)
Balan Dry Flowable (DowElanco)
Bayleton 50 DF (Mobay)
Baythroid 2 (Mobay)
Beacon (Ciba-Geigy)
Benlate (Du Pont)
Bicep 6L (Ciba-Geigy)
Bladex 90DF (Du Pont)

Bolero 10 G (Valent)
Bolstar 6 (Mobay)
Bravo 90DG (ISK Biotech)
Bravo 500 (ISK Biotech)
Bravo W-75 (ISK Biotech)
Bullet (Monsanto)
Bueno 6 (ISK Biotech)
Canopy (Du Pont)
Caparol 4L (Ciba-Geigy)
Captan 50-WP (ICI)
Captan 80-WP (ICI)
Cerone (Rhone-Poulenc)
Chopper RTU (Cyanamid)
Classic (Du Pont)
Cobra Herbicide (Valent)
Concep III (Ciba-Geigy)
Cotoran DF (Ciba-Geigy)
Cotoran 4L (Ciba-Geigy)
Counter (Cyanamid)
Counter Lock'n Load (Cyanamid)
Counter 15G Lock'n Load (Cyanamid)
Counter 20CR (Cyanamid)
Counter 20CR Lock'n Load (Cyanamid)
Curacron 6E (Ciba-Geigy)
Curacron 8E (Ciba-Geigy)
Cycle (Ciba-Geigy)
Cyprex 65-W (Cyanamid)
Cythion RTU (Cyanamid)
Daconate 6 (ISK Biotech)
Daconil 2787 Fungicide (ISK Biotech)
Daconil 2787 Flowable (ISK Biotech)
Daconil 2787 WDG (ISK Biotech)
Dacthal W-75 (ISK Biotech)
Dacthal W-75 Turf (ISK Biotech)

DEF 6 (Mobay)	Ethrel Pineapple Growth Regulator (Rhone-Poulenc)	Maneb + Zinc F4 (Atochem)
Des-I-Cate (Atochem)	Evik 80W (Ciba-Geigy)	Manzate 200 DF (Du Pont)
Desiccant L-10 (Atochem)	Evital (Sandoz)	Marksman (Sandoz)
Devrinol 10-G (ICI)	Express (Du Pont)	Metasystox-R SC (Mobay)
Devrinol 50-DF (ICI)	Extrazine II DF (Du Pont)	Microthiol Special (Atochem)
Devrinol 50-WP (ICI)	Far-Go Granular (Monsanto)	Mocap 10% G (Rhone-Poulenc)
DiPel 2X (Abbott)	Finesse (Du Pont)	Mocap 20% G (Rhone-Poulenc)
DiPel 4L (Abbott)	Folex 6 EC (Rhone-Poulenc)	Mocap Plus (Rhone-Poulenc)
DiPel 6L (Abbott)	Force (ICI)	Monitor 4 (Mobay)
DiPel 8L (Abbott)	Furadan 3G (FMC)	Morestan 25% WP (Mobay)
DiPel 10G (Abbott)	Furadan 4 Flowable (Mobay)	Nemacur 3 (Mobay)
DiPel ES (Abbott)	Furadan 5G (FMC)	Nemacur 15% G (Mobay)
Di-Syston 15% G (Mobay)	Furadan 15G (FMC)	New Lorox Plus (Du Pont)
Di-Syston 8 (Mobay)	Gemini (Du Pont)	Ordram 8-E California (ICI)
Dithane DF (Rohm and Hass)	Glean F.C. (Du Pont)	Ordram 8-E South (ICI)
Dithane M-45 (Rohm and Haas)	Granular Buckle (Monsanto)	Ordram 10-G (ICI)
DSMA Liquid (ISK Biotech)	Guthion 2L (Mobay)	Ordram 15-G (ICI)
Dual 25G (Ciba-Geigy)	Guthion 2S (Mobay)	Orthene 75 S Soluble Powder (Valent)
Dusting Sulfur (FMC)	Guthion 3F (Mobay)	Orthene 80 Seed Protectant (Valent)
D-z-n diazinon 4E (Ciba-Geigy)	Guthion 35% WP (Mobay)	Orthene 90 S (Valent)
D-z-n diazinon 14G (Ciba-Geigy)	Herbicide 273 (Atochem)	Orthene Tobacco Insect Spray (Valent)
D-z-n diazinon 50W (Ciba-Geigy)	Harmony Extra (Du Pont)	Orthene Turf, Tree & Ornamental Spray (Valent)
D-z-n diazinon 50W (Ciba-Geigy)	Hydrothol 191 (Atochem)	Oust (Du Pont)
D-z-n diazinon AG500 (Ciba-Geigy)	Hydrothol 191 G (Atochem)	Partner (Monsanto)
Dyfonate II 10-G (ICI)	Hyvar X (Du Pont)	Penncap-M (Atochem)
Dyfonate II 20-G (ICI)	Karnnex DF (Du Pont)	Penncozeb (Atochem)
Dyrene 50% WP (Mobay)	Knox Out 2FM (Atochem)	Penncozeb DF (Atochem)
Envert 171 (Rhone-Poulenc)	Krovar I DF (Du Pont)	Penncozeb Turf & Ornamental (Atochem)
Eptam 7-E (ICI)	Krovar II DF (Du Pont)	Pinnacle (Du Pont)
Eptam 10-G (ICI)	Kryocide (Atochem)	Pondmaster (Monsanto)
Eradicane 6.7-E (ICI)	Lannate (Du Pont)	Pounce 25 WP (FMC)
Eradicane Extra (ICI)	Lasso Micro-Tech (Monsanto)	Pramitol 5PS (Ciba-Geigy)
Escort (Du Pont)	Lexone DF (Du Pont)	Preview (Du Pont)
Esteron 99 (Rhone-Poulenc)	Logic (Ciba-Geigy)	Princep 4G (Ciba-Geigy)
Ethrel Plant Regulator (Rhone-Poulenc)	Londax (Du Pont)	
	Londax CA only (Du Pont)	
	Lorsban 15G (DowElanco)	
	Maneb 80 (Atochem)	

Princep 4L (Ciba-Geigy)	Sevin 80S (Rhone-Poulenc)	Turbo 8 EC (Mobay)
Princep 80W (Ciba-Geigy)	Signal Dusting Sulfur (ICI)	Velpar (Du Pont)
Princep Caliber 90 (Ciba-Geigy)	Sinbar (Du Pont)	Velpar ULW (Du Pont)
Prep (Rhone-Poulenc)	Sonalan 10 G (DowElanco)	Vendex 50 WP (Du Pont)
Ramrod + Atrazine DF (Monsanto)	Special Electric Dusting Sulfur (ICI)	VOLCK Supreme Spray (Valent)
Ramrod 20 (Monsanto)	Spike (DowElanco)	Weedone 170 (Rhone-Poulenc)
Ranger (Monsanto)	Stam 80 EDF (Rohm and Haas)	Weedone 638 (Rhone-Poulenc)
Rhomene (Rhone-Poulenc)	Stomp WDG (Cyanamid)	Weedone CB (Rhone-Poulenc)
Rhonox (Rhone-Poulenc)	Sulfur Alfa (ICI)	Weedone 2,4-DP (Rhone-Poulenc)
Ridomil/Bravo 81 W WS (Ciba-Geigy)	Sutan + 6.7-E (ICI)	Weedone LV4 (Rhone-Poulenc)
Ridomil MZ58 WS (Ciba-Geigy)	Sutazine + (ICI)	Weedone LV6 (Rhone-Poulenc)
Ridomil PC 11G (Ciba-Geigy)	Sutazine + 1 8.6-G (ICI)	Wettable Sulfur (FMC)
Rodeo (Monsanto)	Talstar 10 WP (FMC)	Ziram F4 (Atochem)
Roundup (Monsanto)	Tame 2.4 ES Spray (Valent)	Ziram 76 (Atochem)
Roundup D-PAK (Monsanto)	Telar (Du Pont)	
Roundup RT (Monsanto)	Tersan 1991 (Du Pont)	
Rovral (Rhone-Poulenc)	Tillam 6-E (ICI)	
Rovral 4 Flowable (Rhone-Poulenc)	Thimet Lock'n Load (Cyanamid)	
Salute 4 EC (Mobay)	Thimet 15G (Cyanamid)	
Scepter 70 DG (Cyanamid)	Thimet 20G (Cyanamid)	
Sencor 4 (Mobay)	Thiodan 50 WP (FMC)	
Sencor DF (Mobay)	Thiolux DF (Sandoz)	
Sequestrene 138 Fe (Ciba-Geigy)	Topsin M 70W (Atochem)	
Sequestrene 330 Fe (Ciba-Geigy)	Topsin M 4.5F (Atochem)	
Sevin 4 F (Rhone-Poulenc)	Topsin M 85WDG (Atochem)	
Sevin 50W (Rhone-Poulenc)	Touchdown (ICI)	
	Treflan TR-10 (DowElanco)	
	Treflan 80 DC (DowElanco)	
	Trigard (Ciba-Geigy)	
	Tupersan (Du Pont)	

- ¹ Do not store above 140 F
- ² Do not store above 85 F
- ³ Do not store below 10 F
- ⁴ Do not store above 45 F
- ⁵ Do not store above 120 F
- ⁶ Do not store above 105 F
- ⁷ Do not store below 30 F
- ⁸ Store above 0 F
- ⁹ MUST store above 32 F
- ¹⁰ MUST store above 40 F
- ¹¹ Do not store below 15 F
- ¹² Do not store above 110 F
- ¹³ Do not store below 20 F
- ¹⁴ Do not store below 55° F
- ¹⁵ Do not store above 115° F
- ¹⁶ Do not store above 90° F

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