


TURF PRODUCT GUIDE



PRECISION
LABORATORIES™

Results. Expect it.®



At Precision Laboratories, innovation isn't a buzzword – it's built into every product we design. Our products are university and field-tested to ensure biological performance and optimum value.

**INNOVATIVE, SENSIBLE,
EFFECTIVE PRODUCTS.**

TABLE OF CONTENTS

NEW PRODUCTS

ACTIVO™ Page 5
Activator Adjuvant with Turf Pigment

SOLAROUS™ Page 5
Chromatic Plant Enhancer

CASCADE™ TRE Page 11
Hydration & Infiltration

PRECIP™ Page 12
Hydration & Infiltration

PRECIP™ G Page 12
Hydration & Infiltration

PROVE™ Program.....	4
Indicators, Markers, Colorants	5-6
Aquatics	7
Maintenance.....	8
Soil Surfactants	9-12
Adjuvants	14-17
Tank Mixing Sequence Guidelines	18
Don't Plug Your Sprayer.....	19



**TECHNICAL
EXPERTISE**



INNOVATION



**RESULTS.
EXPECT IT.**

PRECISION[™]
LABORATORIES

Results.Expect it.®

THE PROVE PROGRAM

Partner Research, Observation, and Validation Experience



The **PROVE Program** from Precision Laboratories demonstrates performance and value of new, innovative products for the marketplace.



P - Partner

We collaborate with partners interested in evaluating new technologies that will shape the future of the industry.



R - Research

Our efforts include large-scale, real-world applications, along with small-plot experiments that allow us to closely examine product performance.



O - Observe

The trial observations allow us to demonstrate that our products are innovative, sensible and effective for our end users.



V - Validate

Members of our Product Management and Marketing Team work closely with our PROVE Program partners to validate performance, fit and return on investment.



E - Experience

The PROVE Program provides first-hand experiences with new products, increasing confidence in and excitement for our latest innovations.

**ACTIVO™
Activator Adjuvant with
Turf Pigment**

A unique activator adjuvant formulated with a green pigment to optimize pesticide performance and turfgrass appearance.



Use Rates	Package Size
0.5-1.5 fluid ounces per 1,000 ft. ²	2 x 2.5 gal

**SOLAROUS™
Chromatic Plant
Enhancer**

Fuses a blend of chromatic reflective ingredients and innovative surfactant systems to increase coverage and adhesion on the plant.



Use Rates	Package Size
0.5 – 2 oz/1,000 ft ² + 50 gal of water/acre	4 x 1 gal

**ENVY™
Turf Pigment**

Pigment dispersion improves color, masks injury and enhances spray coverage.



Use Rates	Package Size
Turf: 16 oz + 50 gal of water/acre Trees and Shrubs: 16 oz + 50 gal of water	4 x 1 gal

**WINTERGREEN™ PLUS
Sprayable Turf Cover**

A nonphytotoxic, colorant and antidesiccant formulated to impart a natural green color to dormant or actively growing turf. Wintergreen Plus protects sensitive turfgrass during dormant periods and accelerates spring green-up.



Use Rates	Package Size
16 - 32 oz/1000 sq ft	2 x 2.5 gal 20 gal

**REGREEN™
Permanent Turfgrass
Colorant**

Nonphytotoxic colorant specifically formulated to impart a long-lasting, natural green color when applied to dormant and non-dormant turfgrasses.



Use Rates	Package Size
Dormant Turf: 12 oz/1000 sq ft Nondormant Turf: 8 oz /1000 sq ft	2 x 2.5 gal

**REPLACE XL™
Commercial Sand
Pigment**

Unique pigment dispersion, formulated to impart a natural, dark green color to sand used for filling divots and topdressing playing surfaces on golf courses and athletic fields.



Use Rates	Package Size
1-2 oz/100 lb sand 1-2 pt/ton sand	2 x 2.5 gal 255 gal

**SIGNAL™
Blue Spray Pattern
Indicator**

Concentrated, temporary, blue spray pattern indicator and solution colorant designed to be added to plant protectants and other liquid spray solutions.



Use Rates	Package Size
1 qt/100 gal	4 x 1 gal 30 gal 55 gal

**SIGNAL™ GREEN
Green Spray Pattern
Indicator**

Green spray pattern indicator formulated to further reduce awareness of pesticide applications compared to ordinary blue spray colorants by providing a temporary green tint to treated areas.



Use Rates	Package Size
32-64 oz/100 gal	4 x 1 gal 55 gal

**SUPER SIGNAL™ BLUE
Blue Spray Pattern
Indicator Concentrate**

Concentrated blue spray pattern indicator provides temporary visibility of spray applications.



Use Rates	Package Size
16-32 oz/100 gal	12 x 1 qts 2 x 2.5 gal

**SUPER SIGNAL™ GREEN
Green Spray Pattern
Indicator Concentrate**

Concentrated green spray pattern indicator formulated to further reduce golfer awareness of pesticide applications compared to ordinary blue spray colorants by providing a temporary green tint to treated areas.



Use Rates	Package Size
16-32 fl oz per 100 gal of solution	12 x 1 qts

**SIGNAL™ BLUE
EZ SoluPak™
Blue Spray Pattern
Indicator**

Highly visible blue spray pattern indicator provides temporary visibility of applications. Waterproof, foil-lined SoluPak prevents accidental staining.



Use Rates	Package Size
1 Pak/50 gal	12 x 2 oz SoluPaks per carton, 4 cartons per master case

**SIGNAL™ GREEN
EZ SoluPak™
Green Spray Pattern
Indicator**

Green spray pattern indicator further reduces golfer awareness of applications compared to blue colorants. Waterproof, foil-lined SoluPak prevents accidental staining.



Use Rates	Package Size
1 Pak/50 gal	12 x 2 oz SoluPaks per carton, 4 cartons per master case

**RUNWAY™
Turf Marking Foam**

Quick dissipating turf foam marker. Will not discolor sensitive turf like ordinary marking foams.



Use Rates	Package Size
3 fl oz/2 gal of water	12 x 1 qt

**PRECISE POND™
Nutrient & Sludge
Metabolizer**

Combination of enzymes and bacteria that preemptively digest phosphorus and nitrogen in the water column, and accelerate the breakdown of partially decomposed organic matter, waste, and sludge.



Use Rates	Package Size
Initial dosage: 3 to 6 pounds per surface acre of water. Maintenance: 1.5 to 2 pounds per surface acre of water.	6 x ½ lb water-soluble packets per carton, 4 cartons per master case 60 x ½ lb water-soluble packets per case

**SPECTRUM™
Aquatic Nutrient
Metabolizer**

Function-specific formulation of select bacteria strains improves water quality by reducing nutrient levels and suspended organic matter in the water column.



Use Rates	Package Size
Initial dosage: 3-6 lb/acre Maintenance: 1.5-2.0 lb/acre	6 x ½ lb water-soluble packets per carton, 4 cartons per master case 120 x ½ lb water-soluble packets per drum

**DEVOUR™
Aquatic Waste &
Sludge Reducer**

Proprietary blend of enzymes, facultative and nonfacultative bacteria accelerates breakdown of partially decomposed organic matter.



Use Rates	Package Size
Initial dosage: 3-6 lb/acre Maintenance: 1.5-2.0 lb/acre	6 x ½ lb water-soluble packets per carton, 4 cartons per master case 120 x ½ lb water-soluble packets per drum

**TRUE BLUE™
Lake & Pond Dye**

Proprietary blend of environmentally friendly, nontoxic dyes reduces sunlight penetration and imparts a natural blue color.



Use Rates	Package Size
1 qt/acre-foot	4 x 1 gal

**TRUE BLUE™
EZ SoluPak™
Lake & Pond Dye**

Proprietary blend of environmentally friendly, nontoxic dyes reduces sunlight penetration and imparts a natural blue color. Waterproof, foil-lined SoluPak prevents accidental staining.



Use Rates	Package Size
1 Pak/acre-foot or 325,000 gal	6 x 5.25 oz SoluPaks per carton, 4 cartons per case

**JET BLACK™
EZ SoluPak™
Lake & Pond Dye**

Proprietary blend of environmentally friendly, nontoxic black dyes reduces sunlight penetration and imparts a natural black, reflective color. Waterproof, foil-lined SoluPak prevents accidental staining.



Use Rates	Package Size
1 Pak/acre-foot or 325,000 gal	6 x 5.25 oz SoluPaks per carton, 4 cartons per case

**ERASE™
Spray System Cleaner**

Emulsifies oily residues in sprayer lines and hoses while elevating rinsate pH to degrade vulnerable crop protection products.



Use Rates	Package Size
1 quarts per 50 gallons of rinsate	12 x 1 qt 4 x 1 gal

**INCIDE OUT™
Spray Tank Cleaner**

Liquid spray tank cleaner that emulsifies and bonds crop protection residues to rinse water for complete purging.



Use Rates	Package Size
1 qt/100 gal of clean water rinsate	12 x 1 qt

**KNOCKDOWN™
Foam Suppressant**

Foam suppressant designed to quickly defoam spray solutions containing nonionic surfactants, silicone surfactants or crop oil concentrates.



Use Rates	Package Size
Anti-foam: 1-4 oz/100 gal of solution General Defoamer: 2-4 oz/100 gal of solution	12 x 1 qt 4 x 1 gal

**GUNDOWN ELITE™
Antifoaming &
Defoaming Agent**

Outperforms ordinary defoamers by delivering superior foam suppression under agitation as well as quick defoaming performance.



Use Rates	Package Size
Anti-foam: 0.5-2/100 gal General Defoamer: 0.5-4 oz/100 gal	12 x 1 qt 4 x 1 gal

**ELIMINO™
Antifoaming &
Defoaming Agent**

An OMRI-listed antifoam and defoaming agent designed to effectively prevent or reduce foam formation in agricultural applications of crop protection and / or fertilizer products.



Use Rates	Package Size
1-10 oz/100 gallons of spray solution	12 x 1 qt

**CONVERT™
Compatibility Agent**

Eliminates compatibility problems associated with tank mixing UAN solutions or suspension fertilizers with emulsifiable concentrates and flowable crop protection products.



Use Rates	Package Size
1-4 pt/100 gal of spray solution to prevent antagonistic tank mixing conditions. 3-6 pt/100 gal of spray solution to correct tank mix incompatibilities.	2 x 2.5 gal

WATER MANAGEMENT

MAKE EVERY DROP COUNT

CREATE GREAT OUTDOOR PLAYING SURFACES USING LESS WATER

WATER WARS



What we know for sure:

- Competition and demand for water will continue to be fierce
- Water supply is decreasing
- You can be pro-active about water

WHOA NELLY, THAT'S A LOT

Gallons of irrigation water used annually on golf courses

2 BIL



That's all the water flowing down Niagara Falls for nearly 45 minutes!

BOTTOM LINE:

We need to improve water and energy use on turf.

WHAT YOU CAN DO:

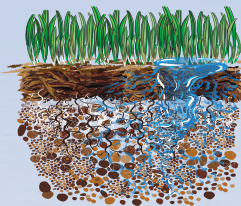


- ✓ Audit your irrigation system
- ✓ Follow good agronomic practices
- ✓ Use innovative soil surfactants



UTILIZE SOIL SURFACTANTS

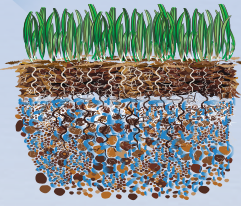
INFILTRATION SURFACTANTS



- Breaks down surface tension
- Reduces evaporation and run-off
- Moves water uniformly throughout the root zone

&

HYDRATION SURFACTANTS



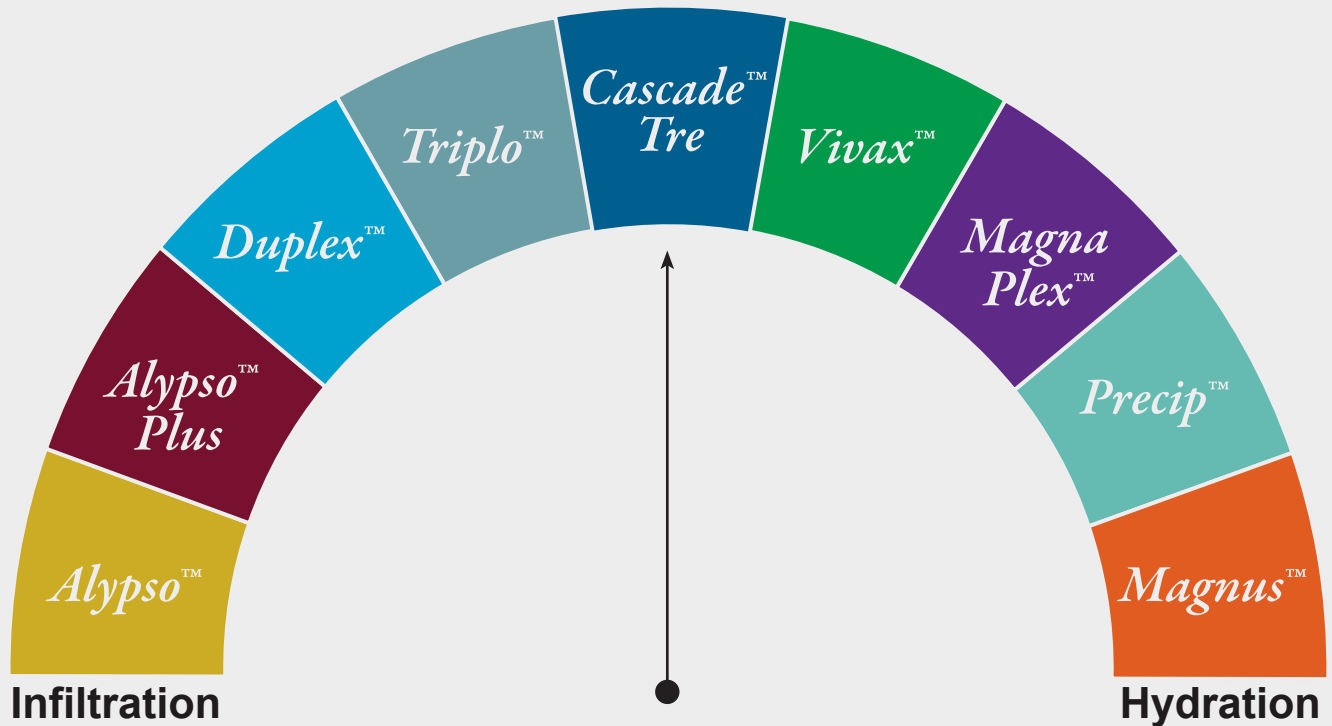
- Holds water in the root zone
- Maintains water content
- Reduces plant stress

Precision Laboratories Can Help

We believe better water management makes an important, positive impact on the world and are committed to do our part through education, awareness, and development of innovative chemistries.

Visit PrecisionLab.com today to learn more about our new soil surfactants.

DIAL IN YOUR WATER MANAGEMENT PROGRAM



SOIL SURFACTANTS

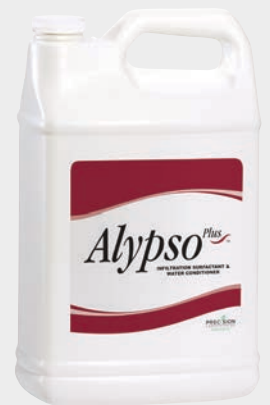
ALYPSO™ Infiltration Surfactant

Unique, naturally-derived surfactant that speeds up the infiltration of irrigation through thatch and into hard-to-wet soils.



ALYPSO™ PLUS Infiltration Surfactant & Water Conditioner

Contains a naturally-derived surfactant that reduces the surface tension of water and improves the infiltration of rainfall and irrigation into and throughout the turf or plant root zone. The water conditioner in Alypso Plus reduces pH and addresses issues associated with poor water quality.



Use Rates

Injection: 1 pt /acre
Spray: 16 - 24 oz/acre

Package Size*

2 x 2.5 gal
20 gal
55 gal

Use Rates

Injection: 32 oz/acre
Spray Application: 32 oz/acre

Package Size*

2 x 2.5 gal
20 gal
55 gal

**+ DUPLEX™
Infiltration Surfactant**

Designed for irrigation injection, Duplex combines penetrants with a buffering agent that neutralizes hard water ions. Duplex improves the infiltration of rainfall or irrigation through thatch, moving water, plant protectants or nutrients into the soil solution.



Use Rates	Package Size*
Injection: 20 oz/acre	2 x 2.5 gal
Spray Application: 20 oz/acre	20 gal
	55 gal
	275 gal

**TRIPLO™
Hydration & Infiltration**

Triplo is a combination of surfactants designed to increase the movement of irrigation and rainwater into and throughout the rootzone of natural playing surfaces.



Use Rates	Package Size*
2.5-5 oz/1000 sq ft	2 x 2.5 gal
	20 gal
	55 gal

**CASCADE™ TRE
Hydration & Infiltration**

Formulated with novel surfactant chemistries to improve the uniformity of water infiltration and hydration deep in the soil matrix. Providing optimum soil moisture through retention and rehydration within the rootzone.



Use Rates	Package Size*
2-8 fl oz/1000 sq ft	2 x 2.5 gal
4 fl oz/1000 sq ft for one month of water management performance.	20 gal
Use varying labeled rates for shorter or longer duration.	55 gal
	265 gal

**VIVAX™
Hydration & Infiltration**

A combination of new surfactant technologies designed to manage water across a wide range of soil and turf types, making it ideal for use on golf courses and sports turf.



Use Rates	Package Size*
5 ounces/1000 sq ft	2 x 2.5 gal
	20 gal
	55 gal

**MAGNAPLEX™
Hydration & Infiltration**

MagnaPlex combines the hydration of Magnus and the infiltration of Duplex in a convenient, easy-to-use formulation that does not require immediate post-application irrigation.



Use Rates	Package Size*
Spray Application: 5 oz/1000 sq ft	2 x 2.5 gal
Injection: 32 oz/acre	20 gal
	55 gal

**MAGNUS™
Hydration Surfactant**

A nonionic surfactant blend that produces uniform hydration in the root zone and optimized growing conditions for new seedlings, stressed turf and upper root zone species.



Use Rates	Package Size*
4 to 6 ounces/1000 sq ft	2 x 2.5 gal
	20 gal
	55 gal

SOIL SURFACTANTS

**PRECIP™
Hydration & Infiltration**

Formulated to address hydrophobicity and water acceptance in soils, PRECIP increases the infiltration of water into the soil and improves the length of hydration.



Use Rates	Package Size*
2 - 8 oz (59 to 237 ml) in a minimum of 1 gallon (3.79 L) of water per 1,000 ft ²	2 x 2.5 gal 20 gal 55 gal 275 gal

**PRECIP™ G
Hydration & Infiltration**

Increases the infiltration of water into the soil and improves the length of hydration, while the limestone carrier quickly dissolves to release the wetting agent into the soil and does not leave residue behind on equipment, such as mower rollers.



Use Rates	Package Size
2 - 8 lbs/1000 sq ft based on desired product duration SGN: 220	50 lb bag

**CASCADE™ PLUS 16G
Hydration & Infiltration**

Specifically formulated to increase both the rate and depth of water and nutrient infiltration on hydrophobic soils.



Use Rates	Package Size
3.5 - 7.0 lbs/1000 sq ft Each 42 pound bag treats approximately 5,700 sq ft at the 7 pound rate SGN: 105	42 lb bag

**CASCADE™ PLUS
Fertilizer 0-0-20
Wetting Agent & Fertilizer**

Combines the proven wetting agent technology of Cascade Plus with a unique fertilizer blend.



Use Rates	Package Size
5 lbs/1000 sq ft to obtain 8 oz of Cascade Plus per 1000 sq ft SGN: 120	50 lb bag

**CASCADE™ PLUS
Fertilizer 15-0-10
Wetting Agent & Fertilizer**

Combines the proven wetting agent technology of Cascade Plus with a unique fertilizer blend.



Use Rates	Package Size
5 lbs/1000 sq ft to obtain 8 oz of Cascade Plus per 1000 sq ft. SGN: 150	50 lb bag

**CASCADE™ PLUS
Fertilizer 3-1-0
Wetting Agent & Fertilizer**

Combines the proven wetting agent technology of Cascade Plus with a unique fertilizer blend.



Use Rates	Package Size
10 lbs/1000 sq ft to obtain 8 oz of Cascade Plus per 1000 sq ft. SGN: 150	50 lb bag

**IN-FLOW™
Infield Skin Maintenance**

A granular soil conditioner and surfactant that influences water's ability to flow into and throughout the profile of infield skins. This helps sports turf managers find the desired balance between water retention and movement, resulting in a better performing infield over a longer period of time.



Use Rates	Package Size
5 lbs/1000 sq ft SGN: 120	50 lb bag

**VIVAX™ 10G
Hydration & Infiltration**

Combination of surfactants that increase volumetric water content and improve water infiltration across a wide range of soils and turf types. Its granular formulation makes Vivax 10G suitable for use on golf courses, athletic fields and other turf areas.



Use Rates	Package Size
3.5 lbs/1000 sq ft SGN: 105	42 lb bag

**VIVAX™ PLUS
Fertilizer 0-0-20
Wetting Agent & Fertilizer**

Combines the new, innovative surfactant technologies in Vivax with a mini-prill fertilizer. It is designed for use on premium playing surfaces, such as golf courses and athletic fields.



Use Rates	Package Size
5 lbs/1000 sq ft SGN: 120	50 lb bag

**VIVAX™ TABS
Hydration & Infiltration**

Easy-to-use tablet that contains Vivax. Designed to improve water infiltration into and throughout localized dry spots (LDS) and provide relief from plant stress across a wide range of soils and turf types.



Use Rates	Package Size
One tablet covers 12,000 - 18,000 sq ft of turf	24 – 6 ounce tablets per case

**PRECISION EZ TABS™
Rescue Tablet**

An easy-to-use tablet, containing the same active ingredient as Magnus, designed to hydrate the plant root zone and provide a rescue treatment for hot spots.

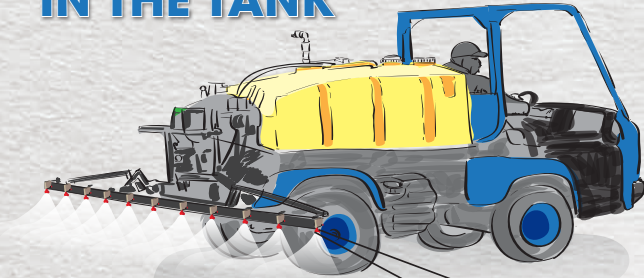


Use Rates	Package Size
One tablets covers approximately 12,000-18,000 square feet of turf. Severity of localized dry spot, water temperature, water pressure and application technique may cause coverage to vary.	24 – 6 ounce tablets per case



TSDM

IN THE TANK



Drift control isn't enough, you need

TOTAL SPRAY DROPLET MANAGEMENT®

GET IT RIGHT - FROM THE START

- **CLEAN THE ENTIRE SPRAY SYSTEM**

Residual active ingredients from previous spray mixes can interact adversely with current spray mix.

- **CONSIDER WATER QUALITY**

Water conditioning agents may be needed to ensure performance of the spray solution.

- **MIX IN THE PROPER ORDER**

Adding products in the incorrect sequence may cause compatibility issues.

- **FOLLOW LABEL RECOMMENDATIONS**

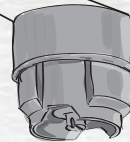
THROUGH THE AIR

WATCH THE WEATHER

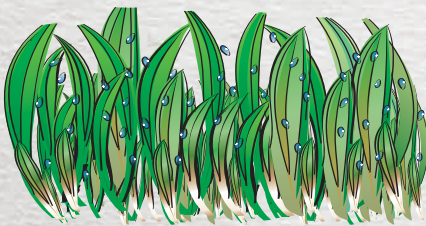
- Wind speed and direction
- Temperature and humidity
- Thermal inversions

WHAT YOU CAN DO

- Select the correct nozzle
- Spray at the correct pressure
- Use drift reduction adjuvants



ON THE TARGET



INNOVATIVE CHEMISTRIES THAT ENHANCE:

- **DROPLET RETENTION**

Reduce kinetic energy of spray droplets to minimize droplet bounce and maximize retention.

- **DROPLET COVERAGE**

Spread the product over the leaf surface for superior coverage.

- **PRODUCT ABSORPTION**

Promote product movement into the target plant for increased absorption.

Get more successful spray applications with our innovative solutions that improve droplet retention and coverage while dramatically reducing off-target movement and exposure.

To learn more, go to www.PrecisionLab.com

BORDER™ 2.0
Drift Control Agent &
Deposition Aid

A concentrated liquid adjuvant for spray droplet management. It enhances the performance of spray applications by modifying the physical characteristics of the spray droplet, improving droplet retention while reducing off-target movement.



Use Rates	Package Size
0.25%–0.50% v/v (2–4 pints)/ 100 gal	2 x 2.5 gal 12 x 1 qt

DIRECT™ RS
Drift Retardant/
Deposition Aid

Drift retardant reduces drift risk and maximizes pesticide performance by binding ultra-small spray particles into larger droplets.



Use Rates	Package Size
1-4 oz/100 gal	12 x 1 qt

OIL-BASED ADJUVANTS

PERSIST® ULTRA
Premium Methylated
Canola Oil

A unique methylated canola oil and surfactant blend that optimizes crop protection performance and mixing characteristics with a wider range of tank-mix partners than ordinary methylated seed oils or crop oils.



Use Rates	Package Size
1.0% v/v or a minimum of 20-24 fl oz/acre	2 x 2.5 gal 275 gal

MICROYL™
Crop Oil Replacement

Activator adjuvant provides superior performance and improved turfgrass safety at lower use rates than ordinary crop oil concentrates.



Use Rates	Package Size
3–4 pt/100 gal	4 x 1 gal 2 x 2.5 gal

+ **COMPOUND™**
Activator Adjuvant

A low-use-rate, low odor activator adjuvant blend designed to maximize the performance of tank mixes applied to turf and ornamentals. Compound effectively buffers spray solutions, maximizes spread, enhances plant cuticle and cell wall penetration and reduces the off-target movement of tank mix partners.



Use Rates	Package Size
1 – 6 pt/100 gal (0.125% v/v - 0.75% v/v)	12 x 1 qt 2 x 2.5 gal 20 gal

ANTI-TRANSPIRANT

AQUALOCK™
Anti-Transpirant

AquaLock is a unique wax dispersion that forms a thin, flexible, water-repellent layer on plant surfaces. AquaLock protects plants against drought, extreme temperatures, wind and sunscald. AquaLock may extend watering intervals for turf and ornamental crops.



Use Rates	Package Size
Turf: 2-8 oz/ 1000 sq ft Ornamentals: 4-8 oz in 1 gallon of water	2 x 2.5 gal 20 gal

ADJUVANTS



**LV™
Water Conditioning
Agent, Surfactant
& Humectant**

LV is specifically formulated for low volume sprayer applications. The powerful water conditioning system of LV is blended with a non-ionic surfactant to increase product and spray solution efficacy.



Use Rates	Package Size
0.031% - 0.25% v/v (4-32 fl oz/100 gal)	12 x 1 qt 4 x 1 gal

**PEN-A-TRATE ECO™
Nonionic Surfactant,
Drift Reduction Agent**

An OMRI-certified, nonionic surfactant and drift reduction product that ensures spray applications stay on target. The environmentally-friendly formulation allows use in and around aquatic areas. The high surfactant load provides improved performance for spray mixes on turf and ornamentals.



Use Rates	Package Size
1-2 pt/100 gal	12 x 1 qt 4 x 1 gal

**PRECISION SPREADER™
Nonionic Surfactant**

A general purpose spray adjuvant, used to enhance the spreading and coverage of sprays.



Use Rates	Package Size
1/2 pt - 2 qt /100 gal	4 x 1 gal



**DELUX™
Surfactant Plus
AMS Adjuvant**

Biodegradable activator surfactant and ammonium sulfate premix enhances performance of glyphosate and certain postemergence herbicides.



Use Rates	Package Size
4-5 qt/100 gal of spray solution for phenoxyes	2 x 2.5 gal



**NEW BALANCE™
pH Acidifier
Surfactant**

Citric-based, pH acidifier, buffer and nonionic surfactant modifies spray solution pH when breakdown from alkaline hydrolysis can reduce insecticide and fungicide performance.



Use Rates	Package Size
Use rate depends on desired pH. See product label.	4 x 1 gal



**NIS 80:20™
Nonionic Surfactant**

Economical, 80% active, low-foaming, nonionic activator adjuvant that enhances crop protection performance by improving spray solution coverage and penetration of target leaf surfaces.



**NIS 90:10™
NONIONIC SURFACTANT**

Economical, 90% active, low-foaming, nonionic activator adjuvant that enhances crop protection performance by improving spray solution coverage and penetration of target leaf surfaces.



Use Rates	Package Size
0.125-0.5% v/v (1-4 pt/100 gal of spray solution)	2 x 2.5 gal 275 gal

Use Rates	Package Size
0.125-0.5% v/v (1-4 pt/100 gal of spray solution)	2 x 2.5 gal 275 gal

SPREADER/STICKERS

**CHEM-STIK™
Nonionic
Spreader-Sticker**

Nonionic spreader sticker maximizes leaf surface coverage of spray solutions, while providing washoff protection from untimely rainfall.



**CHEM-STIK LPH™
Spreader-Sticker & Buffer**

A unique nonionic spreader-sticker formulated to protect crop protection products from premature chemical breakdown by buffering the spray solution to a slightly acidic pH level.



Use Rates	Package Size
4-16 fl oz/100 gal	4 x 1 gal

Use Rates	Package Size
16-48 oz/100 gal	2 x 2.5 gal

SILICONE SURFACTANTS

**SPEED™ NONIONIC
Siloxane Surfactant**

Low-foaming, low-use rate, nonionic siloxane surfactant moves spray solution up and down plant for superior coverage.



**VESTIS™
Organosilicone
Wetting Agent**

Vestis is a nonionic organosilicone wetting agent designed for use with plant protection products, plant growth regulators, fertilizers, microbial products and plant nutritionals. Vestis lowers spray solution surface tension to improve wetting and uniformity of leaf surface coverage.



Use Rates	Package Size
Always use the rate of nonionic surfactant recommended on the pesticide label.	4 x 1 gal

Use Rates	Package Size
3.2-13 oz/100 gal	4 x 1 gal

Tank Mixing Sequence Guidelines

General Recommendations

It is recommended that a compatibility test be done prior to mixing any combination of crop protection products.

If using a mixing vat or inductor, make sure there is adequate agitation and a minimum of 15% of the desired finished spray volume carrier in the mixing vessel prior to diluting the crop protection products. If the mixing vessel cannot hold the required minimum volume, open the valve and add the crop protection products in the recommended order.

Mixing Sequence

1. Sulfonylurea Herbicides

**Add before reducing pH, or pre-slurry in 5 gallons of water at pH 8.5-9.5, and add once completely dissolved.*

Use 2-4 oz of household ammonia in 5 gallons of water to raise pH to desired level.

2. Compatibility Agents and Defoamers (*Convert™/Gundown Elite™, Knockdown™*)

**Compatibility agents will reduce spray solution pH.*

3. Dry Products

- a. Ammonium sulfate and dry micronutrients
- b. Drift retardants
- c. WP, DF, WDG, SP formulations

4. Liquids

- a. Drift retardants
- b. Suspo Emulsions (SE)
- c. Aqueous Suspensions (AS)
- d. Flowables (F or FL)
- e. Micro encapsulated (ME)
- f. Suspension concentrates (SC)
- g. Liquid Concentrates (LC)
- h. Emulsifiable concentrates (EC)
- i. Solutions (S or SL), liquid and concentrate suspension fertilizers, chelated micronutrients and growth hormones
- j. Capsule Suspensions (CS)
- k. Adjuvants
 - i. Crop oil concentrates
 - ii. High surfactant oil concentrates
 - iii. Methylated seed oils
 - iv. Oil-based DRT
 - v. Nonionic surfactants
 - vi. Water conditioning agents

Did You Know?

We have a series of online videos that go into more detail about tank mixing sequence and compatibility issues.

Contact Information

Hours: 7:30 a.m.–4:30 p.m. CT

Phone: (800) 323-6280

24-hour Technical Service:
(800) 323-8351

Precision Laboratories is a leading provider of specialized chemistries applied to plants, seeds, soil and water to maximize resource and biological performance potential while stewarding the environment.

Guarantee

Precision Laboratories is recognized as having the highest level of customer service. We guarantee the integrity and quality of every product we sell and provide 24-hour technical assistance to ensure complete customer satisfaction. Our products are backed by university and independent research, and proven through field-testing by respected agriculture professionals.

Important: Read and follow all label directions before using any product. Additional product and technical information is available on our website; www.precisionlab.com. All products are trademarks or registered trademarks of their respective companies.

Don't Plug Your Sprayer

Correct Mixing Order and Procedures Increase Productivity, Reduce Risk.

Compatibility problems can cost applicators a lot of time and money — in wasted product, spraying time due to plugged sprayers and even lost customers — when the job isn't done correctly.

The Root of the Problem

Before glyphosate-resistant weeds began to emerge it was not uncommon for applicators to mix water-soluble liquids like glyphosate and surfactant together in an inductor or mixing vat with little or no water, and with little or no problems. But times are changing. More glyphosate-resistant weeds means more tank mixing with tank-mix partners that aren't water-soluble, leading to compatibility problems.

The two leading causes of incompatibility problems are:

- 1) Little or no water to dilute crop protection products when using a mixing vat or inductor cone
- 2) Improper mixing sequence

Mixing Vats and Inductor Cones

Are you creating a new crop protection formulation? When combining undiluted crop protection products and adjuvants in a mixing vat or inductor cone that's what you're doing. These new "combinations" were not formulated to be together, undiluted, so they often begin to gel or salt out quickly. The good news is they usually rinse out of the mixing vat or inductor cone easily. The bad news is you've now transferred the problem to your sprayer, leading to plugged screens, lines and nozzles.

The Mixing Vat Solution

If you're going to use a mixing vat or inductor you have two options to avoid tank mixing problems:

- 1) Add enough water to the mixing vat or inductor cone to dilute your tank mix partners. This is usually no less than 10-15% of the entire volume of the anticipated spray load. Example: 1,000 gallon load requires an inductor cone or mixing vat that can hold 100-150 gallons of water.
- 2) If your mixing vat will not hold the appropriate levels of water, then you should open the valve and add products individually in the proper mixing order. Follow each product with a water rinse before adding the next.

Improper Mixing Sequence

Even a slight change in mixing order makes a huge difference in product efficacy and compatibility. Something as simple as reversing the mixing order between a flowable (F) herbicide, like atrazine, and an emulsifiable concentrate (EC), like 2,4-D, can cause a cottage cheese-type consistency that will plug sprayers. Other mixing errors increase the amount of residue and buildup on the interior sidewalls of the sprayer's tank leading to longer cleanout times and the increased risk of cross contamination.

Fixing the Mixing Sequence

Make sure that you add products in the correct order. Most crop protection product labels state a preferred mixing sequence. If you're still not sure, simply conduct a small compatibility test to verify the mixing order that produces the most stable tank mix. Directions for conducting compatibility tests can be found on crop protection labels. If you want to learn more about proper mixing order, watch the compatibility video on our YouTube channel.



Stable tank mixes form milky emulsions, like those in the container on the left in the photo above. When using liquid nitrogen as a carrier, the addition of compatibility agents, like Convert™, can prevent tank mixes from quickly separating and leaving residues trapped inside the tank. Convert can reduce the risk of cross contamination and lower levels of weed control.

Did You Know?

Get your Compatibility Test Kits from Precision Laboratories. Call our customer service team at (800) 323-6280 to order a kit.

Or, you can download Mix Tank for iPhone and Android, which determines the proper mixing sequence based on the products selected.

Follow Us on Social Media

Find Precision Laboratories on all of your favorite social sites including Facebook, Twitter, YouTube, Instagram, and LinkedIn.
Read about the latest Precision Laboratories news and view educational videos and photos.



@PrecisionLabsTurf



@Precision_Labs



Precision Laboratories



@precision_labs_turf



Precision Laboratories, LLC