



MacroPrima Compatibility Guide – Wilchem Products & Agrochemical Inputs

Compiled by Johan Potgieter Pr.Sci.Nat. MScAgric (Agronomy), BScAgric (Soil Science & Horticulture)
Wilchem Product Support and Agronomical Research

| wilchem.com.au

Summary: MacroPrima is most compatible with Wilchem's amino acid micronutrients, organic acid stabilizers, and liquid fertilizer solutions. However, its strong alkalinity limits compatibility with many pesticides, acidic fertilizers, and live biologicals. Always jar test new combinations to avoid crop damage or product loss. Most suited to ameliorate the rootzone pH and CEC for enhanced micronutrient and macronutrient availability and better root establishment. For a foliar specific Calcium spray refer to Wilchem Signature Calcium.

Product: MacroPrima (Wilchem)

Composition: Calcium Hydroxide-based alkaline liquid

pH: ~12 (strong buffer)

Handling Advice: MacroPrima is developed to be mixed in with Water or Liquid UAN to increase fluidity of the product. Once mixed handling is close to normal liquid UAN viscosity.

Alkalinity Notes:

MacroPrima's high alkalinity (pH ~12) makes it effective for soil pH correction and calcium delivery. However, this also makes it reactive with many acidic inputs and salts. Its strong buffering capacity resists pH drops even when mixed with acidic fertilizers or agrochemicals. This can result in:

- Precipitation (e.g., calcium phosphate, calcium sulphate)
- Chemical degradation of pH-sensitive agrochemicals
- Inactivation of weak acid herbicides (e.g., glyphosate)
- Microbial cell death due to membrane disruption from alkaline shock

Recommended Application Rates:

- **In-Furrow (Soil Applied):** 5–7 L/ha, typically with UAN and trace nutrients
- **Foliar (In-Season):** 3 L/ha with compatible foliar programs. Ideal to use streamer nozzles for soil contact or large nozzles for bigger droplets causing rundown into rootzone.

I. Compatibility Overview – Soil (In-Furrow) Application

Compatible Products – High Compatibility with MacroPrima (Wilchem):

- **Flexi-N / UAN (32–34% N):** Excellent compatibility. MacroPrima buffers ammonia and supports calcium stability in solution.
- **Wilchem Signature Range (Amino Acid Chelated):** Signature 242, 341 – compatible due to chelation protecting micronutrients from alkaline precipitation.



- **Wilchem Humate450:** Compatible. Organic acids stabilize calcium and aid nutrient transport in soil. Great Combination in furrow or as foliar @ 0.5-1 Ltr Humate 450.
- **Wilchem Biotics – MicroN Stubble, Bioteam, Recruit (Trihcoderma-based):** Generally compatible in soil. Prefer separate application or dilution prior to tank mixing use with BioPhilm to protect microbes in the Alkaline conditions. Not recommended to use the biologicals without Liquid UAN added.

Caution Required / Jar Test Recommended:

- **Phosphoric Acid or Acidifying Agents:** Risk of strong pH reaction; must test compatibility in advance.
- **MAP/DAP/MKP (Phosphate salts):** Reacts with Ca(OH)_2 to form insoluble calcium phosphate. Jar test essential.
- **Sulfate Salts (e.g., ZnSO_4 , MnSO_4):** React with calcium to form low-solubility precipitates. Risk of Gypsum precipitate forming.
- **Highly acidic bio stimulants:** pH swing can destabilize biological components or cause flocculation.

II. Compatibility Overview – Foliar Application

Compatible Products – Foliar Use at 3 L/ha:

- **Liquid UAN (low to moderate rate):** Stable up to 60 L/ha in foliar blends. MacroPrima buffers ammonia volatility.
- **Wilchem Signature Range – Chelated Micronutrients (Amino Acid):** Signature Zn, Mn, Cu products are compatible and stable under high pH when chelated.
- **Wilchem K27-N:** Compatible due to similar alkaline profile.
- **Microbial Metabolites (non-living):** Compatible. Living microbial spores may not survive pH 12. Recommending the use of Wilchem Metaboost Microbial Metabolites for foliar combination.

Caution Required / Limited Compatibility:

- **Live Microbials (e.g., Recruit Canola):** Avoid foliar mixing. Alkalinity can kill microbes. If used with Liquid UAN add Wilchem BioPhilm and non-chlorinated water to protect microbes.
- **Acidic micronutrient solutions (sulphates):** Use chelates instead to avoid calcium precipitation.

III. Herbicide Compatibility

Group A (Fops, Dims):

- Often unstable at high pH. Risk of chemical degradation. Avoid mixing.

Group B (Sulfonylureas, e.g., Logran, Ally):

- Moderate risk. Slight degradation possible; jar test before mixing.



Group C (Triazines, e.g., Atrazine):

- Stable in alkaline conditions. May be tank-mixed if no physical precipitation occurs.

Group D (Dinitroanilines, e.g., Trifluralin):

- Often pre-mixed as emulsions. Watch for emulsion breakage at high pH.

Group G (e.g., Reflex, Valor):

- Generally stable but limited data with high pH carriers. Jar test.

Glyphosate (Group M):

- DO NOT MIX. Glyphosate efficacy is drastically reduced at high pH due to dissociation of its active form.

IV. Fungicide Compatibility

Contact Fungicides (Mancozeb, Chlorothalonil):

- High pH reduces stability. Use separately.

Systemic Fungicides (Triazoles, Strobilurins):

- Moderate to high pH sensitivity. Some may hydrolyse rapidly (e.g., propiconazole).

Copper Products (CuSO₄ or Hydroxide):

- Copper may precipitate with calcium. Risk of phytotoxicity and nozzle blockage.

V. Insecticide / Pesticide Compatibility

Organophosphates (e.g., Chlorpyrifos, Dimethoate):

- Alkaline hydrolysis risk. Efficacy reduced. Avoid mixing.

Synthetic Pyrethroids (e.g., Alpha-cypermethrin):

- Often stable at high pH. However, avoid emulsifiable concentrates due to destabilization risk.

Biological Insecticides (Bt, NPV):

- DO NOT MIX. High pH inactivates proteins and spores.

VI. Fertilizer Compatibility Summary

Fertilizer Type	Compatibility with MacroPrima	Notes
UAN / Flexi-N	Compatible	Alkaline stability, buffers NH ₃ release
MAP / DAP / MKP	Not Compatible	Precipitates calcium phosphate
Potassium Nitrate	Limited – Jar test	May precipitate K-Ca salts
Sulphate Salts (Zn/Mn)	Incompatible unless chelated	Precipitate with Ca(OH) ₂
Chelates (EDTA, Amino Acid)	Compatible	Most stable option with MacroPrima
Fulvates / Humates	Compatible	Improve calcium mobility
Liquid Silicates	Compatible	Similar alkaline compatibility
Phosphoric Acid	Incompatible	Rapid pH shifts possible

VII. Practical Use Recommendations

Tank Mixing Order (Recommended):

1. Water
2. UAN / Flexi-N
3. MacroPrima
4. Wilchem Signature Chelates or Amino Acids
5. Humate450
6. Final pH check (ideal foliar pH: 6.5–8.5)

Spray Conditions:

- Avoid high temperatures and strong sunlight when spraying foliar MacroPrima
- Use high water volumes and ensure uniform coverage

Crop-Specific Examples (WA Broadacre):

- **Wheat / Barley (In-Furrow):** Flexi-N 40L/Ha + MacroPrima 7L/HA + Signature ZMC242 4L/Ha + Wilchem Biotics Package + Humate450 1/Ha
- **Canola (Foliar):** Flexi-N (20 L/ha) + MacroPrima (3 L/ha) + Signature 341 before flowering
- **Lupins / Legumes:** Use MacroPrima at lower rates, preferably separated from sensitive foliar mixes