

Phosphate Esters

Product Overview

Stepan Agricultural Solutions offers a complete line of tridecyl alcohol ethoxylate and tristyrylphenol ethoxylate-based phosphate esters with an array of ethoxylation, mono- and di-ester ratios and neutralization agents. Stepan Company's manufacturing capabilities allow for a wide range of customized phosphate esters to meet the growing demands of formulators.

| Trade Name | CAS No. (Alt. CAS No.) | Chemical Description | Actives, % | pH ¹ | Appearance at 25°C | Denisty, g/ml at 25°C | Flash Point, PMCC, °C | Pour Point, °C | Viscosity at 25°C, cps | U.S. EPA ² Clearances |
|-------------------|--|---|---------------|-----------------|-----------------------|--------------------------|--------------------------|-------------------|---------------------------|--|
| STEPFAC™ 3675 | 68610-21-9 (68130-47-2) | Ethoxylated Alcohol Phosphate Ester | 70 | 2.0 | Clear Liquid | 1.14 | >70 | -21 | 190 | Non-Food Use Only |
| STEPFAC 8180 | 9046-01-9 (78330-24-2) | Tridecyl Alcohol Ethoxylate Phosphate Ester, POE-3 | 100 | 2.6 | Hazy Liquid | 1.03 | >94 | <-18 | 760 | 40 CFR 180.910 40 CFR 180.920 40 CFR 180.930 |
| STEPFAC 8181 | 9046-01-9 (78330-24-2) | Tridecyl Alcohol Ethoxylate Phosphate Ester, POE-6 | 100 | 2.4 | Hazy Liquid | 1.06 | >94 | <-16 | 845 | 40 CFR 180.910 40 CFR 180.920 40 CFR 180.930 |
| STEPFAC 8181 K | 261627-68-3 | Tridecyl Alcohol Ethoxylate Phosphate Ester, POE-6, Potassium Salt | 100 | 6.0 - 7.0 | Clear Liquid | 1.06 | >94 | <-18 | 650 | 40 CFR 180.910 40 CFR 180.930 |
| STEPFAC 8181 PT3K | 261627-68-3 | Tridecyl Alcohol Ethoxylate Phosphate Ester, POE-6, Potassium Salt | 100 | 4.0 - 7.0 | Hazy Liquid | 1.07 | >94 | <-18 | 1150 | 40 CFR 180.910 40 CFR 180.930 |
| STEPFAC 8182 | 9046-01-9 (78330-24-2) | Tridecyl Alcohol Ethoxylate Phosphate Ester, POE-12 | 100 | 2.5 | White Paste | 1.06 | >94 | 6 | 210 ³ | 40 CFR 180.910 40 CFR 180.920 |
| STEPFAC 8170-U | 51811-79-1 (68412-53-3/ 7664-38-2) | Nonylphenol Ethoxylate Phosphate Ester, POE-10 | 100 | 2.0 | Clear Amber Liquid | 1.12 | >94 | -2 | 3070 | 40 CFR 180.910 40 CFR 180.930 |
| STEPFAC 8171 | 51811-79-1 (68412-53-3/ 7664-38-2) | Nonylphenol Ethoxylate Phosphate Ester, POE-6 | 100 | 2.0 | Clear Amber Liquid | 1.11 | >94 | <-18 | 9400 | 40 CFR 180.910 40 CFR 180.930 |
| STEPFAC 8175 | 51811-79-1 (68412-53-3/ 7664-38-2) | Nonylphenol Ethoxylate Phosphate Ester, POE-12 | 100 | 2.0 | Clear Amber Liquid | 1.12 | >94 | -4 | 2370 | 40 CFR 180.910 40 CFR 180.930 |
| STEPFAC TSP-PE | 114535-82-9 (90093-37-1) | Tristyrylphenol Alcohol Ethoxylate, POE-16, Phosphate Ester | 98 | 2.0 | Hazy Yellow Liquid | 1.14 | >94 | 4 | 4500 | 40 CFR 180.920 |
| STEPFAC TSP-PE K | 163436-84-8 | Tristyrylphenol Alcohol Ethoxylate, POE-16, Phosphate Ester, Potassium Salt | 100 | 8.0 | Yellow Liquid | 1.11 | >94 | 0 | 245 | 40 CFR 180.920 |
| STEPFAC TSP-PE N | 105362-40-1 | Tristyrylphenol Alcohol Ethoxylate, POE-16, Phosphate Ester, Triethanolamine Salt | 98 | 7.6 | Hazy Yellow Liquid | 1.15 | >94 | 5 | 4000 | Non-Food Use Only |

¹ Measured at 5% in H₂O

² U.S. EPA: United States Environmental Protection Agency

³ Measured at 50°C

Compatibility

Stepan's phosphate esters can be used as compatibility aids to help improve the compatibility of liquid fertilizers with various types of pesticides, either as an "in-can" aid or as a "tank mix."



Tank Mix Formulation Example

| Component | Amount (wt%) |
|----------------------------------|--------------|
| 30-0-0 Liquid Fertilizer | 94.00 |
| S-Metolochlor EC | 3.00 |
| Atrazine 4L | 2.00 |
| STEPFAC 8181 or STEPFAC 8181K | 1.00 |

Formulation Examples

Propanil 360 g/L Emulsifiable Concentrate

| Component | Amount (wt%) |
|-------------------|--------------|
| Propanil | 36.00 |
| STEPFAC 8170 | 3.10 |
| Other Surfactants | 6.10 |
| Solvent | 54.80 |

Metribuzin and S-Metolochlor Emulsifiable Concentrate

| Component | Amount (wt%) |
|-------------------|--------------|
| Metribuzin | 58.20 |
| S-Metolochlor | 13.80 |
| STEPFAC 8171 | 4.66 |
| Other Surfactants | 8.29 |
| Solvent | 15.06 |

Bifenthrin 200 g/L Emulsifiable Concentrate

| Component | Amount (wt%) |
|----------------|--------------|
| Bifenthrin | 20.00 |
| STEPFAC TSP-PE | 10.00 |
| Solvent | 70.00 |

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