

Airophos

Phosphates



How do they work

Airophos are phosphate builders that contribute to formulating other products.

- In detergents these builders enhance detergency action so that less can be used of more expensive detergents with high activity.
- The “builder” can be inorganic or organic. All complex phosphates enhance the detergency of soap type detergents
- Airophos phosphates are also used to control hard waters. One important function of airophos within detergents is to enable the cleaning components of the detergent by preventing interference by the “hardness” of water (mineral ions). Even in soft water, this is necessary because of calcium and magnesium ions in soils and dirt.
- Dispersion: anions are adsorbed strongly by surfaces carrying a positive electronic charge, thereby neutralising the positive charge. Slurries of clays and similar substances can be reduced in viscosity by addition of airophos solutions.
- Buffering: all airophos solutions exhibit a degree of buffering power but, where this requirement is dominant, as in moderately alkaline hard-surface cleaners, Airophos 21 and Airophos 4kp are the preferred choice.
- Sequestration: polyphosphates can sequester calcium and magnesium so that these ions do not interfere with the washing action of detergents. Similarly copper may be sequestered to reduce its catalytic action on the decomposition of hydrogen peroxide, its adverse effect on dyeing and the degradation of textile fibres. The amount required to bind a given quantity of metal ion varies greatly with the nature of the metal and other factors dependant on the system in use. Dosage requirements are recommended to be measured under conditions as close as possible to actual practice.
- The power of Airophos...“if a piece of cloth has imbedded in it some calcium in the form of an insoluble calcium soap, the phosphate molecule re-dissolves the calcium, releases sodium which re-combines with the soap molecule, and thereby regenerates useable soap. This is achieved by the sodium combining with the fatty acid anion of the soap molecule”

key applications

domestic & industrial dishwashing products

performance detergents for laundry washing machines

prevents scaling & deposits

removes dirt from textile

detergents

acrylics

manufacture of detergents & cleaning agents

redispersion water softener

key industries

paints

excellent dispersing agent

production of flame retarding compositions

mineral products

textiles

surface treatment

agrochemical

Airophos

Selecting the best product

Airophos function overview:

	Buffer/Ph Modification	Sequestration	Corrosion Inhibition/ Threshold Effect	Dispersion/ Deflocculation	Scale Inhibition/ Threshold Effect
Airophos 4KP		✓	✓	✓	✓
Airophos 20NA		✓	✓	✓	✓
Airophos 32NA	✓		✓		
Airophos K18		✓	✓	✓	✓
Airophos K21		✓		✓	

Key differences to help you decide

	Grade	% Active	Ph	Distribution	Crystallisation
Airophos 4KP	T	50	10.0		
Airophos 20NA	T	32	7.0		
Airophos 32NA	T	32	4.4		
Airophos K18	T	34	8.5	65% diphosphate & triphosphate	-17 degrees
Airophos K21	T	48	11.0	Mainly higher phosphates	-6 degrees



Airophos 4KP

Tetra potassium pyrophosphate

Appearance

- **Airophos 4KP** is a colourless, transparent crystalline chemical compound with the formula $\text{Na}_4\text{P}_2\text{O}_7$

Description

- **Airophos 4KP** is a tetra potassium pyrophosphate based phosphate and is a salt composed of pyrophosphate and sodium ions.
- Is used as a buffering agent, an emulsifier, a dispersing agent, and a thickening agent. Its toxicity is approximately twice that of table salt when ingested orally.
- They produce metallic complexes with metallic ions. The magnesium ion in this instance is inactivated, or sequestered. The product formed does not precipitate from solution.
- Is best for magnesium ions whereas sodium hexametaphosphate is best for calcium ions.
- The inclusion of pyrophosphate with salt enhances protein hydration and dissolution, resulting in increased yields and firm reformed products on cooking

Key Applications

- **Detergents:** liquid formulations such as machine dish wash detergents where high compatibility and high solubility of potassium pyrophosphate is advantageous. Cleaning of metal surfaces - alkaline salts cause saponification of grease & oils. Household detergents to prevent deposition on clothing
- **Metal Treatment:** Pyrophosphate in copper plating systems. The high solubility of potassium pyrophosphate makes it an ideal source of the pyrophosphate necessary for these systems.
- **Paints:** dispersion of pigments.
- **Latex:** dispersion of fillers.
- **Water Treatment:** corrosion & scale inhibitor in addition to water softener
- **Paper Manufacturing:** dispersion of pulps and coatings.

Pack Sizes





Airophos 20NA

Sodium polyphosphate

Appearance

- **Airophos 20NA** is a clear colourless solution

Description

- Sodium polyphosphate based solution that can be used in applications where properties of dispersion, sequestration and buffering are required.
- Can be used alone at high concentration or formulated with other products.
- Fully miscible with water
- Where other components are used, as when formulating detergents the more soluble potassium based products are usually preferred.

Key Applications

- Serves as a builder (water softener)
- Prevents soil redispersion in detergents
- Being a highly charged chelating agent, it binds to dications tightly and prevents them from interfering with the sulfonate detergent
- Industrial detergent manufacture
- Paint manufacturing
- Paper manufacturing
- Cement & Ceramic production - Decreases the viscosity of glazes up to a certain limit
- Leather tanning as a masking agent and synthetic tanning agent.
- Acrylic Products

Pack Sizes





Airophos

Airophos 32NA

Sodium hexametaphosphate

Appearance

- **Airophos 32NA** is a colourless and odourless liquid with a pH of 4, 5

Description

- Sodium hexametaphosphate based phosphate at 32% solution that is also used as a sequestrant

Key Applications

- Airophos 32NA is used as a defloculant in the production of clay based ceramic particles
- Acts as a dispersing agent to break down clay and other soil types
- Metal treatment
- Disposal of paints
- Photography to prevent spotting on films

Pack Sizes





Airophos K18

Potassium Polyphosphate

Appearance

- **Airophos K18** is a milky solution that clears on warming or dilutions.

Description

- Airophos K18 is a potassium polyphosphate based solution that can be used in applications where properties of dispersion, sequestration and buffering are required.
- Used alone at high concentration or formulated with other products.
- Fully miscible with water.
- Where other components are used when formulating detergents, the more soluble potassium based products are usually preferred.
- Polyphosphates are used as sequestrants, dispersants, scale inhibitors and pH modifiers but not as buffers.

Key Applications

- Primarily used as a builder and buffering agent of liquid detergents and cleaners including hard surface cleaners, rug and carpet shampoos, machine dishwashing and car washing products.
- Other detergent and cleaning uses include bottle washing detergents and window cleaning solutions
- Paint manufacture
- Cement production
- Horticulture - Fertilizer production
- Textiles - for fabrics including cellulosic, synthetics, wools in bleaching, scouring and dyeing.

Pack Sizes





Airophos K21

Potassium Polyphosphate with higher diphosphate distribution

Appearance

- **Airophos K21** is a clear colourless solution

Description

- Potassium polyphosphate with a higher diphosphate distribution that can be used in applications where properties of dispersion, sequestration and buffering are required.
- Can be used alone at high concentration or formulated with other products.
- Fully miscible with water
- Offers a less soluble alternative to potassium based sister product Airophos K21P.

Key Applications

- Detergent manufacturing within products manufactured for industrial cleaning
- Specific cleaning products within food manufacturing environments across the industry

Pack Sizes





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