

Functions of phosphates in detergents

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In household cleaning products, alongside surfactants, phosphates (sodium tripolyphosphate = STPP) enable detergents to perform efficiently in all washing conditions.

They are widely used in laundry detergents, dishwasher detergents, industrial and institutional detergents.

STPP fulfils several important functions in detergents:

- inhibits the effects of calcium and magnesium salts present in hard water and in soils (dirt, food wastes ...) by sequestering these ions, thus enabling surfactants to wash effectively.
- re-dissolves calcium and magnesium compounds present in the washing machine from previous washes.
- prevents the deposit of calcium and magnesium incrustations on the washing machine's heating elements.
- avoids re-deposition of dirt and incrustations on fabrics or tableware.
- stabilises alkalinity at the correct level throughout the washing process, ensuring washing efficiency for laundry detergents and hygiene (dirt removal and killing of micro-organisms in dishwashers).
- helps break up large particles of dirt into smaller ones, which can be washed out.
- hydrolyses grease and oils, facilitating their removal in the washing process.
- helps the efficient manufacture, storage and use of detergents by stabilising their physical properties.
- improves rinsing
- facilitates dissolving of detergents, particularly for tablets.

Because of this range of different functions, if phosphates are not used in detergents, they must be replaced by a number of different chemicals, because no one substitute has been found for any application which offers all the functions played by phosphates.

The amount of phosphate used in household cleaning products in Europe in 2004 was estimated to be about 243 000 tonnes STPP = 61 490 tonnes P (source AISE).