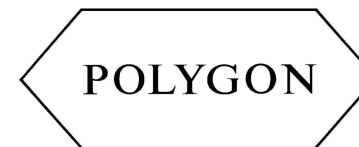




Incrustation inhibitors + dispersing agents

The product list is not complete. The statements made do not dispense the reader from verifying them.

Product names	Application	Properties
OPTIGONAL D-N	Threshold-active, not calcium sensitive sequestering and dispersing agent with excellent soil suspending properties. For household, professional and industrial cleaners. Also available as powder or granules.	Oligomeric phosphonic acid (patented). Good replacement for polyphosphates and polyacrylates. Part replacement of NTA. Excellent threshold effect even at very high pH. Excellent dispersing agent. Particularly well suited as inhibitor for CaSO ₄ in reverse osmosis in sea water desalination. Good anti-redeposition aid, increases secondary detergency. Stable against hydrolysis. Clear solubility over the whole pH range.
OPTIGONAL DS	Threshold active, chlorine-free, non calcium sensitive sequestering and dispersing agent with pronounced soil suspension properties. For household, professional and industrial cleaners.	Oligomeric phosphonic acid (patented). Particularly suitable for metal-working, cooling lubricants and electro-plating.
OPTIGONAL DX-N	Threshold active, non calcium sensitive sequestering and dispersing agent. Recommended for use in automated dish washing. Also available as free acid and partially neutralised.	Oligomeric phosphonic acid (patented). Replaces NTA, EDTA, polyphosphate and polyacrylates. Pronounced threshold effect even at very high pH. Combines properties of OPTIGONAL D-N and OPTIGONAL K.
OPTIGONAL DX-O	Threshold active, not calcium sensitive sequestering and dispersing agent with pronounced soil suspending properties. For household, professional and industrial cleaners.	Oligomeric phosphonic acid (patented). Good replacement for polyphosphates and polyacrylates. Part replacement of NTA. Excellent threshold effect even at very high pH. Excellent dispersing agent. Particularly well suited as inhibitor for CaSO ₄ in reverse osmosis in sea water desalination. Good anti-redeposition aid. Stable against hydrolysis. Good secondary detergency. Replaces insoluble zeolite in washing powder, reduces redeposition of soil on fibres. Clear solubility over the whole pH range.

**Incrustation inhibitors + dispersing agents**

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Product names	Application	Properties
OPTIGONAL G-N	Threshold-active, non Ca sensitive sequestering and dispersing agent with pronounced soil release properties. Excels in its very good combination of sequestering and dispersing properties. Fast acting. Particularly recommended for automated dish-washing.	Oligomeric phosphonic acid (patented). Good replacement of NTA. Stable to hydrolysis. Clearly soluble over the whole pH range.
OPTIGONAL K-N	Threshold active non calcium sensitive sequestering and dispersing agent. For household, professional and industrial cleaners. Also available as acid and partially neutralized.	Oligomeric phosphonic acid (patented). Good replacement for polyphosphates and polyacrylates. Pronounced threshold-effect even at a very high pH. Similar properties like OPTIGONAL D-N and DX-O. Higher sequestering power.
OPTIGONAL S-N	Threshold-active, non Ca sensitive sequestering and dispersing agent. For household, professional and industrial cleaners. Available as acid, too.	Combines very good sequestering properties with good dispersing properties. Very good inhibition of Ca and Mg salts
POLYGON PC 1088	Threshold active sequestering and dispersing agent. Granules. For household, professional and industrial cleaners.	Low hygroscopy. Stabiliser for percarbonates and perborates.
POLYGON PC 1167	Threshold active phosphorous-free sequestering and dispersing agent with pronounced soil suspending properties. For household, professional and industrial cleaners.	Stable against active chlorine, H ₂ O ₂ . Suitable in disinfectants. Completely soluble in water, very good stability from pH 2 to pH 12, very good stability even at temperatures between 120 and 130° C.
POLYGON PC 1178	sequestering agent for industrial applications (alkaline)	Particularly for trivalent metal ions
POLYGON PC 1190	Fat-soluble sequestering agent and stabiliser to prevent catalytic effects of heavy metals (Cu, Fe, Ni) in certain degradation and oxidation processes in organic substances (such as unsaturated fatty acids). Boosts the power of antioxidising agents. Acts as corrosion inhibitor.	Fat-soluble formulation of phosphonic acids, completely soluble in fatty acids, glycols, ethoxylated alcohols; limited solubility in water.
POLYGON PC 1192	Threshold active sequestering and dispersing agent with pronounced soil suspension properties. For household, professional and industrial cleaners on the basis of oxidative media (e.g. hypochlorite).	Stable against active chlorine, H ₂ O ₂ . Suitable for disinfectants. Completely water-soluble. Very high stability at pH >7. Good sequestering properties for magnesium ions.

Products of POLYGON CHEMICAL LTD.



Incrustation inhibitors + dispersing agents

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Product names	Application	Properties
POLYGON PC 1194	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Prevents deposition of calcium salts on bottles during washing. Used in breweries to prevent scale. In combination with TENSAN TEM excellent corrosion inhibitor in acidic environment. Available also as chlorine-free product.	High sequestering power for CaCO ₃ , very good at pH 10-12, excellent cost-benefit-ratio, good threshold effect. Also used in electroplating to remove interfering ions.
POLYGON PC 1198	Threshold active phosphorous-free sequestering and dispersing agent with pronounced soil suspension properties. For household, professional and industrial cleaners. Good inhibition of CaCO ₃ and CaSO ₄ ions.	Stable against active chlorine, H ₂ O ₂ . Phosphorous-free alternative in water treatment. Stable against hydrolysis even at high temperatures and at any pH.
POLYGON PC 1225	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Prevents incrustations during bottle cleaning and scales in brewery boilers. In combination with TENSAN TEM excellent corrosion inhibitor in acidic conditions.	High sequestering power w.r.t. to CaCO ₃ , very good at pH 10-12, particularly good cost-benefit-ratio. Good threshold effect. Suitable also in electroplating to remove interfering ions.
POLYGON PC 1335	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Stabilises hydrogen peroxide, peracetic acid, perborates and percarbonates.	Almost completely chlorine and iron-free. Particularly good sequestering properties w.r.t. iron over the whole pH range. Good sequestering agent for CaCO ₃ in alkaline environment. Particularly pure quality. Stable in oxidative environment.
POLYGON PC 1385	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Stabilises hydrogen peroxide, peracetic acid, perborates and percarbonates. Powder.	Almost chlorine and iron-free. Excellent sequestering agent for iron at any pH. Good CaCO ₃ sequestering power in alkaline conditions. Particularly pure quality. Stable in oxidative media.
POLYGON PC 1387	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Stabilises hydrogen peroxide, peracetic acid, perborates and percarbonates.	Almost free of chlorine and iron ions. Very good sequestering power w.r.t. to iron ions over the whole pH range. Good CaCO ₃ sequestering power in alkaline environment. High purity. Stable in oxidative media.

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Incrustation inhibitors + dispersing agents

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Product names	Application	Properties
POLYGON PC 1389	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Prevents incrustations during bottle cleaning and scales in brewery boilers.	High CaCO ₃ sequestering power, very good at pH 10-12, good threshold effect. Suitable in electroplating to remove interfering ions, particularly zinc ions.
POLYGON PC 1390	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Prevents incrustations during bottle cleaning. Stabilises hydrogen peroxide. Also available as granules.	Good sequestering power w.r.t. to iron ions over the whole pH range and w.r.t. CaCO ₃ in alkaline conditions. Particularly pure quality (colour, odour). Secondary corrosion inhibition of aluminium in H ₃ PO ₄ and HCl. Anti-wear in water miscible cooling lubricants. Stabilises hydrogen peroxide.
POLYGON PC 1392	Threshold active sequestering and dispersing agent (particularly suitable for zinc and lead). Prevents precipitation of CaSO ₄ in reverse osmosis (e.g. sea water desalination).	In electroplating (nickel plating) deactivation of interfering zinc and lead ions. Strong CaSO ₄ sequestering power.
POLYGON PC 1393	Threshold active sequestering and dispersing agent with pronounced soil suspensions properties. For household, professional and industrial cleaners based on oxidative media (e.g. hypochlorite). Also available in powder or as granules.	Stable against active chlorine, H ₂ O ₂ . Used in disinfectants. Completely water soluble, very good solubility at pH >7. Good magnesium sequestering power. Readily biodegradable.
POLYGON PC 1395	Threshold active sequestering and dispersing agent with pronounced soil suspending properties. For household, professional and industrial cleaners.	Boosts detergency power of surfactants. Replacement for polyphosphates; no eutrophication of waters. To be applied only at pH >6. Corrosion inhibitor for aluminium and iron in alkaline environment.
POLYGON PC 1905	Sequestering and dispersing agent, incrustation inhibitor. Granules, also available as powder.	Phosphonate, good sequestering power w.r.t. to CaCO ₃ , good threshold effect. Very good storage stability, slightly hygroscopic.
POLYGON PC 1938	Biodegradable sequestering agent for industrial applications in alkaline conditions.	Replaces EDTA and NTA at higher pH values. Chelating trivalent metal ions.

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Incrustation inhibitors + dispersing agents

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Product names	Application	Properties
POLYGON PC 1943	Threshold-active phosphorous-free sequestering and dispersing agent with pronounced soil suspending properties. For household, professional and industrial cleaners.	Stable against active chlorine, H ₂ O ₂ . Suitable for disinfectants. Completely soluble in water, very good stability from pH 2 to 12, excellent temperature stability (even at 120 - 130° C).
POLYGON PC 1962	Threshold active sequestering and dispersing agent. For household, professional and industrial cleaners. Stabilises hydrogen peroxide, peracetic acid, perborates and percarbonates. Granules.	Almost free of chlorine and iron ions. Very good sequestering power w.r.t. to iron ions over the whole pH range. Good CaCO ₃ sequestering power in alkaline environment. High purity. Stable in oxidative media.
POLYGON PC 2003 new	Threshold active phosphorous-free sequestering and dispersing agent with pronounced soil release properties. For household and I+I cleaners. Good sequestering properties w.r.t. CaCO ₃ and CaSO ₄ . Also available as free acid.	Stable against active chlorine, H ₂ O ₂ . Stable to hydrolysis even at high temperature and at any pH value.
POLYGON PC 2030	Threshold active sequestering and dispersing agent. Stabilises hydrogen peroxide, peracetic acid, perborates and percarbonates. Recommended for all uses where only a minimum of impurities are allowed.	Very good sequestering power w.r.t. to iron ions over the whole pH range. Good CaCO ₃ sequestering power in alkaline environment. Stable in oxidative media.