

Additives for cooling lubricants



PRODUCTNAME

APPLICATIONS / SPECIAL FEATURES

For non-water-miscible cooling lubricants

ANTIOXIDANTANTS

TENSAN AO

Highly effective, **oilsoluble** antioxidant based on alkylalcohol and diphosphonic acid, ppm-level dosage, chelating metals (like Fe, Cu, Ni) and thus prevents the oxidative catalysis of carbon double-bonds (e.g. unsaturated components). Increases the effect of radical-scavengers. Good solubility in many organic media (oils, fats, surfactants, non-polar solvents; limited solubility in water, very good thermic stability.

POLYGON PC 2400

Label-free according to
CLP-Regulation (EG)1272/2008

Derivative of di-tert.-butylphenol (DTBP-Derivative), ash-free, hindered-phenolic antioxidant for the protection of oils at high temperatures.

MINIMUM QUANTITY LUBRICATION

POLYGON PC 2417

NEW

Label-free according to
CLP-Regulation (EG)1272/2008

Octyl-palmitate ester for minimum quantity lubrication with defoaming effect and stability over a wide range of temperature.

POLYGON PC 2418

NEW

Label-free according to
CLP-Regulation (EG)1272/2008

Isodecyl-oleate ester for minimum quantity lubrication with defoaming effect and stability over a wide range of temperature.

EP/AW - ADDITIVES

POLYGON PC 2395

Dimercapto-thiadiazole (DMTD) derivative as ash-free, extreme-pressure (EP) additive and non-ferrous metal deactivator.

POLYGON PC 2396

Triphenyl-phosphorothionate (TPPT) as excellent, ash-free, extreme-pressure (EP) and anti-wear (AW) additive.

POLYGON PC 2397

Butyl-triphenyl-phosphorothionate (buty-TPPT) as liquid version of TPPT, ash-free extreme-pressure (EP) and anti-wear (AW) additive.

POLYGON PC 2398

Zink-dialkyl-dithiophosphate (ZDDP) as multifunctional additive: antioxidant, anti-wear (AW) additive and corrosion inhibitor.

POLYGON PC 2399

Derivative of Zink-dialkyl-dithiophosphate (ZDDP-Derivative) as multifunctional additive: antioxidant, anti-wear (AW) additive and corrosion inhibitor.

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PRODUCTNAME	APPLICATIONS / SPECIAL FEATURES
CORROSION-INHIBITORS	
POLYGON PC 2359 NEW	Phosphorous-free corrosion-inhibitor based on sarcosine- and imidazoline derivatives (in low viscosity paraffin) with water displacement effect. Protects iron, steel and copper from corrosion and rust removing properties, water-free and non-foaming. For use in cooling lubricant emulsions, metalworking-fluids, rust-removers and for vibratory grinding.
POLYGON PC 2365 NEW	Phosphorous-free, oilsoluble corrosion-inhibitor based on sarcosine- and imidazoline derivatives (in n-butoxypropanol) for cooling lubricants and metalworking-fluids. Forms a monomolecular, water-displacing film and protects iron, non-ferrous metals and aluminium from corrosion.
SURFACTANTS AND EMULSIFIERS	
POLYGON PC 2078 Label-free according to CLP-Regulation (EG)1272/2008	Special EO-/PO-blockcopolymer (non-ionic) surfactant for cooling lubricants and metalworking fluids, hydraulic-fluids and mold-release agents. Very good stability in acidic formulations and above average alkali-resistance. Low foaming, only marginally soluble in water, but good solubility in various organic media forming clear solutions like in ethanol or isopropanol.
TENSAN P 197	Phosphated alcoholethoxylate (free acid) also available as potassium-salt (TENSAN P 197 P). Polyfunctional and outstanding wetting agent and solubilizer. Very good alkali-resistance, low foaming and dispersible in water. Soluble in most organic solvents and oils. Corrosion-inhibiting properties especially for iron and suitable for metalworking-fluids, cooling lubricants and alkaline cleaners.
TENSAN P 864	Phosphated alcoholethoxylate (free acid) as emulsifier and load-carrier for cooling lubricants and metalworking-fluids. Often used in combination with classic fattyalcohol-ethoxylates to stabilise the surfactant properties at fluctuating temperatures. Anionic, low foaming, good wetting and good alkali-resistance.
EP/AW - ADDITIVE	
POLYGON PC 1875	Ethoxylated phenyl-phosphate as extreme-pressure (EP) and anti-wear (AW) additive for cooling lubricants and metalworking-fluids. Good corrosion inhibiting properties especially for aluminum (passivating), very low foaming.
CORROSION-INHIBITORS	

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PRODUCTNAME	APPLICATIONS / SPECIAL FEATURES
POLYGON PC 1826	Butylphosphate as foam reduced corrosion inhibitor for iron and steels in water based, alkaline systems like cooling lubricants and metalworking-fluids. Low solubility in water (turbid). Soluble in glycols, isopropylalcohol and alcohol-water mixtures.
TENSAN TEO	Octylphosphate as corrosion inhibitor for iron , steel and aluminum . Low foaming and very good emulsifying properties. Easy to neutralize with amines, sodium- or potassium hydroxide. Suitable for both alkaline and acidic range, but at acidic pH only as emulsion.

For water-soluble cooling lubricants

METAL- AND LIME-SOAP DISPERSANTS

POLYGON PC 1553	Patented oligomeric phosphonate. Not Ca sensitive sequestering- and dispersing-agent with outstanding metal-soap dispersing properties. Substitutes polyphosphates, polyacrylates and classic phosphonates. Pronounced threshold-effect also at very high pH.
POLYGON PC 1879	Low chloride version (<200ppm) of POLYGON PC 1553 and therefore especially suitable as metal-soap dispersant for chloride-sensitive applications like metalworking-fluids, cooling-lubricants and electroplating. Also available in granulated form.
POLYGON PC 1630	Patented oligomeric phosphonate. Not Ca sensitive sequestering- and dispersing-agent with outstanding metal-soap dispersion properties. Substitutes polyphosphates, polyacrylates and classic phosphonates. Pronounced threshold-effect also at very high pH.
POLYGON PC 1194	Aminotrimethylenephosphonate as threshold-active sequestering- and dispersing-agent. Prevents lime-scale formation and very effective in lime-soap dispersion. Excellent chelating agent for Fe-, Cu- and Mn-ions.
POLYGON PC 1335	Hydroxyethylidenediphosphonate as threshold-active sequestering- and dispersing-agent. Very high quality with low-chloride and low-iron content. Outstanding iron-chelating power especially at pH 8-12. Very good CaCO ₃ -sequestering in alkaline pH and stable in oxidative media.
POLYGON PC 1390	Diethylenetriaminepentamethylenephosphonate as threshold-active sequestering- and dispersing-agent and anti-war (AW) additive for water-soluble cooling lubricants and metalworking-fluids. Prevents lime-scale formation and very good dispersion of lime-soap and zinc-soap. High CaCO ₃ -sequestering and outstanding iron chelating especially from pH 8-12. High quality with low colour and low odour.

SURFACTANTS AND WETTING AGENTS

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PRODUCTNAME	APPLICATIONS / SPECIAL FEATURES
POLYGON PC 2077	Special EO-/PO-blockcopolymer (non-ionic) wetting agent for cooling lubricants, metalworking-fluids, hydraulic-fluids, lubricants and mold-release agents. No clear hydrophobic or hydrophilic classification possible. Low surface tension abasement of water, no surfactant according to EU detergency-regulation. Very low foaming, clear solubility in water, alcohols and aromatic solvents. Works as defoamer at temperatures above cloud-point. Very good resistance in acidic formulations, and towards temperature. Not sensitive to shear forces.
TENSAN KS Label-free according to CLP-Regulation (EG)1272/2008	Chloride-free alkylalanine-derivative as polyfunctional amphoteric surfactant and solubilizer. Especially suitable for system-cleaners of metalworking-fluids and cooling-lubricants. Shows good supporting of corrosion-inhibitors.
TENSAN PP 396	Ethoxylated phenyl-phosphate as solubilizer with enormous cleaning-power, good supporting of corrosion-inhibitors, anionic and very low foaming. Very good wetting and stability against bacterial degradation for example in cooling-lubricants and metalworking-fluids.
CORROSION-INHIBITORS	
POLYGON PC 1873	Ethoxylated phenylphosphate as corrosion-inhibitor for iron, steel, non-ferrous metals and especially for zinc . Prevents formation of white-rust (ZnCO_3) in alkaline solutions (pH 9-11). Free from amines, mineral-oils, nitrites, p-tert.-butylbenzoic acid (PTBB), low foaming, not sensitive to water hardness. Used to extend service-life of water-miscible cooling lubricants and metalworking-fluids.
TENSAN TEM	Methylphosphate as corrosion-inhibitor for iron, steel and copper in acidic media. Easy to neutralise. Amine-, sodium- or potassium-salts in alkaline systems also protect aluminium . No surfactant-properties, good soluble in water, very low pH.
POLYGON PCG 1209	Zinc-phosphonate based corrosion-inhibitor. Especially suitable for cooling-lubricants, metalworking- and hydraulic-fluids. Protects iron , (stainless) steel , aluminium and non-ferrous metals like bronze (Cu/Sn), copper and brass (Cu/Zn) in neutral and alkaline media (pH 7-13).
POLYGON PCG 1419	Amine and alkylphosphate based corrosion-inhibitor for aluminum and light-alloys with magnesium in alkaline media (pH 8-12). Especially effective in presence of complexing agents like NTA or citric-acid.
POLYGON PCG 1831	Succinic- and fattyacid based corrosion-inhibitor for iron, steel, non-ferrous metals, aluminum and tinplate in alkaline systems from pH 9-11. Used in cooling-lubricants, metalworking-, hydraulic- and grinding-fluids and for alkaline industrial cleaners.
POLYGON PCG 1969	Corrosion-inhibitor and brightener based on patented oligomeric phosphonate and alkylphosphate. Protects aluminum and alloys from corrosion and oxidation, when added to neutral and alkaline water-based systems. Especially effective in presence of amines.

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POLYGON PCG 2057

Phosphorous-free, low foaming, water-based corrosion-inhibitor based on octanoic-acid and modified zinc-phthalate. For the protection of iron, steel, galvanized steel, aluminium and non-ferrous metals in the pH 8-13. Used in cooling-lubricants, metalworking-, hydraulic- and grinding-fluids and for alkaline industrial cleaners.