



ILCO PHOS Phosphate Esters

PRODUCT RANGE - Monomers

No.	Product Name#	C-Chain	P-Content [%]	pH-Value	Acid Value [mg KOH/g]	Solubility in Water	Color	Form/Viscosity at 20°C
1	ILCO PHOS 100	C1	25.9 – 28.1	approx. 1.5	930-1030	completely soluble	colorless to yellowish liquid	clear liquid approx. 200 mPas
2	ILCO PHOS 101	C16	-	7.0 - 7.5	potassium neutralized	partial soluble, dispersible	white dispersion	paste (30% solution)
3	ILCO PHOS 102	C13/C15, Oxo POE 3	8.2 - 9.4	1 - 2	290 - 350	dispersible	colorless to yellowish	clear liquid at 25°C
4	ILCO PHOS 200	C2	22.0 – 23.2	approx. 1.5	670 - 710	completely soluble	colorless	liquid approx. 300 mPas
5	ILCO PHOS 201	C4, iso-Butyl	15.8 – 17.0	1 - 2	410 - 470	partial soluble, dispersible	colorless	liquid
6	ILCO PHOS 202	C4; n-Butyl	16.6 - 17.8	1 - 3	440 - 490	partial soluble, dispersible	colorless to yellowish	clear liquid approx. 200 mPas
7	ILCO PHOS 203	C8; 2-Ethylhexyl	10.9 – 12.1	1 - 3	280 - 330	dispersible	yellow	clear liquid approx. 300 mPas
8	ILCO PHOS 204	C8/C10	11.6 - 12.8	< 3	270 - 330	dispersible	colorless - yellowish	clear liquid
9	ILCO PHOS 205	C12	8.0 - 9.2	1 - 3	210 - 250	dispersible	white to yellowish	solid
10	ILCO PHOS 206	C16/C18	6.7 - 7.9	1 - 3	180 - 220	insoluble	yellowish to brownish	flakes
11	ILCO PHOS 207	C18	6.3 - 7.5	1 - 3	185 - 215	insoluble	yellow to brownish	flakes
12	ILCO PHOS 208	C18', Oleyl	6.1 - 7.3	0 - 4	170 - 190	insoluble	brown	liquid



ILCO PHOS Phosphate Esters

PRODUCT RANGE - Polymers

No.	Product Name#	C-Chain	P-Content [%]	pH-Value	Acid Value [mg KOH/g]	Solubility in Water	Color	Form/Viscosity at 20°C
13	ILCO PHOS 209	C10 POE 4	4.2 – 5.4	1 - 3	125 - 145	dispersible	colorless to yellowish	clear liquid
14	ILCO PHOS 210	C12 POE 4	4.2 – 5.4	2 - 3	125 - 155	dispersible	colorless to yellowish	liquid approx. 500 mPas
15	ILCO PHOS 211	C13, iso POE 6	3.6 - 4.8	1.5 - 3.5	100 - 140	dispersible	colorless to light yellowish	liquid approx. 700 mPas
16	ILCO PHOS 212	C13, iso POE 8	3.2 - 3.8	2 - 3	95 - 115	dispersible	colorless to light yellowish	liquid
17	ILCO PHOS 213	C13/C15, Oxo POE 7	3.2 – 4.0	0 - 3	62 - 70 (pH 5.2)	dispersible	colorless to yellowish	liquid/paste
18	ILCO PHOS 214	C16/C18 POE 11	1.8 – 3.0	1 - 3	66 - 76	dispersible	colorless to yellowish	solid, clear liquid at 70°C
19	ILCO PHOS 215	C18', Oleyl POE 5	3.6 - 4.2	1.5 - 3.5	100 - 125	dispersible	yellow	liquid at 30°C
20	ILCO PHOS 216	Nonylphenol POE 9	3.3 - 4.5	2 - 2.5	110 - 130	dispersible	colorless to yellowish	liquid
21	ILCO PHOS 300	C12/C14 POE 4	-	6.5 - 7.5	sodium neutralized	completely soluble	clear to opaque	liquid max. 400 mPas

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ILCO PHOS Phosphate Esters

PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
1	ILCO PHOS 100	C1	13 / 21 / 29	Acidic, water soluble under acidic conditions, less corrosive than mineral acids, provides high grease and lime-dissolving power, low foam, free rinsing, hard water stable, compatible with anionic and nonionic surfactants.	<p>ILCO PHOS 100 is used as mild acid with low corrosion potential in acid cleaning agents. In aqueous solution it acts as proton donator but it's much less corrosive than free mineral acids.</p> <p>Cleaners are notable for having a powerful acidic cleaning action without damaging surfaces or installations such as plastic surfaces, fittings, showers, bathtubs, acid-resistant enamel, toilettes and sinks.</p> <p>ILCO PHOS 100 is typically used in applications like bathroom cleaners, institutional cleaners, aluminum/stainless steel cleaners, plastic cleaners, filter cleaners for water treatment, railway carriage cleaners, maintenance chemicals.</p>
2	ILCO PHOS 200	C2	12 / 20 / 24	Acidic, less corrosive than mineral acids, provides high grease and lime-dissolving power, low foam, free rinsing, hard water stable, compatible with anionic and nonionic surfactants, soluble in oil and water, corrosion-inhibition, flame retardancy	<p>ILCO PHOS 200 is employed in acid pickling and degreasing agents which are used for derusting and degreasing in the surface treatment of metals. It produces high-gloss effect on chromium, brass, stainless steel, copper, etc.</p> <p>Efficient acid cleaning agents for sanitary and building sector can be formulated with ILCO PHOS 200. Cleaners achieve high lime-dissolving power coupled with corrosion-inhibition properties.</p> <p>It works also as an antistatic agent. High phosphorus content and good water solubility enable this product to be used in water based flame retardant formulations for textiles.</p>
3	ILCO PHOS 202	C4; n-Butyl	10 / 18 / 22	Antistatic agent, adhesion promoter, high alkaline stable, hard water stable	<p>ILCO PHOS 202 is used as a hardener for acid-curing paint systems as well as a pickling and anchoring agent for the application of paints. In printing inks ILCO PHOS 202 acts as flexibliser. It can be used as adhesion promoter by interacting with polar groups of the substrate to the surface. Furthermore, it is used as antistatic agent especially on plastic film and as dispersing agent.</p>



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PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
4	ILCO PHOS 201	C4; iso-Butyl	10 / 18 / 22	High alkali stable, low foam, emulsifier, free rinsing, hard water stable, solubilization/hydrotrope.	ILCO PHOS 201 is used in textile industry as very effective antistatic agent with good wetting properties on low energy surfaces like polyolefines.
5	ILCO PHOS 203	C8; 2-Ethyl- hexyl	8 / 15 / 19	High alkali stable, low foam, strong emulsifying and dispersing properties, high cleaning efficiency, free rinsing, hard water stable, solubilization/hydrotrope, corrosion-inhibition of metals	ILCO PHOS 203 is mainly used as a wetting agent with defoaming ability in alkaline cleaning agents and in surface treatment for the printing and coating industry. Furthermore it is known as a dispersing agent in pigment pastes. In metal pigment pastes the ester acts as corrosion inhibitor. ILCO PHOS 203 is also used as extraction and flotation agents.
6	ILCO PHOS 204	C8/C10	7 / 15 / 19	High alkali stable, low foam, strong emulsifying and dispersing properties, high cleaning efficiency, free rinsing, hard water stable, solubilization/hydrotrope, corrosion-inhibition of metals.	ILCO PHOS 204 can be used in neutral and alkaline cleaners with high cleaning power. It is also found in fiber finishes as antistatic additive.
7	ILCO PHOS 205	C12	5 / 13 / 17	High alkali stable, low foam, strong emulsifying and dispersing properties, high cleaning efficiency, hard water stable, corrosion-inhibition of metals	ILCO PHOS 205 can be used in neutral and alkaline cleaners with high cleaning power. It is also found in fiber finishes as antistatic additive.
8	ILCO PHOS 101	C16	- / 14 / -	ILCO PHOS 101 is dispersible in heated oil phase of preparations.	ILCO PHOS 101 is a skin compatible anionic O/W-emulsifier for cosmetic preparations like sun creams. It promotes the formation of intimate mixtures of non-miscible liquids by altering the interfacial tension. The surfactant property lowers the surface tension of cosmetic formulations as well as aids the even distribution of the product when used. INCI: POTASSIUM CETYL PHOSPHATE



ILCO PHOS Phosphate Esters

PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
9	ILCO PHOS 206	C16/C18	0 / 9 / 13	Defoamer, solid, aqueous thickener	ILCO PHOS 206 is often used as efficient defoamer for high-temperature detergents. Foam regulation effect is activated between 60°C and 90°C. Defoaming works in soft and hard water. It can also be used as a thickener of aqueous solutions.
10	ILCO PHOS 207	C18	0 / 8 / 12	Defoamer, solid	ILCO PHOS 207 is often used as efficient defoamer for high-temperature detergents. Foam regulation effect is activated between 60°C and 90°C. Defoaming works in soft and hard water. It may be also used as a thickener of aqueous solutions.
11	ILCO PHOS 208	C18 ^s , Oleyl	1 / 8 / 12	Defoamer, liquid at room temperature	
12	ILCO PHOS 209	C10 POE 4	8 / 16 / 20	Wetting, solubilization/hydrotrope, highly alkaline stable, emulsification, free rinsing	Detergents, maintenance chemicals, textiles, agriculture



ILCO PHOS Phosphate Esters

PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
13	ILCO PHOS 210	C12 POE 4	7 / 15 / 18	The Product is chemically stable in acidic & alkaline solutions and compatible with anionic & nonionic surfactants. It shows good wetting and dispersing effects.	<p>ILCO PHOS210 exhibits excellent dispensability for solid particles and can be used in acidic, neutral and alkaline cleaners.</p> <p>It is used as EP additive for metal working fluids and as dispersing agent in pigment preparations. It shows good antistatic and softening action on laundry. ILCO PHOS 210 exhibits excellent emulsifying action for water in chlorinated hydrocarbons and petroleum spirit.</p> <p>ILCO PHOS 210 is also used in cosmetic formulations. It acts as O/W emulsifier to promote the formation of intimate mixtures of non-miscible liquids by altering the interfacial tension. It's cleansing power helps to keep the body surface clean. The surfactant property lowers the surface tension of cosmetic formulations as well as aids the even distribution of the product when used.</p> <p>INCI: LAURETH-4 PHOSPHATE</p>
14	ILCO PHOS 300	C12/C14 POE 4	- / 14 / -	<p>ILCO PHOS 300 is produced by direct esterification of phosphorus acid with C12/14 natural alcohol ethoxylate and subsequent neutralization with sodium hydroxide.</p> <p>Esterification degree: 15% Neutral Components, 5-10 % Monoesters, 45-50 % Diesters 24-28 % Triesters</p>	<p>ILCO PHOS 300 is an effective O/W emulsifier for the cosmetic industry.</p> <p>Low amounts (1.0 - 3.0%) are sufficient to achieve highly stable emulsions.</p> <p>It allows the manufacture of emulsions with polar oils and UV filters.</p> <p>Lotions and creams can be processed cold since ILCO PHOS 300 is liquid at room temperature.</p> <p>INCI: TRILAURETH-4 PHOSPHATE</p>



ILCO PHOS Phosphate Esters

PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
15	ILCO PHOS 211	C13, iso POE 6	7 / 15 / 19	Excellent wetting action, strong dispersing properties, effective corrosion inhibitor at pH > 6, acts as metal deactivator, chemically stable in acidic & alkaline solutions, compatible with anionic & nonionic surfactants, can be used for the prevention of scale.	ILCO PHOS 211 can be used as detergent booster due to its good wetting and dispersing ability. It is also often found in formulations for crop protection and as emulsifier for the emulsion polymerization. In many cases ILCO PHOS 211 is also a good alternative to exchange nonylphenol ethoxylate based phosphate esters.
16	ILCO PHOS 212	C13, iso POE 8	8 / 16 / 20	Excellent wetting action, strong dispersing properties, effective corrosion inhibitor at pH > 6, acts as metal deactivator, chemically stable in acidic & alkaline solutions, compatible with anionic & nonionic surfactants, can be used for the prevention of scale.	ILCO PHOS 212 can be used as detergent booster due to its good wetting and dispersing ability. It is also often found in formulations for crop protection and as emulsifier for the emulsion polymerization. In many cases ILCO PHOS 212 is also a good alternative to exchange nonylphenol ethoxylate based phosphate esters.
17	ILCO PHOS 213	C13/C15 Oxo POE 7	8 / 16 / 24	ILCO PHOS 213 is a colorless to yellowish paste (liquid at >25°C) with a faint ester-like odor. It can be emulsified in water. The Product is chemically stable in acidic & alkaline solutions and compatible with anionic & nonionic surfactants.	ILCO PHOS213 is an excellent dispersing agent and is used as alternative to exchange nonylphenol ethoxylate based phosphate esters.
18	ILCO PHOS 102	C13/C15 Oxo POE 3	7 / 15 / 19	Fast wetting, excellent dispersing power.	ILCO PHOS 102 is an excellent wetting and dispersing agent and is used as alternative to exchange nonylphenol ethoxylate based phosphate esters.
19	ILCO PHOS 214	C16/C18 POE 11	7 / 14 / 18		



ILCO PHOS Phosphate Esters

PROPERTIES AND APPLICATIONS

No.	Product Name	C-Chain	HLB acidic (pH <5) / neutral (pH 6 - 9) / alkaline (pH > 10)	Properties	Applications
20	ILCO PHOS 215	C18' Oleyl POE 5	3 / 11 / 15	ILCO PHOS215 is a clear yellowish liquid with an ester-like odor. Water soluble after neutralization.	<p>Multifunctional additive for water based lubricants providing emulsification, anti-wear, extreme pressure, and corrosion inhibition. Preferred antiwear/emulsifier for water based metal working lubricants.</p> <p>ILCO PHOS 215 is also used in cosmetic formulations. It acts as O/W emulsifier to promote the formation of intimate mixtures of non-miscible liquids by altering the interfacial tension. The surfactant property lowers the surface tension of cosmetic formulations as well as aids the even distribution of the product when used.</p> <p>INCI: OLETH-5 PHOSPHATE</p>
21	ILCO PHOS 216	Nonyl-phenol POE 9		The Product is chemically stable in acidic & alkaline solutions and compatible with anionic & nonionic surfactants.	<p>ILCO PHOS216 is used as detergent, wetting agent, emulsifier and anti-static agent.</p> <p>Major application fields are Maintenance Chemicals, Textiles, Vehicle Cleaning, Lubricants, Emulsion Polymerization and Detergents</p>

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ILCO PHOS Phosphate Esters

Regulatory Status

No	Product Name#	Chemical Name	CAS No.	EINECS No:	Inventory
1	ILCO PHOS 100	Phosphoric acid, monomethyl ester; methyl dihydrogen phosphate; Monomethyl phosphate	812-00-0	212-379-1	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; PHILIPPINES: PICCS; SWITZERLAND: SWISS; USA: TSCA
2	ILCO PHOS 200	Mixture of phosphoric acid, monoethyl ester; phosphoric acid, diethyl ester	1623-14-9; 598-02-7	216-603-9; 209-912-5	ASIA-PACIFIC: ASIA-PAC; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; SWITZERLAND: SWISS; USA: TSCA
3	ILCO PHOS 201	Mixture of phosphoric acid, mono(2-methylpropyl) ester; phosphoric acid, bis(2-methylpropyl) ester	2466-73-1; 6303-30-6	219-576-1; 228-602-0	ASIA-PACIFIC: ASIA-PAC; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; NEW ZEALAND: NZIoC; PHILIPPINES: PICCS
4	ILCO PHOS 202	Mixture of Phosphoric acid, mono(2-ethylhexyl) ester; Phosphoric acid, bis(2-ethylhexyl) ester	1623-15-0; 107-66-4; (12788-93-1)	216-604-4; 203-509-8; (235-826-2)	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; NEW ZEALAND: NZIoC; PHILIPPINES: PICCS; SWITZERLAND: SWISS; USA: TSCA
5	ILCO PHOS 203	Phosphoric acid, 2-ethylhexyl ester Mixture of phosphoric acid, 2-ethylhexyl ester; phosphoric acid, bis(2-ethylhexyl) ester	12645-31-7; 298-07-7	235-741-0; 206-056-4	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: EINECS; KOREA: ECL; PHILIPPINES: PICCS; USA: TSCA
6	ILCO PHOS 204	Phosphoric acid, C8/C10 alcohol ester Mixture of phosphoric acid, monoctyl ester; phosphoric acid, dioctyl ester; phosphoric acid, monodecyl ester; phosphoric acid, didecyl ester	3991-73-9; 3115-39-7; 3921-30-0; 7795-87-1	223-638-3; 221-485-7; 223-491-5; 232-248-2	ASIA-PACIFIC: ASIA-PAC; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; USA: TSCA
7	ILCO PHOS 205	Mixture of phosphoric acid, monododecyl ester; phosphoric acid, didodecyl ester	12751-23-4; 7057-92-3	235-799-7; 230-341-2	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; USA: TSCA



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Regulatory Status

No	Product Name#	Chemical Name	CAS No.	EINECS No:	Inventory
8	ILCO PHOS 101	1-Hexadecanol, dihydrogen phosphate, monopotassium salt potassium hexadecyl hydrogen phosphate	19035-79-1; (84861-79-0)	284-768-1; (284-374-2)	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: NDSL; EEC: EINECS; JAPAN: ENCS; USA: TSCA
9	ILCO PHOS 206	Phosphoric acid, C16/C18 alcohol ester	85186-38-5	286-022-3	ASIA-PACIFIC: ASIA-PAC; EEC: EINECS
10	ILCO PHOS 207	Mixture of phosphoric acid, mono octadecyl ester; phosphoric acid, di octadecyl ester mono/di stearyl phosphate	39471-52-8; 3037-89-6	254-466-7; 221-237-8	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL, NDSL; EEC: EINECS; KOREA: ECL; USA: TSCA
11	ILCO PHOS 208	Phosphoric acid, oleic alcohol esters	37310-83-1	253-455-4	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: EINECS; JAPAN: ENCS; KOREA: ECL; PHILIPPINES: PICCS; USA: FIFRA, TSCA
12	ILCO PHOS 209	Phosphoric acid, C10 alcohol POE 4 ester Decyl alcohol, ethoxylated, phosphated	52019-36-0	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; KOREA: ECL; NEW ZEALAND: NZIoC; PHILIPPINES: PICCS; USA: TSCA
13	ILCO PHOS 210	Bis[3,6,9,12-tetraoxatetra-cosyl]hydrogenphosphat 3,6,9,12-Tetraoxatetracosan-1-ol, hydrogen phosphate	20297-05-6	polymer (243-716-0)	CANADA: NDSL; EEC: EINECS; USA: TSCA
14	ILCO PHOS 300	Mono-, di- and tri-(alkylteragylcol ether)-o-phosphoric acid esters (alkyl mainly C12/14)	121158-63-2; 121158-61-0; 121158-62-1	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; KOREA: ECL; PHILIPPINES: PICCS



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No	Product Name [#]	Chemical Name	CAS No.	EINECS No:	Inventory
15	ILCO PHOS 211	Isotridecyl alcohol, ethoxylated, phosphated Poly(oxy-1,2-ethanediyl), .alpha.-isotridecyl-.omega.-hydroxy-, phosphate	73038-25-2	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; USA: TSCA
16	ILCO PHOS 212	Tridecyl alcohol, ethoxylated and phosphated	73038-25-2	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; USA: TSCA
17	ILCO PHOS 102	Phosphoric acid, C13/C15 oxoalcohol POE 3 ester	68071-35-2	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: NLP; NEW ZEALAND: NZIoC; PHILIPPINES: PICCS; USA: TSCA
18	ILCO PHOS 213	C13-C15 alcohol, ethoxylated and phosphated	68071-35-2	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; EEC: NLP; NEW ZEALAND: NZIoC; PHILIPPINES: PICCS; USA: TSCA
19	ILCO PHOS 214	Phosphoric acid, C16/C18 alcohol POE 11 ester	106233-09-4	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; EEC: NLP; NEW ZEALAND: NZIoC
20	ILCO PHOS 215	Polyoxyethylene oleyl ether (5) phosphate Phosphoric acid, mixed esters with oleyl alcohol polyglycol ether (5)	39464-69-2	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; JAPAN: ENCS; KOREA: ECL; PHILIPPINES: PICCS; USA: TSCA
21	ILCO PHOS 216	Ethoxylated Nonylphenol Phosphate (POE 9) Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, phosphate	51811-79-1	polymer	ASIA-PACIFIC: ASIA-PAC; AUSTRALIA: AICS; CANADA: DSL; KOREA: ECL; PHILIPPINES: PICCS; USA: FIFRA, TSCA



ILCO PHOS Phosphate Esters

Derived properties from HLB-value

HLB Value	Properties
< 10	Oil Soluble
6 - 10	Water Dispersible
> 10	Water Soluble
0 - 2	Anti-foam
3.5 - 6	W/O Emulsifier
7 - 9	Wetting Agent
8 - 18	O/W Emulsifier
13 - 15	Detergent
15 - 18	Solubilizer

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