



Manual dishwashing detergents

Local. Global. Integrated.

Operating in 17 countries, in 39 different locations, PCC SE currently employs over 3 300 people.



About Us

PCC Exol SA is a major player in the European surfactants market. In the eastern and central-eastern part of the continent, it is the undisputed leader in its industry. Most of the production facilities and the company's headquarters are located in Brzeg Dolny, Poland. Here we develop, test and manufacture a wide range of anionic, non-ionic and amphoteric surfactants and speciality industrial formulations.

New products are continuously added to the portfolio in response to market trends and individual customer requirements. The surfactants produced at the plants have a very wide range of industrial applications. They

are used as wetting agents, emulsifiers, auxiliaries in paper, metallurgy and many other industries, as well as in household chemicals, personal care products and textiles.

PCC EXOL pays special attention to the issue of sustainable development, which is one of the key elements of the company's strategy. In order to strengthen its competitive position in the surfactants market, the company is committed to promoting responsible production and consumption throughout the value chain. The concept of sustainable development is therefore a key aspect of all the company's management and operational processes.

PCC ROKITA SA PCC PCG OXYALKYLATES IRPC	PCC ROKITA SA	PCC ROKITA SA	PCC EXOL SA PCC CHEMAX INC PCC PCG OXYALKYLATES	PCC SYNTEZA
Polyols 	Chlorine 	Phosphorus 	Surfactants 	Alkylphenols 
<ul style="list-style-type: none"> • Polyether polyols • Polyester polyols • Prepolymers • Polyurethane Systems 	<ul style="list-style-type: none"> • Chlorine • MCAA • Other Chlorine Downstream Product 	<ul style="list-style-type: none"> • Phosphorus derivatives • Naphthalene derivatives • Polycarboxyethers (PCE) 	<ul style="list-style-type: none"> • Anionic surfactants • Cationic surfactants • Nonionic surfactants • Amphoteric surfactants (betaines) • Chemical formulation 	<ul style="list-style-type: none"> • Nonylphenol • Dodecylphenol • Tristyrylphenol
PCC CONSUMER PRODUCTS SA	PCC ROKITA SA	PCC INTERMODAL SA	PCC BAKKISILICON HF.	PCC SE
Consumer Products 	Energy 	Logistics 	Silicon 	Holding & Projects 
<ul style="list-style-type: none"> • Household & industrial Cleaners, Detergents and Personal Care Products 	<ul style="list-style-type: none"> • Renewable Energy • Conventional Energy 	<ul style="list-style-type: none"> • Intermodal transport • Road Haulage • Rail Transport 	<ul style="list-style-type: none"> • Microsilica • Silicon Metal 	<ul style="list-style-type: none"> • Portfolio Management • Project Development



Manual dishwashing detergents

Despite the numerous advantages of automatic dishwashing, many consumers still prefer to wash dishes by hand.

The market caters to this preference by offering a variety of products, including classic liquids and gels, foams that are pleasant to apply, spray preparations, and bar soaps. There is also diversity in the composition of dishwashing detergents. While some manufacturers rely on proven, traditional solutions, others seek innovative raw materials. However, a common feature is their commitment to environmental sustainability, ensuring that the products released on the market are as eco-friendly as possible.

This brochure presents products from the PCC Exol range that can be used successfully in detergents for hand washing dishes.

Additionally, we present examples of formulations based on our raw materials, as well as performance tests that demonstrate the effectiveness of the proposed preparations.

The table below shows products from the PCC Exol range that can be used in hand dishwashing preparations.

The PCC Exol portfolio is constantly developing and expanding, so if you are looking for a specific raw material that is not on the list, please check our website or contact us. This list is only a recommendation; you may find an unspecified product in our extensive portfolio that will work perfectly in your formulation!

Product	Chemical name
Nonionic surfactants	
ROKAnol C7	Alcohols, C12-18 + 7 EO
ROKAnol L7 or L7W	Alcohols, C12-14 + 7 EO (Laureth-7)
ROKAnol MT7E	Alcohols, C8-18 + 7 EO
ROKAnol TMP7	Alcohols, C13-15 + 7 EO
ROKAnol NL8	Alcohols, C9-11 + 8 EO
ROKAnol NL9	Alcohols, C9-11 + 9 EO
ROKAcet KO400G	PEG-6 Glyceryl Cocoate
ROKAmid MRZ4	PEG-4 Rapeseedamide
ROKAmid KAD	Cocamide DEA
ROKwinol 20	Polysorbate 20

Anionic surfactants	
ABSNa 25/ABSNa 30/ABSNa 50/ABSNa 60	Sodium Dodecylbenzenesulfonate
EXOsoft PC35	Potassium Cocoate
EXOsoft PO30	Potassium Oleate
ROSULfan L	Sodium Lauryl Sulfate
ROSULfan L/PH	Sodium Lauryl Sulfate
ROSULfan C/PH	Sodium Coco Sulfate
ROSULfan A	Ammonium Lauryl Sulfate
ROSULfan A70	Ammonium Lauryl Sulfate
ROSULfan E	Sodium 2-ethylhexyl Sulfate
ROKAtend LS	Sodium Lauroyl Sarcosinate
EXOsoft L3/40	Disodium Laureth Sulfosuccinate
SULFOROKAnol L227/1	Sodium Laureth Sulfate
SULFOROKAnol L270/1	Sodium Laureth Sulfate
SULFOROKAnol L270/1A	Sodium Laureth Sulfate
SULFOROKAnol L290/1M	MIPA Laureth Sulfate and Propylene Glycol
SULFOROKAnol L385/1T	TIPA Laureth Sulfate and Propylene Glycol
SULFOROKAnol L325	Sodium C12-15 Pareth Sulfate
SULFOROKAnol L370	Sodium C12-15 Pareth Sulfate
SULFOROKAnol IT330	Sodium Trideceth Sulfate
SULFOROKAnol IT370	Sodium Trideceth Sulfate
Amphoteric surfactant	
ROKAmina K30	Cocamidopropyl Betaine
ROKAmina K30K	Cocamidopropyl Betaine
ROKAmina K40HC	Cocamidopropyl Betaine
Additives	
EXOtrope SCS 40	Sodium Cumenesulfonate
EXOlat ZA	Sodium Salt of Acrylic-Maleic Copolymer

Formulation guide & performance tests

Below are formulations for manual dishwashing based on PCC Exol products. The preparations are available in various forms, including gel, foam and spray. Each formulation is accompanied by information about its properties and the performance tests carried out.

The effectiveness of each preparation was tested in accordance with the IKW method 'Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage through Plate Test (2024)', measured by the number of plates washed with it.

Hand dishwashing liquid

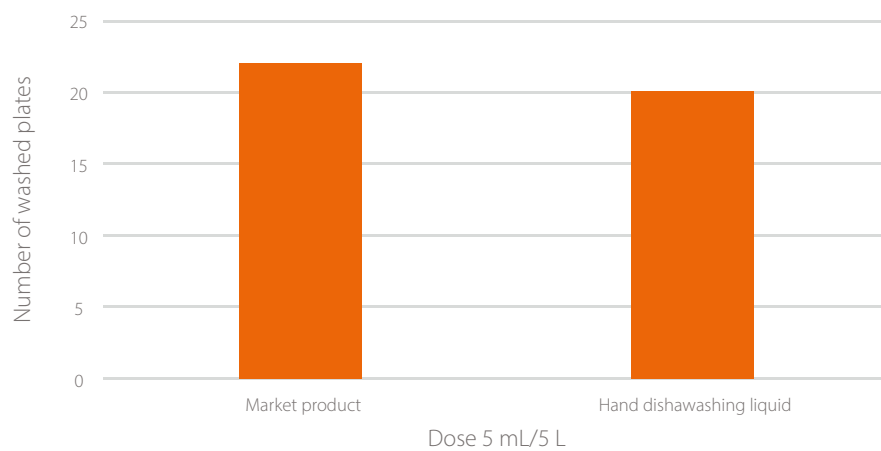
Compound	Brand name	Concentration [%]	Function
Sodium C12-15 Pareth Sulfate	SULFOROKAnol L370	11.5	Foaming agent/ cleaning agent
Cocamidopropyl Betaine	ROKAmina K30K	6.0	Foaming agent/ foam stabilizer
Polysorbate 20	ROKwinol 20	0.3	Dirt-emulsifying agent
Phenoxyethanol	-	0.8	Preservative
Sodium Chloride	-	2.5	Thickener
Citric Acid	-	q.s.	pH modifier
Aqua	-	up to 100.0	Solvent

Appearance	visual method	viscous, clear liquid
pH		4.8 – 5.3
Viscosity [cP]	Brookfield LV, spindle S34, speed 6 RPM, T: 20°C	4000 – 4500
Density [g/mL]	20°C	approx. 1.03
Active substance [%]	anionic	approx. 8
Dry matter [%]	without Sodium Chloride	10.2

Procedure:

1. Combine SULFOROKAnol L370 with water, mix until dissolved.
2. Add ROKAmina K30K, mix until clear liquid is obtained.
3. Next add ROKwinol 20 and Phenoxyethanol, mix.
4. Check pH, add Citric Acid to pH approx. 5.
5. Add Sodium Chloride and stir slowly until viscous liquid is obtained.

Performance test of Hand dishwashing liquid



The performance test results for Hand dishwashing liquid were compared to a market product with a similar pH, viscosity, anionic active substance content and dry matter content. The tests were

conducted according to the IKW method „Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage trough Plate Test (2024)“ using a brush.



Economic hand dishwashing liquid

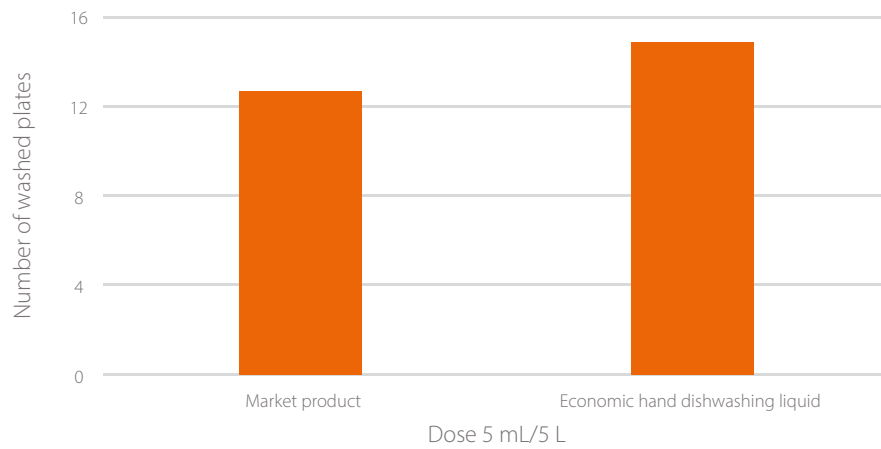
Compound	Brand name	Concentration [%]	Function
Sodium Laureth Sulfate	SULFOROKAnol L227/1	20.0	Foaming agent/ cleaning agent
Cocamidopropyl Betaine	ROKAmina K30	3.0	Foaming agent/ foam stabilizer
Alcohols, C8-18, ethoxylated	ROKAnol MT7E	0.5	Cleaning agent
Sodium Benzoate	-	0.4	Preservative
Sodium Chloride	-	4.5	Thickener
Citric Acid	-	q.s.	pH modifier
Aqua	-	up to 100.0	Solvent

Appearance	visual method	viscous, clear liquid
pH		4.3 – 4.8
Viscosity [cP]	Brookfield LV, spindle S34, speed 20 RPM, T: 20°C	2000 – 2500
Density [g/mL]	20°C	approx. 1.04
Active substance [%]	anionic	approx. 5.5
Dry matter [%]	without Sodium Chloride	7.2

Procedure:

1. Combine Sodium Benzoate with water, mix until dissolved.
2. Next add SULFOROKAnol L227/1 and mix.
3. Add ROKAmina K30, mix until clear liquid is obtained.
4. Next add ROKAnol MT7E, mix.
5. Check pH, add Citric Acid to pH approx. 4.5.
6. Add Sodium Chloride and stir slowly until viscous liquid is obtained.

Performance test of Economic hand dishwashing liquid



The performance test results for Hand dishwashing liquid were compared to a market product with a similar pH, viscosity, anionic active substance content and dry matter content. The tests were conduc-

ted according to the IKW method, „Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage trough Plate Test (2024)“ using a brush.



Concentrated hand dishwashing liquid in two version

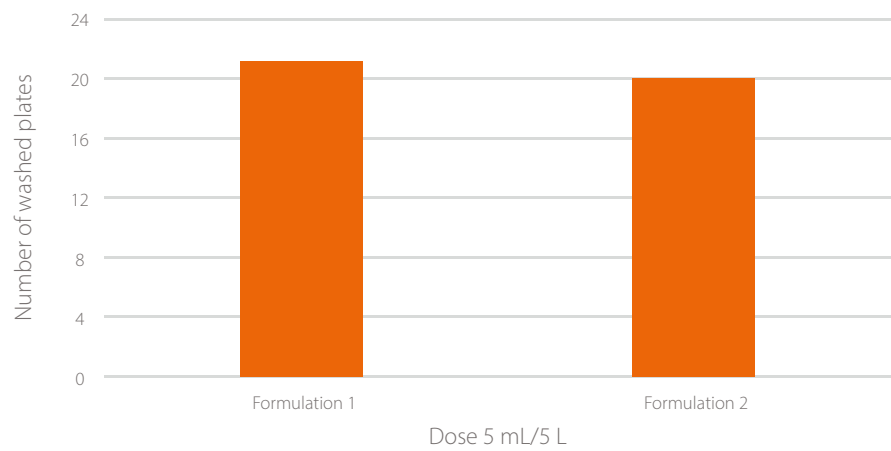
Compound	Brand name	Concentration [%]		Function
		Formulation 1	Formulation 2	
Sodium Laureth Sulfate	SULFOROKAnol L270/1	15.0		Foaming agent/ cleaning agent
Potassium Oleate	EXOsoft PO30	5.0		Cleaning agent/ foaming agent
Cocamidopropyl Betaine	ROKAmina K40HC	5.0		Foaming agent/ foam stabilizer
Sodium Cumenesulfonate	EXOtrophe SCS 40	2.5		Hydrotrope
PEG-6 Glyceryl Cocoate	ROKAcet KO400G	2.0	-	Cleaning agent
PEG-4 Rapeseedamide	ROKAmid MRZ4	-	2.0	Cleaning agent
Sodium Benzoate	-	0.4		Preservative
Sodium Chloride	-	1.5		Thickener
Citric Acid	-	q.s.		pH modifier
Aqua	-	up to 100.0		Solvent

		Formulation 1	Formulation 2
Appearance	visual method	viscous, clear liquid	
pH		4.7-5.2	
Viscosity [cP]	Brookfield LV, spindle S34, speed 12 RPM, T: 20°C	2300 - 2800	3500 - 4000
Density [g/mL]	20°C	approx. 1.04	
Active substance [%]	anionic	approx. 12.0	
Dry matter [%]	without Sodium Chloride	17.2	

Procedure:

1. Combine Sodium Benzoate with water, mix until dissolved.
2. Next add SULFOROKAnol L270/1 and mix.
3. Add ROKAcet KO400G/ROKAmid MRZ4, mix until clear liquid is obtained.
4. Next add EXOsoft PO30, mix.
5. Add EXOtrophe SCS 40 and mix.
6. Next add ROKAmina K40HC, mix.
7. Check pH, add Citric Acid to pH approx. 5.0.
8. Add Sodium Chloride and stir slowly until viscous liquid is obtained.

Performance test of Concentrated hand dishwashing liquids



The performance test results for Concentrated hand dishwashing liquid in two version were compared, Formulation 1 – with ROKAcet KO400G and Formulation 2 – with ROKAmid MRZ4. The tests were

conducted according to the IKW method „Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage trough Plate Test (2024)*“ using a brush.



Concentrated dishwashing foam

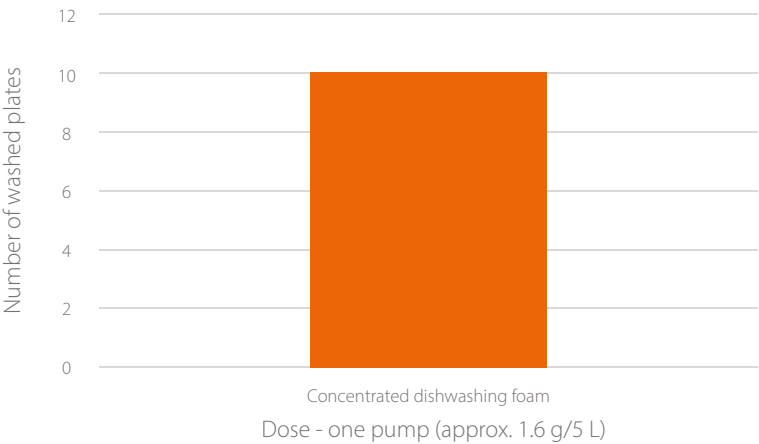
Compound	Brand name	Concentration [%]	Function
Sodium Laureth Sulfate	SULFOROKAnol L270/1	17.0	Foaming agent/ cleaning agent
Sodium Lauryl Sulfate	ROSULfan L	7.0	Foaming agent/ cleaning agent
Disodium Laureth Sulfosuccinate	EXOsoft L3/40	5.0	Foaming agent/ cleaning agent
Sodium Cumenesulfonate	EXOtrope SCS 40	2.5	Hydrotrope
Glycerin	-	7.5	Humectant
Ethanol	-	4.0	Solvent/degreaser
Phenoxyethanol	-	0.8	Preservative
Sodium Hydroxide	-	q.s.	pH modifier
Aqua	-	up to 100.0	Solvent

Appearance	visual method	clear liquid
pH		7.2 – 7.7
Viscosity [cP]	Brookfield LV, spindle S18, speed 20 RPM, T: 20°C	<100 cP
Density [g/mL]	20°C	approx. 1.04
Active substance [%]	anionic	approx. 16
Dry matter [%]		24.3

Procedure:

1. Combine SULFOROKAnol L270/1 with water, mix until dissolved.
2. Add EXOsoft L3/40, mix until clear liquid is obtained.
3. Next add Glycerin, mix.
4. Add ROSULfan L and mix.
5. Next add Ethanol, mix.
6. Add EXOtrope SCS 40 and Phenoxyethanol, mix.
7. Check pH, add Sodium Hydroxide to pH approx. 7.5.

Performance test of Concentrated dishwashing foam



The performance test were conducted according to the IKW method „Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage trough Plate Test (2024)“ using a brush.



Dishwashing spray

Compound	Brand name	Concentration [%]	Function
Sodium Trideceth Sulfate	SULFOROKAnol IT370	13.0	Cleaning agent/ wetting agent
Cocamidopropyl Betaine	ROKAmina K30	3.5	Foaming agent/ foam stabilizer
Sodium Coco Sulfate	ROSULfan C/PH	3.0	Cleaning agent/ foaming agent
Sodium Cumenesulfonate	EXOtropo SCS 40	2.0	Hydrotrope
Phenoxyethanol	-	0.8	Preservative
Glycerin	-	0.5	Humectant
Citric Acid	-	q.s.	pH modifier
Aqua	-	up to 100.0	Solvent

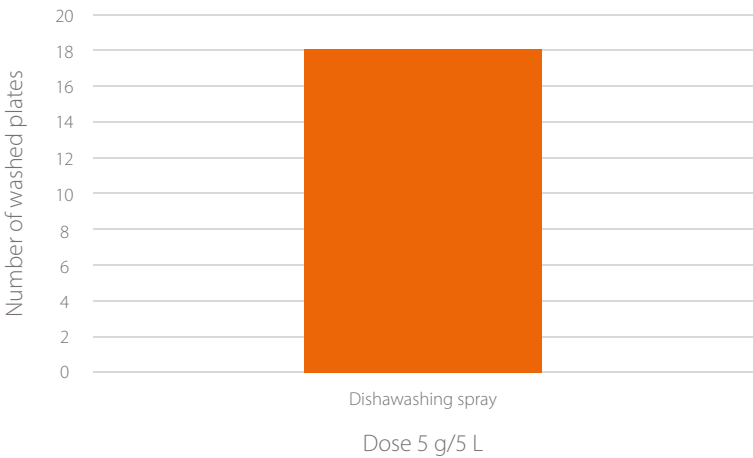
Appearance	visual method	clear liquid
pH		5.8 – 6.2
Viscosity [cP]	Brookfield LV, spindle S18, speed 20 RPM, T: 20°C	<100 cP
Density [g/mL]	20°C	approx. 1.02
Active substance [%]	anionic	approx. 8.5
Dry matter [%]		11.5

Procedure:

1. Combine SULFOROKAnol IT370 with water, mix until dissolved.
2. Add ROSULfan C/PH, mix until clear liquid is obtained.
3. Next add EXOtropo SCS 40 and Glycerin, mix.
4. Add ROKAmina K30 and mix.
5. Next add Phenoxyethanol, mix.
6. Check pH, add Citric Acid to pH approx. 6.



Performance test of Dishwashing spray



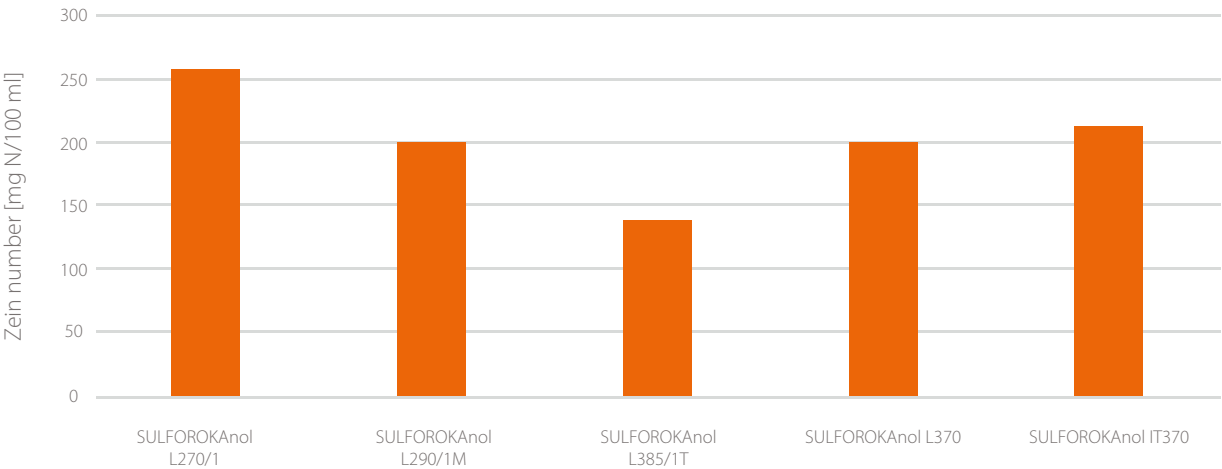
The performance test results for Dishwashing spray were conducted according to the IKW method „Recommendation for the Quality Assessment of Hand Dishwashing Detergents, Part A: Mileage trough Plate Test (2024)“ using a brush.

The irritant potential of surfactants – Zein number

Many consumers wash dishes without wearing protective gloves. For this reason, dishwashing products should be non-irritating to the skin. The irritation potential of the final product depends on all the ingredients (some raw materials mitigate the irritating effects of others) and their concentrations in the composition. The table below

shows a comparison of zein number results for aqueous solutions of selected anionic surfactants from the PCC Exol range. The Zein number, expressed in milligrams of nitrogen per 100 millilitres of solution, is an indicator of irritation potential; the higher the Zein number, the greater the potential irritation of the tested raw material.

Zein number for aqueous solutions of surfactants with a concentration of 1% by weight of the active substance.





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www.products.pcc.eu



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The information in the catalogue is believed to be accurate and compiled to the best of our knowledge; however, it should be considered as introductory only. Detailed information about our products is available in TDS and MSDS.

The suggestions for product applications are based on our best knowledge.

The responsibility for the use of products in conformity or otherwise with the suggested application, and for determining product suitability for the user's own purposes rests with the user.

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