

# Vehicle Cleaning and Care

Raw materials and chemical additives





# Introduction

Autocare chemicals are a dynamically growing segment of the industrial and consumer cleaning sector. The used products satisfy the requirements of both the users who prefer to clean their cars on their own and the car cleaning and maintenance companies with hand or automatic car wash points.

The autocare sector requires the use of many specialised cleaning mixtures and vehicle maintenance agents. The ingredients used for such mixtures are based on:

- Level of product sophistication
- Application: hand or automatic car washes
- The role of a particular ingredient
- Economical aspect
- Compatibility of ingredients
- Legal regulations

In the car cleaning and care segment, apart from the well-known and conventional products, there are also preparations with properties suiting current market trends and growing customer requirements. They contain various advanced components fulfilling certain functions in the formulation. They make the finished products highly efficient and effective.

Below we present some car cleaning and care sample formulations. They are based on high-quality raw materials and chemical additives made at the PCC EXOL SA plants, the manufacturer of a wide range of industrial surfactants.

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## Car shampoo



### Formulation concept:

- Detergent
- Foaming agent
- Foam stabiliser
- Alkalisising agent
- Complexing agent
- Auxiliary additives



### Sample formulation:

ABSNa 30	27.0%
SULFOROKAnol L227/1	10.0%
ROKAmina K40HC	5.0%
Sodium carbonate	2.0%
Sodium metasilicate	3.0%
EXOlat MC60	2.0%
Water	up to 100%





Automatic car body rinse aid



Formulation concept:

Foaming agent

Foam stabilizer

Antistatic agent

Rinse aid agent

Solvent

Drying agent

Auxiliary additives



Sample formulation:

SULFOROKAnol L270/1	5.0%
ROKAmina K40HC	10.0%
ROKAmin K15K (or Rokamin K15)	1.0%
ROKAmid KAD/2A	5.0%
EXOlat MC60	4.0%
Triethanolamine	for pH 7
Water	up to 100%



Paste for chromed parts



Formulation concept:

Solvent

Emulsifier

Foaming agent

Detergent

Wetting agent

Drying agent

Auxiliary additives



Sample formulation:

Dearomatized mixture of short-chained hydrocarbons	30.0%
ROKwin 80	10.0%
ROKAnol® NL9	5.0%
ROKAnol® IT9	2.0%
Water	up to 100%



Traffic film remover



Formulation concept:

Detergent
Wetting agent
Foaming agent
Solubilizer (hydrotrope)
Complexing agent
Antistatic agent
Auxiliary additives



Sample formulation:

ROKAnol® L7	8.0%
ROKAnol® LP3135	3.0%
Hydrotrope	3.0%
EXOlat MC60	2.0%
Citric acid	0.1%
Water	up to 100%



Bloody rim



Formulation concept:

Complexing agent
Thickener
Detergent
Wetting agent
Foaming agent
Auxiliary additives



Sample formulation:

Sodium mercaptoacetate	30.0%
ROKamid KAD/2A	2.0%
ROKAnol® NL9	4.0%
ROKAnol® IT9	5.0%
SULFOROKAnol L270/1	5.0%
Water	up to 100%





Roles of surfactants in vehicle cleaning  
and maintenance preparations



Emulsifier – easier oil and water phases connection

Product name	Chemical structure	CAS	Freezing point	Acid resistance	HLB
ROKAnol NL9	Alcohols, C9-C11, ethoxylated	68439-46-3	15°C	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance)	14.1
ROKAnol K18	Alcohols, C16-18 even and C18-unsaturated, ethoxylated	68920-66-1	35°C	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance)	15.8
ROKwin 80	1.4-sorbitan monooleate	1338-43-8	-14°C	—	4.3
EXOemul OM4	Mixture of surfactants	Mixture of surfactants	<-20°C	HCl – Lack of resistance in the tested range	—
ROKAnol IT7	Alcohols, C13, branched, ethoxylated	69011-36-5	2°C	HCl – Lack of resistance in the tested range	12.1
ROKAcet R26	Ricinus oil, ethoxylated	61791-12-6	0°C	H <sub>2</sub> SO <sub>4</sub> (VI) - 140 ml/l	—
ROKAcet R40	Ricinus oil, ethoxylated	61791-12-6	21°C	H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance)	—

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): acid test concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)

Solubilizer (hydrotropic solubilization)  
- increased water solubility of ingredients

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
ROKAmin K15K	Ethoxylated and quaternized fatty amine	68989-03-7	<0	NaOH - 140 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance)
EXOtrope CS	Ethoxylated and quaternized fatty amine	68989-03-7	-19	NaOH - 140 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance)

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): acid test concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)

Thickener - increased formulation viscosity

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
ROKamid KAD/2A	Amides, C8-18 (even) and C18 unsaturated, N,N-bis(hydroxyethyl)	68155-07-7	6	Lack of resistance in the tested concentration range	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) H <sub>2</sub> SO <sub>4</sub> (VI) - 225 ml/l (25% acid - max. Laboratory-tested resistance )
ROKamid RAD	Amides, C16-18 (even) and C18 unsaturated, N,N-bis(hydroxyethyl)	68603-38-3	4	Lack of resistance in the tested concentration range of NaOH	—
SULFOROKAnol L270/1	Alcohols, C12-C14, ethoxylated (<2.5 TE), sulphated, sodium salts	68891-38-3	10	NaOH - 20 g/l	HCl - 100 ml/l H <sub>2</sub> SO <sub>4</sub> (VI) - 140 ml/l

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): acid test concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)



Foaming agent - improved formulation foaming properties

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Ross-Miles foaming power - 1 g/l of active substance after 180 s - demi water	Ross-Miles foaming power - 1 g/l of active substance after 180 s - hard water
ROSufan D	Sodium salt of sulphated decyl alcohol	142-87-0	0	NaOH - 90 g/l	HCl - 140 ml/l Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	220 ml	380 ml
ROSULfan A	Ammonium salt of sulphated lauryl alcohol	90583-11-2	Approx. 0	NaOH - 30 g/l	HCl - 120 ml/l Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	420 ml (5 g/l)	60 ml (5 g/l)
ROSULfan L	Sodium salt of sulphated lauryl alcohol	85586-07-8	Approx. 0	NaOH - 20 g/l	HCl - 120 ml/l Sulphuric(VI) acid - 140 ml/l	180 ml	30 ml
ROKAmina K40HC	1-Propanaminium, 3-amino-N-(carboxymethylo)-N,N-dimethyl-, even N-C8-18-acyl derivatives, hydroxides, inert salts	61789-40-0	-15	NaOH - 200 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	320 ml	310 ml
SULFOROKAnol L270/1	Alcohols, C12-C14, ethoxylated (<2.5 TE), sulphated, sodium salts	68891-38-3	10	NaOH - 20 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 140 ml/l	350 ml	420 ml

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): acid test concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)

Foaming agent - improved foaming properties

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Ross-Miles foaming power - 1 g/l of active substance after 180 s - demi water	Ross-Miles foaming power - 1 g/l of active substance after 180 s - hard water
SULFOROKAnol L227/1	Alcohols, C12-C14, ethoxylated (<2.5 TE), sulphated, sodium salts	68891-38-3	0	NaOH - 20 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 130 ml/l	350 ml	420 ml
EXOcon B27	Mixture of surfactants	Mixture of surfactants	-3	NaOH - 20 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 130 ml/l	240 ml	250 ml
EXOclean APC	Mixture of surfactants	Mixture of surfactants	0	NaOH - 10 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 130 ml/l	240 ml	250 ml
ROKAnol NL9	Alcohols, C9-C11, ethoxylated	68439-46-3	15	NaOH - 90 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	220 ml	220 ml
ROKAnol NL12W/80	Alcohols, C9-C11, ethoxylated	68439-46-3	-13	NaOH - 80 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	230 ml	230 ml
ROKAnol L7	Alcohols, C12-14, ethoxylated	68439-50-9	10	NaOH - 50 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	250 ml	250 ml
ROKAnol L10/80	Alcohols, C12-14, ethoxylated	68439-50-9	2	NaOH - 90 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	240 ml	240 ml

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): tested acid concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)





Detergent - surface cleaning, reduced surface tension

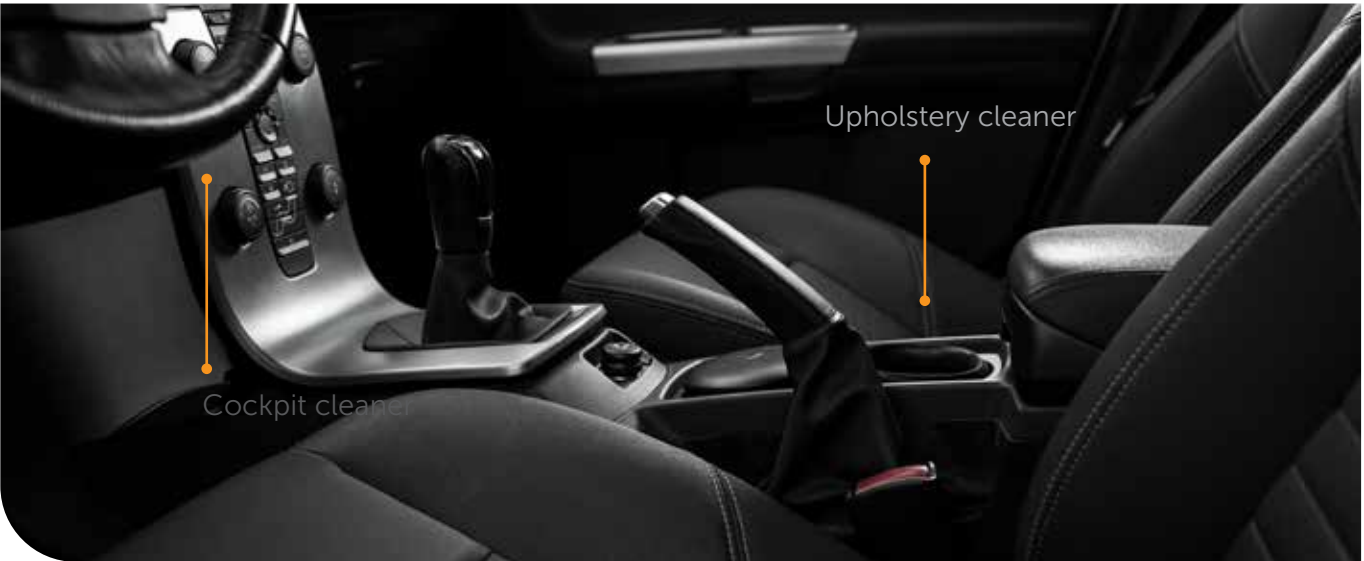
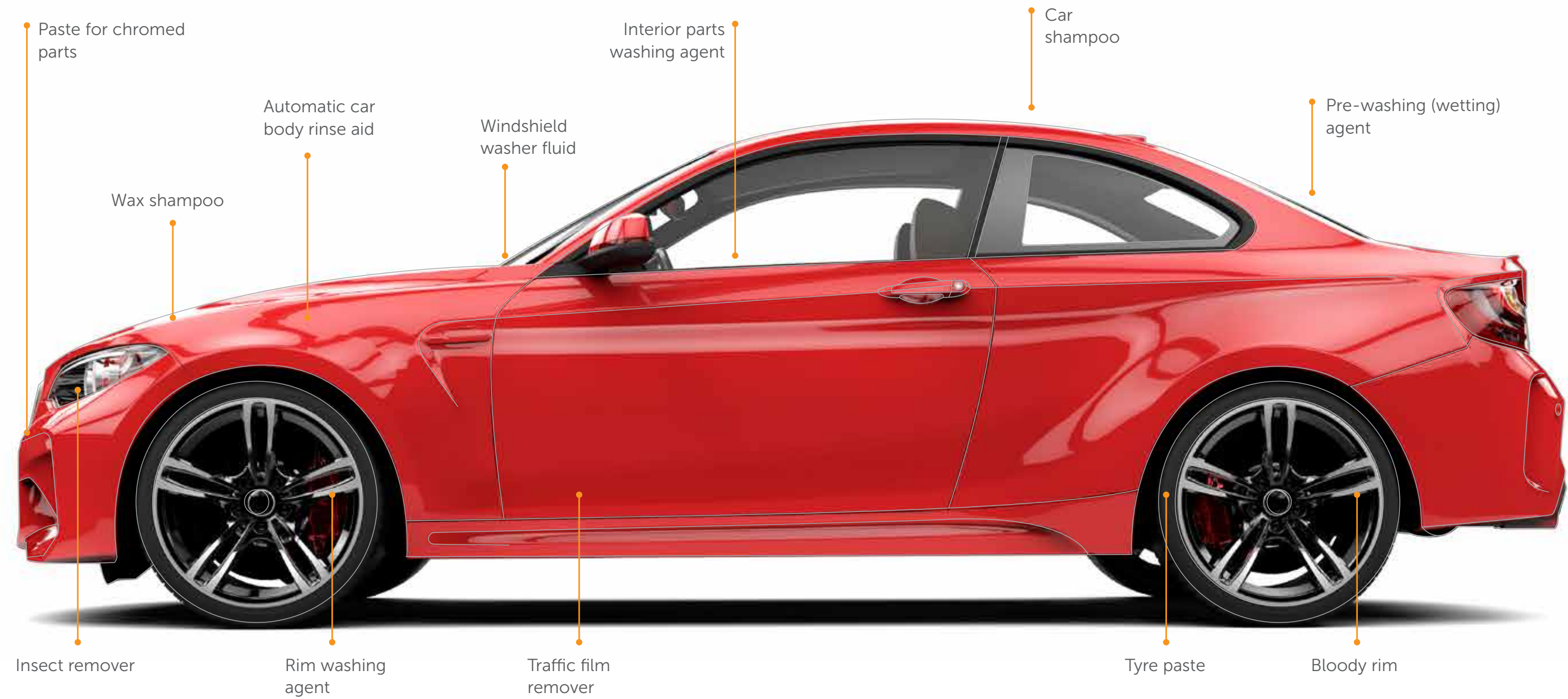
Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Detergency - 2 g/l of product at 40°C on EMPA 125 fabric
ROKAnol NL6	Alcohols, C9-C11, ethoxylated	68439-46-3	5	NaOH - 40 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	21 dL
ROKAnol NL9	Alcohols, C9-C11, ethoxylated	68439-46-3	15	NaOH - 90 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	15 dL
ROKAnol IT9	Alcohols, C13, branched, ethoxylated	69011-36-5	10	NaOH - 40 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	18 dL
ABSNa 30	Benzenemonosulfonic acids, C10-13 alkyl derivatives, sodium salts	68411-30-3	<0	NaOH - 10 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 140 ml/l	17 dL *(tested on ABSNa 50)
ABSNa 60	Benzenemonosulfonic acids, C10-13 alkyl derivatives, sodium salts	68411-30-3	-	NaOH - 10 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 140 ml/l	17 dL *(tested on ABSNa 50)
ROKAnol GA7	Alcohols, C10, ethoxylated	160875-66-1	20	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	17 dL
ROKAnol GT9	Alcohols, C9-C16, ethoxylated	97043-91-9	8	NaOH - 30 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	17 dL
ROKAnol L7	Alcohols, C12-14, ethoxylated	68439-50-9	10	NaOH - 50 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	17 dL
SULFOROKAnol L270/1	Alcohols, C12-C14, ethoxylated (<2.5 TE), sulphated, sodium salts	68891-38-3	10	NaOH - 20 g/l	HCl - 100 ml/l Sulphuric(VI) acid - 140 ml/l	13 dL
ROKAnol GA7W	Alcohols, C10, ethoxylated	160875-66-1	0	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	13 dL

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): tested acid concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)







Wetting agent – improved distribution effect and liquid penetration by reduced surface tension

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Wettability 1 g/l
ROKAnol NL6	Alcohols, C9-C11, ethoxylated	68439-46-3	5	NaOH - 40 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	17 s
ROKAnol NL9	Alcohols, C9-C11, ethoxylated	68439-46-3	15	NaOH - 90 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	16 s
ROKAnol GT9	Alcohols, C9-C16, ethoxylated	97043-91-9	8	NaOH - 30 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	15 s
ROKAnol IT7	Alcohols C13, branched, ethoxylated	69011-36-5	2	NaOH - 10 g/l	Lack of resistance	11 s
ROKAnol ID7	Alcohols, C9-11-iso-, C-10-rich, ethoxylated	78330-20-8	6	NaOH - 60 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	19 s
ROKAnol IT9	Alcohols, C13, branched, ethoxylated	69011-36-5	10	NaOH - 40 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	15 s
ROKAnol LP3135	Alcohols, C9-11-iso-, C10-rich, ethoxylated, propoxylated	154518-36-2	-6	NaOH - 10 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	20 s
ROKAnol GA7	Alcohols, C10, ethoxylated	160875-66-1	20	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	13 s

NaOH (sodium hydroxide): tested hydroxide concentration: 30% (10 g/l is the minimum tested quantity of NaOH solution in the product, 390 g/l is the maximum tested quantity of NaOH solution in the product)

HCl (hydrochloric acid) and H<sub>2</sub>SO<sub>4</sub> (sulphuric acid(VI)): tested acid concentration is 25% (10 ml/l is the minimum tested quantity of hydrochloric acid solution in the product, 225 ml/l is the maximum tested quantity of acid in the product)





**Complexing agent** – reduced water hardness  
by bonding metal ions and solving scale on the surface  
of equipment

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
EXOlat MC60	Aqueous solution of sodium salts of acrylate-maleic copolymer	Polymer	Approx. 0	Lack of resistance in the tested range	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)
EXOlat C40	Aqueous solution of sodium salt of polyacrylic acid	9003-04-7	Approx. 0	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)

**Antistatic agent** – prevention of electrostatic effects  
on metals and fabrics surfaces

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
ROKAmin K15K	Ethoxylated and quaternized fatty amine	68989-03-7	<0	NaOH - 140 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)
ROKAmin SRK8	Ethoxylated and quaternized fatty amine	Polymer	-18	NaOH - 100 g/l	Sulphuric(VI) acid - 140 ml/l (25% acid - max. Laboratory-tested resistance)
ROKAmin SRK8P4	Ethoxylated and quaternized fatty amine	Polymer	<-20°C	NaOH - 50 g/l	Sulphuric(VI) acid - 140 ml/l (25% acid - max. Laboratory-tested resistance)
Tequat LC90i	Mixture of quaternary methylsulphate of fatty acid diesters with triethanolamine in isopropanol	Mixture	40	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)



Foam stabilizer – production and maintenance of a stable and dense foam

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Foam stability - Ross-Miles foaming power - 1 g/l of active substance after 30 s/180 s/300 s - demi water	Foam stability - Ross-Miles foaming power - 1 g/l of active substance after 30 s/180 s/300 s - hard water
ROKamina K40HC	1-Propanaminium, 3-amino-N-(carboxymethylo)-N,N-dimethyl-even N-C8-18-acyl derivatives, hydroxides, inert salts	61789-40-0	-15	NaOH - 200 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	330 ml/ 320 ml/320 ml	320 ml/310 ml/310 ml
ROKamina K30K	1-Propanaminium, 3-amino-N-(carboxymethylo)-N,N-dimethyl-, even N-C8-18-acyl derivatives, hydroxides, inert salts	61789-40-0	okolo 0	NaOH - 200 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	380 ml/370 ml/360 ml	390 ml/370 ml/370 ml
ROKamid KAD/2A	Amides, C8-18 (even) and C18 unsaturated, N,N-bis(hydroxyethyl)	68155-07-7	6	Lack of resistance	Lack of resistance	70 ml/60 ml/50 ml	50 ml/40 ml/40 ml
ROKamid MRZ17	Mixture of ethoxylated amides of rape oil acids and ethoxylated glycerine	221045-17-6	20	NaOH – 90 g/l	Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	160 ml/160 ml/150 ml	100 ml/100 ml/90 ml

Rinse aid agent – formation of a rinse aid surface polishing layer

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
ROKAmin K15K	Ethoxylated and quaternized fatty amine	68989-03-7	<0	NaOH - 140 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)
ROKAmin SRK8	Ethoxylated and quaternized fatty amine	Polymer	-18	NaOH - 100 g/l	Sulphuric(VI) acid - 140 ml/l (25% acid - max. Laboratory-tested resistance)

Drying agent – making the surface hydrophobic to facilitate the drainage of water drops

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance
ROKAmin K15K	Ethoxylated and quaternized fatty amine	68989-03-7	<0	NaOH - 140 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)
ROKAmin K5	Alkyl amines C12-18, ethoxylated	61791-14-8	-14	NaOH - 50g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)



Antifoaming agent – extinguishing or reduction of the foam level in formulation

Product name	Chemical structure	CAS	Freezing point	Alkali resistance	Acid resistance	Foam stability - Ross-Miles foaming power - 1 g/l of active substance after 30 s/180 s/300 s - demi water	Foam stability - Ross-Miles foaming power - 1 g/l of active substance after 30 s/180 s/300 s - hard water
ROKAnol LP3943	Alcohols, C9-11-iso-, C10-rich, ethoxylated, propoxylated	154518-36-2	-6	Lack of resistance	Lack of resistance	30/0/0	10/0/0
ROKAnol LP100	Polyoxyalkylglycol ether of fatty alcohol	Polymer	9	NaOH – 50 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance) Sulphuric(VI) acid - 225 ml/l (25% acid - max. Laboratory-tested resistance)	230/70/50	200/60/50
ROKAmer 1000	Block copolymer of ethylene oxide and propylene oxide	9003-11-6	< -20	Lack of resistance	Lack of resistance	0/0/0	0/0/0
ROKAmer 2000	Block copolymer of ethylene oxide and propylene oxide	9003-11-6	< -20	Lack of resistance	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance)	0/0/0	0/0/0
ROKAmer 2600	Block copolymer of ethylene oxide and propylene oxide	9003-11-6	<-20	NaOH – 10 g/l	HCl - 225 ml/l (25% acid - max. Laboratory-tested resistance)	0/0/0	0/0/0
ROKAmer PP2000	Polyoxypropylenediol	25322-69-4	<-20	Absence in the tested range	HCl – 225 ml/l	0/0/0	0/0/0
ROKAmer PP4000	Polyoxypropylenediol	25322-69-4	-5	Absence in the tested range	HCl – 225 ml/l	0/0/0	0/0/0
ROKAnol RZ4P11	Alcohols, C16-C18, ethoxylated, propoxylated	68002-96-0	0	Lack of resistance	HCl – 90 ml/l	0/0/0	0/0/0
ROKAmer G3500	Glycerine, ethoxylated, propoxylated	9082-00-2	< -15	NaOH – 20 g/l	HCl – 225 ml/l	0/0/0	0/0/0
EXOantifoam S100	Mixture of surfactants	Mixture	0	NaOH – absence in the tested range	HCl – absence in the tested range	0/0/0	0/0/0

## PCC EXOL SA

### Sustainable technologies for new generations



PCC EXOL SA is a company that combines cutting-edge technologies with rich experience in the production of surfactants (surface active agents). The company is seated in Brzeg Dolny (Poland), where s anionic, non-ionic and amphoteric surfactants production plants are located. With its flexible production processes, the company offers a wide spectrum of surfactants and industrial formulations, which are often suited to individual customers operating in various industry sectors. As one of leading surfactant manufacturers, PCC EXOL SA carries out new investment projects and implements innovative technologies based on global sustainability trends.

The offered surfactants have a very broad range of application. Aside from the mass production for personal care products industry, cosmetics and detergents, the substances produced by PCC EXOL SA also include specialised products used in various industries, such as textiles, agrochemicals, metal machining, oil drilling, building & construction, paints & coatings, paper industry, extraction & drilling, and many others.

Their comprehensive portfolio is continuously extended by new, innovative products, so the company can meet even the strictest market requirements and adapt to individual needs

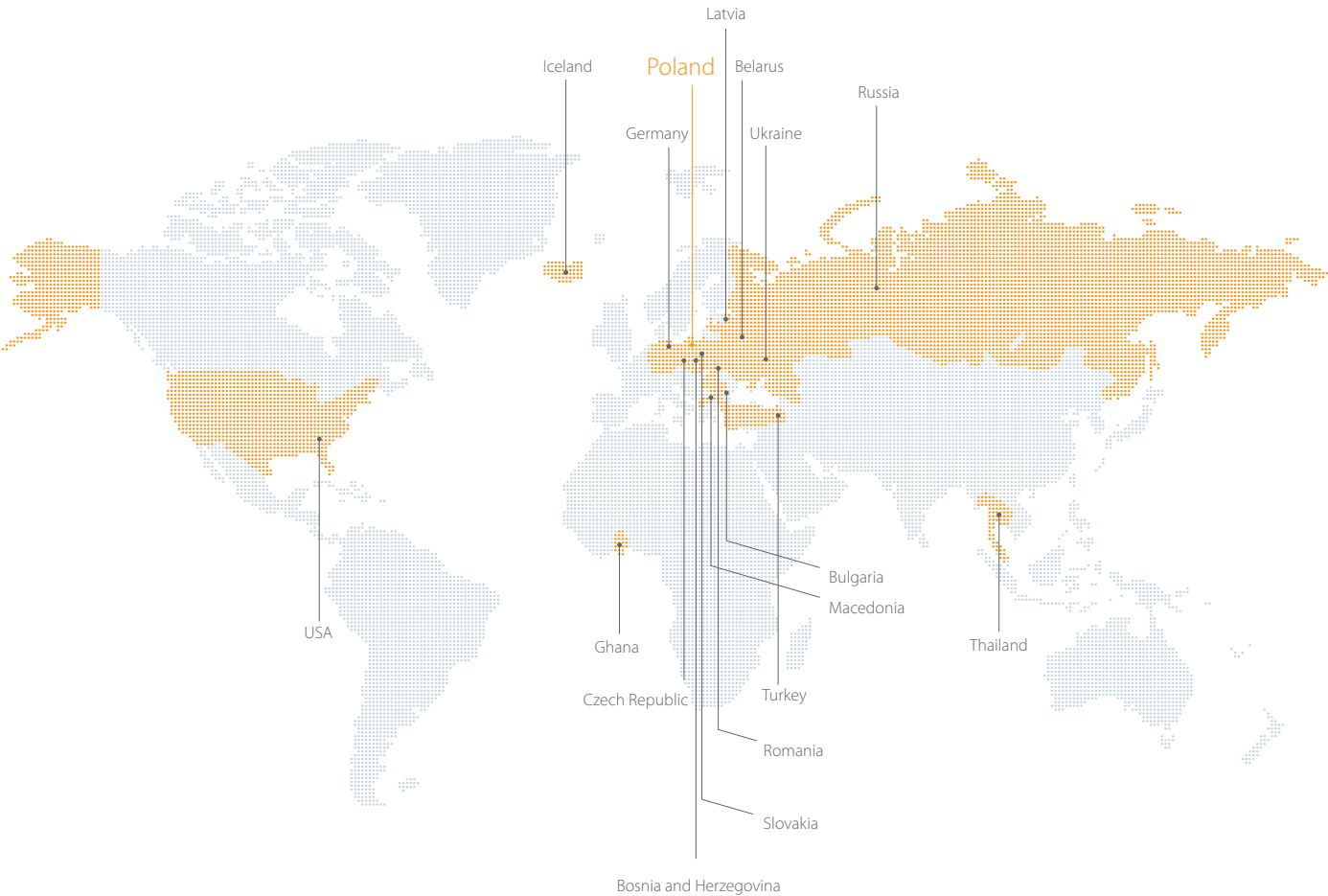
of customers. This is possible due to the dynamic development of the research facilities, flexible production as well as the knowledge and experienced personnel. PCC EXOL SA have the key competence necessary for a worldwide production of surfactants. The ongoing projects will soon bring new opportunities for the company further development and expansion into new markets. The company offers not only a wide portfolio and professional servicing but most of all flexible production and comprehensive system solutions that suit individual customer demands.

The strategic investor in PCC EXOL SA is PCC SE, operating on international markets of chemical raw materials, transport, energy, coal, coke, petrol, plastics and metallurgy. PCC SE includes 82 companies operating in 41 different locations in 18 countries.



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PCC Group in the world



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PCC Rokita Capital Group, 30 companies, including:

- PCC Rokita SA
- PCC Prodex Sp. z o.o.
- PCC Prodex GmbH (Germany)
- PCC PU Sp. z o.o.
- IRPC PCC Co. Ltd. (Thailand)
- PCC Therm Sp. z o.o.

PCC EXOL SA

PCC EXOL Capital Group, 5 companies, including:

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- PCC Chemax Inc. (the USA)
- PCC EXOL Kimya Sanayi Ve Ticaret Limited Şirketi (Turkey)

PCC CP Kosmet Sp. z o.o.

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- PCC CP Kosmet Sp. z o.o.
- OOO PCC Consumer Products Navigator (Belarus)
- OOO PCC Consumer Products (Russia)

PCC MCAA Sp. z o.o.

PCC Autochem Sp. z o.o.

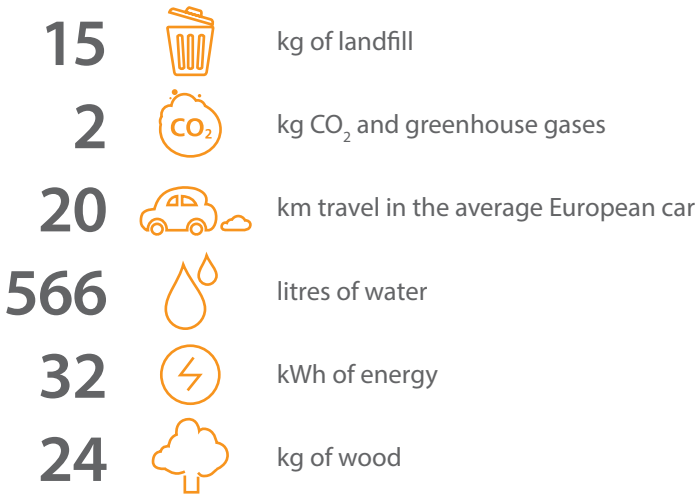
PCC Intermodal SA

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