PCC

ROKAnol GA Series

Ethoxylated fatty alcohols

Non-ionic surfactant series

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

Polyols

- Polyether polyols
- Polyester polyols
- Prepolymers
- Polyurethane Systems

PCC ROKITA SA

Chlorine

- Chlorine
- MCAA
- Other Chlorine Downstream Product

PCC ROKITA SA

Phosphorus

- Phosphorus derivatives
- Naphthalene derivatives
- Polycarboxyethers (PCE)

PCC EXOL SA
PCC CHEMAX INC
PCC PCG OXYALKYLATES

Surfactants

- Anionic surfactants
- Cationic surfactants
- Nonionic surfactants
- Amphoteric surfactants (betaines)
- Chemical formulation

PCC SYNTEZA

Alkylphenols

- Nonylphenol
- Dodecylphenol
- Tristyrylphenol

PCC CONSUMER PRODUCTS SA

Consumer Products

- Household & industrial Cleaners, Detergents and Personal Care Products

PCC ROKITA SA

Energy

- Renewable Energy
- Conventional Energy

PCC INTERMODAL SA

Logistics

- Intermodal transport
- Road Haulage
- Rail Transport

PCC BAKKISILICON HF.

Silicon

- Microsillica
- Silicon Metal

PCC SE

Holding & Projects

- Portfolio Management
- Project Development

ROKAnol GA Series

Chemical description

ROKAnol GA Series are non-ionic, branched surfactants based on Guerbet C10 alcohol. Due to the specific structure these products exhibits superior performance and can be used in variety of applications where they can be used instead of C9-C11 or linear C10 alcohols ethoxylates. The numeric portion of the product name indicates the general degree of ethoxylation. ROKAnol GA Series can be represented by the following structure:

$$R(OCH_2CH_2)_nOH$$

where **n – 3, 5, 7, 8, 9**
R – alkyl chain of C10 Guerbet alcohol

With an increasing degree of ethoxylation the solidification point of ROKAnol GA also increases and starting form ROKAnol GA8 products have the form of a paste/solid material. To simplify the handling of products with a higher ethoxylation degree products indicated as "W" can be used.

Applications

Rokanol GA Series can successfully become ingredients of household and professional cleaning agents, detergents, textile auxiliaries, agrochemicals as well as an emulsifi er in industrial applications:

- **Industrial and institutional cleaning**
- **Household detergents**
- **Textile industry**
- **Agrochemicals**
- **Others**

Basic physical and chemical properties

ROKAnol	GA3	GA5	GA7W	GA7	GA8W	GA8	GA9W	GA9
Appearance at 20-25°C	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid/paste	Liquid	Liquid/paste
Molecular weight [g/mol]	290	370	445	445	510	510	550	550
Hazen colour	Max. 50 (40°C)	Max. 50 (50°C)	Max. 50 (40°C)	Max. 50 (40°C)	Max. 50 (20-25°C)	Max. 50 (50°C)	Max. 50 (20-25°C)	Max. 50 (50°C)
Hydroxyl value [mg KOH/g]	190	150	125	125	110	110	100	100
Cloud point [°C]								
Method A 1%	-	-	-	-	54-58	54-57	67-70	67-70
Method B 1% solution in 5% NaCl solution	-	-	-	-	43	43	54	54
Method C 1% solution in 10% NaCl solution	-	-	-	-	36	36	43	43
Method D 10% solution in 25% BDG solution	41	61	71	71	75	75	78	78
Method E 16.7% solution in 25% BDG solution	30-33	54-57	67-70	67-70	73	73	77	77
Approx. Solidification point [°C]	0	approx. 10	< -10	< 20	< -10	< 20	< -10	approx. 20
Water content [%, by weight]	Max. 0.5	Max. 0.5	14-16	Max. 0.5	14-16	Max. 0.5	4-16	Max. 0.5
pH of 1% solution in deionized water, at 20°C	5-7	5-7*	5-7	5-7	5-7	5-7	5-7	5-7
Density at 25°C [g/cm³]	0.95	0.97	1.01	0.97 $^{30°C}$	1.02	1.01	1.02	1.02 $^{30°C}$
Viscosity at 25°C [cP]	Max. 100	Max. 100	Max. 100	Max. 200	Max. 100	approx. 50 $^{50°C}$	Max. 100	Max. 200 $^{30°C}$
Average degree of ethoxylation [mol EO]	3	5	7	7	8	8	9	9
Surface tension of 0.1% solution at 25°C [mN/m]	28	27	27	27	28	28	29	28

Additional information

Solubility

The solubility of ROKAnol GA Series depends on the degree of ethoxylation. The higher the degree of ethoxylation of the product, the better it dissolves in water, but this is in acetone.

Solubility – at 25°C, 10% Solutions

Product name	Demineralized water	Methanol	Acetone
ROKAnol GA3	○	●	●
ROKAnol GA5	○	●	●
ROKAnol GA7	●	●	●
ROKAnol GA7W	●	●	●
ROKAnol GA8	●	●	○
ROKAnol GA8W	●	●	●
ROKAnol GA9	●	●	○
ROKAnol GA9W	●	●	●

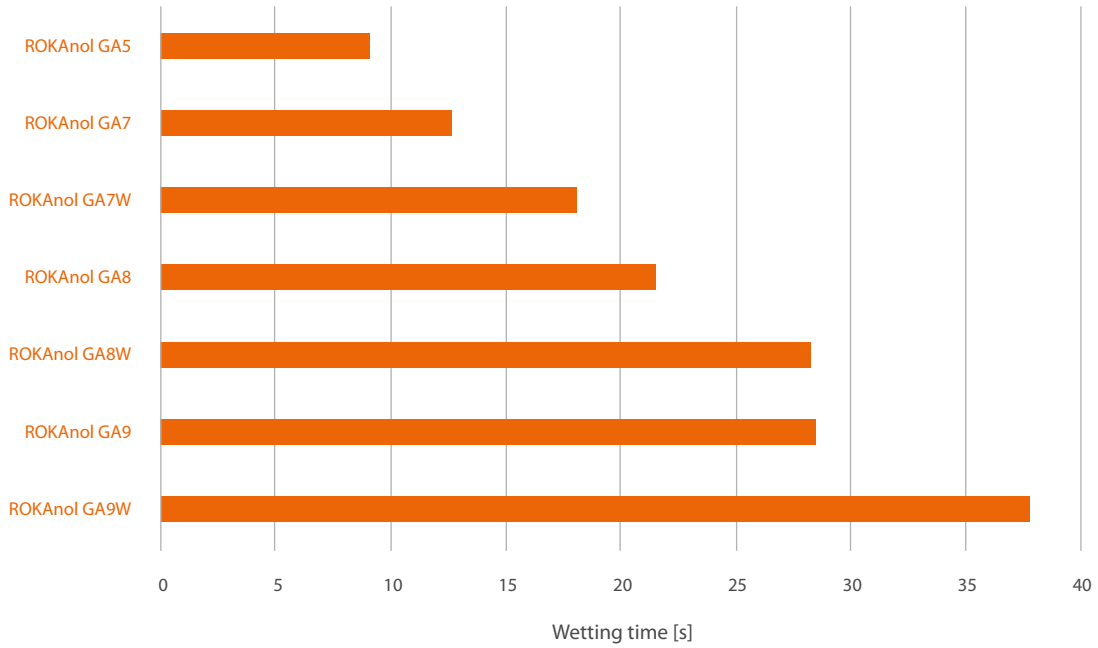
○ macroscopic phase separation ● homogeneous, cloudy solution ● clear, homogeneous solution ● homogeneous, opalescent solution

Wetting capability

For many applications, such as hard surface cleaning or textile processing, i.e. in all processes where one phase (air, oil or soil), should be replaced by a liquid phase (aqueous or organic), one of the most important parameters is capability of eff ective wetting.

The capability of wetting cotton fabric was determined in accordance with **PN-EN 1772:2001**

Concentration of 1.0 g/l; demineralized water; temperature 20°C

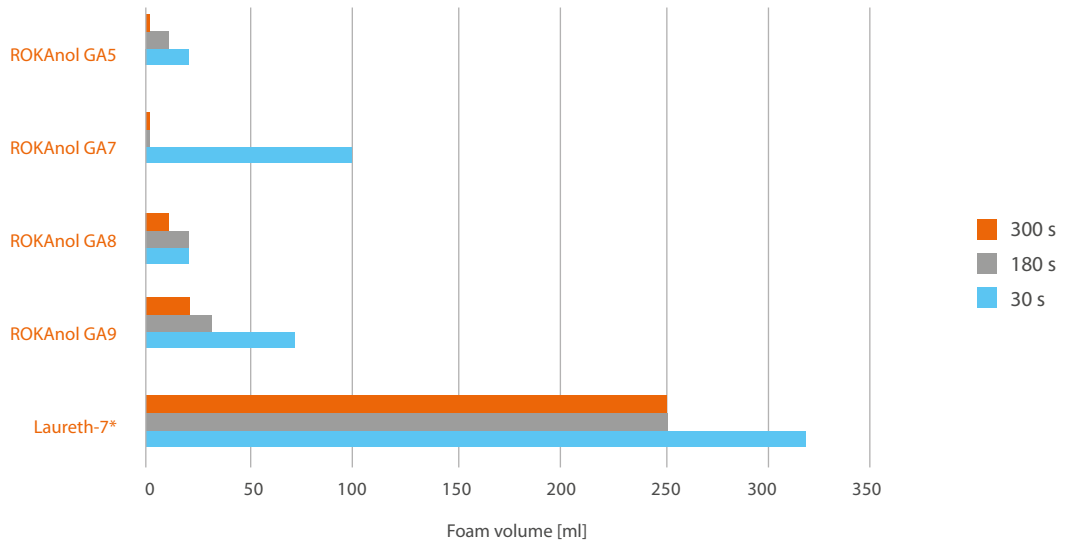


Foaming capability

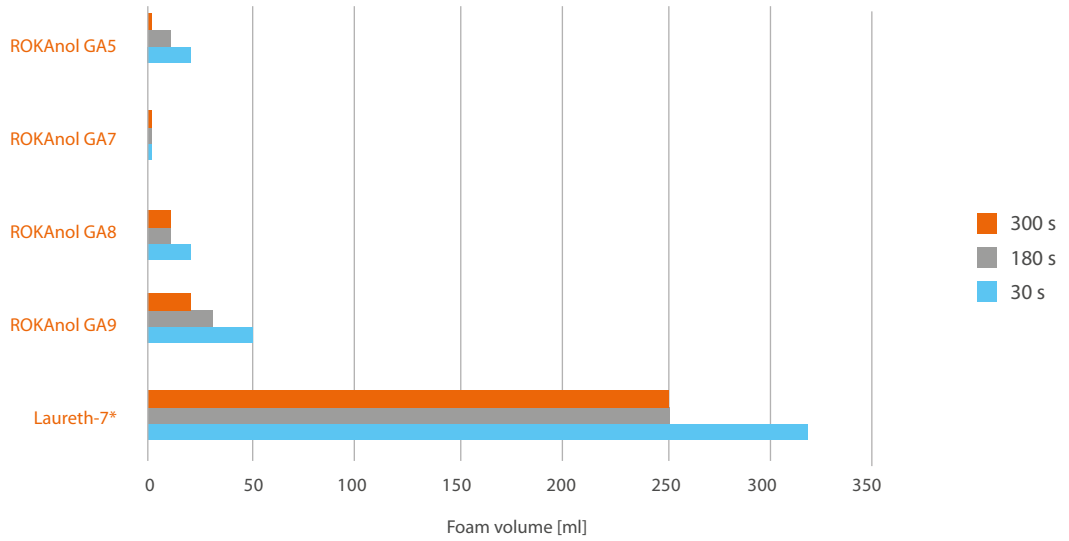
The foaming capability is one of the fundamental properties of surfactants, essential for assessing the possible directions of application and these agents. Generating low foam by ROKAnol GA Series, makes them ideal for application in compositions, where we want to limit the use of anti-foaming agents.

The Determination of the foaming capability was performed according to PN-ISO 696:1994 Standard - The modifi ed Ross-Miles method, at a temperature of 25°C, for a surfactant concentration of 2 g/l, in both hard (17°d) and demineralized water.

Concentration of 2.0 g/l; demineralized water; temperature 25°C



Concentration of 2.0 g/l; hard water; temperature 25°C



*comparison with reference product

Degreasing capability/dynamic method

The propeller stirrer was immersed in used oil for 5 minutes at 20°C and then placed in the beakers containing the 2 g/l solutions of ROKAnol GA Series. Subsequently, the engine was set at 200 RPM and after 2 and 5 min the stirrer was taken out of the solution. The degree of soiling was assessed by visually. This test was available for all products ROKAnol GA Series.

Demineralized water

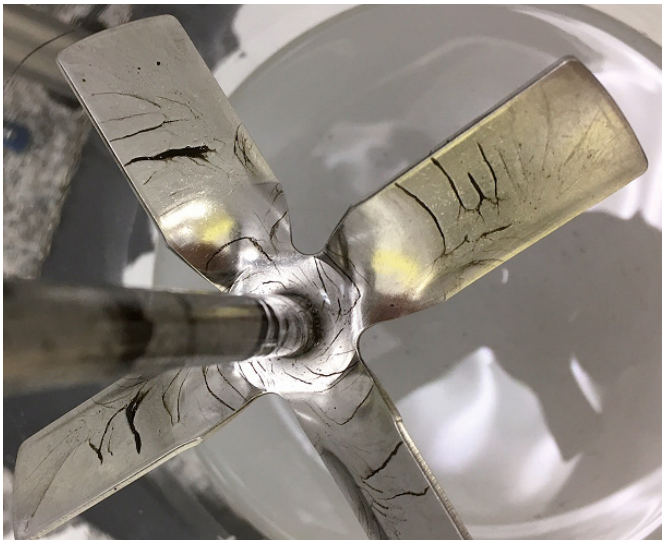
1A

1B

Pic. 1A/1B Degreasing capability.
Dynamic test, demineralized water, after 2 min and 5 min

ROKAnol GA3

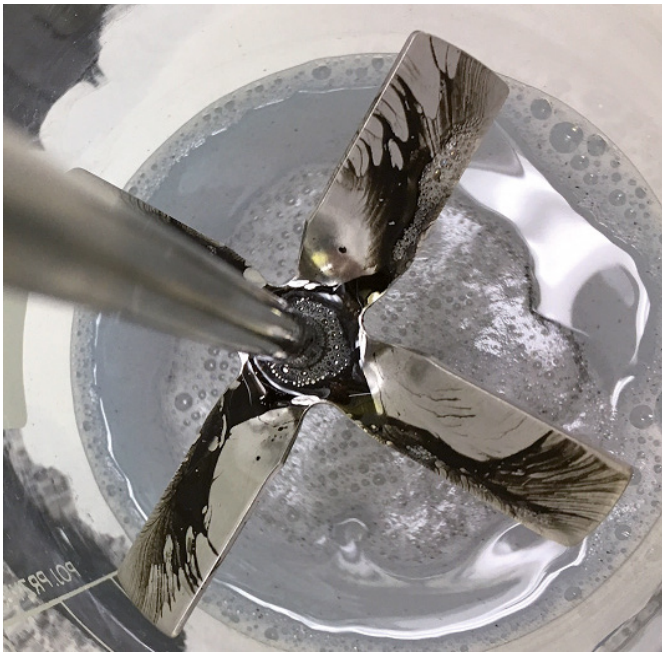
2A



2B

Pic. 2A/2B Degreasing capability.
Dynamic test, ROKAnol GA3, after 2 min and 5 min

ROKAnol GA5

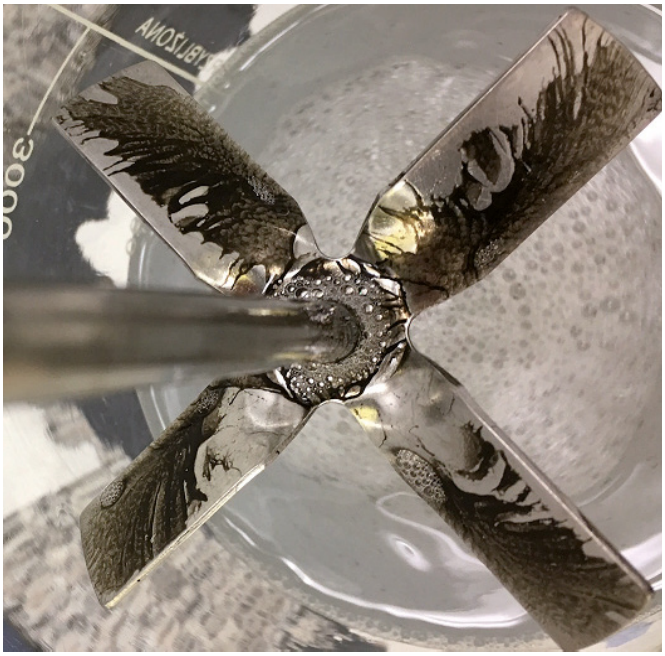


3A

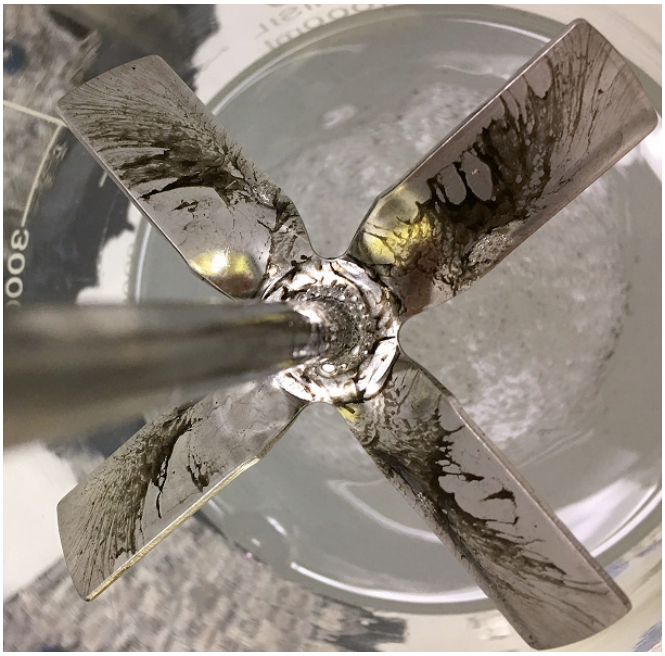
3B

Pic. 3A/3B Degreasing capability.
Dynamic test, ROKAnol GA5, after 2 min and 5 min

ROKAnol GA7



4A



4B

Pic. 4A/4B Degreasing capability.
Dynamic test, ROKAnol GA7, after 2 min and 5 min

ROKAnol GA8

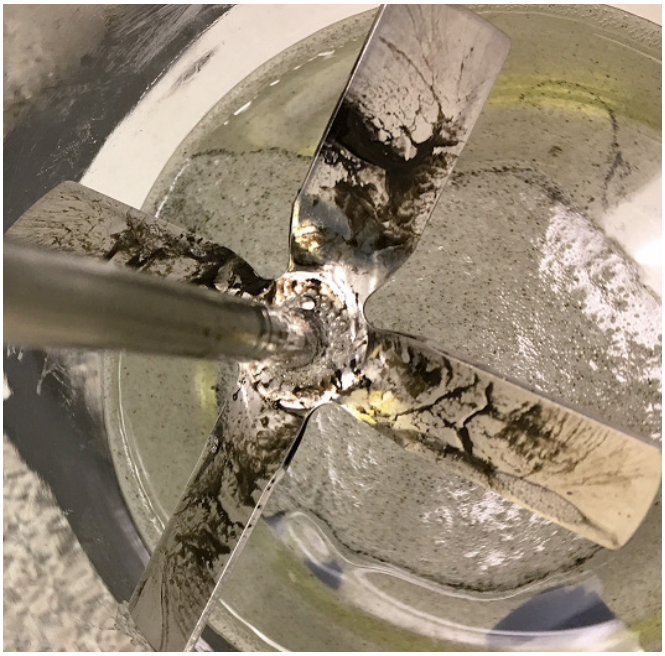
5A

5B

Pic. 5A/5B Degreasing capability.
Dynamic test, ROKAnol GA8, after 2 min and 5 min

ROKAnol GA9

6A



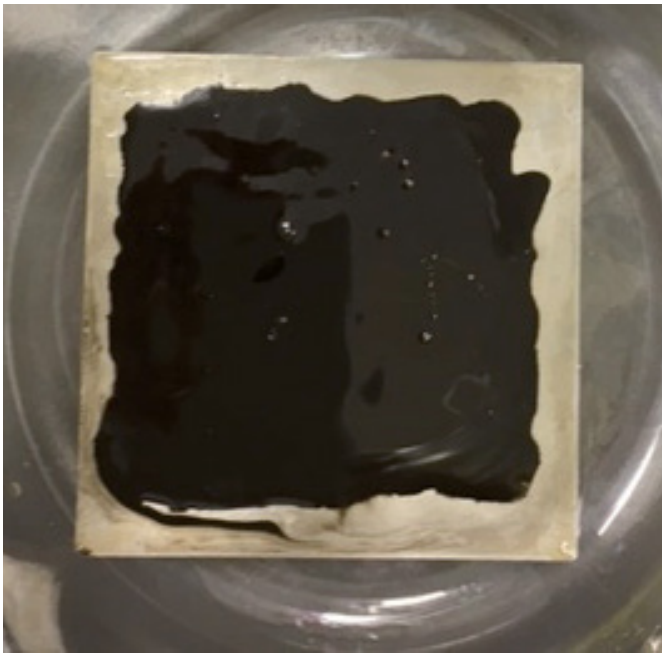
6B

Pic. 6A/6B Degreasing capability.
Dynamic test, ROKAnol GA9, after 2 min and 5 min

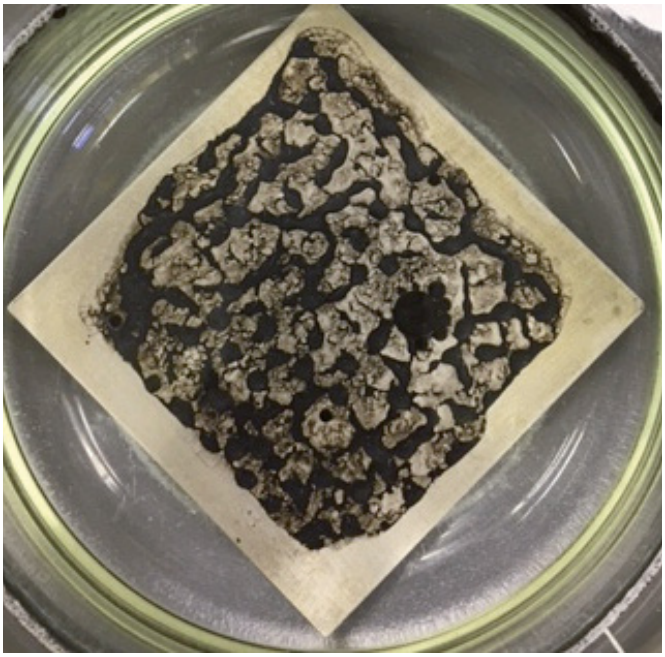
Static method

Used oil (1 g) was applied to at chrome cast iron plate and then placed in a beaker containing a surfactant solution (2 g/l) for 10 minutes at 20°C. After this time, the degree of soiling was visually assessed. ROKAnols GA3 and GA5 were excluded from the study, due to the lack of solubility and the formation of a hazy solution, that hindered the visual assessment of soiling.

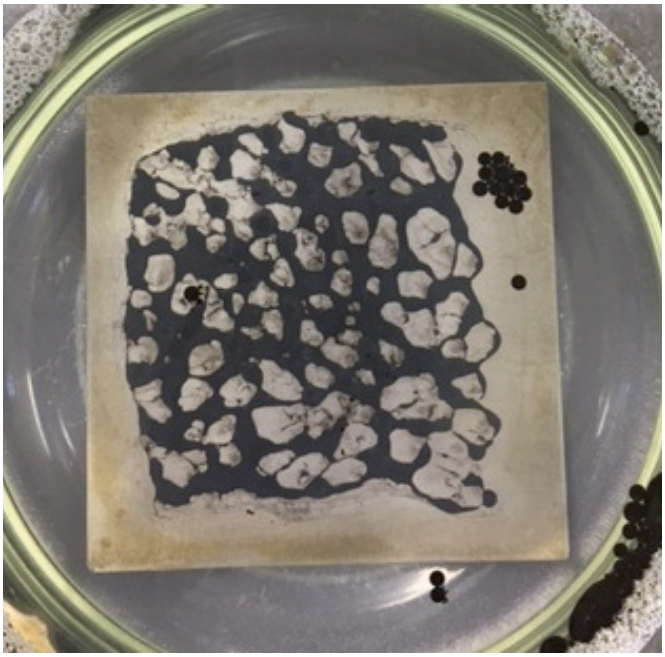
Degreasing capability. Static test, 10 min, temperature 20°C



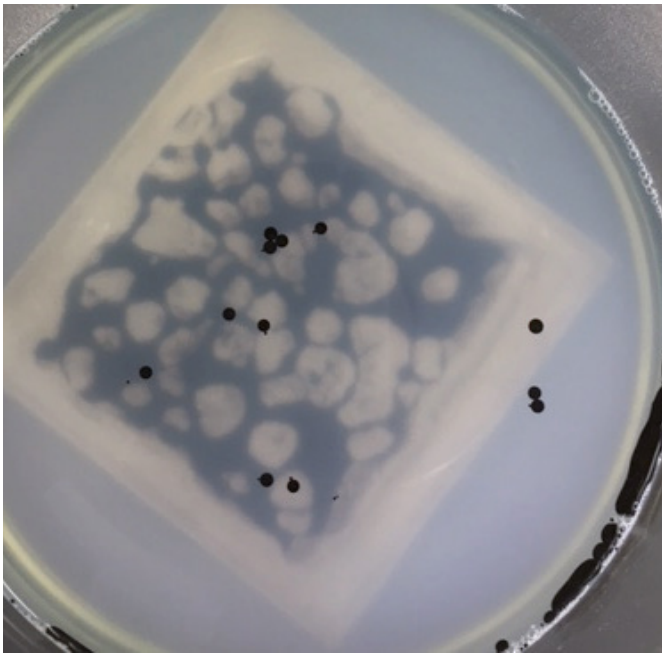
water



ROKAnol GA9



ROKAnol GA8



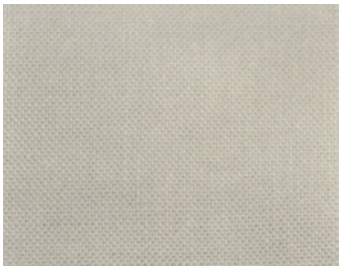
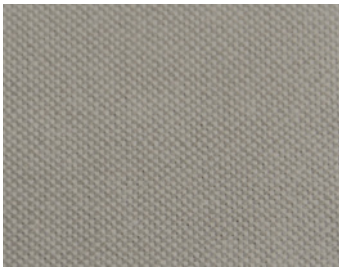
ROKAnol GA7

Detergency

Detergency - the ability of the surfactant to remove soils from the fabric surface during the laundering process. Detergency tests were performed using to own method, with an EMPA 125 fabric: soiled with a mixture of oils and carbon black. Cotton was washed at a temperature 40°C in ROKAnol GA Series solutions.

After drying the fabrics and pressing them, the total color diff erence of the fabric before and after washing, was measured. ROKAnol GA3 was excluded from the study, because it was retained partially on the water surface during the detergency test.

Comparison of the EMPA 125 fabric, before and after the detergency tests

Concentration [g/l] / Product name	0	2	5
ROKAnol GA9			
ROKAnol GA8			
ROKAnol GA7			
ROKAnol GA5			

Detergency results in dL units

Product name	ROKAnol GA9		ROKAnol GA8		ROKAnol GA7		ROKAno GA5	
Concentration	2 g/L	5 g/L	2 g/L	5 g/L	2 g/L	5 g/L	2 g/L	5 g/L
The aritmetic average of all measurements [dL units]	13	15	14	17	9	17	7	9

The dL parameter is described by perceptually uniform, trichromatic colour models: CIE LAB and CIE LCH. The following is an interpretation of this parameter:

L is defi ned as lightness (luminosity), while dL is determined by the equation:

dL = LT - LS, where: T – tested sample (fabric after the detergency test),
S – standard to which the tested sample is compared (fabric before the detergency test).

Alkali and acid resistance

The Physical stability of surface active agents over a specifi ed time, in acidic/alkaline environment, is the maximum concentration of acid/base (g/l), at which the surfactant can be dissolved in an acidic/alkaline solution with a concentration of 1% to form a stable solution. Stability is determined by evaluating the appearance of solutions.

The analysis of this stability for ROKAnol GA Series has been performed in accordance with the **PN-EN 14712:2005** Standard.

Alkali resistance (Sodium Hyroxide); concentration of 1% active matter; temperature 20°C

NaOH conc. [g/l] / Product name	10	20	30	40	50	60	70
ROKAnol GA3	○						
ROKAnol GA5	●	●	○				
ROKAnol GA7	●	●	●	○			
ROKAnol GA7W	●	●	●	○			
ROKAnol GA8	●	●	●	●	●	○	
ROKAnol GA8W	●	●	●	●	●	○	
ROKAnol GA9	●	●	●	●	●	○	
ROKAnol GA9W	●	●	●	●	●	○	

○ macroscopic phase separation ● homogeneous, cloudy solution ● clear, homogeneous solution ● homogeneous, opalescent solution

Acid resistance (Sulphuric Acid); concentration of 1% active matter; temperature 20°C

Product name \ H_2SO_4 conc. [g/l]	1	10	40	60	120	140	225
ROKAnol GA3	○	○	○	○	○	○	○
ROKAnol GA5	●	●	●	●	●	●	●
ROKAnol GA7	●	●	●	●	●	●	●
ROKAnol GA7W	●	●	●	●	●	●	●
ROKAnol GA8	●	●	●	●	●	●	●
ROKAnol GA8W	●	●	●	●	●	●	●
ROKAnol GA9	●	●	●	●	●	●	●
ROKAnol GA9W	●	●	●	●	●	●	●

○ macroscopic phase separation ● homogeneous, cloudy solution ● clear, homogeneous solution ● homogeneous, opalescent solution

Acid resistance (Hydrochloric Acid); concentration of 1% active matter; temperature 20°C

Product name \ HCl CONC. [ml/l]	1	10	40	60	120	140	225
ROKAnol GA3	○	○	○	○	○	○	○
ROKAnol GA5	●	●	●	●	●	●	●
ROKAnol GA7	●	●	●	●	●	●	●
ROKAnol GA7W	●	●	●	●	●	●	●
ROKAnol GA8	●	●	●	●	●	●	●
ROKAnol GA8W	●	●	●	●	●	●	●
ROKAnol GA9	●	●	●	●	●	●	●
ROKAnol GA9W	●	●	●	●	●	●	●

○ macroscopic phase separation ● homogeneous, cloudy solution ● clear, homogeneous solution ● homogeneous, opalescent solution

Applications

ROKAnol GA Series are non-ionic surfactants and can, most of all, successfully become ingredients of cleaning agents and detergents, due to the fact, that detergents and cleaners for household and industrial and institutional use are the main purpose for their applications.

Further more, this group of products, is also suited to textile auxiliaries, agrochemicals as well as an emulsifi er in industrial applications. These products can be used in an environment of oxidizing agents, reducing agents and in hard water. They are active in cold water, in acid and neutral baths and in diluted alkali. Moreover, compounds of this series may be used in admixture with other non-ionic and auxiliary agents, or in mixtures with anionic and cationic surfactants.

Household and professional cleaners

Rokanol GA Series can be successfully used in hard surface cleaners including heavy duty products. These products exhibit outstanding degreasing and emulsifying properties which improve cleaning performance. To optimize the performance and formulation stability of mixtures diff erent ROKAnol GA can be used. These products are ideal as a component of hard surface cleaners e.g. bathroom cleaners, car care products or fl oor and carpets cleaners.

Acid cleaners
The basic condition for acid qualifying as a cleaning agent is the pH value of the ready-to-work product within the acidic range resulting from the presence of at least one acid in the composition. Thanks to its excellent resistance to acids, ROKAnol GA Series can be successfully used as an additive to acid cleaners. ROKAnol GA Series, added to the composition of such agents, will facilitate the removal of organic impurities, that are poorly soluble in water and increase the penetration of the cleaning agent into the dirt structure.

Disinfectants
Surfactants are very important components of disinfectants. The reason for better bactericidal action, in the presence of surfactants is thought to be an accumulation of the agent within micelles of the surfactant, which absorb to the microorganism's cell wall. For this reason, the active ingredient is (quickly and in large quantities) incorporated into the cell wall of the microorganism so a lower dose is needed to achieve the desired eff ect. ROKAnol GA Series, with a higher degree of ethoxylation (≥7 EO), i.e. those that are water-soluble, is ideally suited as an additive to a disinfectant composition.

Metal cleaners
Good wetting properties and dynamic as well as static degreasing tests on metal surfaces, prove that ROKAnol GA Series is ideally suited as a formulation ingredient for metal cleaning agents. For such applications, ROKAnol GA7, ROKAnol GA8 and ROKAnol GA9 are particularly recommended for use.

Emulsifi cation
In the emulsifi cation process, the most crucial element is ease of emulsion formation and stability. ROKAnol GA Series, in appropriate conditions, exhibits these properties by being able to lower the surface tension, provide the right viscosity of the emulsion and prevent inversion. The use of ROKAnol GA Series as emulsifi ers in specifi c circumstances, is dependent on its hydrophilic-lipophilic balance, which increases with the increase in the degree of ethoxylation.

Dispersing
ROKAnol GA Series can work effi ciently in dispersants, thanks to their ability to evenly distribute larger molecules (e.g. pigments) in water systems to obtain colloidal systems, simultaneously eliminating the formation of aggregates.

Wetting
ROKAnol GA Series, reduce the surface tension of the liquid and thus facilitate its spread. Lowering the surface tension reduces the energy needed to distribute the drop onto the fi lm, thereby weakening the cohesive properties of the liquid and enhancing the adhesion properties. In addition, ROKAnol GA Series are non-ionic, so it does not ionize in water and does not react with other ions, which can often lead to the formation of a precipitate.

Other applications
There are many more possibilities for ROKAnol GA Series applications. These include industries such as textiles, paints and coatings and agrochemicals.

PCC Exol SA
Sienkiewicza 4
56-120 Brzeg Dolny, Poland
products@pcc.eu

Please visit our capital group business platform:
www.products.pcc.eu

April 2025

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.
All copyright and trademark rights, as well as other intellectual and industrial property rights and the resulting rights to use this publication and its contents have been transferred to PCC Rokita SA or PCC EXOL SA or its licensors. All rights reserved.
Users/readers are not entitled to reproduce this publication in whole or in part, nor are they entitled to reproduce it (excluding reproduction for personal use) or to transfer it to third parties.
Permission to reproduce it for personal use does not apply to data used in other publications, electronic information systems, or other media publications. PCC Rokita SA and PCC EXOL SA shall not be responsible for data published by users.