

ROKAnol GT Series

Ethoxylated fatty alcohols
Non-ionic surfactant series

Operating in 18 countries, in 41 different locations, PCC Group currently employs more than 3 100 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.

Sustainable development is an important element of PCC EXOL's business approach. The company develops its management practices and processes to address environmental, social and ethical challenges. The scope of these activities is determined by the company's strategic priorities, operational capabilities and available, verifiable supporting documentation. Among other areas, PCC EXOL undertakes initiatives aimed at supporting the circular economy, improving energy and resource efficiency, enhancing safety performance, and promoting sustainability-related practices within selected elements of its value chain through cooperation with suppliers and customers.

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 
• Polyether polyols • Polyester polyols • Prepolymers • Polyurethane Systems	• Chlorine • MCAA • Other Chlorine Downstream Product	• Phosphorus derivatives • Naphthalene derivatives • Polycarboxyethers (PCE)	• Anionic surfactants • Cationic surfactants • Nonionic surfactants • Amphoteric surfactants (betaines) • Chemical formulation	• 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 
• Household & industrial Cleaners, Detergents and Personal Care Products	• Energy Production	• Intermodal transport • Road Haulage • Rail Transport	• Microsilica • Silicon Metal	• Portfolio Management • Project Development

ROKAnol GT Series

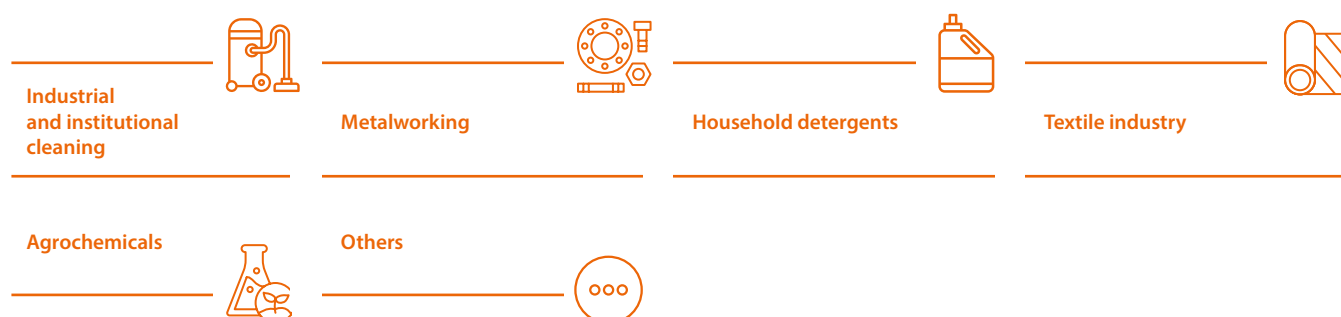
Chemical description

ROKAnol GT Series are non-ionic, branched surfactants based on $C_9 - C_{16}$ 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 C_{13} Alcohols Ethoxylates. The numeric portion of the product name indicates the general degree of ethoxylation.

Application

ROKAnol GT Series can successfully become ingredients of household and professional cleaning agents, detergents, textile auxiliaries, agrochemicals as well as an emulsifier in industrial applications:



Basic physical and chemical properties

Product Parameter	ROKAnol GT3	ROKAnol GT5	ROKAnol GT6	ROKAnol GT6R	ROKAnol GT7	ROKAnol GT8	ROKAnol GT9	ROKAnol GT10
Appearance at 20-25°C	liquid	liquid	liquid	liquid	liquid	liquid	liquid	turbid liquid/paste
Molecular weight [g/mol]	310	410	440	460	480	530	560	600
Hazen colour at 40°C	max. 100	max. 100	max. 100	max. 100	max. 100	max. 50	max. 50	max. 50
Hydroxyl value in 5% NaCl solution	170	140	120	120	120	110	110	100
pH of 1% solution in deionized water at 20°C	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0 ^b	5.0 – 7.0
Cloud point, method A [°C]	-	-	-	-	-	55	54 - 56	64 - 66
Cloud point B [°C]	-	-	-	-	-	40	42	50
Cloud point C [°C]	-	-	-	-	-	20	30	39
Cloud point D [°C]	48 - 51	65	67 - 72	71 - 73	71	76 - 78	77	80
Cloud point E [°C]	41	60 - 62	68	68	65 - 70	74	75	78
Solidification point [°C]	-10	4	3	4	10	9	14	19
Water content [%]	max. 1	Max. 0.5	Max. 0.5	Max. 0.5	Max. 0.5	Max. 0.5	Max. 0.5	Max. 0.5
Density at 30°C [g/cm ³]	0.94	0.95 ^a	0.98	0.98	0.97 ^a	0.99	0.98 ^a	0.99 ^a
Viscosity at 50°C [cP]	max. 50	max. 50	max. 50	max. 50	max. 50	max. 50	max. 50	max. 50
Surface tension of 0.1% [mN/m]	27	27	27	27	27	27	27	27
HLB	8.5	10.7	12.0	12.4	12.8	13.3	13.7	14.0

^a - density measurements at 50°C, ^b - pH of 5% solution

Additional information

Solubility

The solubility of ROKAnol GT Series depends on the degree of ethoxylation. The higher the degree of ethoxylation of the product, the better it dissolves in water.

Solubility – at 25°C, 10% solutions

Product name	Demineralized water	Methanol	Acetone
ROKAnol GT3	○	●	●
ROKAnol GT5	○	●	●
ROKAnol GT6	○	●	●
ROKAnol GT6R	○	●	●
ROKAnol GT7	○	●	●
ROKAnol GT8	●	●	●
ROKAnol GT9	●	●	●
ROKAnol GT10	●	●	●

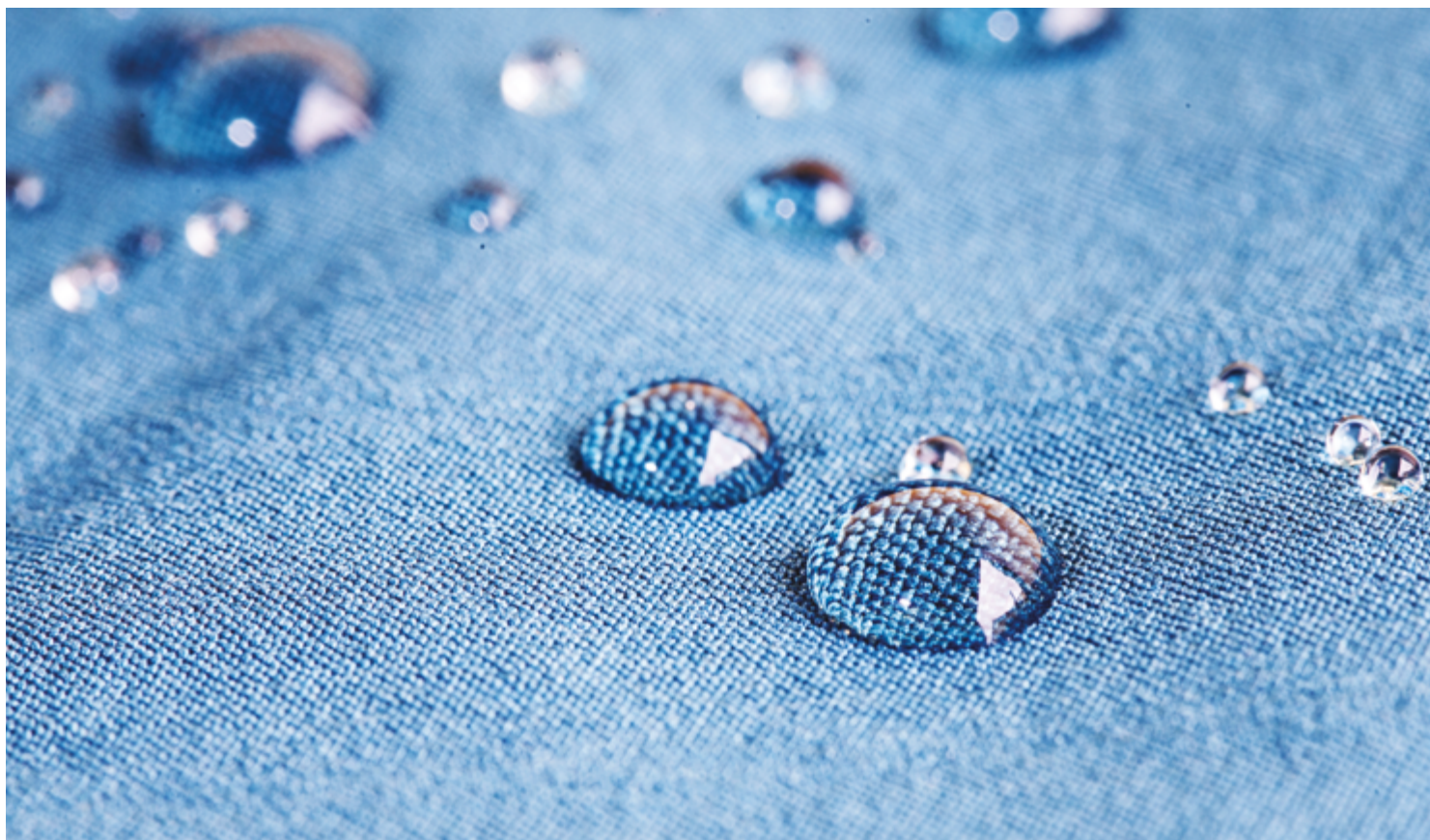
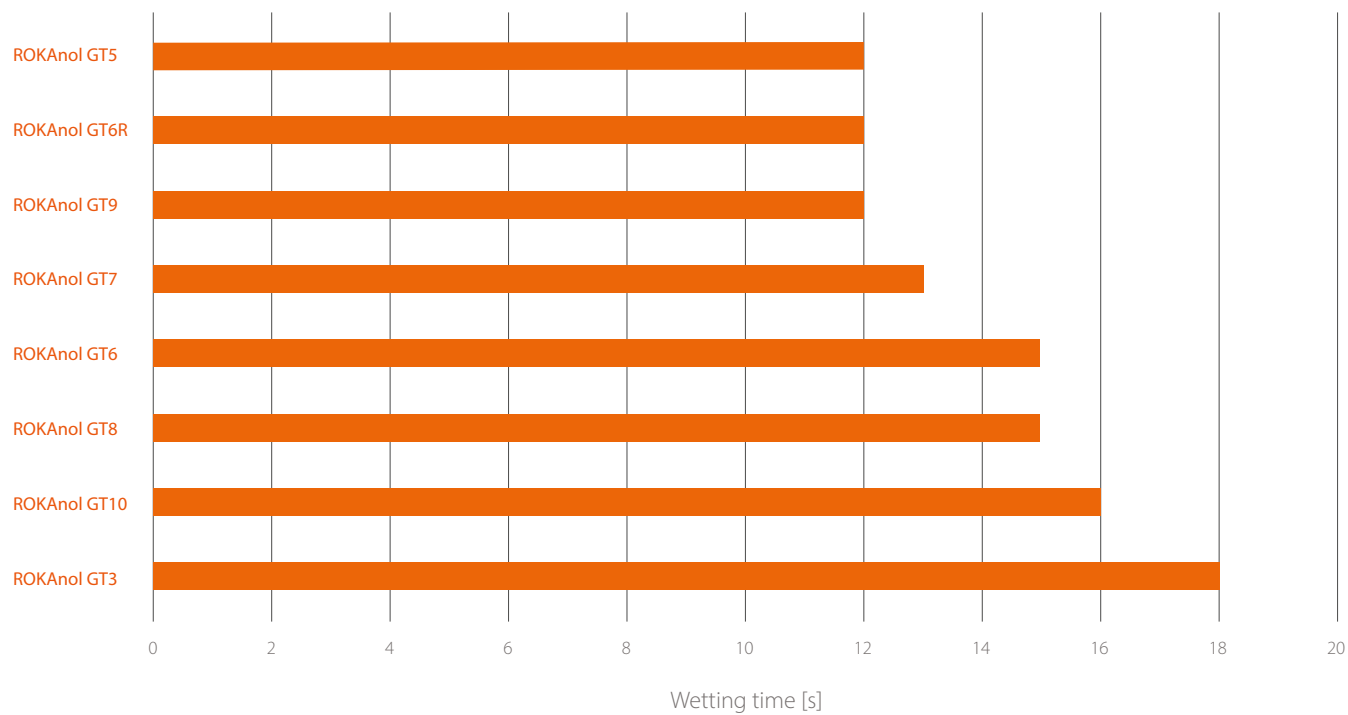
● clear, homogenous solution ● homogenous, opalescent solution ● homogenous, cloudy solution ○ macroscopic phase separation



Wetting capability

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

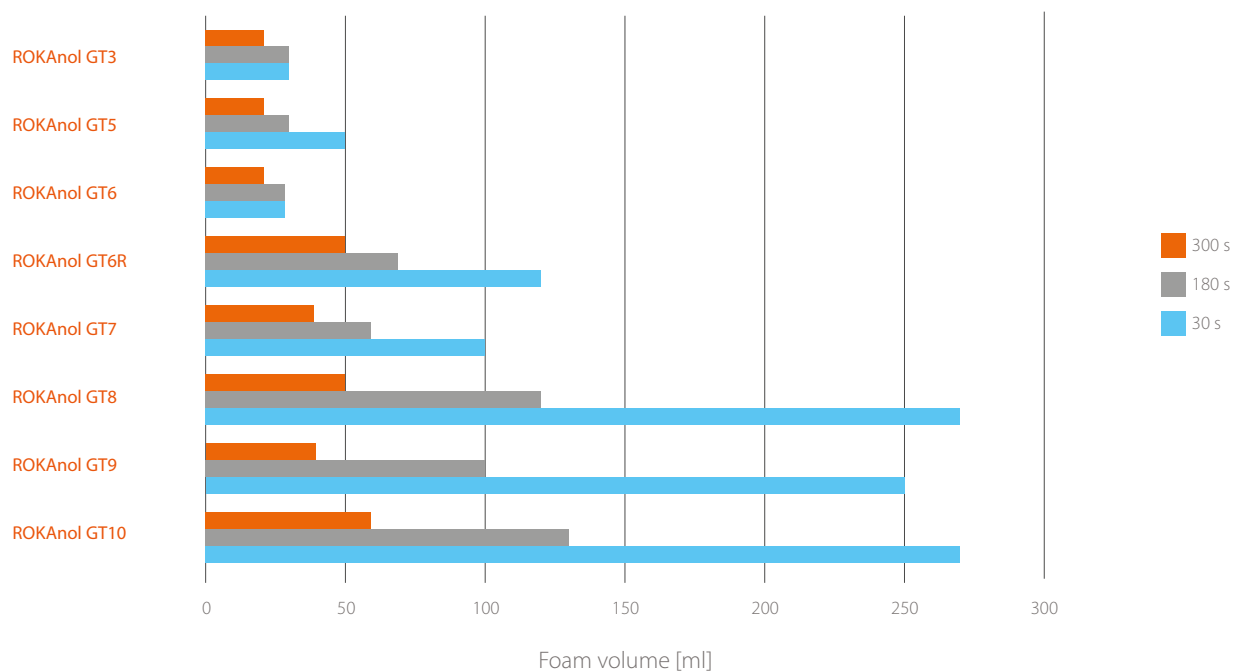


Foaming capability

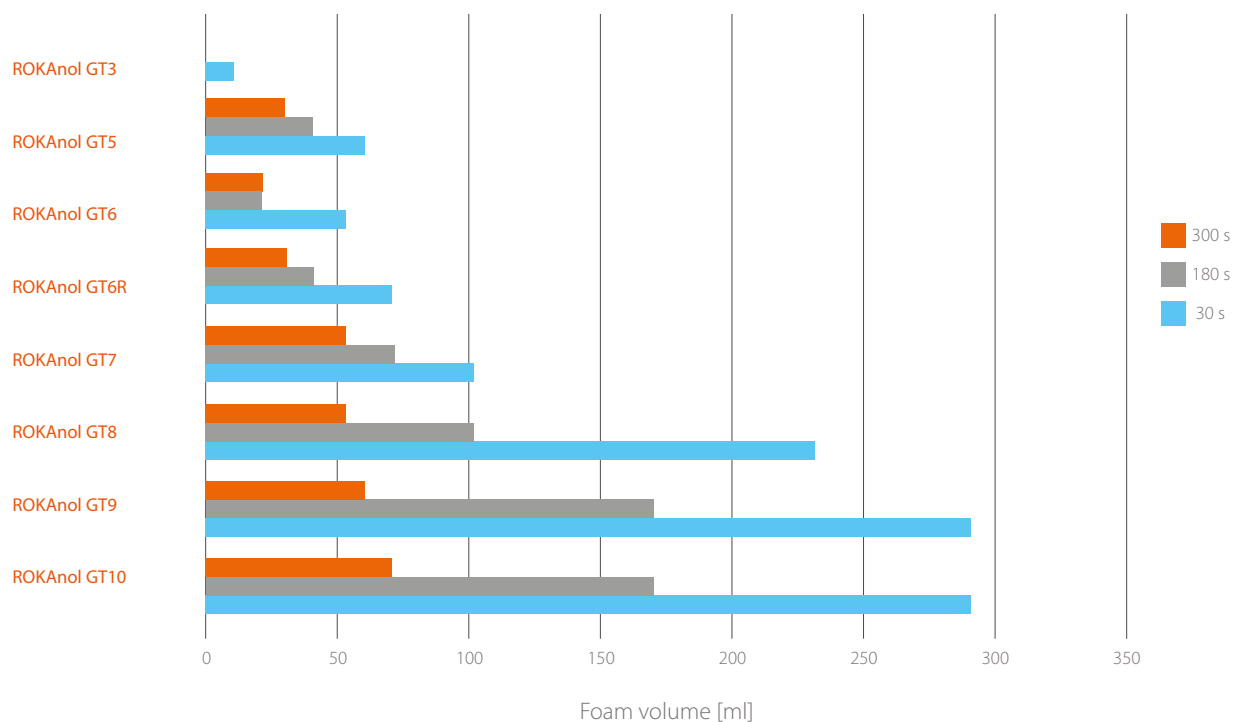
The foaming capability is one of the fundamental properties of surfactants, essential for assessing the possible directions of application and these agents. The foaming properties change with the increasing product ethoxylation degree.

The Determination of the foaming capability was performed according to PN-ISO 696:1994 Standard - The modified RossMiles method, at a temperature of 25°C, for a surfactant concentration of 1 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



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 GT Series. Subsequently, the engine was set at 200 RPM and after

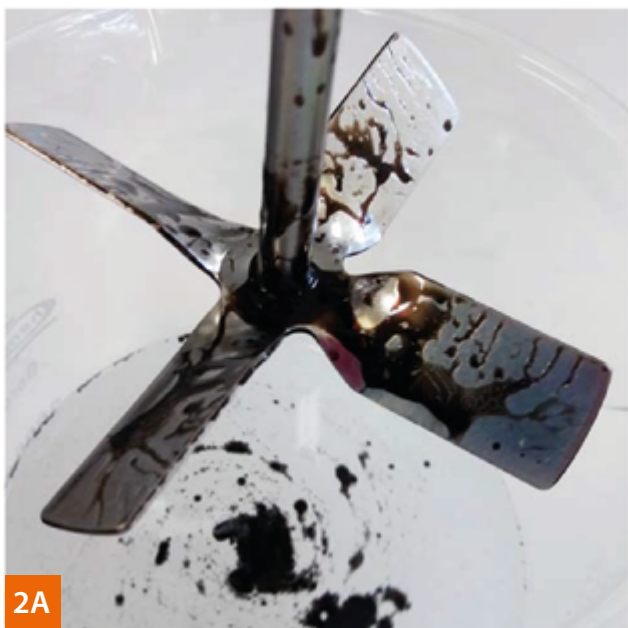
2 and 5 min the stirrer was taken out of the solution. The degree of soiling was assessed visually.

Demineralized water



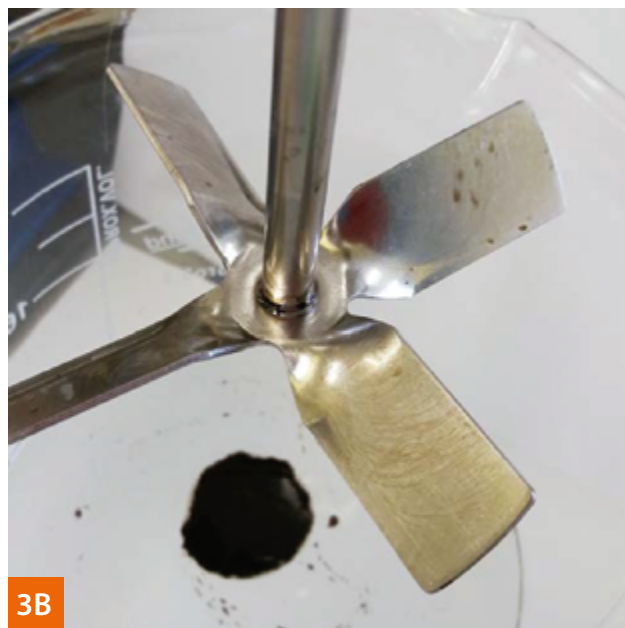
Pic. 1A/1B Degreasing capability. Dynamic test, demineralized water, after 2 min and 5 min.

ROKAnol GT3



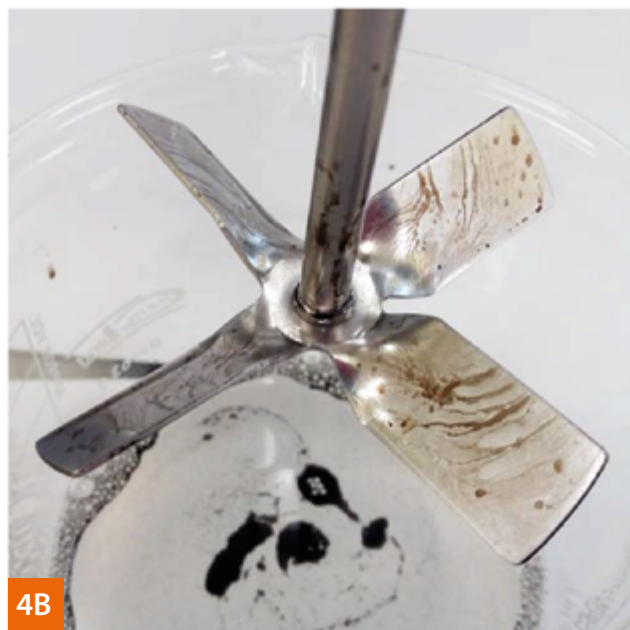
Pic. 2A/2B Degreasing capability. Dynamic test, ROKAnol GT3, after 2 min and 5 min.

ROKAnol GT5



Pic. 3A/3B Degreasing capability. Dynamic test, ROKAnol GT5, after 2 min and 5 min.

ROKAnol GT6



Pic. 4A/4B Degreasing capability. Dynamic test, ROKAnol GT6, after 2 min and 5 min.

ROKAnol GT7

Pic. 5A/5B Degreasing capability. Dynamic test, ROKAnol GT7, after 2 min and 5 min.

ROKAnol GT8

Pic. 6A/6B Degreasing capability. Dynamic test, ROKAnol GT8, after 2 min and 5 min.

ROKAnol GT9



Pic. 7A/7B Degreasing capability. Dynamic test, ROKAnol GT9, after 2 min and 5 min.

ROKAnol GT10



Pic. 8A/8B Degreasing capability. Dynamic test, ROKAnol GT10, after 2 min and 5 min.

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 GT series solutions. After drying the fabrics and pressing them, the total color difference 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.

Table 3 Comparison of the EMPA 125 fabric, before and after the detergency tests

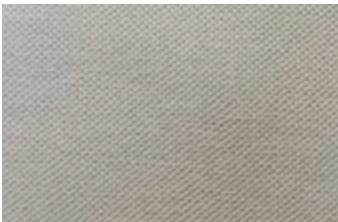
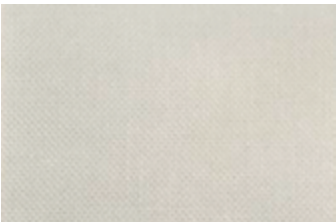
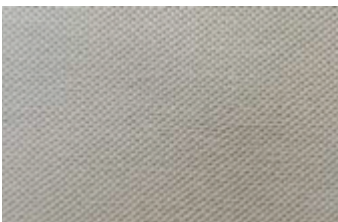
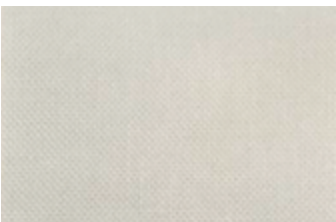
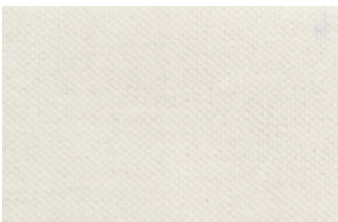
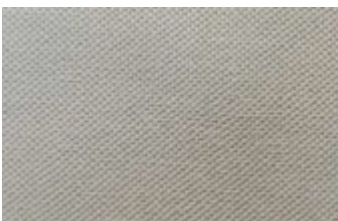
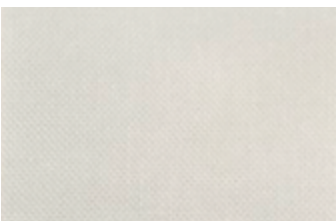
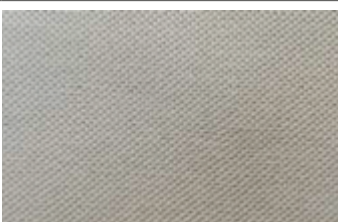
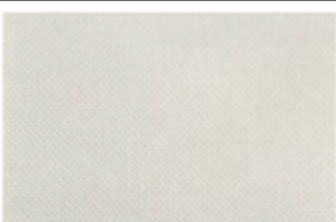
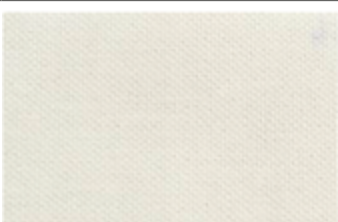
Concentration [g/l] Product name	0	2	5
ROKAnol GT10			
ROKAnol GT9			
ROKAnol GT8			
ROKAnol GT7			
ROKAnol GT6			

Table 4 Detergency results in dL units

Product Name	ROKAnol GT10		ROKAnol GT9		ROKAnol GT8		ROKAnol GT7		ROKAnol GT6	
Concentration [g/l]	2	5	2	5	2	5	2	5	2	5
The arithmetic average of all measurements [dL units]	18	18	18	19	18	19	15	18	16	18

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 defined 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 specified 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 GT Series has been performed in accordance with the **PN-EN 14712:2005** Standard.

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

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

Product name \ NaOH conc. [g/l]	10	20	30	40	50	60	70
ROKAnol GT3	○	○	○	○	○	○	○
ROKAnol GT5	●	●	●	●	●	○	○
ROKAnol GT6	●	●	●	○	○	○	○
ROKAnol GT6R	●	●	●	○	○	○	○
ROKAnol GT7	●	●	●	○	○	○	○
ROKAnol GT8	●	●	●	●	○	○	○
ROKAnol GT9	●	●	●	●	○	○	○
ROKAnol GT10	●	●	●	●	●	○	○

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

Product name \ NaOH conc. [g/l]	10	20	30	40	50	60	70
ROKAnol GT3	o	o	o	o	o	o	o
ROKAnol GT5	•	•	•	•	•	•	•
ROKAnol GT6	•	•	•	•	•	•	•
ROKAnol GT6R	•	•	•	•	•	•	•
ROKAnol GT7	•	•	•	•	•	•	•
ROKAnol GT8	•	•	•	•	•	•	•
ROKAnol GT9	•	•	•	•	•	•	•
ROKAnol GT10	•	•	•	•	•	•	•





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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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