

The background is a close-up, artistic photograph of a dark blue, textured fabric, possibly wool or a similar material, with numerous small, clear water droplets scattered across its surface. The lighting is soft and directional, creating highlights on the droplets and the texture of the fabric.

ROKAnol[®] M7, MT7
and MT7E versus
ROKAnol[®] L7

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.

<p>PCC ROKITA SA PCC PCG OXYALKYLATES IRPC</p> <p>Polyols</p> 	<p>PCC ROKITA SA</p> <p>Chlorine</p> 	<p>PCC ROKITA SA</p> <p>Phosphorus</p> 	<p>PCC EXOL SA PCC CHEMAX INC PCC PCG OXYALKYLATES</p> <p>Surfactants</p> 	<p>PCC SYNTEZA</p> <p>Alkylphenols</p> 
<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
<p>PCC CONSUMER PRODUCTS SA</p> <p>Consumer Products</p> 	<p>PCC ROKITA SA</p> <p>Energy</p> 	<p>PCC INTERMODAL SA</p> <p>Logistics</p> 	<p>PCC BAKKISILICON HF.</p> <p>Silicon</p> 	<p>PCC SE</p> <p>Holding & Projects</p> 
<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"> • Microsillica • Silicon Metal 	<ul style="list-style-type: none"> • Portfolio Management • Project Development

ROKAnol M7, MT7 and MT7E versus ROKAnol L7

General characteristic

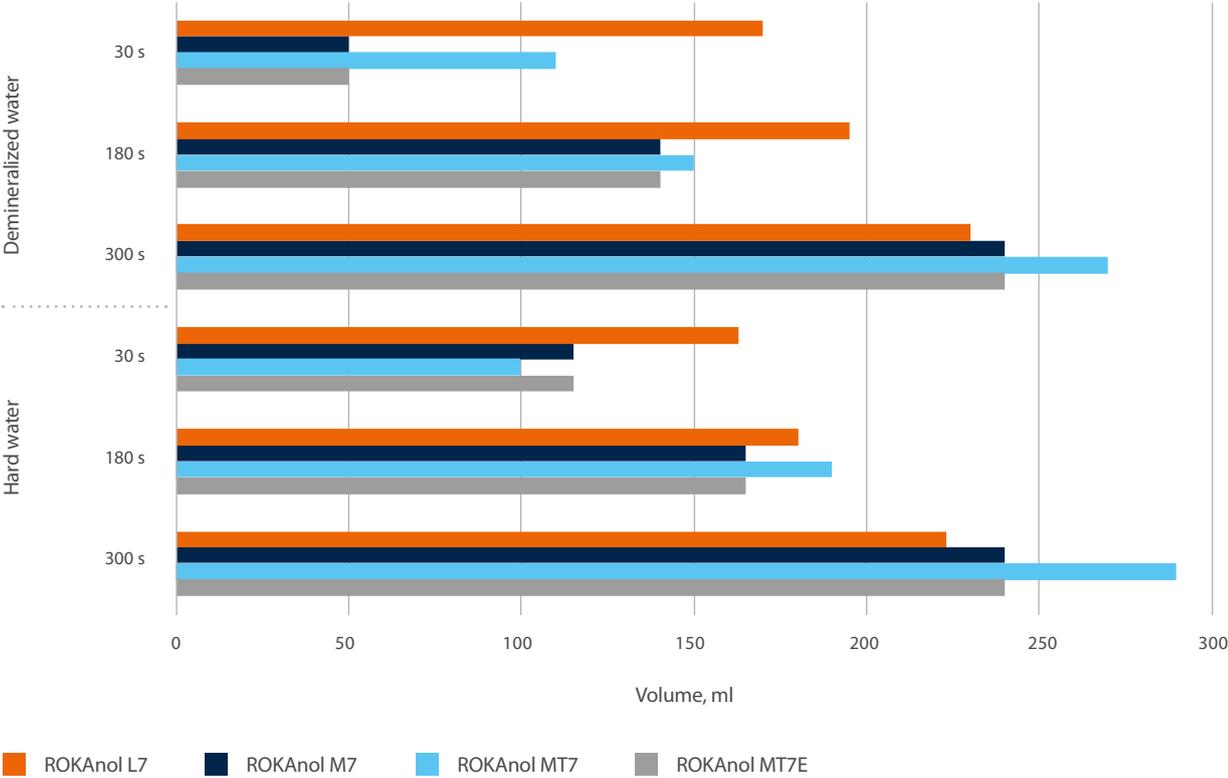
Basic information concerning the physical and chemical properties is summarised in a table below.

	ROKAnol L7	ROKAnol M7	ROKAnol MT7	ROKAnol MT7E
Chemical Name	Alcohols, C12-14, ethoxylated	Alcohols, C10-C18, ethoxylated	Alcohols, C8-18, ethoxylated	Alcohols, C8-18, ethoxylated
CAS Number	68439-50-9	85422-93-1	157707-43-2	157707-43-2
Appearance	clear or slightly turbid liquid	clear or slightly turbid liquid	liquid	clear or slightly turbid liquid
Colour in Hazen scale	max. 70	max. 150	max. 150	max. 150
pH of 5% solution	4.6 ÷ 7.4	5 ÷ 8	5 ÷ 8	5 ÷ 8
Cloud point (aqueous solution), method A °C	57 ÷ 63	56 ÷ 62	56 ÷ 62	56 ÷ 62
Cloud point (aqueous solution), method B °C	41 ÷ 48	39 ÷ 45	41 ÷ 47	39 ÷ 45
Cloud point (aqueous solution), method C °C	30 ÷ 40	29 ÷ 35	30 ÷ 37	29 ÷ 35
Cloud point (aqueous solution), method D °C	78 ÷ 84	71 ÷ 78	74 ÷ 80	71 ÷ 78
Cloud point (aqueous solution), method E °C	76 ÷ 83	71 ÷ 77	73 ÷ 79	71 ÷ 77
Water, % (m/m)	max. 1	max. 1.0	max. 0.5	max. 1.0
Density at 25°C, g/mL	approx. 0.99	approx. 1.00	approx. 0.99	approx. 1.00
Viscosity at 25°C, cP	approx. 200	approx. 200	approx. 200	approx. 200
Freezing point, °C	approx. 12	approx. 12	approx. 15	approx. 12



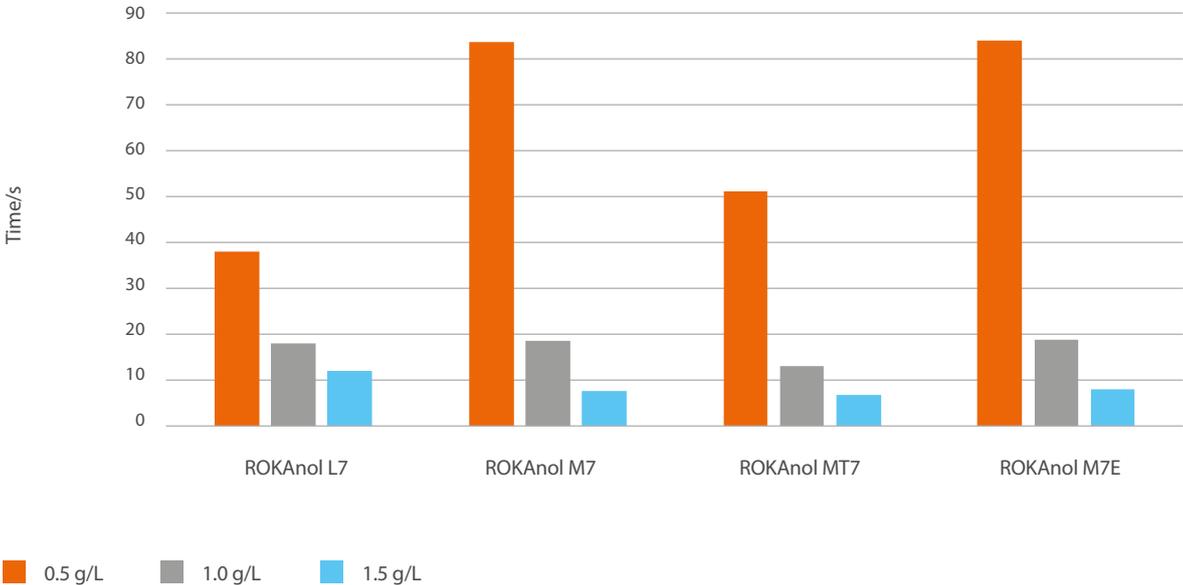
Foaming capability

Foaming capability was measured according to modified Ross-Miles' method (PN-ISO 696:1994). The foam value was measured after 30, 180 and 300 seconds. The results were presented on graphs.



Wetting capability

Wetting capability was measured at 20°C for three concentrations. The results were presented on graph.



Alkali and acid resistance

Alkali resistance

Product name	NaOH con., g/L						
	30	40	50	60	70	80	90
ROKAnol L7	●	●	●	●	●	●	○
ROKAnol M7	●	●	●	●	●	○	○
ROKAnol MT7	●	●	●	●	○	○	○
ROKAnol MT7E	●	●	●	●	●	○	○

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

Acid resistance

Product name	H ₂ SO ₄ conc. mL/L						
	1	10	40	60	100	140	225
ROKAnol L7	●	●	●	●	●	●	●
ROKAnol M7	●	●	●	●	●	●	●
ROKAnol MT7	●	●	●	●	●	●	●
ROKAnol MT7E	●	●	●	●	●	●	●

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



Solubility

Product name	Demineralized water	Methanol	Acetone	Ethyl ether
ROKAnol L7	●	●	●	●
ROKAnol M7	●	●	●	●
ROKAnol MT7	●	●	●	●
ROKAnol MT7E	●	●	●	●

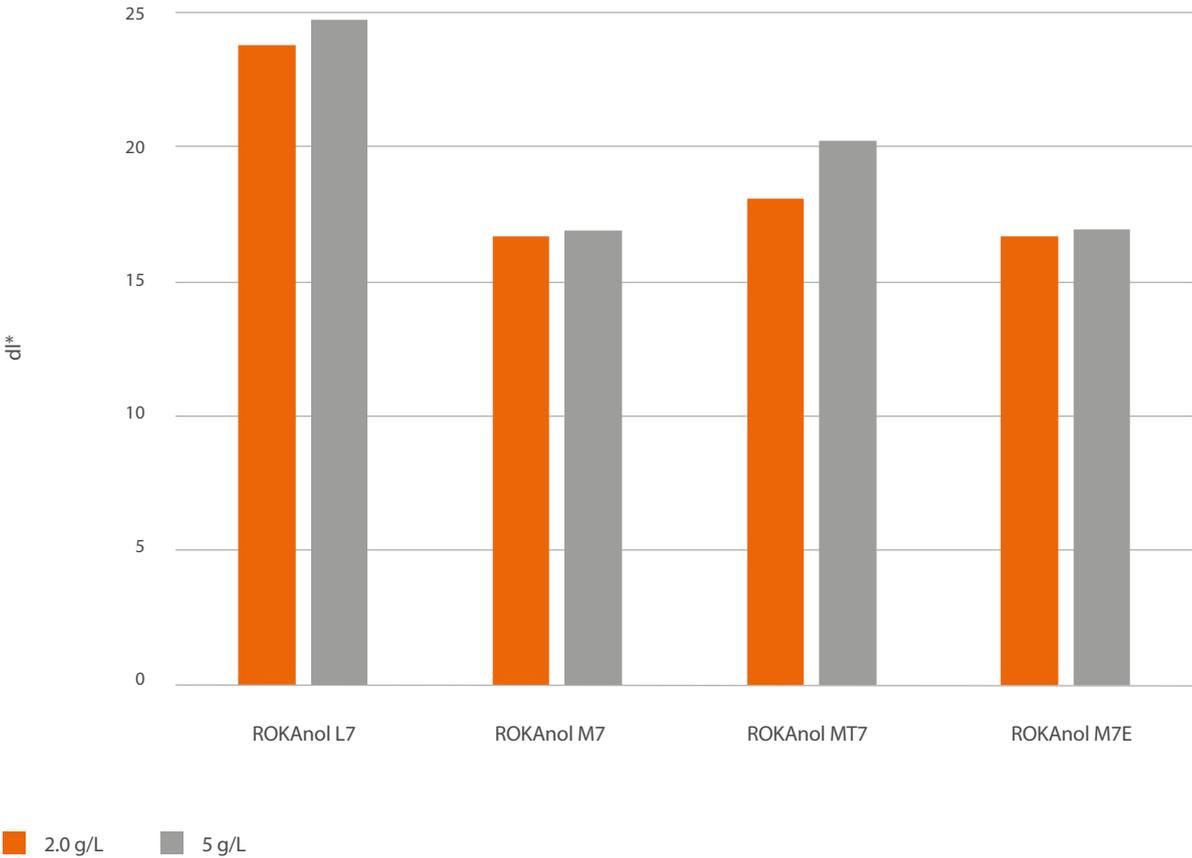
● soluble ● partially soluble ● insoluble

Both products showed similar solubility in the tested solvents.

Detergency

Detergency is 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. After drying the fabrics and pressing them, the total color difference of the fabric before and after washing, was measured. The higher the difference is, the better detergency properties are for surfactant.



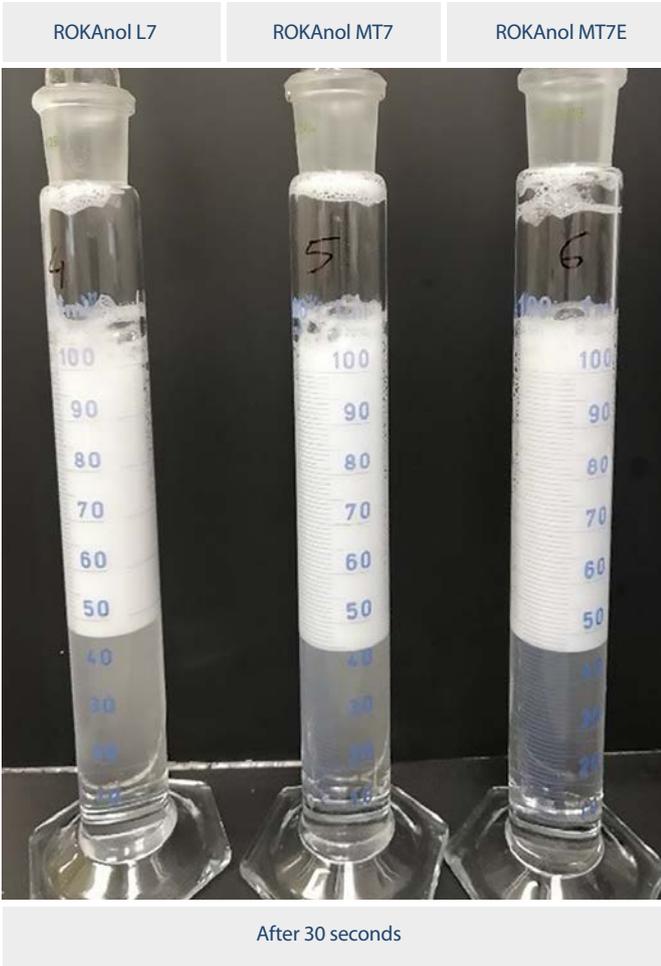
Formulations – performance test of hand dishwashing liquid

1. In the table was showed formulation proposals for 4 surfactants.

Brand name	ROKAnol L7	ROKAnol M7	ROKAnol MT7	ROKAnol MT7E
	Concentration [%]			
Aqua	81.5			
SULFOROKAnol L270/1	8.0			
ROKAmina K30	5.0			
ROKAmid KAD	1.0			
ROKAnol L7	2.0	-	-	-
ROKAnol M7	-	2.0	-	-
ROKAnol MT7	-	-	2.0	-
ROKAnol MT7E	-	-	-	2.0
Sodium Chloride	2.5			
Physical and chemical properties				
Appearance	clear, transparent homogenous liquid			
Viscosity [cP]	1000-1500	40-100	200-400	20-100
pH	6-7	6-7	6-7	6-7



The foaming properties were measured for samples: ROKAnol L7, ROKAnol MT7, ROKAnol MT7E. The results are presented on the photos.



2. In the next step new formulations with higher organic matter were prepared. The formulations are shown in a table below.

Brand name	ROKAnol L7	ROKAnol MT7	ROKAnol MT7E
	Concentration [%]		
Aqua		78.9	
SULFOROKAnol L270/1		10.0	
ROKAmina K30		7.0	
ROKAmid KAD		0.7	
ROKAnol L7	1.4	-	-
ROKAnol MT7	-	1.4	-
ROKAnol MT7E	-	-	1.4
Sodium Chloride		2.6	
Physical and chemical properties			
Appearance	clear, transparent homogeneous liquid		
Viscosity [cP]	4000-5500	1500-3000	1500-2500
pH	6-7	6-7	6-7



3. The formulations for baby laundry detergent and stain remover are presented below.

Baby laundry detergent

Brand name	ROKAnol L7	ROKAnol MT7	ROKAnol MT7E
	Concentration [%]		
Aqua		43.0	
SULFOROKAnol L227/1		35.0	
EXOsoft MG		5.0	
EXOsoft PO30		5.0	
ROKAnol L7	3.0	-	-
ROKAnol MT7	-	3.0	-
ROKAnol MT7E	-	-	3.0
GLDA		2.5	
Euperlan HCA		0.5	
Glycerin		6.0	
Physical and chemical properties			
Appearance	clear, transparent homogenous liquid		
Viscosity [cP]	700-900	100-200	<100
pH	7-9	7-9	7-9

Stain remover

Brand name	ROKAnol L7	ROKAnol MT7	ROKAnol MT7E
	Concentration [%]		
Aqua		51.3	
ABSNa 50%		7.7	
ROKAnol L7	11.0	-	-
ROKAnol MT7	-	11.0	-
ROKAnol MT7E	-	-	11.0
Perhydrol, 35%	-	30	-
Citric Acid			
Physical and chemical properties			
Appearance	clear, transparent homogenous liquid		
Viscosity [cP]	<200	<200	<200
pH	4-6	4-6	4-6

4. The detergency test for final product.

Detergency – the ability of the detergent to remove soils from the fabric surface during the laundering process. Detergency tests were performed using to own method, with a different solids: 1. Fluid make-up, 2. Curry, 3. Blood, aged, 4. Wine, aged, 5. Spaghetti sauce with beef, 6. Chocolate ice cream, aged, 7. Grass/ mud,

with thickening agent, 8. Highly discriminative tea, 9. Grass, pure, 10. Baby food carrot/potato, 11. Standard clay, 12. Betacarotene on cotton, circular stain, 13. Dirty Motor Oil (DMO), 14. Butterfat with colourant, 15. Beef fat, coloured with Sudan red.

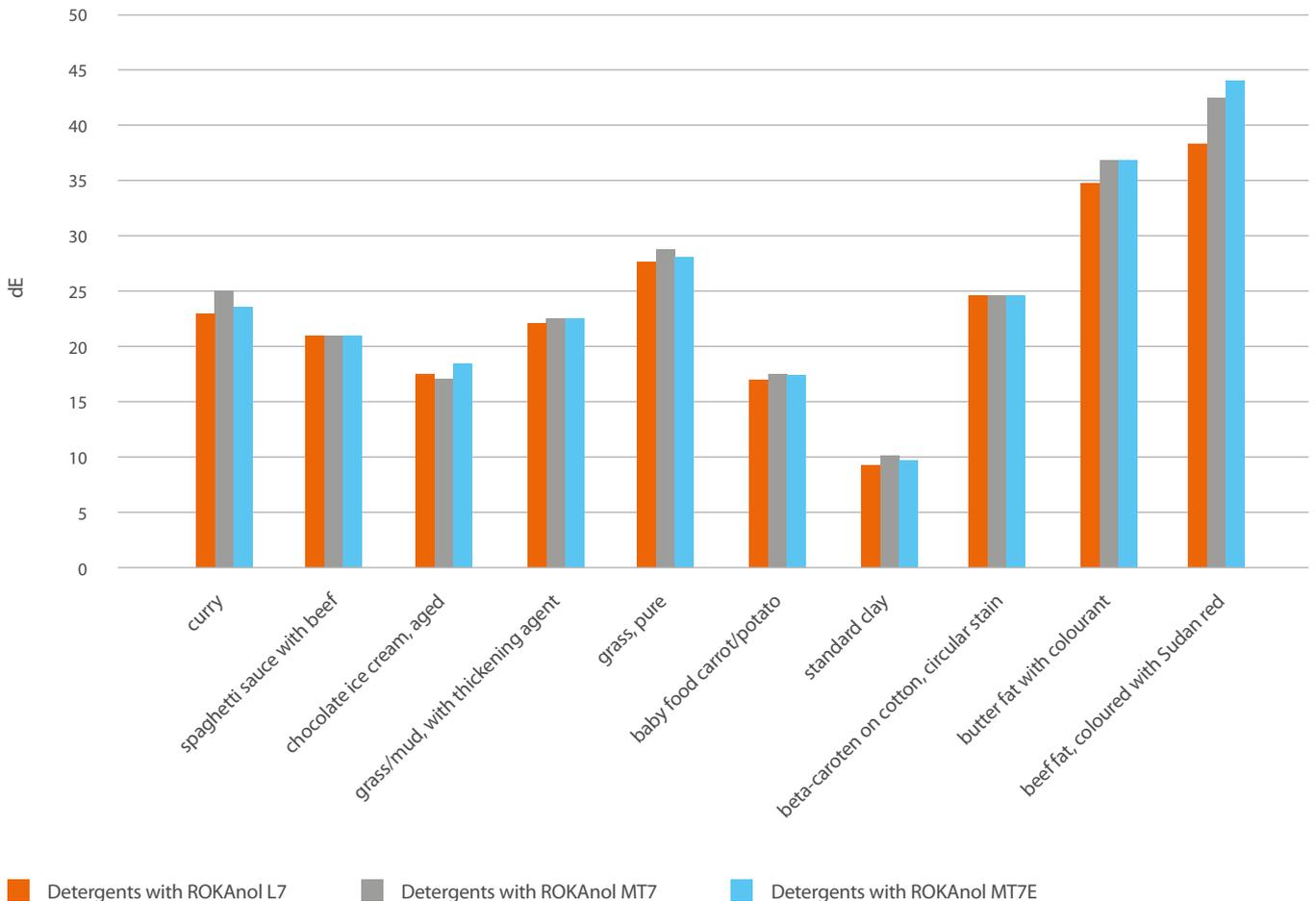
Test conditions for baby laundry detergents:

- automatic washmachine
- 40°C (with one of the formulations)
- cotton program
- load – calculated for 2 kg of dry, white towels
- fabric soiled with standard dirt

After the washing process was performed, the standardly disturbed fabrics were dried and ironed, and then the degree of washing was assessed by measuring parameter dE from the CIE LAB scale, as the

difference between the initially disturbed stain and the degree of its washing. The greater dE value, the better the washing outcome.

Baby laundry detergents – typical stain for children



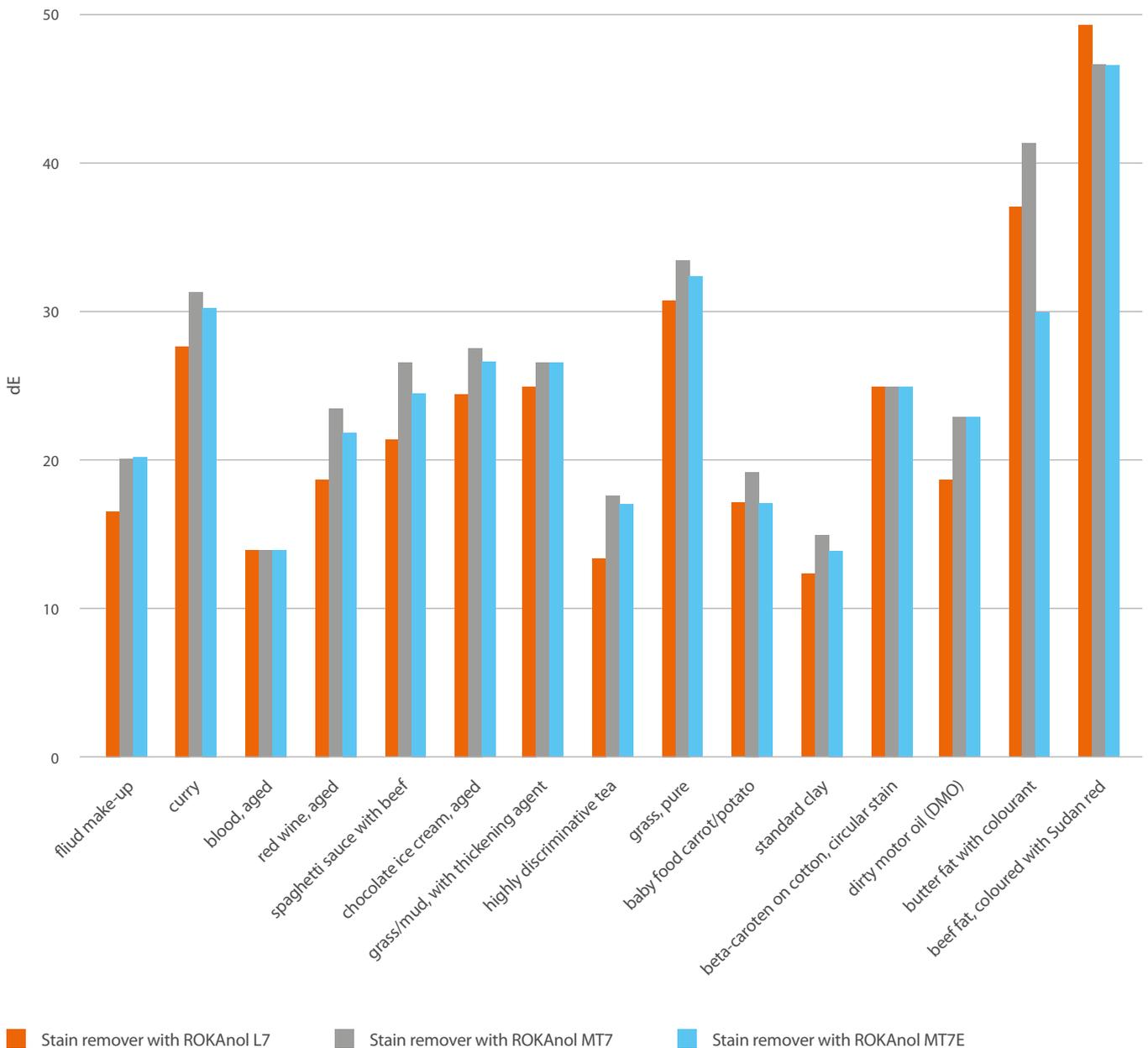
Test conditions for stain remover:

- automatic washmachine
- 40°C (with one of the formulations)
- cotton program
- load – calculated for 2.5 kg of dry, white towels
- the dosing of the stain remove: 100 ml with market capsule
- fabric soiled with standard dirt

After the washing process was performed, the standardly disturbed fabrics were dried and ironed, and then the degree of washing was assessed by measuring parameter dE from the CIE LAB scale, as the

difference between the initially disturbed stain and the degree of its washing. The greater dE value, the better the washing outcome.

Stain remover





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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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