PCC

ROKAnol LP 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 LP Series

Chemical description

ROKAnols with low foaming properties are non-ionic surfactants. They are ethylene and propylene oxides adducts to various types of alcohols and can be represented by follow structure

$$RO(CH_2CH_2O)_x[CH(CH_3)CH_2O]_yH$$

where: **R = fatty alcohol radical**

x = average number of ethylene oxide units

y = average number of propylene oxide units

Applications

ROKAnols with low foaming properties are multipurpose products which are used in variety of applications, where antifoaming, dispersing, wetting properties and detergency plays important role, i.e. in detergents, or I&I applications. Low foaming surfactants are very useful for low-foam and no-foam applications. They are especially suitable for:

- Automatic dishwashing detergents
- Laundry detergents
- Textile industry
- Agriculture
- Paints and coatings
- Rinse aids
- Hard surface cleaners
- Pulp and paper

Basic physical and chemical properties

ROKAnol	L4P5	L5P5	LP2024W/95	NL8P4	B2	RZ4P11
Appearance at 20-25 °C	Clear or slightly turbid liquid	Clear or slightly turbid liquid	Clear liquid	Clear or slightly turbid liquid	Turbid liquid	Clear or turbid liquid
Concentration [%]	apprx. 100	approx. 100	approx. 95	approx. 100	approx. 100	approx. 100
Hazen colour at 40°C	usually <100	max. 100	max. 100	max. 200	usually <100	–
Cloud point [°C]						
Method A 1% in water solution	approx. 25	27-31	approx. 23	38-48	30-39	insoluble
Method B 1% solution in 5% NaCl solution	approx 16	20,3	approx. 16	approx. 36	approx. 26	insoluble
Method C 1% solution in 10% NaCl solution	< 10	13	<10	approx. 28	approx. 18	insoluble
Method D 10% solution in 25% BDG solution	approx. 46	approx. 48	approx. 49	approx. 60	approx. 47	approx. 30
Method E 16.7% solution in 25% BDG solution	approx. 42	approx. 42	approx. 42	approx. 55	approx. 43	23-27
Average molar mass [g/mol]	650	730	500	740	1000	1080
Water content [%, by weight]	max. 0.5	max. 0.5	max. 5.0	max. 1.0	max. 0.5	max. 1.0
Approx. Solidification point [°C]	approx. -12	approx. -9	approx. -15	approx. -6	approx. 0	approx. -15
pH in deionized water, at 20°C	5.5-8.5 1% solution	5.0-7.0 1% solution	5.0-7.0 1% solution	5.0-7.0 1% solution	5.5-8.5 1% solution	5.5-8.5 1% solution
Density at 25°C [g/cm^3]	approx. 0.97	approx. 0.97	approx. 0.98	approx. 1.00	approx. 0.98	approx. 0.96
Viscosity at 25°C [cP]	approx. 60	approx. 70	approx. 50	approx. 80	approx. 130	approx. 110

Basic physical and chemical properties

ROKAnol	LP100	LP180	LP200	LP220	LP400	LP700	LP911	LP3034
Appearance at 20-25 °C	Liquid	Colorless to yellowish liquid	Clear or turbid liquid	Liquid	Clear or cloudy liquid	Liquid	Liquid	Clear liquid
Concentration [%]	approx. 95	approx. 100	approx. 100	approx. 97	approx. 100	approx. 100	approx. 100	approx. 100
Hazen colour at 40°C	max. 100 (20-25 °C)	approx. 150	max. 100	max.50	max. 100 (20-25°C)	max. 100 (50°C)	max. 100	max. 100
Cloud point [°C]								
Method A 1% in water solution	72-76	approx. 17	< 10	36-40	39-42	20-24	9-11	18.5
Method B 1% solution in 5% NaCl solution	approx. 57	insoluble	insoluble	approx. 27	approx. 30	approx. 13	insoluble	<10
Method C 1% solution in 10% NaCl solution	approx. 47	insoluble	insoluble	approx. 19	approx. 21	< 10	insoluble	<10
Method D 10% solution in 25% BDG solution	approx. 71	approx. 38	approx. 43	approx. 54	approx. 53	approx. 56	approx. 33	36.8
Method E 16.7% solution in 25% BDG solution	approx. 69	32-35	37-41	approx. 49	39-42	20-24	approx. 28	30-34
Average molar mass [g/mol]	1100	1870	680	790	640	540	920	740
Water content [%, by weight]	max. 5	max. 0.5	max. 0.5	max. 3.0	max. 0.5	max. 0.5	max. 0.5	max. 1.0
Approx. Solidification point [°C]	approx. 10	< -20	< -15	approx. -12	< -5	< -10	< -20	< -20
pH in deionized water, at 20°C	5-7 1% solution	5-8 5% solution	5-7 1% solution	5-8 5% solution	5-7 1% solution	5-7 1% solution	5-7 5% solution	5-7 1% solution
Density at 25°C [g/cm^3]	approx. 1.04	approx. 1.01	approx. 0.99	approx. 1.01	approx. 1.00	approx. 0.98	approx. 0.99	approx. 0.97
Viscosity at 25°C [cP]	approx. 245	approx. 240	approx. 100	max.200	approx. 90	approx. 70	approx. 100	approx.100

Basic physical and chemical properties

ROKAnol	LP3135	LP3943	LP60	LP64	LP66	LP550	LP1319	LP2023
Appearance at 20-25 °C	Turbid liquid	Clear liquid	Clear liquid	Liquid	Liquid	Clear liquid	Clear liquid	Clear liquid
Concentration [%]	approx. 95	approx. 100	approx. 100	approx. 100	approx. 97	approx. 100	approx. 100	approx. 100
Hazen colour at 40°C	max. 100	–	max. 200 (20-25 °C)	max. 70	max. 70	max. 50 (20-25°c)	max.150 (20-25°c)	max. 100 (20-25°c)
Cloud point [°C]								
Method A 1% in water solution	31-35	< 10	insoluble	<10	approx. 15	<10	< 10	insoluble
Method B 1% solution in 5% NaCl solution	approx. 24	< 10	insoluble	<10	<10	<10	< 10	insoluble
Method C 1% solution in 10% NaCl solution	approx. 18	insoluble	insoluble	<10	<10	<10	< 10	insoluble
Method D 10% solution in 25% BDG solution	approx. 51	approx. 50	14-18	60-62	approx. 69	26-30	approx. 20	approx. 26
Method E 16.7% solution in 25% BDG solution	approx. 45	39-43	< 10	approx. 55	64-68	23-25	13-19	20-23
Average molar mass [g/mol]	620	550	770	770	1000	1550	1530	1060
Water content [%, by weight]	max. 6	max. 0.5	max. 1.0	max. 0.5	max. 3.0	max. 0.3	max. 0.5	max. 0.5
Approx. Solidification point [°C]	< -6	< -20	< -20	approx. 2	approx. 4	approx. -14	< -20	approx. -10
pH in deionized water, at 20°C	5-7 1% solution	5-7 2.5% solution	6-8 1% solution	5-7 1% solution	5-7 1% solution	5-7 1% solution	4-7 1% solution	5-7 1% solution
Density at 25°C [g/cm^3]	approx. 1.00	approx. 0.95	approx. 0.96	approx. 0.96	approx. 0.98	approx. 1.00	approx. 0.98	approx. 0.97
Viscosity at 25°C [cP]	approx. 100	approx. 55	approx. 100	approx. 115	approx. 160	max.300	approx.200	approx. 140

Basic physical and chemical properties

ROKAnol	LP2227	LP2500	LP2855
Appearance at 20-25 °C	Clear liquid	Clear liquid	Clear / slightly turbid liquid
Concentration [%]	approx. 100	approx. 100	approx. 100
Hazen colour at 40°C	max.100	max. 40	max. 100
Cloud point [°C]			
Method A 1% in water solution	22-27	31-35	27-31
Method B 1% solution in 5% NaCl solution	approx. 15	approx. 24	approx. 30
Method C 1% solution in 10% NaCl solution	approx. 12	approx. 15	12-14
Method D 10% solution in 25% BDG solution	approx. 48	approx. 48	approx. 49
Method E 16.7% solution in 25% BDG solution	approx. 43	approx. 45	42-44
Average molar mass [g/mol]	approx. 490	approx. 670	approx. 630
Water content [%, by weight]	max. 0.5	max. 0.5	max. 0.5
Approx. Solidification point [°C]	approx. -3	approx. -1	< -10
pH in deionized water, at 20°C	5-7 1% solution	6-8 5% solution	5-7 1% solution
Density at 25°C [g/cm^3]	approx. 1.00	approx. 0.98	approx. 0.97
Viscosity at 25°C [cP]	approx. 300	approx. 80	approx. 50

Basic physical and chemical properties

ROKAnol	LP3841	LP600	LP1300	LP2424	LP1012	LP160	LP42	LP610	LP27	LP3
Appearance at 20-25 °C	Clear or slightly Turbid liquid	Liquid	Turbid strawy liquid	Light yellow clear liquid	Liquid	Clear liquid	Clear liquid	Yellow clear liquid	Clear or slightly Turbid liquid	Clear liquid
Concentration [%]	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 100	approx. 99	approx. 100	approx. 100
Hazen colour at 40°C	max. 100	max. 40	max. 100 (20-25°c)	approx. 28 (25°C)	max. 100	max. 100 (50°C)	max. 70 (20-25°C)	approx. 240	max. 100	max. 100 (25°)
Cloud point [°C]										
Method A 1% in water solution	38-48	31-35	nsoluble	nsoluble	10-12	ıpprox. 59	insoluble	approx. 73	27-31	insoluble
Method B 1% solution in 5% NaCl solution	ɔprox. 37	ɔprox. 24	nsoluble	nsoluble	35-40	ıpprox. 44	insoluble	approx. 30	approx. 20	insoluble
Method C 1% solution in 10% NaCl solution	ɔprox. 29	ɔprox. 15	nsoluble	nsoluble	nsoluble	ıpprox. 32	insoluble	20-22	approx. 13	insoluble
Method D 10% solution in 25% BDG solution	ɔprox. 60	ɔprox. 48	ɔprox. 28	29.1	pprox. 36	74-76	50-54	57-62	48-50	22-24
Method E 16.7% solution in 25% BDG solution	approx. 56	approx. 45	20-23	28.6	27-29	approx. 76	42-46	approx. 54	approx. 43	< 10
Average molar mass [g/mol]	approx. 740	approx. 6760	approx. 1060	approx. 490	approx. 800	approx. 1600	approx. 670	approx. 650	approx. 730	approx. 374
Water content [%, by weight]	max. 1	max. 0.5	max. 05	max. 0.5	max. 0.5	max. 1	max. 1	max. 1.5	max. 0.5	max. 0.5
Approx. Solidification point [°C]	approx. -5	approx. -9	approx. -10	< -20	< -20	approx. 18	approx. 6	approx. -3	approx. -10	< -20
pH in deionized water, at 20°C	5 -7 5% solution	6-8 1% solution	5-7 1% solution	5-7 1% solution	6 -7.5 1% solution	5-8 10% solution	5-7 1% solution	4 -6 1% solution	5-7 1% solution	5-7 5% solution
Density at 25°C [g/cm^3]	approx. 1.00	approx. 0.98	approx. 0.97	0.93 - 0.97	approx. 0.96	approx. 1.0 (50°C)	approx. 0.94	approx. 1.01	approx 0.97	approx. 0.9
Viscosity at 25°C [cP]	approx. 100	approx. 80	approx. 150	< 100	approx. 40	approx. 100	approx. 100	approx.100	approx. 100	approx.100

Additional information

Solubility

Solubility in water and other solvents has been shown in the table below.

Solubility – at 25°C, 10% Solutions

ROKAnol Series	Demineralized water	Methanol	Ethyl ether	Acetone
L4P5	●	●	○	●
L5P5	●	●	○	●
LP2024W/95	●	●	○	●
NL8P4	●	●	○	○
B2	●	●	○	○
RZ4P11	●	●	○	○
LP100	●	●	○	●
LP180	●	●	○	●
LP200	○	●	○	●
LP220	●	●	○	●
LP400	●	●	●	●
LP700	○	●	○	●
LP911	○	●	●	●
LP3034	○	●	●	●
LP3135	●	●	○	●
LP3943	○	●	●	●
LP60	●	●	○	○
LP64	○	●	○	●
LP66	○	●	○	○
LP550	○	●	●	●
LP1319	○	●	●	●
LP2023	○	●	●	●
LP2227	●	●	○	●
LP2500	●	●	○	●
LP2855	●	●	○	○
LP3841	●	●	○	○
LP600	●	●	○	○
LP1300	○	●	●	●
LP2424	●	●	●	●
LP1012	○	●	●	●
LP160	●	●	○	●
LP42	●	●	●	●
LP610	●	●	●	●
LP27	●	●	○	●
LP3	●	●	●	●

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

Foaming capability – modified Ross-Miles

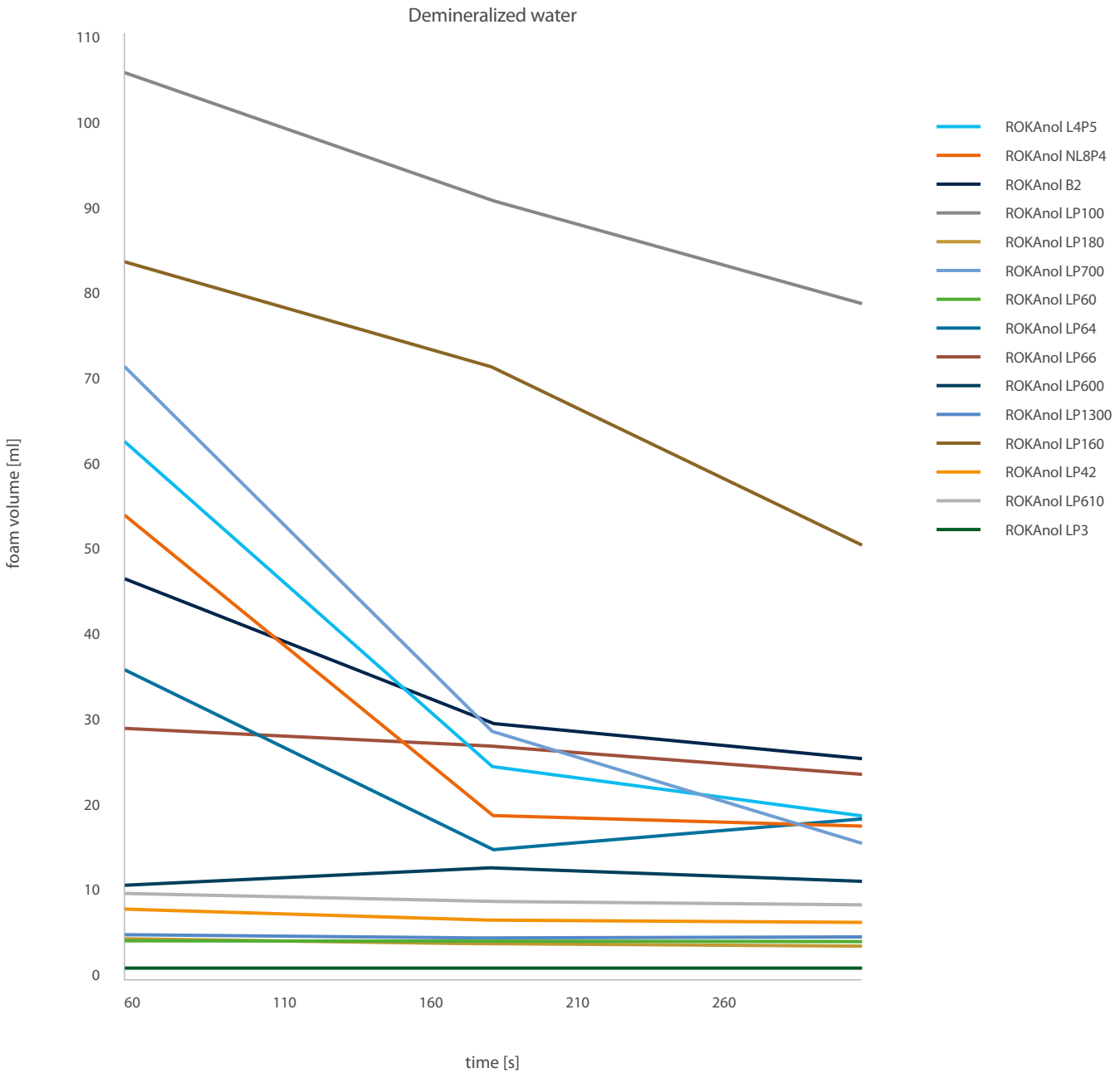
ROKAnols from low foaming range exhibit desired properties like good detergency, efficient wettability, degreasing abilities. Difference between low foaming ROKAnols and standard non-ionic surfactants is in their low foaming capability. Due to that, these products can be used in many application where foam is problematic. Determination of the foaming capability was preformed according to PN-ISO 696:1994 (the modified Ross-Miles method) for solution with a concentration of 1.0 g/l in deionised and hard water at a temperature of 25ºC.

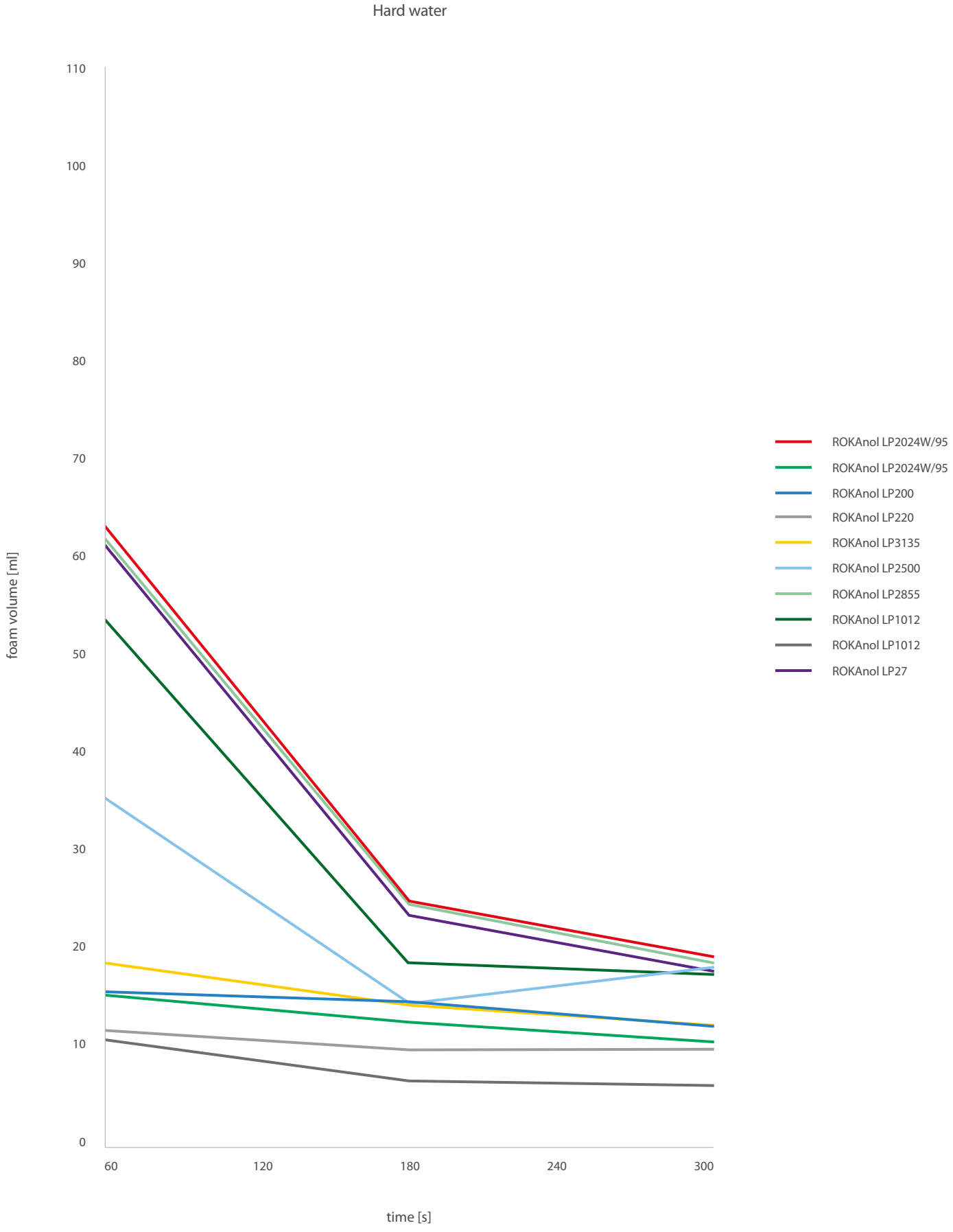
ROKAnol Series	Demineralized water	Hard water
L4P5	low	poor
L5P5	poor	poor
LP2024W/95	poor	poor
NL8P4	poor	non
B2	moderate	low
RZ4P11	non	non
LP100	moderate	moderate
LP180	non	non
LP200	non	non
LP220	non	non
LP400	poor	poor
LP700	moderate	moderate
LP911	non	non
LP3034	non	non
LP3135	non	non
LP3943	non	non
LP60	non	non
LP64	non	non
LP66	poor	poor
LP550	non	non
LP1319	non	non
LP2023	non	non
LP2227	non	non
LP2500	poor	poor
LP2855	poor	poor
LP3841	poor	non
LP600	poor	poor
LP1300	non	non
LP2424	non	non
LP1012	non	non
LP160	poor	poor
LP42	non	non
LP610	non	non
LP27	poor	poor
LP3	non	non

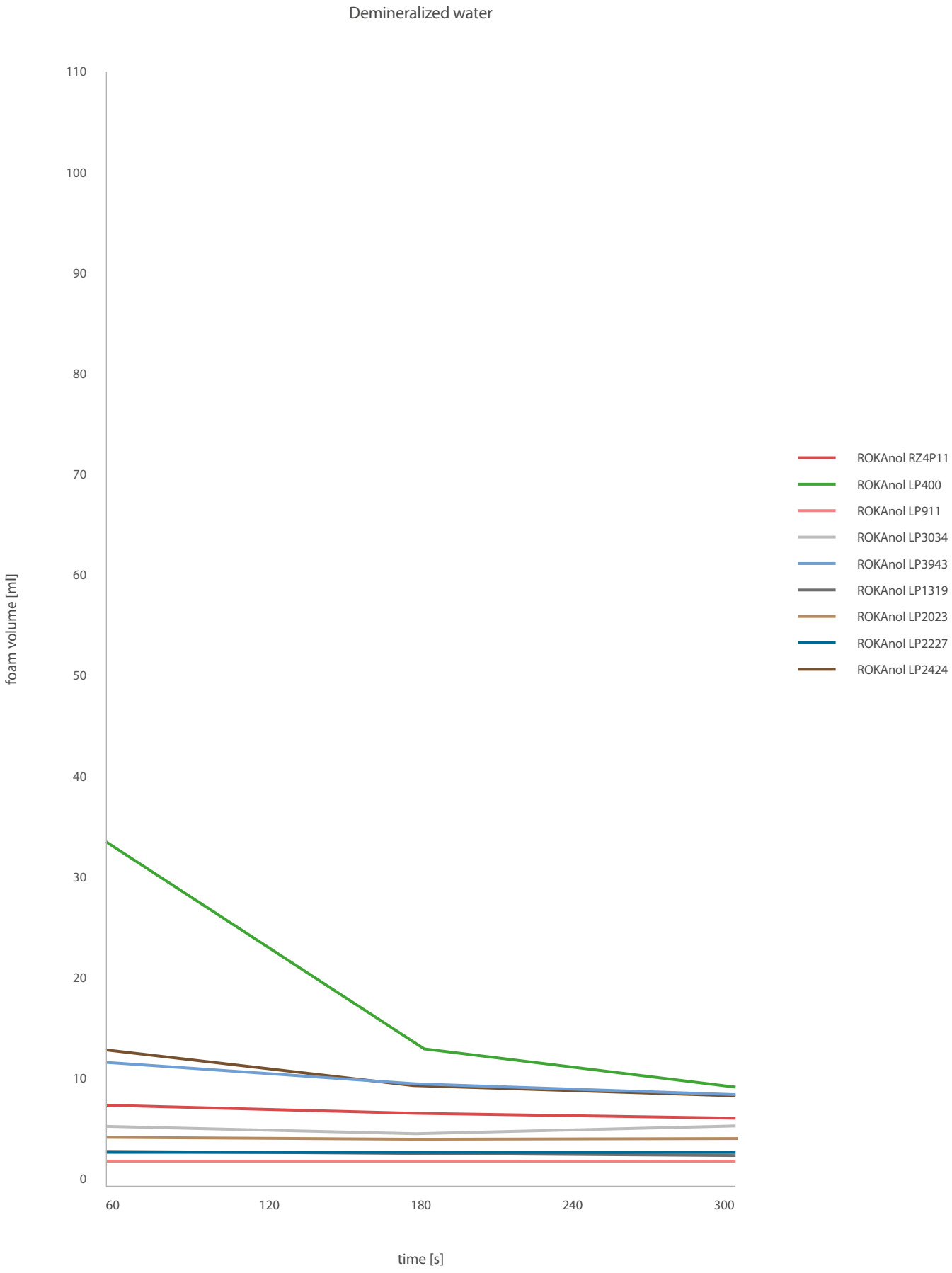
Foam value [ml]	Description
100-200	moderate
70-100	low
20-70	poor
0-20	non

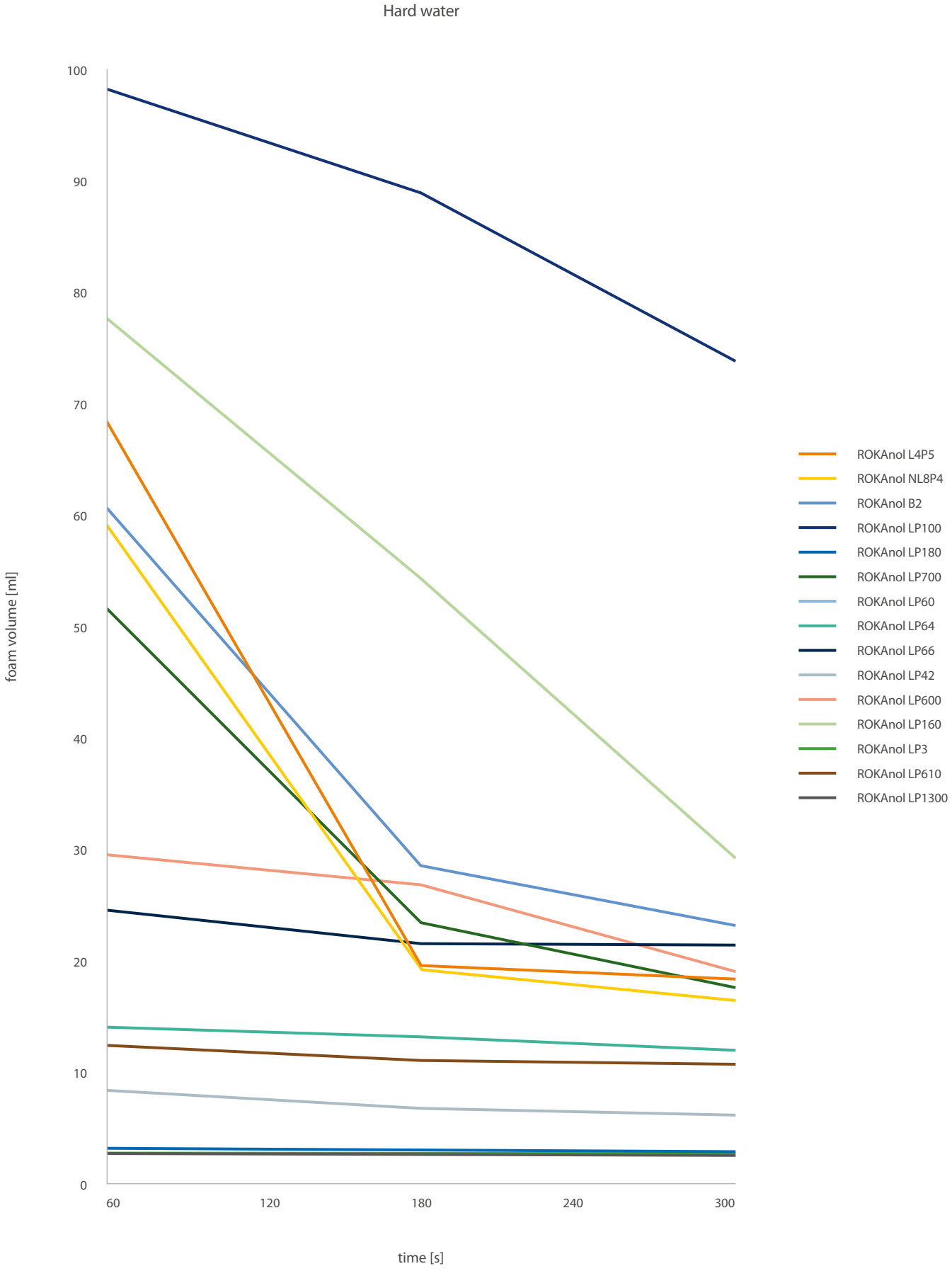
Foaming capability – modified Ross-Miles

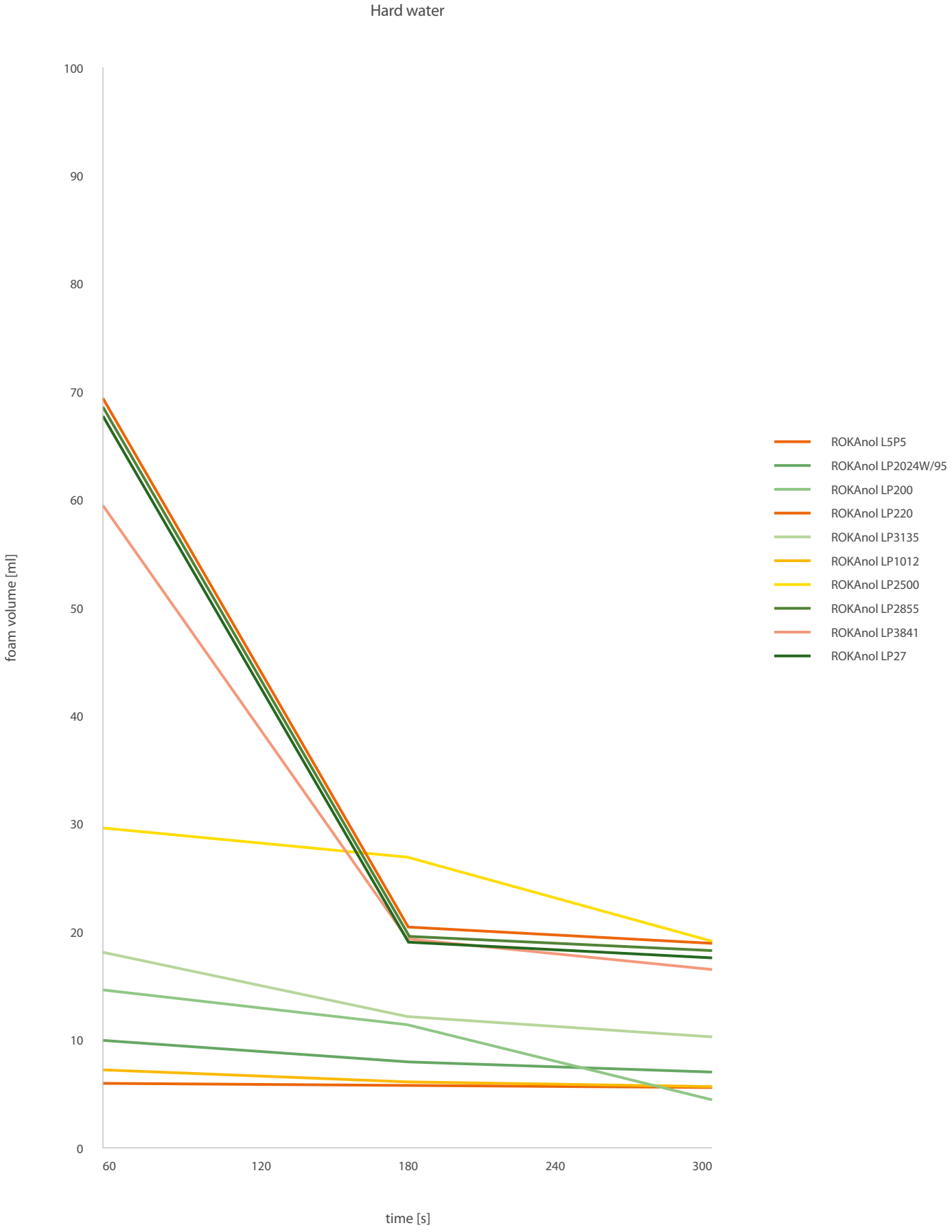
The other method of determination of foamability I conducted according to ASTM D1173 (Ross-Milles method), for solutions of 1g/l concentration in demineralized and hard water. At a temperature of 25ºC. The measures of foam volume are taken in 60 s, 180 s and 300 s.

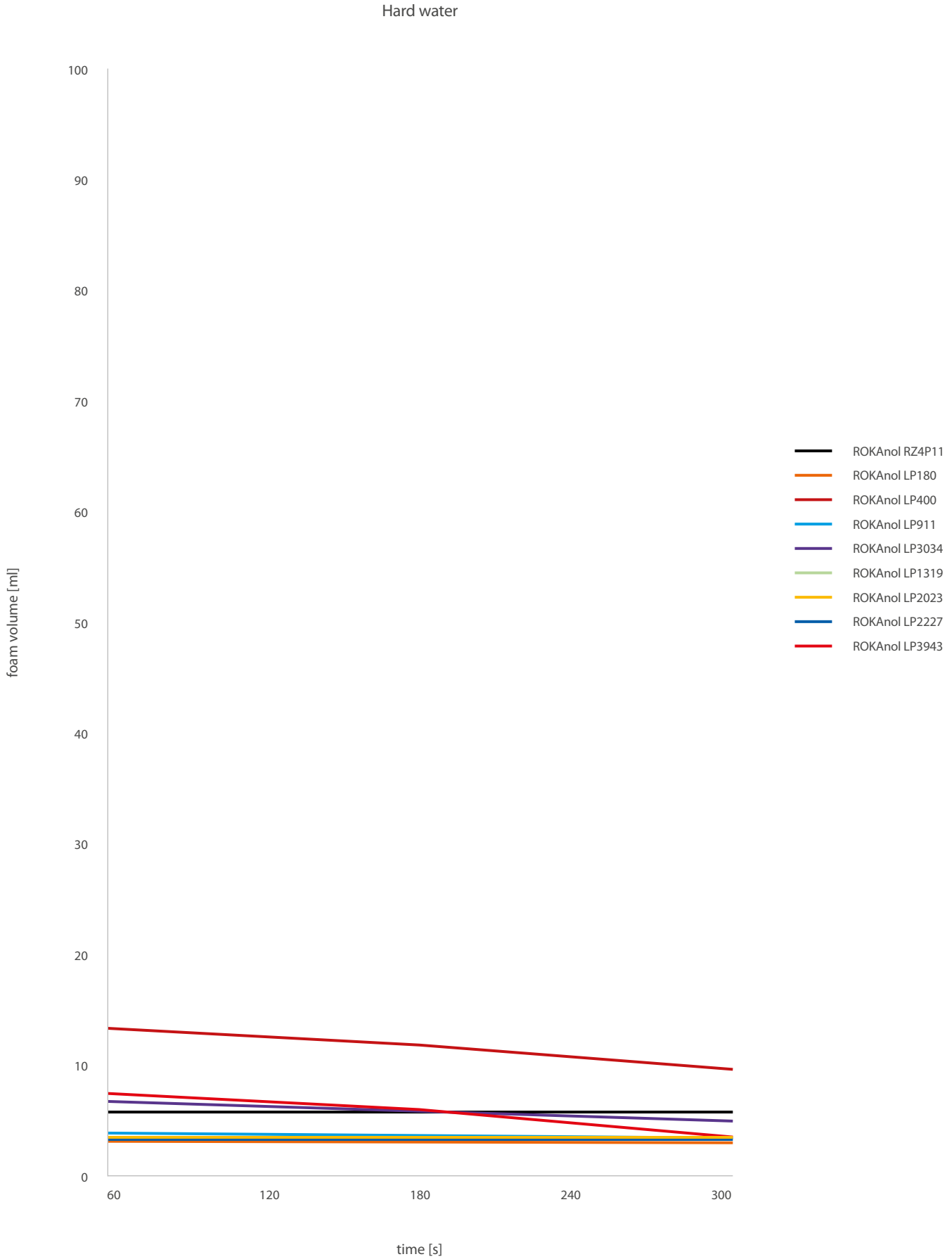



Hard water
110
100
90
80
70
60
50
40
30
20
10
0
foam volume [ml]
60
120
180
240
300
time [s]
ROKAnol LP2024W/95
ROKAnol LP2024W/95
ROKAnol LP200
ROKAnol LP220
ROKAnol LP3135
ROKAnol LP2500
ROKAnol LP2855
ROKAnol LP1012
ROKAnol LP1012
ROKAnol LP27


Demineralized water
110
100
90
80
70
60
50
40
30
20
10
0
foam volume [ml]
60
120
180
240
300
time [s]
ROKAnol RZ4P11
ROKAnol LP400
ROKAnol LP911
ROKAnol LP3034
ROKAnol LP3943
ROKAnol LP1319
ROKAnol LP2023
ROKAnol LP2227
ROKAnol LP2424


Hard water
foam volume [ml]
100
90
80
70
60
50
40
30
20
10
0
60
120
180
240
300
time [s]
ROKAnol L4P5
ROKAnol NL8P4
ROKAnol B2
ROKAnol LP100
ROKAnol LP180
ROKAnol LP700
ROKAnol LP60
ROKAnol LP64
ROKAnol LP66
ROKAnol LP42
ROKAnol LP600
ROKAnol LP160
ROKAnol LP3
ROKAnol LP610
ROKAnol LP1300


Hard water
foam volume [ml]
100
90
80
70
60
50
40
30
20
10
0
60
120
180
240
300
time [s]
ROKAnol L5P5
ROKAnol LP2024W/95
ROKAnol LP200
ROKAnol LP220
ROKAnol LP3135
ROKAnol LP1012
ROKAnol LP2500
ROKAnol LP2855
ROKAnol LP3841
ROKAnol LP27


Hard water
100
90
80
70
60
50
40
30
20
10
0
foam volume [ml]
60
120
180
240
300
time [s]
ROKAnol RZ4P11
ROKAnol LP180
ROKAnol LP400
ROKAnol LP911
ROKAnol LP3034
ROKAnol LP1319
ROKAnol LP2023
ROKAnol LP2227
ROKAnol LP3943

Wetting capability

The capability of effective wetting is a necessary and required property of surfactants in a large number of applications. Some of ROKAnols with low foaming properties are effective wetting agents. Other products with antifoaming profile exhibit poor wetting properties. The capability of wetting cotton fabric was determined according to EN 1772:2001.Wetting time (time in seconds necessary for wetting the textile material) was measured at ROKAnols solution with a concentration of 1.0 g/l in deionized water at a temperature of 25°C.

ROKAnol Series	Demineralized water
L4P5	low
L5P5	poor
LP2024W/95	poor
NL8P4	poor
B2	moderate
RZ4P11	non
LP100	moderate
LP180	non
LP200	non
LP220	non
LP400	poor
LP700	moderate
LP911	non
LP3034	non
LP3135	non
LP3943	non
LP60	non
LP64	non
LP66	poor
LP550	non
LP1319	non
LP2023	non
LP2227	non
LP2500	poor
LP2855	poor
LP3841	poor
LP600	poor
LP1300	non
LP2424	non
LP1012	non
LP160	poor
LP42	non
LP610	non
LP27	poor
LP3	non

Time (s)	Description
<20	excellent
20-50	good
50-100	moderate
100-300	low
>300	poor

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

ROKAnol \ H_2SO_4 conc. [g/l]	1	10	20	60	120	225
L4P5	●	●	●	●	●	●
L5P5	●	●	●	●	●	●
LP2024W/95	●	●	○	○	○	●
NL8P4	●	●	●	●	●	●
B2	●	●	●	●	●	●
RZ4P11	○	○	○	○	○	○
LP100	●	●	●	●	●	●
LP180	○	○	○	○	○	○
LP200	○	○	○	○	○	○
LP220	●	●	●	●	●	●
LP400	●	●	●	●	●	●
LP700	○	○	○	○	○	○
LP911	○	○	○	○	○	○
LP3034	○	○	○	○	○	○
LP3135	●	●	●	●	●	●
LP3943	○	○	○	○	○	○
LP60	○	○	○	○	○	○
LP64	○	○	○	○	○	○
LP66	○	○	○	○	○	●
LP550	○	○	○	○	○	○
LP1319	○	○	○	○	○	○
LP2023	○	○	○	○	○	○
LP2227	●	●	●	●	●	●
LP2500	●	●	●	●	●	●
LP2855	●	●	●	●	●	●
LP3841	●	●	●	●	●	●
LP600	●	●	●	●	●	●
LP1300	●	●	●	●	●	●
LP2424	○	○	○	○	○	○
LP1012	○	○	○	○	○	○
LP160	●	●	●	●	●	●
LP42	○	○	○	○	○	○
LP610	●	●	●	●	●	●
LP27	●	●	●	●	●	●
LP3	○	○	○	○	○	○

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

Alkali resistance

The analysis of this stability for low foaming surfactants has been performed in accordance with the PN-EN 14712:2005 Standard.

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

ROKAnol \NaOH conc. [g/l]	10	20	30	40	60	70	300	360
L4P5	○	○	○	○	○	○	○	○
L5P5	○	○	○	○	○	○	○	○
LP2024W/95	○	○	○	○	○	○	○	○
NL8P4	●	●	●	○	○	○	○	○
B2	●	●	○	○	○	○	○	○
RZ4P11	○	○	○	○	○	○	○	○
LP100	●	●	●	●	○	○	○	○
LP180	○	○	○	○	○	○	○	○
LP200	○	○	○	○	○	○	○	○
LP220	●	●	●	○	○	○	○	○
LP400	○	○	○	○	○	○	○	○
LP700	○	○	○	○	○	○	○	○
LP911	○	○	○	○	○	○	○	○
LP3034	○	○	○	○	○	○	○	○
LP3135	●	●	○	○	○	○	○	○
LP3943	○	○	○	○	○	○	○	○
LP60	○	○	○	○	○	○	○	○
LP64	○	○	○	○	○	○	○	○
LP66	○	○	○	○	○	○	○	○
LP550	○	○	○	○	○	○	○	○
LP1319	○	○	○	○	○	○	○	○
LP2023	○	○	○	○	○	○	○	○
LP2227	●	○	○	○	○	○	○	○
LP2500	●	●	○	○	○	○	○	○
LP2855	●	○	○	○	○	○	○	○
LP3841	●	●	●	○	○	○	○	○
LP600	○	○	○	○	○	○	○	○
LP1300	●	●	●	●	●	●	●	●
LP2424	○	○	○	○	○	○	○	○
LP1012	●	○	○	○	○	○	○	○
LP160	●	●	●	●	●	○	○	○
LP42	○	○	○	○	○	○	○	○
LP610	●	●	●	●	○	○	○	○
LP27	○	○	○	○	○	○	○	○
LP3	○	○	○	○	○	○	○	○

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

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