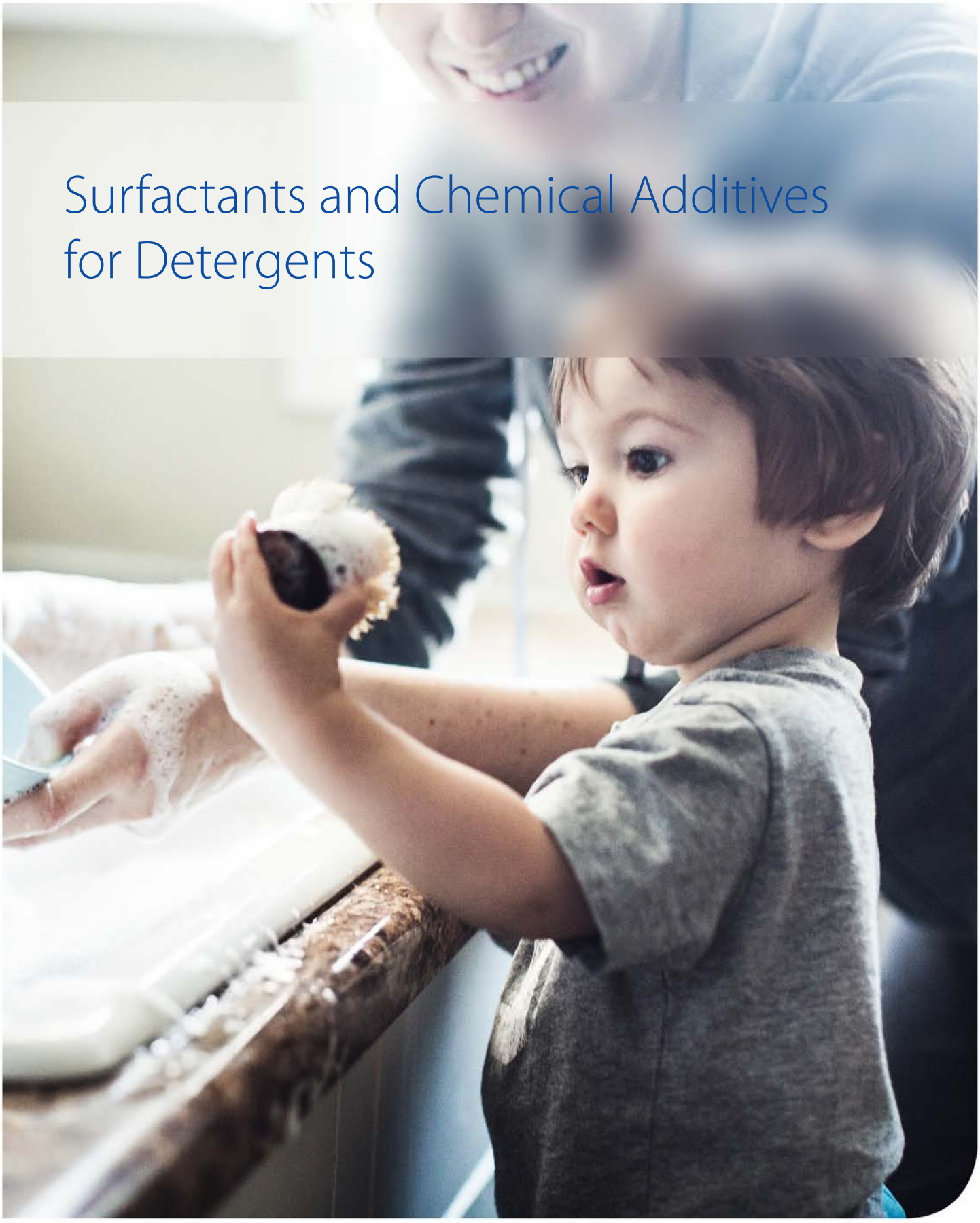
Surfactants and Chemical Additives for Detergents



pcc

More than Chemistry

Table of content

PCC GROUP
WE BUILD VALUE THROUGH
SUSTAINABLE INNOVATION 4

PCC ROKITA SA
INNOVATIONS FOR THE FUTURE 6

PCC ROKITA SA
CHEMICAL ADDITIVES FOR
THE PRODUCTION OF DETERGENTS 9

PCC EXOL SA
SUSTAINABLE TECHNOLOGIES FOR NEW
GENERATIONS 10

PCC EXOL SA
SURFACTANTS FOR THE PRODUCTION
OF DETERGENTS 16

NOTES FOR GUIDANCE CONCERNING THE
FUNCTIONAL PARAMETERS AND NOTATION
USED IN THE CATALOGUE 26

PCC GROUP
LOCATIONS AROUND THE WORLD 28

PCC Group
We build value through sustainable innovation

Each project or venture with a long-term success story shares one common thing – it's based on in-depth market research and on the knowledge acquired through years of experience. It is knowledge and experience that enables us to constantly aim higher and deliver greater value through dynamic and sustainable world-wide development of the PCC Group.

The companies, operating as a part of the PCC Group, act with responsibility and care. We only embark on new business challenges when we are certain that we have the skills and knowledge to achieve success. We operate in three major markets: chemicals, energy and logistics. Several dozen business units, managed by PCC SE, work in synergy to generate the greatest possible competitive advantage in both local and international markets. Each day nearly three thousand professionals contribute their energy, and effort, to secure the sustainable development of the PCC Group. The key element of our strategy is to ensure the development of each individual business unit through taking advantage of innovative technology and new market applications. We achieve our goals in a sustainable and responsible way – we care about the environment and the society within we operate.

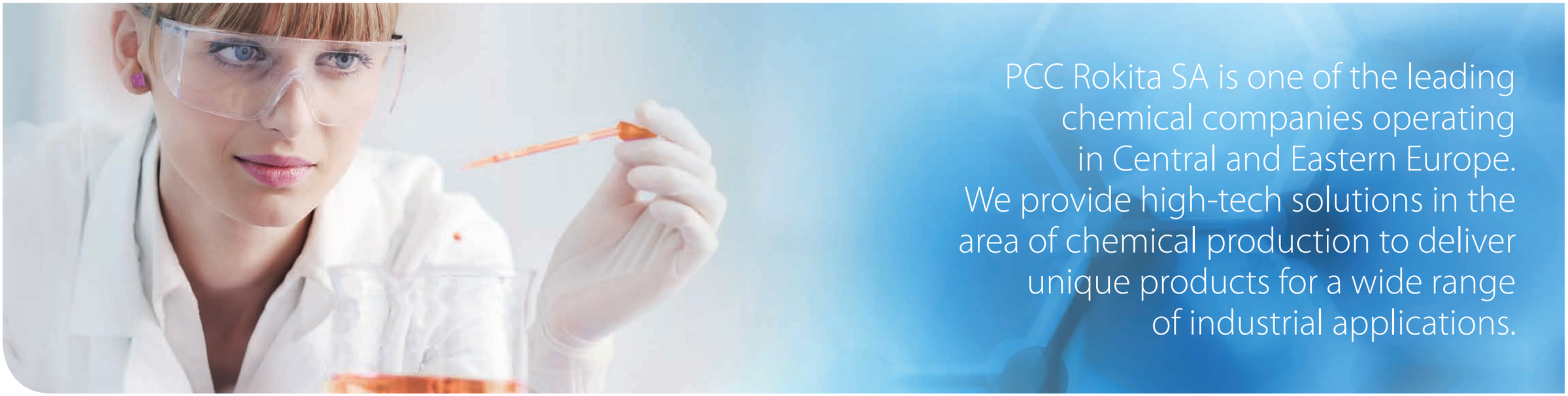
We are always ready to reach our strategic goal. Efficient and dynamic management helps our employees to fully develop their potential and therefore enhances the overall PCC Group value. Joint enterprises and individual initiatives of our companies are the results of the entrepreneurship culture promoted within the PCC Group. Our philosophy is built on simple values - integrity, trust and reliability. We believe that following those principles is the only way to build a long-term competitive advantage.

The PCC Group currently employs nearly 3000 people. We operate in 17 countries, in 39 different locations around the world. Our portfolio includes eight basic segments. Individual operational responsibility is assigned to seven of them - Polyols, Surfactants, Chlorine, Specialty Chemicals, Consumer Products, Energy and Logistics. Each of these segments is supported by 19 business units, all under the management of the PCC Group.

The divisions, segments and business units of the PCC Group

Divisions	Segments	Business units
Chemicals	Polyols	• Polyols • Polyurethane Systems
	Surfactants	• Anionic Surfactants • Non-ionic Surfactants • Amphoteric Surfactants (Betaines)
	Chlorine	• Chlorine • MCAA • Other Chlorine Downstream Products
	Speciality Chemicals	• Phosphorus and Naphthalene Derivatives • Alkylphenols • Chemicals and Commodities Trading • Quartzite
	Consumer Products	• Household and Industrial Cleaners, Detergents and Personal Care Products • Matches and Firelighters
Energy	Energy	• Renewable Energies • Conventional Energies
Logistics	Logistics	• Intermodal Transport • Road Haulage • Rail Transport
Holding	Holding	• Portfolio Management • Projects • Services

PCC Rokita SA
Innovations for the future



PCC Rokita SA is one of the leading chemical companies operating in Central and Eastern Europe. We provide high-tech solutions in the area of chemical production to deliver unique products for a wide range of industrial applications. Our key focus is the engineering, manufacturing and distribution of chemical products vital for broad range of businesses including plastics, construction, textiles, coating, and many others. We run our activity on a global basis. Sales outside of Poland represent approximately 60% of the total company revenue. Of this revenue, the most important market is Germany, which generates about 40% of our total sales.

Our product portfolio includes over 250 products that may be divided into four product groups:

- polyols
- PAG (polyalkylene glycols)
- alkalis, chlorine and chlorine derivatives
- phosphorus and naphthalene derivatives

The Company runs its activity based on strategic business units.

CHLORINE BUSINESS UNIT

The Chlorine Business Unit runs one of the most high-tech, environmentally friendly installations of membrane electrolysis. We provide – among many other products - chlorine and alkalis. Chlorine is a key raw material used in the production of 55% of all the products in the chemical industry. PCC Rokita SA is the biggest supplier of chlorine to water installations in Poland. Apart from chlorine, the unit also manufactures sodium hydroxide, chlorobenzene and hydrochloric acid.

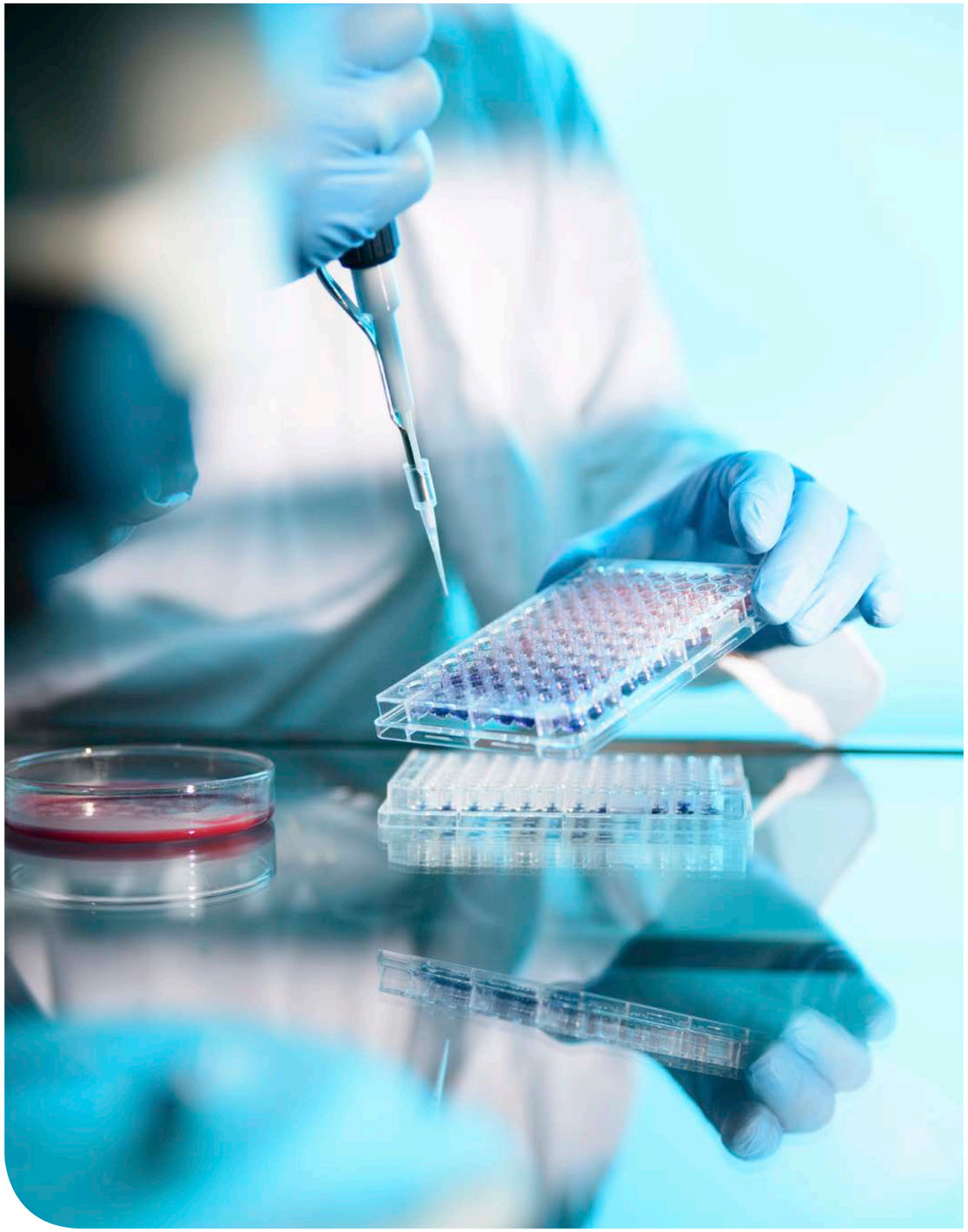
POLYOLS BUSINESS UNIT

The Polyols Business Unit is one of the biggest European manufacturers of polyether polyols registered under the ROKOPOL® trade name. The ROKOPOL® product line finds its application mainly in the production of flexible foams, rigid foams and CASE applications. The foams are being used in the furniture industry, automotive industry and many others. The unit's other important product line is ROKOLUB® - a wide range of PAG (polyalkylene glycols) providing the base stock for lubricants.

PHOSPHORUS CHEMISTRY BUSINESS UNIT

The Phosphorus Chemistry Business Unit is the biggest producer of phosphorus flame retardants, for polyurethane foams, in Eastern Europe. We also provide naphthalene based super plasticizers for large infrastructure investments in Central and Eastern Europe. Moreover, the portfolio of the business unit also includes innovative products like polymer additives (e.g. flame retardant plasticizers, antioxidants, heat stabilizers) as well as fire-resistant hydraulic fluids and lubricant additives.

As a dominating business entity, PCC Rokita SA runs the PCC Capital Group, which includes over a dozen companies operating mainly in the chemical industry and specialist services industry. These companies provide services both for the PCC Capital Group and for the external market. The strategic investor of the PCC Rokita Group is the German company - PCC SE, which operates on multiple international markets including raw materials for chemistry, transport, energy, coal, coke, fuels, plastics and metallurgy. The International PCC SE Group consociate 78 companies operating in 17 countries of the world.



PCC Rokita SA

The Chlorine Businness Unit at PCC Rokita SA is the producer and supplier of basic chemical raw materials for various industrial applications. Sodium lye in liquid and solid form finds its application in the production of household chemicals: sodium hypochlorite and hydrochloric acid. The membrane electrolysis system in which sodium lye is generated is one of the most high-tech systems in Europe. Hypochlorite is the derivative product of the electrolysis system, formed through the saturation of sodium lye with gaseous chlorine from own production. The synthesis system produces hydrochloric acid of unique, on the European scale, concentrations and exceptional purity.

The high quality and chemical purity of PCC Rokita SA products is a guarantee of stability and repeatability of the production processes.

PRODUCT NAME	CAUSTIC SODA	SODA LYE	SODIUM HYPOCHLORITE	HYDROCHLORIC ACID FOR FOOD INDUSTRY	SYNTHETIC HYDROCHLORIC ACID
PCC Rokita SA					
Chemical formula	NaOH	NaOH	NaClO	HCl	HCl
Alternative names	Sodium hydroxide	Sodium hydroxide, soda	Sodium chlorate (I), sodium salt of hypochlorous acid	Hydrogen chloride	Hydrogen chloride
Form appearance	Solid, flakes	Liquid	Liquid	Liquid	Liquid
Concentratiion	98%	Aqueous solution, ca. 50%	Aqueous solution	Aqueous solution, min. 33%	Aqueous solution, min. 33%
Quality	High	High	High – within a limited consumption time	Very high	High
Characteristics	Membrane electrolysis product	Membrane electrolysis product	Derivative product of the membrane electrolysis system	Inorganic synthesis product, approved for use in food industry systems	Inorganic synthesis product
Packing	25 kg bags	Pallet containers 1000L, road and railway tankers	Pallet containers 1000L, road tankers	Pallet containers 1000L, road and railway tankers	Pallet containers 1000L, road and railway tankers
Basic uses	Production of ionic surface-active agents, e.g. detergents. As a washing-disinfectant agent to decontaminate, unblock and clean surfaces and bathroom fittings.		Production of bleachers for textiles. As a disinfectant agent to decontaminate, degrease and clean surfaces and bathroom fittings. Not to be combined with hydrochloric acid.	HCl is used, mostly for the production of cleaning, stone removal and rust removal agents. Not to be combined with sodium hypochlorite.	

PCC EXOL SA
Sustainable technologies for new generations

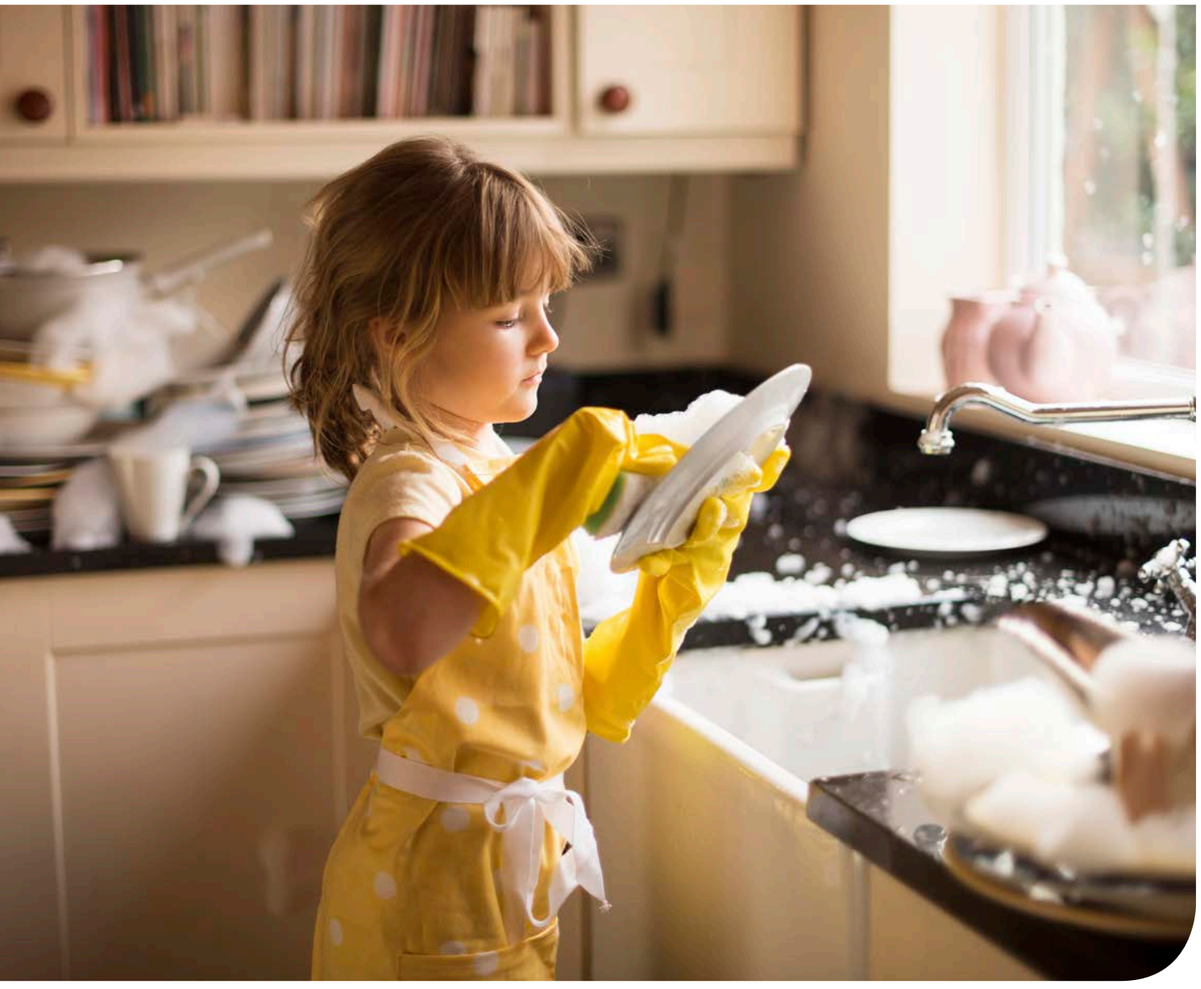
PCC Exol SA is a combination of the latest technology with experience in production and distribution of surfactants. The company has its headquarters in Brzeg Dolny, Poland, where the manufacturing units of anionic, nonionic and amphoteric surfactants are located. Flexibility of production enables us to offer a wide range of surfactants adjusted to the current customer needs. As one of the leading chemical products manufacturers, we continue to undertake investment activities based on the principle of sustainable development.

Our products have numerous industrial applications. Our surfactants are used as raw materials for various markets including: household chemicals, textile, agrochemicals, metalworking, oilfield industries, construction industry, paints & coatings, pulp and paper, and many others. Over the years, PCC Exol SA has developed core expertise in manufacturing specialty surfactants. We meet our customers' needs with a unique and versatile product portfolio, a broad expertise in surfactants chemistry and a high degree of flexibility.

Through close customer relationships and by maximizing the synergy of customers' application experience combined with our knowledge of chemistry, we continuously strive to offer tailor-made products and system solutions that contribute to your success.

We are continuously expanding our product range with new surfactants, focusing on safe chemistry and being friendly to people and environment. Our operations are conducted in full compliance with legal and other requirements, including environmental requirements, the design, production and sale of large volumes of specialist, often unique, chemical products for further processing requires coordinated cooperation of many services at the Company's disposal.

A certified quality management system and environmental management system has proven to be very useful. Those two integrated systems help our employees to be aware of their roles in reaching quality and environmental goals. Our specialists know that in the end, by carrying out their tasks in accordance with procedures applicable to their positions and other internal regulations, we provide our clients with exactly what they expect from us, acting within conditions of reasonable and legal usage with regard to the environment. Our strategic investor is the German company PCC SE, which operates internationally in three divisions: Chemical, Energy and Logistics.



Surfactants with washing and cleaning properties

The dynamic growth of the household chemistry sector is possible owing to the know-how of the producers of surfactants towards design and development of innovative products. PCC EXOL SA, as the company leans towards innovation, is enriching its offer with modern substances and chemical formulations applicable in different areas of household chemical use. The ongoing and scheduled investment projects will let us expand our product portfolio with - among other things - raw materials for the production of high quality detergents.

Wetting agents

The primary and most important purpose of wetting agents is to reduce surface tension between two phases. Their presence is required due to the proper deliquescence and spreading of clean¬ing formulation with active substances on the cleaning surface. The rich offer of PCC EXOL SA products allows you to choose from a wide range of both non-ionic and anionic wetting agents as components of cleaning substances.

Solubilizers

Solubilizers are agents improving the solvent power of components slightly soluble in water, or another medium. The numerous group of constituents of the substances constituting a contamination does not exhibit solubility in water, and mentioned here are fatty acids, fatty alcohols, triglycerides or hydrocarbons. The structure of solubilizers allows for the creation of self-organizing structures, allowing for the dissolving of hydrophobic component of the cleaning agent in the aqueous cleaning substances.

Detergents

Detergency is a process of removing dirt from a soiled surface, while a detergent is a product or a product blend making this process possible. Surface active agents' cleaning properties are linked to their' dual structure. The hydrophobic particles of the surfactants cling themselves to the particles of dirt creating a spherical composition - a micelle. At the same time a layer separating particles of dirt from the hydrophilic medium is formed. As an effect we can remove the dirt easily. PCC EXOL SA offers a wide range of anionic and non-anionic products with detergency properties, yielding an opportunity to create various professional solutions in the area of professional and institu¬tional cleaning. The rich offer of PCC EXOL SA products enables our clients to choose both non-ionic and anionic solubilizers improving the solubility of added components of cleaning substances.

Dispersants

A primary function of dispersants is to support fragmentation into small particles. Dispersants are being used to create dyes, remove particles of dirt, and as a component of many other various recipes. Among the rich offer of PCC Exol there is a number of dispersers deliberately dedicated to household chemical products.

Emulsifiers

The presence of an emulsifier in a cleaning substance is of utmost importance. The hydrophobic nature of the majority of smudges of dirt present on a hard flat surface, of fibres of a cloth, subject to the washing process, prevent the combination with water. This makes it difficult to remove the particles of dirt from the washing or cleaning bath. The choice of a proper emulsifying agent will guarantee the reduction of the surface tension at the boundary of phases, thus it will allow to perfectly degrease and clean the surface. Our product portfolio includes both non-ionic and anionic emulsifiers, applicable in almost every household chemical product.

Low-foaming agents

Low-foaming agents prevent the creation of abundant foam while at the same time maintaining its surface-active properties. For formulations in which the effect of intensive foaming is not desirable, the research department of PCC EXOL SA has developed a series of non-ionic low-foaming agents dedicated for various household chemical applications.

Thickeners

According to the prevailing market trend, formulations of a high viscosity are equated with the high quality of the final product. This effect is obtained through the addition of thickeners belonging to the group of anionic, non-ionic and amphoteric surfactants. In the rich offer of PCC Exol there are substances that have very good thickening properties, due to which they allow the increase of the viscosity of the final formulation.

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ABS Acid	•	•	•	•				•	•	•			•			85536-14-7	A	liquid	–	Dodecylbenzenesulfonic acid	min. 96.0	–
ABS Acid/1	•	•	•	•				•	•	•			•			85536-14-7	A	liquid	–	Dodecylbenzenesulfonic acid	min. 90.0	–
ABSNa 30	•		•					•	•	•			•			68411-30-3	A	liquid	–	Sodium dodecylbenzenesulfonate	28.0-32.0	–
ABSNa 50	•		•					•	•	•			•			68411-30-3	A	liquid/ paste	–	Sodium dodecylbenzenesulfonate	48.0-52.0	–
POLIkol 200™							•	•		•			•			25322-68-3	N	liquid	–	Polyoxyethylene glycol	min. 99.0	530-590[4]
POLIkol 300™							•	•		•			•			25322-68-3	N	liquid	–	Polyoxyethylene glycol	min. 99.0	360-390[4]
POLIkol 400™							•	•		•			•			25322-68-3	N	liquid	–	Polyoxyethylene glycol	min. 99.0	270-300[4]
POLIkol 600™							•	•		•			•			25322-68-3	N	liquid/ paste	–	Polyoxyethylene glycol	min. 99.0	170-200[4]
POLIkol 1500™							•	•		•			•			25322-68-3	N	wax	–	Polyoxyethylene glycol	min. 99.0	70-80[4]
POLIkol 1500™ Flakes							•	•		•			•			25322-68-3	N	flakes	–	Polyoxyethylene glycol	min. 98.5	70-80[4]
POLIkol 4500™							•	•		•			•			25322-68-3	N	wax	–	Polyoxyethylene glycol	min. 99.0	23-28[4]
POLIkol 4500™ Flakes							•	•		•			•			25322-68-3	N	flakes	–	Polyoxyethylene glycol	min. 99.0	23-28[4]
POLIkol 6000 ™							•	•		•			•			25322-68-3	N	wax	–	Polyoxyethylene glycol	min. 99.0	16-23[4]
POLIkol 6000™ Flakes							•	•		•			•			25322-68-3	N	flakes	–	Polyoxyethylene glycol	min. 99.0	16-23[4]
POLIkol 8000™							•	•		•			•			25322-68-3	N	wax	–	Polyoxyethylene glycol	min. 99.0	12-16[4]
POLIkol 8000™ Flakes							•	•		•			•			25322-68-3	N	flakes	–	Polyoxyethylene glycol	min. 99.0	12-16[4]

A – anionic, N – non-ionic

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROSULfan D™	•	•		•			•	•		•	•	•				142-87-0	A	liquid	–	Sodium Decyl Sulfate	35-40	–
ROSULfan A	•	•		•			•	•		•		•	•			931-558-1	A	liquid	–	Ammonium Lauryl Sulfate	26-28	–
ROSULfan L™	•	•		•			•	•		•		•	•			85586-07-8	A	liquid	–	Sodium Lauryl Sulfate	27.0-30.0	–
ROKAnol B2™	•		•	•	•	•		•	•			•	•	•		68002-96-0	N	liquid	6.2	Alcohols, C16-18 + EO/PO	min. 99.5	30-39 A
ROKAnol D3W™	•							•	•	•		•	•			68131-33-5	N	liquid/ paste	7.8	Alcohols, C10-16 + 3 EO	min. 99.7	164-172[3]
ROKAnol D5™		•	•					•	•	•		•	•			68002-97-1	N	liquid	11.9	Alcohols, C10-16 + 5 EO	min. 99.5	40-43 A
ROKAnol D7™		•	•					•	•	•		•	•			68002-97-1	N	liquid	13.1	Alcohols, C10-16 + 7 EO	min. 99.5	73-76 A
ROKAnol DB3™	•	•	•	•			•	•					•			68131-39-5	N	liquid/ paste	7.8	Alcohols, C12-15 + 3 EO	min. 99.7	164-172[4]
ROKAnol DB5™	•	•	•	•			•	•	•	•			•			68131-39-5	N	liquid	10.5	Alcohols, C12-15 + 5 EO	min. 99.5	65-72 D
ROKAnol DB7™	•	•	•	•			•	•	•	•			•			68131-39-5	N	liquid/ paste	12.0	Alcohols, C12-15 + 7 EO	min. 99.5	100-114[4]
ROKAnol DB7W™	•	•	•	•			•	•	•	•			•			68131-39-5	N	oily liquid	12.0	Alcohols, C12-15 + 7 EO	90.0-93.0	48-52 A
ROKAnol DB11W™	•	•	•	•			•	•		•			•			68131-39-5	N	oily liquid/ paste	13.6	Alcohols, C12-15 + 11 EO	88.0-92.0	60-64 C
ROKAnol GA8™			•				•	•	•			•	•			160875-66-1	N	liquid/ paste	–	Alcohols, C10 + 8 EO	min. 99.0	54-57 A
ROKAnol ID5™	•	•	•	•			•	•		•		•	•			68439-46-2	N	liquid	11.7	Alkohole, C10-Iso + 5 EO	min. 99.5	66-69 E
ROKAnol ID7™	•	•	•	•			•	•	•	•		•	•			68439-45-2	N	liquid	13.2	Alcohols, C10-Iso + 7 EO	min. 99.5	56-62 A
ROKAnol ID8™	•	•	•	•			•	•	•	•		•	•			68439-45-3	N	liquid	13.8	Alcohols, C10-Iso + 8 EO	min. 99.5	65-68 A
ROKAnol IT3™	•		•				•						•			25322-68-3	N	liquid	–	Alcohols, C10-Iso + 3EO	min. 99.0	12-16[4]

A – anionic, N – non-ionic

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROKAnol IT5™	•		•					•		•			•			69011-36-5	N	liquid	10.5	Alcohols, C13-Iso + 5 EO	min. 99.5	60-62 E
ROKAnol IT6™	•		•					•	•	•		•	•			69011-36-5	N	liquid	11.4	Alcohols, C13-Iso + 6 EO	min. 99.5	69-72 D
ROKAnol IT6R™	•		•					•	•	•		•	•			69011-36-5	N	liquid	11.5	Alcohols, C13-Iso + 6 EO	min. 99.5	71-74 D
ROKAnol IT7™	•		•					•	•	•		•	•			69011-36-5	N	liquid	12.1	Alcohols, C13-Iso + 7 EO	min. 99.0	65-70 E
ROKAnol IT7W™	•		•					•	•	•		•	•			69011-36-5	N	liquid	12.1	Alcohols, C13-Iso + 7 EO	89.0-91.0	65-70 E
ROKAnol IT8™	•		•					•	•	•		•	•			69011-36-5	N	liquid/ paste	12.8	Alcohols, C13-Iso + 8 EO	min. 99.5	76-78 D
ROKAnol IT9™	•		•					•	•	•		•	•			69011-36-5	N	oily liquid/ paste	13.3	Alcohols, C13-Iso + 9 EO	min. 99.0	56-60 A
ROKAnol IT9R™	•		•					•	•	•		•	•			69011-36-5	N	oily liquid/ paste	13.4	Alcohols, C13-Iso + 9 EO	min. 99.0	61-63 A
ROKAnol IT9W™	•		•					•	•	•		•	•			69011-36-5	N	liquid	13.3	Alcohols, C13-Iso + 9 EO	89.0-92.0	58-62 A
ROKAnol IT10™	•		•					•	•	•		•	•			69011-36-5	N	liquid/ paste	13.8	Alcohols, C13-Iso + 10 EO	min. 99.5	74 -77 A
ROKAnol IT12™	•		•					•		•		•	•			69011-36-5	N	liquid/ paste	14.5	Alcohols, C13-Iso + 12 EO	min. 99.5	79-85 A
ROKAnol K3™	•	•		•									•			9005-04-03	N	viscous liquid/ semi - liquid paste	7.0	Alcohols, C16-18 unsaturated + 3 EO	min. 99.0	4.2-5.1[1]
ROKAnol K5™	•	•		•					•	•			•			9005-04-3	N	liquid/ paste	9.2	Alcohols, C16-18 unsaturated + 5 EO	min. 99.0	7.0-8.5[1]
ROKAnol K7™	•	•		•					•	•			•			9005-04-3	N	viscous liquid/ semi - liquid	10.8	Alcohols, C16-18 unsaturated + 7 EO	min. 99.5	9.0-10.5[1]
ROKAnol K14™	•	•		•						•	•		•			9005-04-3	N	paste/ wax	14.0	Alcohols, C16-18 unsaturated + 14 EO	min. 99.5	63-68 C
ROKAnol K18™	•	•		•						•	•		•			9005-04-3	N	paste/ wax	16.3	Alcohols, C16-18 unsaturated + 18 EO	min. 99.0	74-79 C

A – anionic, N – non-ionic

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROKAnol K21™	•	•		•						•	•		•			9005-04-3	N	paste/ wax	16.5	Alcohols, C16-18 unsaturated + 21 EO	min. 99.5	74-79 C
ROKAnol L3A™	•	•	•	•			•	•		•			•			68551-12-2	N	liquid	8.0	Alcohols, C12-16 + 3 EO	min. 95.0	53-55 E
ROKAnol L4™	•		•	•					•	•		•	•			68002-97-1	N	liquid	10.0	Alcohols, C12-14 + 4 EO	min. 99.5	59-63 E
ROKAnol L4P5™	•	•	•	•	•	•			•	•				•		68439-51-0	N	liquid	5.3	Alcohols, C12-14 + EO/PO	min. 99.5	98-108 4)
ROKAnol L5A™	•	•	•	•			•			•			•			68551-12-2	N	liquid	10.5	Alcohols, C12-16 + 5 EO	min. 99.5	66-75 D
ROKAnol L5P5™	•	•	•	•	•	•			•	•			•	•		68439-51-0	N	liquid	6.0	Alcohols, C12-14 + EO/PO	min. 99.5	27-31 A
ROKAnol L7A™	•	•	•	•			•			•			•			68551-12-2	N	liquid	12.9	Alcohols, C12-16 + 7 EO	min. 99.5	56-62 A
ROKAnol L7™	•	•	•	•			•		•	•		•	•			103819-01-8	N	liquid	12.9	Alcohols, C12-14 + 7 EO	min. 99.0	30-40 C
ROKAnol L7W™	•	•	•	•			•		•	•		•	•			103819-01-8	N	liquid	12.9	Alcohols, C12-14 + 7 EO	89.0-92.0	30-40 C
ROKAnol L10™	•	•	•	•			•		•	•		•	•			103819-01-8	N	paste	14.1	Alcohols, C12-16 + 10 EO	min. 99.5	59-63 C
ROKAnol L10/80™	•	•	•	•			•		•	•		•	•			103819-01-8	N	oily liquid	14.1	Alcohols, C12-14 + 10 EO	77.0-81.0	58 -63 C
ROKAnol L80/50W™	•	•		•	•	•			•	•		•				68439-51-0	N	viscous liquid	17.6	Alcohols, C12-14 + EO/PO	47.0-51.0	–
ROKAnol L22™	•	•								•	•	•	•		•	68551-12-2	N	wax	17.0	Alcohols, C12-14 + 22 EO	min. 99.7	46-52[4]
ROKAnol LK1™	•	•											•		•	68439-50-9	N	liquid	3.7	Alcohols, C12-14 + EO	min. 97.0	231-241[4]
ROKAnol LK2™	•	•							•	•		•	•		•	68439-50-9	N	liquid	6.2	Alcohols, C12-14 + 2 EO	min. 99.7	192-204[4]
ROKAnol LK2A™	•	•							•	•			•		•	68439-50-9	N	liquid	6.2	Alcohols, C12-16 + 2 EO	min. 99.7	196-204[4]

A – anionic, N – non-ionic

PRODUCT	APPLICATION								FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROKAnol LK3™	•	•	•	•			•	•	•	•			•		•	68002-97-1	N	liquid/ paste	7.8	Alcohols, C12-14 + 3 EO	min. 99.7	165-173[4]
ROKAnol LN75/50™	•			•						•	•	•	•			61790-81-6	N	viscous liquid	17.8	Lanolin + 75 EO	48.0-52.0	–
ROKAnol LN75K™	•			•						•	•		•			61790-81-6	N	solid body	17.8	Lanolin + 75 EO	min. 99.0	–
ROKAnol LP2024™	•		•		•	•	•	•	•	•		•	•	•		37251-67-5	N	liquid	6.3	Alcohols, C10 + EO/PO	min. 99.5	20-24 A
ROKAnol LP2126™	•		•		•	•				•		•		•		68002-96-0	N	liquid	1.3	Alcohols, C16-18 + EO/PO	min. 99.5	21-26 D
ROKAnol LP2529™	•	•	•		•	•		•		•			•	•		68551-13-3	N	liquid	3.5	Alcohols, C12-14 + EO/PO	min. 99.5	25-29 E
ROKAnol LP27™	•		•		•	•		•	•	•			•	•		68439-51-0	N	liquid	6.0	Alcohols, C12-14 + EO/PO	min. 99.5	25-31 A
ROKAnol LP3135™	•		•		•	•		•	•	•		•		•		154518-36-2	N	liquid	7.5	Alcohols, C9-11-Iso-, C10-rich + EO/PO	94.0-96.0	31-35 A
ROKAnol LP700™					•	•	•	•	•	•		•		•		–	N	liquid	–	Polyoxyalkylene fatty alcohol ether	99.5	54-57,5 D
ROKAnol NL3™	•	•	•	•			•	•	•	•		•	•			68439-46-3	N	liquid	8.5	Alcohols, C9-11 + 3 EO	min. 99.7	185-193[4]
ROKAnol NL5™	•	•	•	•			•	•	•	•		•	•			160901-09-7	N	liquid	11.6	Alcohols, C9-11 + 5 EO	min. 99.5	33-39 A
ROKAnol NL6™	•	•	•	•			•	•	•	•		•	•			160901-09-7	N	liquid	12.5	Alcohols, C9-11-Iso and linear + 6 EO	min. 99.5	50-57 A
ROKAnol NL8™	•	•	•	•			•	•	•	•		•	•			160901-09-7	N	liquid	13.8	Alcohols, C9-11-Iso and linear + 8 EO	min. 99.5	78-85 A
ROKAnol NL8P4™	•	•	•	•			•	•	•	•		•	•	•		154518-36-2	N	liquid	9.5	Alcohols, C9-11-Iso, C10-rich + EO/PO	min. 99.0	38-48 A
ROKAnol NL9™	•	•	•	•			•	•	•	•		•	•			160901-09-7	N	liquid	14.1	Alcohols, C9-11-Iso and linear + 8 EO	min. 99.5	82 - 85 D
ROKAnol O3™	•	•					•			•	•	•	•	•		9004-98-2	N	liquid	7.1	Alcohols, C16-18 unsaturated + 3 EO	min. 99.0	37-41 E
ROKAnol O18™	•	•					•			•	•	•	•			9004-98-2	N	paste	16.3	Alcohols, C16-18 unsaturated + 22 EO	min. 99.0	70-74 C

A – anionic, N – non-ionic

PRODUCT	APPLICATION								FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROKAnol O20™	•	•					•			•	•	•	•			9004-98-2	N	paste	16.3	Alcohols, C16-18 unsaturated + 20 EO	min. 99.0	71-76 C
ROKAnol O100™	•	•					•			•	•	•	•			9004-98-2	N	wax	18.9	Alcohols, C16-18 unsaturated + 100 EO	min. 99.0	–
ROKAnol RZ4P11™	•							•			•	•		•		68002-96-0	N	liquid	3.3	Alcohols, C16-18 + EO/PO	min. 99.0	23-27 E
ROKAnol T6™	•							•				•	•			68439-49-6	N	wax	10.0	Alcohols, C16-18 + 6 EO	min. 99.5	105-115[4]
ROKAnol T10™	•							•				•	•			68439-49-6	N	wax	11.7	Alcohols, C16-18 + 10 EO	min. 99.5	85-95[4]
ROKAnol T12™	•							•				•	•			68439-49-6	N	wax	13.5	Alcohols, C16-18 + 12 EO	min. 99.5	85-100 A
ROKAnol T18™	•							•				•	•			68439-49-6	N	wax	16.3	Alcohols, C16-18 + 18 EO	min. 99.0	74-77 C
ROKAnol UD3™	•	•	•				•	•	•	•			•	•		127036-24-2	N	liquid	8.7	Alcohols, C11-Iso + 3 EO	min. 99.5	43-48 E
ROKAnol UD5™	•	•	•				•	•	•	•			•	•		127036-24-2	N	liquid	11.0	Alcohols, C11-Iso + 5 EO	min. 99,5	60-65 E
ROKAnol UD7™	•	•	•				•	•	•	•			•	•		127036-24-2	N	liquid	12.3	Alcohols, C11-Iso + 7 EO	min. 99.0	51-56 A
ROKAmid KAD™	•		•				•	•	•	•			•		•	–	N	liquid	–	Cocoamide DEA	min. 99.5	–
ROKAmid MRZ17™	•									•			•			221045-17-6	N	liquid	–	Amides, ethoxylated rapeseed oil	min. 99.5	58-64 C
ROKAmid R2™	•		•				•	•		•	•		•			–	N	liquid	–	Fatty acids polyoxyalkilene amides	min. 99.5	74-80 E
ROKAmid RAD™	•		•				•	•		•	•		•		•	68603-38-3	N	liquid	–	Oleamide DEA	min. 90.0	–
ROKAmid RZ5P6™	•						•				•		•			–	N	liquid	–	Block copolymer of ethylene and propylene oxides with rape oil fatty acids ethanolamide	min. 99.5	80-110[4]
ROKAmid TW5P6™	•									•	•		•			–	N	liquid	–	Polyoxyalkylene amide of fatty acids	min. 99.5	80-120[4]

A – anionic, N – non-ionic

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners								
ROKAmin K15™							•		•	•		•	•			61791-14-8	N	liquid	15.5	PEG - 15 Cocamine	min. 97.0	63-73[3]
ROKAmin SR5™							•	•	•	•		•	•			61791-26-2	N	liquid/ liquid paste	9.8	Tallow Amine + 5.8 EO	min. 99.0	105-110[3]
ROKAmin SR8™			•				•	•	•	•		•	•			61791-26-2	N	liquid/ paste	12.4	Tallow Amine + 10 EO	72.0-77.0	55-65[3]
ROKAmin SR8™ CONCENTRATE			•				•	•	•	•		•	•			61791-26-2	N	viscous liquid	12.4	Tallow Amine + 10 EO	min. 99.0	75-80[3]
ROKAmin SR8P4™			•				•	•	•	•		•	•	•		68213-26-3	N	liquid	8.8	Tallow Amine + EO/PO	min. 99.0	55-65[3]
ROKAmin SR11™			•				•	•	•	•		•	•			61791-26-2	N	liquid/ liquid paste	12.5	Tallow Amine + 11 EO	min. 99.0	70-75[3]
ROKAmin SR22™			•				•	•	•	•		•	•			61791-26-2	N	paste	16.1	Tallow Amine + 25 EO	min. 99.0	37-45[3]
ROKAcet HR40™	•	•			•		•			•		•				61788-85-0	N	paste	–	Castor oil, hydrogenated + 40 EO	min. 99.0	60-67[2]
ROKAcet K7™	•	•		•			•	•		•	•	•		•		61791-29-5	N	liquid	11.6	Coconut fatty acid, ethoxylated	min. 99.0	104-112[2]
ROKAcet KO300G™	•	•		•			•	•		•	•	•				68201-46-7	N	liquid	–	PEG-7 Glyceryl Cocoate	min. 99.0	90-100[2]
ROKAcet O7™	•	•		•			•	•		•	•	•				9004-96-0	N	liquid	10.6	Oleate + 7 EO	min. 99.0	86-96[2]
ROKAcet R11™	•	•		•			•	•		•	•	•				61791-12-6	N	liquid	6.9	Castor oil + 11 EO	min. 99.0	45-50 E
ROKAcet R26™	•	•		•			•	•		•	•	•				61791-12-6	N	liquid	11.0	Castor oil + 26 EO	min. 99.5	74-82[2]
ROKAcet R40™	•	•		•			•	•		•	•	•		•		61791-12-6	N	paste	13.0	Castor oil + 40 EO	min. 99.0	55-64[2]
ROKAcet R40W™	•	•		•			•	•		•	•	•				61791-12-6	N	liquid	13.0	Castor oil + 40 EO	89.0-91.0	48-59[2]
ROKAcet R70™	•	•		•			•	•		•	•	•				61791-12-6	N	paste	15.4	Castor oil + 70 EO	min. 99.0	40-45[2]
ROKAcet R250™	•	•		•			•	•		•	•	•				61791-12-6	N	solid	18.5	Castor oil + 250 EO	min. 99.0	65-70 C

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PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners								
ROKAcet RZ17™	•	•		•			•	•		•	•		•			70914-02-2	N	oily liquid	–	Glycerides of fatty acids C14-18 + 17 EO	min. 99.0	90-110[2]
ROKAcet RZG12™	•	•		•			•	•		•	•		•			–	N	liquid	–	esters of rapeseed oil acids, glycerine + 12 EO	min. 99.0	117-130[2]
ROKAcet S7™	•	•		•			•	•		•	•		•			9004-99-3	N	pasta	10.6	Stearate + 7 EO	min. 99.0	92-97[2]
ROKAcet S24™	•	•		•			•	•		•	•	•	•			9004-99-3	N	wax	15.8	Stearate + 24 EO	min. 99.0	40-45[2]
ROKAmer 1010™	•	•					•	•	•	•		•	•	•		9003-11-6	N	wax	16.6	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	49-52 A
ROKAmer 1010/50™	•	•					•	•	•	•		•	•	•		9003-11-6	N	viscous liquid	16.6	Block copolymer of ethylene oxide and propylene oxide	48.0-54.0	–
ROKAmer 2000™			•		•	•	•	•	•	•		•	•	•		9003-11-6	N	liquid	2.4	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	23-27 A
ROKAmer 2000S™			•		•	•	•	•	•	•		•	•	•		9003-11-6	N	liquid	2.4	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	23-27 A
ROKAmer 2100™					•	•	•	•	•	•		•	•	•		9003-11-6	N	liquid	3.4	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	17-20 A
ROKAmer 2330™					•	•	•	•	•	•		•	•	•		9003-11-6	N	viscous liquid	4.9	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	21-26 A
ROKAmer 2600™			•		•	•	•	•	•	•		•	•	•		9003-11-6	N	liquid	5.6	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	16-20 A
ROKAmer 2600S™			•		•	•	•	•	•	•		•	•	•		9003-11-6	N	liquid	5.6	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	16-20 A
ROKAmer 2950™			•		•	•	•	•	•	•		•	•	•		9003-11-6	N	viscous liquid/ liquid paste	8.1	Block copolymer of ethylene oxide and propylene oxide	min. 99.0	54-60 A
ROKAmina K30™	•		•	•			•	•	•	•		•			•	–	Am	liquid	–	Cocoamidopropyl Betaine	29-32	–
ROKAmina K30B™	•	•	•	•			•	•	•	•		•			•	–	Am	liquid	–	Coco Betaine	29-32	–

A – anionic, N – non-ionic, Am - amphoteric

PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
ROKAmina K40™	•		•	•			•	•	•	•			•		•	–	Am	liquid	–	Cocoamidopropyl Betaine	min. 37	–
ROKwin 60™			•				•		•		•		•		•	1338-41-6	N	solid	4.7	Sorbitan Monoestrate	min. 98.5	145-160[2]
ROKwin 80™			•				•		•		•		•		•	1338-43-8	N	oily liquid	4.3	Sorbitan Monooleate	min. 99.0	145-170[2]
ROKwinol 60™			•				•		•		•		•		•	9005-67-8	N	liquid	14.9	Sorbitan Monostearate + 20 EO	min. 99.0	15-55[2]
ROKwinol 80™			•				•		•		•		•		•	9005-65-6	N	liquid/ paste	15.0	Sorbitan Monooleate + 20 EO	min. 99.0	45-55[3]
SULFOROKAnol L170/1™	•			•			•	•	•	•			•			68891-38-3	A	liquid/ paste	–	Sodium Laureth Sulfate +1 EO	68.0-72.0	–
SULFOROKAnol L225/1™	•			•			•	•	•	•			•			68891-38-3	A	liquid	–	Sodium Laureth Sulfate +2 EO	25.0-27.0	–
SULFOROKAnol L227/1™	•			•			•	•	•	•			•			68891-38-3	A	liquid	–	Sodium Laureth Sulfate +2 EO	–	–
SULFOROKAnol L270/1™	•	•		•			•	•	•	•			•			68891-38-3	A	liquid/ paste	–	Sodium Laureth Sulfate +2 EO	68.0-72.0	–
SULFOROKAnol L270/1A™	•	•		•			•	•	•	•			•			68891-38-3	A	liquid/ paste	–	Sodium Laureth Sulfate +2 EO	68.0-72.0	–
SULFOROKAnol L327™	•	•		•			•	•	•	•			•			125301-92-0	A	liquid	–	Sodium Laureth Sulfate +3 EO	26.0-28.0	–
SULFOROKAnol L327/1™	•	•		•			•	•	•	•			•			13150-00-0	A	liquid	–	Sodium Laureth Sulfate +3 EO	27.0-29.0	–

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PRODUCT	APPLICATION							FUNCTION							CAS number	Ionic character	Appearance	HLB	Chemical name /INCI name	Active substance (%)	Cloud Point[°C], Cloud Point Tanaka [°C][1], Saponification Value[2] [mgKOH/g], Amine Value[3] [mgKOH/g], Hydroxyl Value[4] [mgKOH/g]
	Liquid detergents	Capsules, wash powders	Bleachers	Washing-up liquids	Tablets for dish washers	Preparations for dish washer cleaning	Cleaning of toilets	Cleaning of hard surfaces	Wetting agents	Detergents	Solubilizers	Dispersants	Emulsifiers	Low-foaming agents	Thickeners							
SULFOROKAnol L370™	•	•		•			•	•	•	•			•			125301-92-0	A	liquid/ paste	–	Sodium Laureth Sulfate +3 EO	68.0-72.0	–
SULFOROKAnol L370/1™	•	•		•			•	•	•	•			•			13150-00-0	A	liquid/ paste	–	Sodium Laureth Sulfate +3 EO	68.0-72.0	–
SULFOBURSZTYNIAN DOSS™	•			•			•	•	•	•			•			577-11-7	A	liquid	–	Di (2-ethylhexyl)sulfosuccinic acid, sodium salt	min. 60.0	–
SULFOBURSZTYNIAN DOSSGP™	•			•			•	•	•	•			•			577-11-7	A	liquid	–	Aqueous solution of sodium salt of di-sulfosuccinate (2-ethylhexyl)	min. 60.0	–
SULFOBURSZTYNIAN L3/40™	•			•			•	•	•	•			•			68815-56-5	A	liquid	–	Disodium Laureth Sulfosuccinate	min. 90.0	–

A – anionic, N – non-ionic

Notes for guidance concerning the functional parameters and notation used in the catalogue

HLB (Hydrophilic-Lipophilic Balance)

The hydrophilic-hydrophobic balance is a parameter that determines the ratio of the content of the hydrophilic group and that of the hydrophobic group in a particle. The validity scope of the HLB number for non-ionic surface-active compounds is included within the range of 0 to 20 and is the measure of the share of the hydrophilic group in the particle.

$$HLB=20 \cdot \frac{\text{molecular mass of hydrophilic part}}{\text{molecular mass of compound}}$$

On the other hand, for aqueos solution of ionic surface active agents acquire additional transformations increasing their degree of hydrophilicit their degree of hydrophilicity, the value of the HLB number goes up to 40.

HLB for ester type compounds (polyoxyethylenated fatty acids):

$$HLB=20 \cdot (1-\frac{LZ}{LK})$$

where:

LZ saponification number of oxyethylenation product, mgKOH/g

LK acid number of acids subjected to oxyethylenation, mgKOH/g

On the basis of the HLB scale, the range of the utility fitness of surface-active agents can be determined.

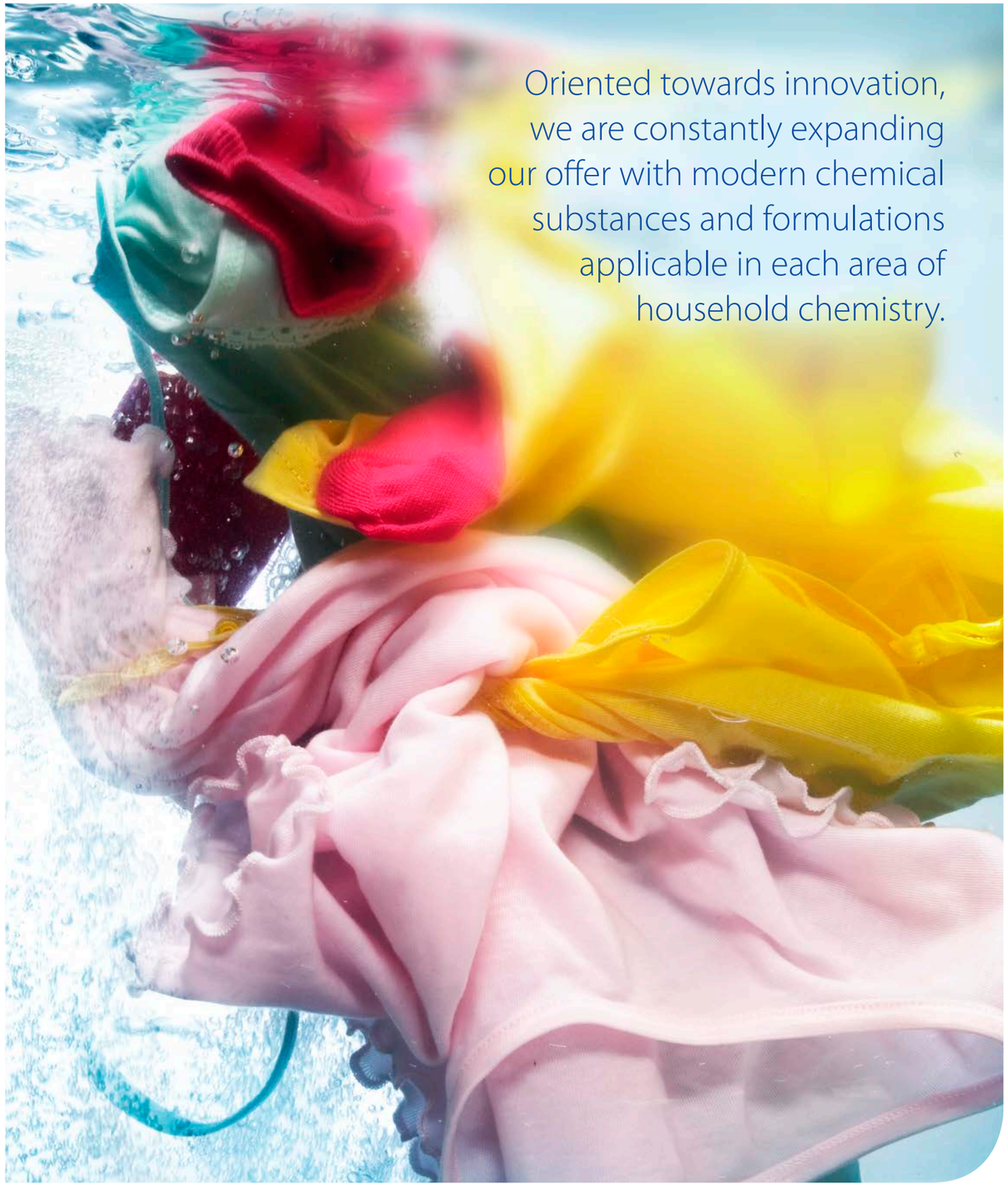
HLB NUMBER	EO CONTENTS IN PRODUCT, %	PRODUCT APPLICATION
1-3	5-15	Anti-foam agent
4-6	20-30	Emulsifier W/O
7-11	35-55	Wetting agent
8-18	40-90	Emulsifier W/O
10-15	50-75	Detergent
10-18	50-90	Solubilizer

Cloud point

Cloud point is an indicator determining the behaviour of water or other organic solutions of nonoionic surfactants. Solutions of surfactants become cloudy during heating and revers to clear solution at a certain temperature when cooled - this temperature is defined as 'cloud point'.

Depending on the temperature range at which the solution becomes cloudy, five determination methods are discriminated:

Method A – aqueous solution (10 - 90°C)
Method B – solution of NaCl 50g/l (>90°C)
Method C – solution of NaCl 100g/l (>90°C)
Method D – solution 45g of butyl diglycol/water (<10°C)
Method E – solution 25 g of butyl diglycol/water (<10°C)



PCC Group - Industrial Park in Brzeg Dolny, Poland

PCC Rokita SA

PCC Rokita Capital Group, 22 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:
PCC EXOL SA
PCC Chemax Inc. (the USA)
PCC EXOL Kýmya Sanayý Ve Týcaret Lýmýted Ţýrketý (Turkey)

PCC CP Kosmet Sp. z o.o.

Capital Group PCC CP Kosmet, 3 companies, including:
PCC CP Kosmet Sp. z o.o.
OOO PCC Consumer Products Navigator (Belarus)
OOO PCC Consumer Products (Russia)

PCC MCAA SE

PCC MCAA Sp. z o.o.

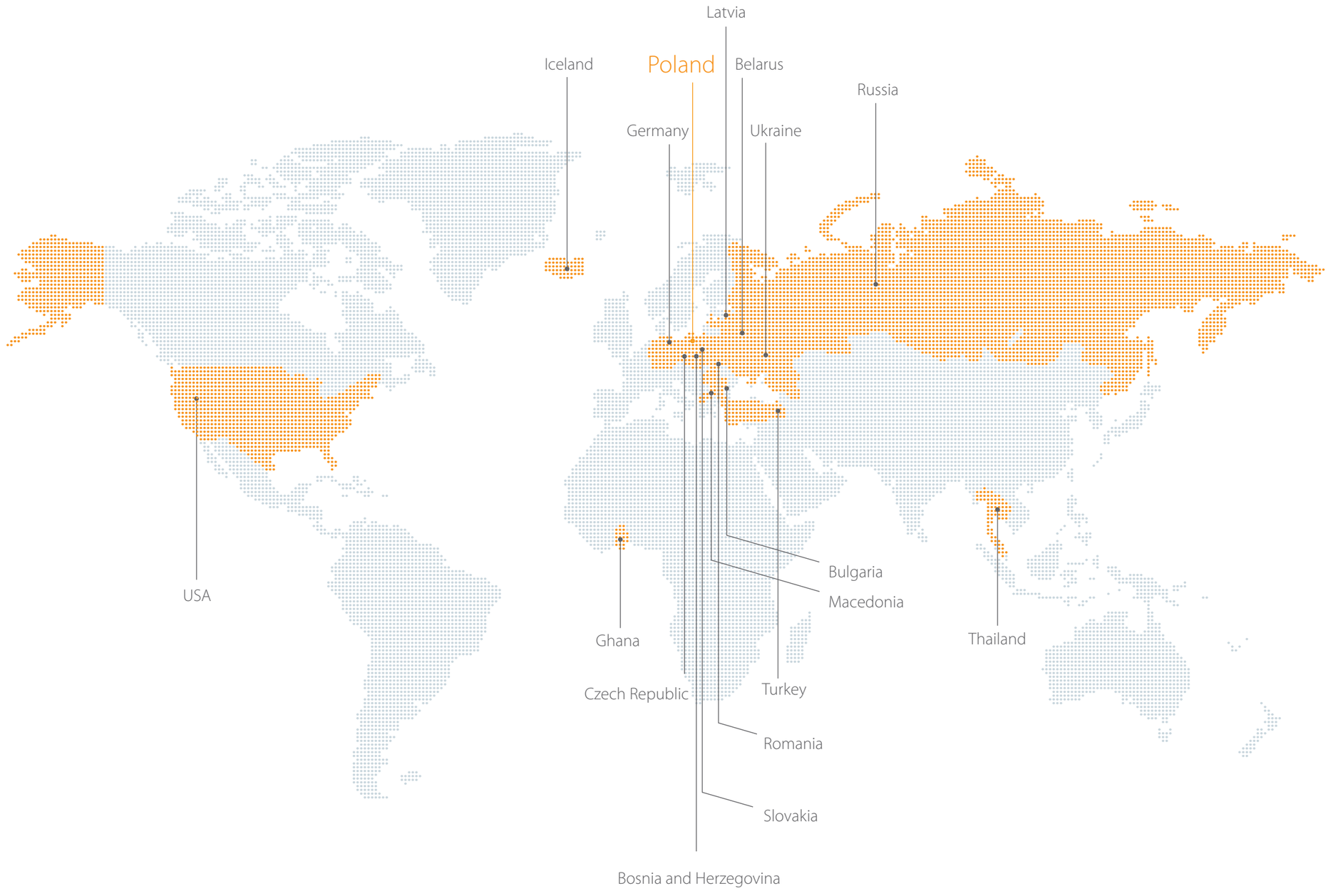
PCC Autochem Sp. z o.o.

PCC Autochem Sp. z o.o.

PCC Intermodal SA

PCC Intermodal SA

PCC Group in the world



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TEXT PAGES	
Brand	Cocoon Silk
Grammage	150
Number of pages	28
COVER PAGES	
Brand	Cocoon Silk
Grammage	250
Number of pages	4
PUBLICATION	
Size (cm)	21 x 29.7
Quantity	200

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30	kg of landfill
4	kg CO_2 and greenhouse gases
40	km travel in the average European car
1096	litres of water
68	kWh of energy
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Carbon footprint data evaluated by Labelia Conseil in accordance with the Bilan Carbone® methodology. Calculations are based on a comparison between the recycled paper used versus a virgin fibre paper according to the latest European BREF data (virgin fibre paper) available.

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