

Board and sandwich panels

Polyurethane Technology Platform



pcc

*More than
Chemistry*

PCC products for the manufacture of polyurethane insulation panels

Our range of polyester products complements some of our existing chemistries, on site, which together represent our 'Polyurethanes Technology Platform'.

The Platform encompasses a range of Roflam phosphorous additives, as well as, a series of Exol surfactants and emulsifiers. These products can be used to tailor make products and formulations and meet today's strict European wide legislation for thermal and fire performance. Other chemistries, on site, include the manufacture of a range of various functionality polyether

polyols based on Propylene and Ethylene oxide, and other speciality monomers. These include Sorbitol and Mannich chemistry. They are all used to create bespoke solutions for both metal and flexible faced panels.

We have recently established a polyurethanes 'Centre of Excellence' in our new, purpose built, R&D laboratory. We are adding significant resources to support a growing Technical Service and Sales/Marketing presence across the EMEA region.



PCC PU is a major manufacturer of polyols and additives for the manufacture of polyurethane insulation panels. Key market applications are residential and commercial construction.

We have, most recently, started up a new facility for the production of aromatic polyester polyols at our site in Brzeg Dolny, Poland.

Polyester polyols for PIR block foam

PRODUCT NAME	HYDROXYL VALUE [mg KOH/g]	ACID VALUE [mg KOH/g]	VISCOSITY AT 25°C, [mPa·s]	WATER CONTENT [wt%]	FUNCTIONALITY	FLAME RETARDANT CONTENT	PERFORMANCE FEATURES
Rokester 1910	190-210	0.6-1.0	7500-12500	max. 0.15	2	NO	Low hydroxyl with higher viscosity polyester polyol for block foam.
Rokester 1957.01	190-210	1.0-2.0	10000-20000	max. 0.15	2	YES	Low hydroxyl polyester polyol for block foam with improved fire performance and reduced smoke emission.
Rokester 2430	230-250	1.6-2.0	8000-12000	max. 0.15	2	NO	Aromatic polyester polyol for block foam.
Rokester 2436	230-250	max. 1.0	8000-12000	max. 0.15	2	NO	Aromatic polyester polyol for block foam with reduced smoke emission.
Rokester 2446.01	230-260	max. 1.5	4000-6500	max. 0.1	2	NO	Polyester polyol for block foam with improved fire performance and low smoke emission.
Rokester 2650	240-260	max. 1.0	8000-12000	max. 0.1	2	NO	PET based polyester polyol for block foam.
Rokester 3164.01	280-315	1.0-2.0	1500-4500	max. 0.15	2.3	NO	High functionality polyester polyol used as a component for PIR and PUR panels with better heat resistant and low smoke emission.
Rokester 3561.01	300-330	max. 1.5	8500-13000	max. 0.15	2.7	NO	High functionality polyester polyol used as a component for PIR and PUR panels with better heat resistant and low smoke emission.

Polyester polyols for PIR panels

PRODUCT NAME	HYDROXYL VALUE [mg KOH/g]	ACID VALUE [mg KOH/g]	VISCOSITY AT 25°C, [mPa·s]	WATER CONTENT [wt%]	FUNCTIONALITY	FLAME RETARDANT CONTENT	PERFORMANCE FEATURES
Rokester 1600.01	150-170	max. 1.5	1000-3000	max. 0.15	2	NO	Aliphatic-aromatic polyester polyol for reduced smoke emulsion for high index PIR foams.
Rokester 1911	165-185	max. 1	max. 5500	max. 0.15	2	YES	Low hydroxyl and viscosity dedicated for i-pentane PIR panels.
Rokester 1911.02	175-195	max. 1.5	max. 5500	max. 0.15	2	YES	Low hydroxyl and viscosity dedicated for n-pentane PIR panels.
Rokester 1952.01	190-210	2.0-3.0	max. 7000	max. 0.15	2	NO	Low hydroxyl and viscosity polyester for PIR panels with excellent performance and low lambda value.
Rokester 1953	175-195	max. 3.0	max. 5500	max. 0.15	2	YES	Low hydroxyl and viscosity polyester for PIR panels with excellent performance and low lambda value.
Rokester 1910	190-210	0.6-1.0	7500-12500	max. 0.15	2	NO	Low hydroxyl with higher viscosity polyester polyol for PIR panels.
Rokester 2416	225-245	1.9-2.3	max. 4500	max. 0.15	2	YES	Polyester polyol for PIR panels excellent performance and low lambda values.
Rokester 2402	230-250	max. 1.5	max. 4500	max. 0.15	2	NO	Polyester polyol for PIR panels with excellent performance and low lambda values.
Rokester 2446.01	230-260	max. 1.5	4000-6500	max. 0.1	2	NO	Polyester polyol for PIR panels with better fire performance and low smoke emission.
Rokester 2520	220-250	max. 1.5	max. 5500	max. 0.15	2.3	YES	High functionality polyester polyol for i-pentane PIR panels. The product exhibits enhanced hydrophobic properties.
Rokester 3110	300-330	2.0-3.0	2000-3000	max. 0.15	2	NO	High hydroxyl and low viscosity polyester polyol for PIR panels.
Rokester 3164.01	280-315	1.0-2.0	1500-4500	max. 0.15	2.3	NO	High functionality polyester polyol used as a component for PIR and PUR panels with better heat resistance and low smoke emission. The product exhibits enhanced hydrophobic properties.
Rokester 3561.01	300-330	max. 1.5	8500-13000	max. 0.15	2.7	NO	High functionality polyester polyol used as a component for PIR and PUR panels with better heat resistant and low smoke emission. The product exhibits enhanced hydrophobic properties.

Roflam series - Flame retardants for PIR block foam and panels

PRODUCT NAME	CHEMICAL NAME	DENSITY AT 25°C, [g/ml]	VISCOSITY AT 25°C, [mPa·s]	ACID VALUE, [mg KOH/g]	PHOSPHOROUS CONTENT [%]	CHLORINE CONTENT [%]	TYPE	PERFORMANCE FEATURES
Roflam P	Tris(2-chloro-1-methyl-ethyl) phosphate	1.28	66	max. 0.1	9.5	32.5	additive	Highly effective Viscosity reduction
Roflam 6	N,N-bis-(2-hydroxyethyl) aminomethane phosphonic acid diethyl ester	1.16	200	max. 8.0	12.2		reactive	Halogen free High phosphorus content
Roflam B7	t-Butylated triaryl phosphate	1.18	72	max. 0.1	8.5	Halogen free	additive	Halogen free
Roflam F5	Isopropylated triaryl phosphate	1.17	53	max. 0.1	8.3		additive	Halogen free

EXOstab series - Additives for PIR block foam and panels

PRODUCT NAME	FOAMING AGENT	HYDROXYL VALUE [mg KOH/g]	HLB*	DESCRIPTION
EXOstab NP200	n-pentane, water	56	7.0	Non-ionic surfactant based on nonylphenol Non-ionic emulsifier and compatibiliser applied as an auxiliary agent in manufacturing process of PIR/PUR foams. EXOstab series significantly improves the compatibility of the polyol and the foaming agent. EXOstab series does not contain silicone derivatives
EXOstab NP300	n-pentane, i-pentane, water	80	7.5	
EXOstab NP400	n-pentane, water	68	6.5	
EXOstab NP500	n-pentane, water	40	5.0	
EXOstab C100	n-pentane, c-pentane, water	80	11.5	Non-ionic surfactant based on modified oleochemicals
EXOstab C200	n-pentane, c-pentane, water	67	13.0	

* HLB - Hydrophilic-lipophilic balance



PCC Group

We build value through sustainable innovation



Operating in 17 countries, in 39 different locations, PCC SE currently employs 3300 people.

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

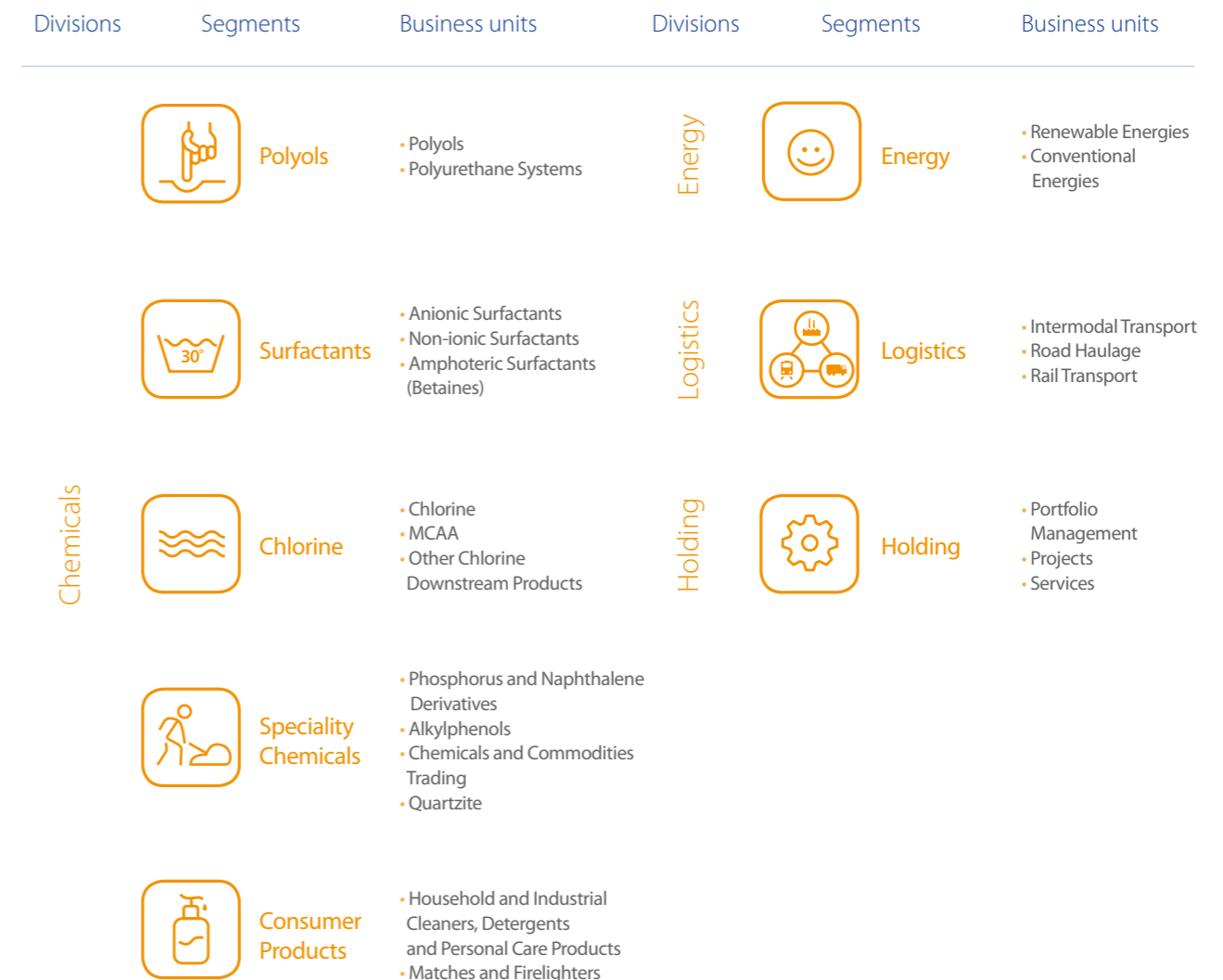
development of the PCC Group. The key element of our strategy is to ensure the development of each individual business unit through taking advantage of innovative technology and new market applications. We achieve our goals in a sustainable and responsible way – we care about the environment and the society within which we operate.

We are always ready to reach our strategic goals. 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 entrepreneurial 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 3300 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, Speciality 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



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.

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PCC EXOL Capital Group, 5 companies, including:

- PCC EXOL SA**
- PCC Chemax Inc. (the USA)
- PCC EXOL Kimya Sanayi Ve Ticaret Limited Şirketi (Turkey)

PCC CP Kosmet Sp. z o.o.

Capital Group PCC CP Kosmet, 3 companies, including:

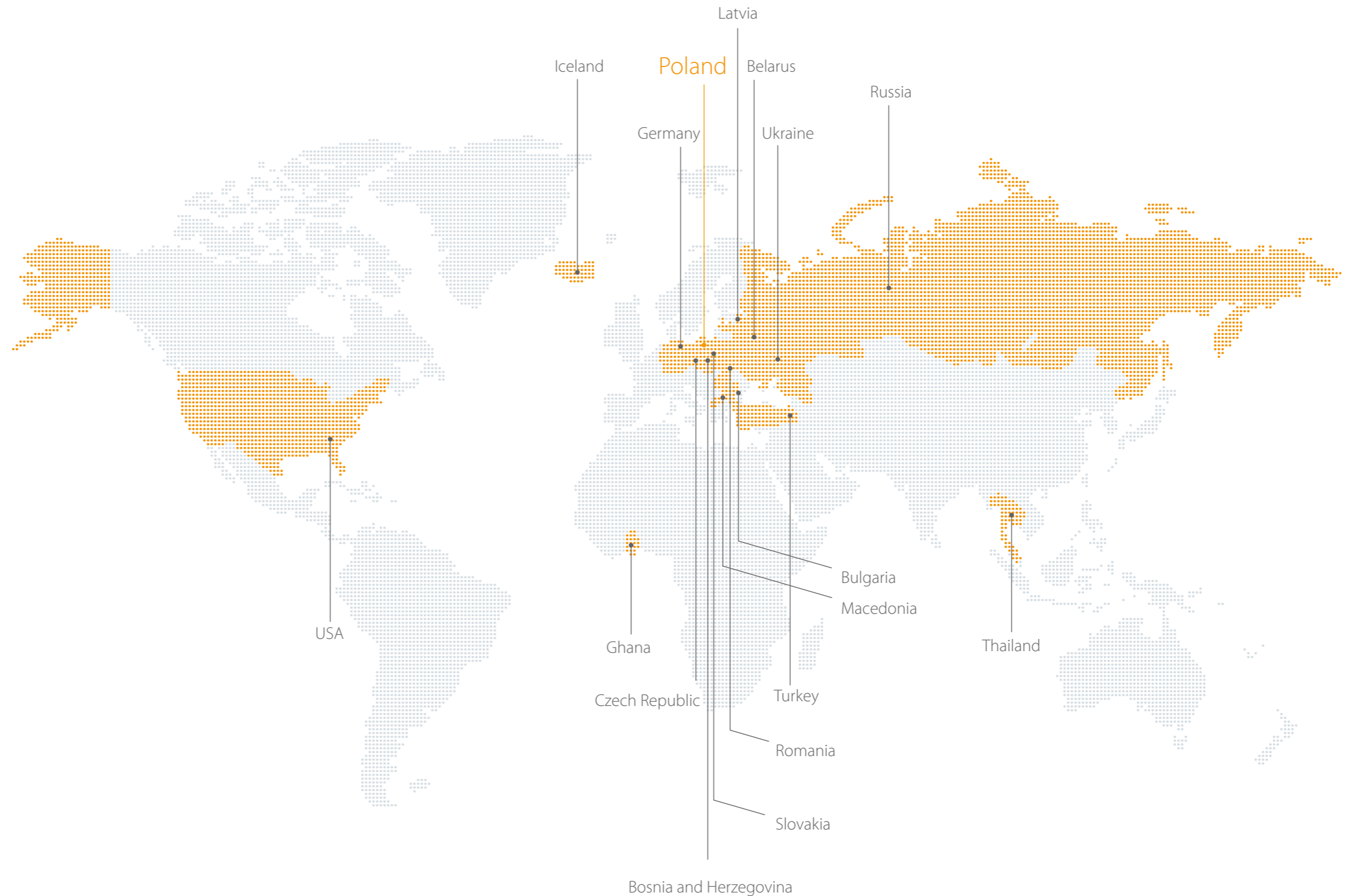
- PCC CP Kosmet Sp. z o.o.**
- OOO PCC Consumer Products Navigator (Belarus)
- OOO PCC Consumer Products (Russia)

PCC MCAA Sp. z o.o.

PCC Autochem Sp. z o.o.

PCC Intermodal SA

PCC Group in the world





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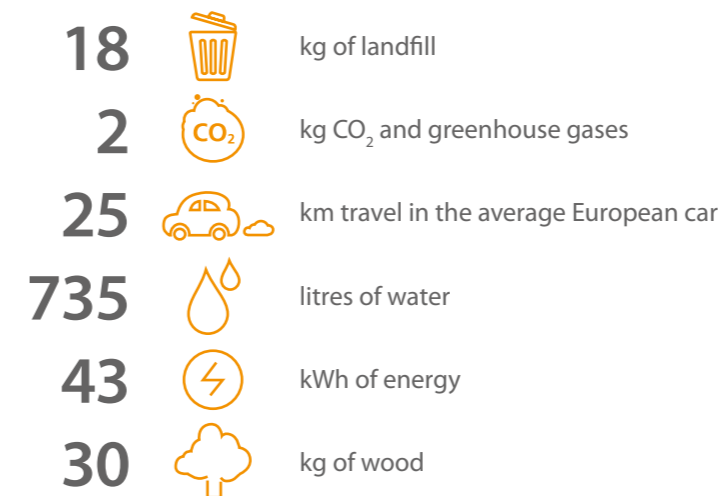
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PCC Rokita SA
Sienkiewicza St. 4
56-120 Brzeg Dolny, Poland
products@pcc.eu

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

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