# ROKAcet K10
## and its formulations for cleaning

PCC Exol

# ROKAcet K10

## Chemical description

ROKAcet K10 is used as a component of washing and cleaning agents and as an emulsifier. The product shows very good detergency properties, it can be used in a mixture with other non-ionic agents auxiliaries and in mixtures with anionic and cationic active agents.

## Applications:

- Industrial and institutional cleaning
- Laundry detergents
- Hard surface cleaning

## Benefits:

- effective ingredient of laundry detergents
- good cleaning properties
- excellent solubilizing properties
- good wetting properties
- non-classified product
- good temperature resistance
- compatible with wide range of nonionic surfactants
- compatible with other additives

# Additional information

| Physicochemical parameters | ROKAcet K10 |
|---|---|
| CAS | 61791-29-5 |
| Molecular weight [g/mol] | – |
| Appearance at temperature (20÷25)°C | liquid |
| Color (Gardner) at (40)°C | max 3 |
| pH of 20% solution | 5.0 ÷ 7.5 |
| Solidification point, °C | 15 |
| Cloud point; method A, °C | 35 |
| Cloud point; method B, °C | 25 |
| Cloud point; method C, °C | 19 |
| Cloud point; method D, °C | 67 |
| Cloud point; method E, °C | 66 |
| Water, % (m/m) | max 1 |
| Density at 30°C, g/mL | approx. 1.03 |
| Viscosity at 25°C, cP | approx. 100 |
| Surface tension of 0.1% solution at 25°C, mN/m | 37 |

## Solubility

The solubility of ROKAcet K10 in water and other solvents has been shown in the table below.

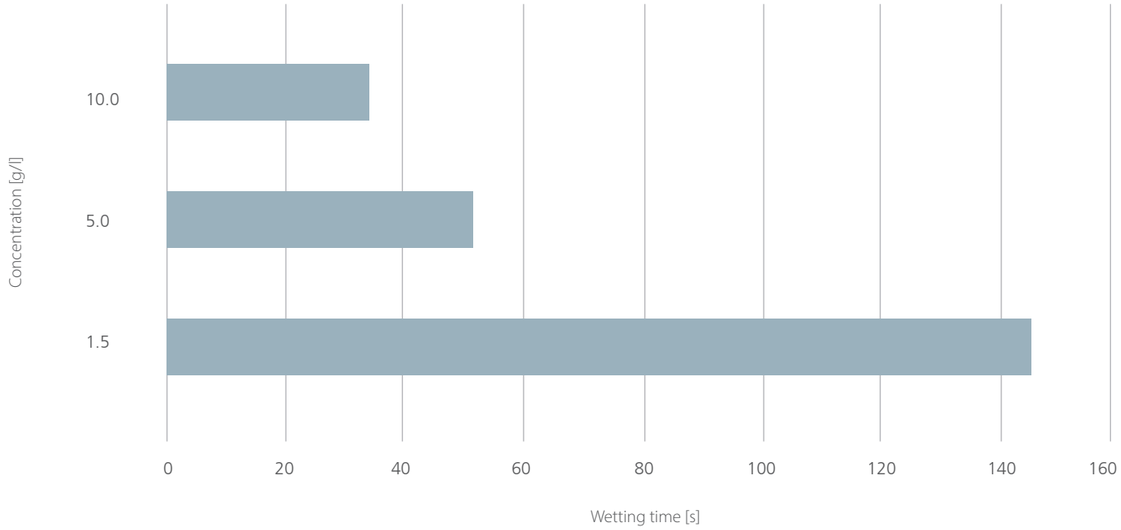
| PRODUCT NAME | DEMINERALIZED WATER | METHANOL | ACETONE | ETHYL ETHER |
|---|---|---|---|---|
| ROKAcet K10 | ● | ● | ● | ● |

● soluble ● insoluble ● partially soluble

## Wetting capability

Surfactants reduce the surface tension of liquids in which they are dissolved. Thanks to them, any liquid (usually water) has greater wetting capability, which increases its ability to get as close as possible to the solid. This is very important for many surfactant applications, especially in cleaning processes.
The capability of wetting cotton fabric was determined in accordance to PN-EN 1772:2001 Standard.

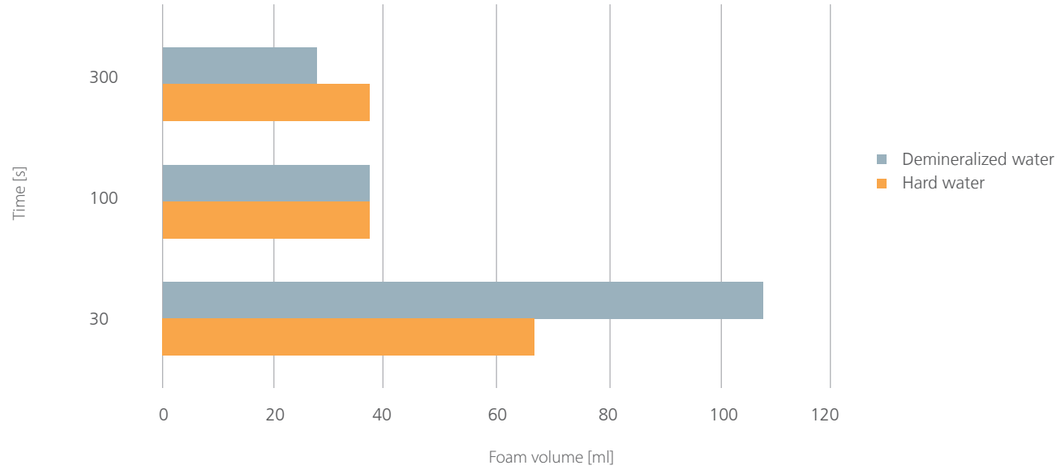
### Wetting capability for ROKAcet K10; demineralized water; temperature at 20°C




## Foaming capability

Foam is a heterogeneous system in which the liquid is the continuous phase and the dispersed phase is a gas. Foams, as well as emulsions, are thermodynamically unstable systems, so surfactant molecules on the interface are required to stabilize them. The ability to foam a substance is important in many industrial applications including the detergents, where it prevents re-dirt in the washing or cleaning processes. The determination of the foaming capability was performed according to PN-ISO 696: 1994 Standard (the modified Ross-Miles method) at a temperature of 25°C, for a surfactant concentration of 1.0 g/l, in both demineralized water and hard (17°d).

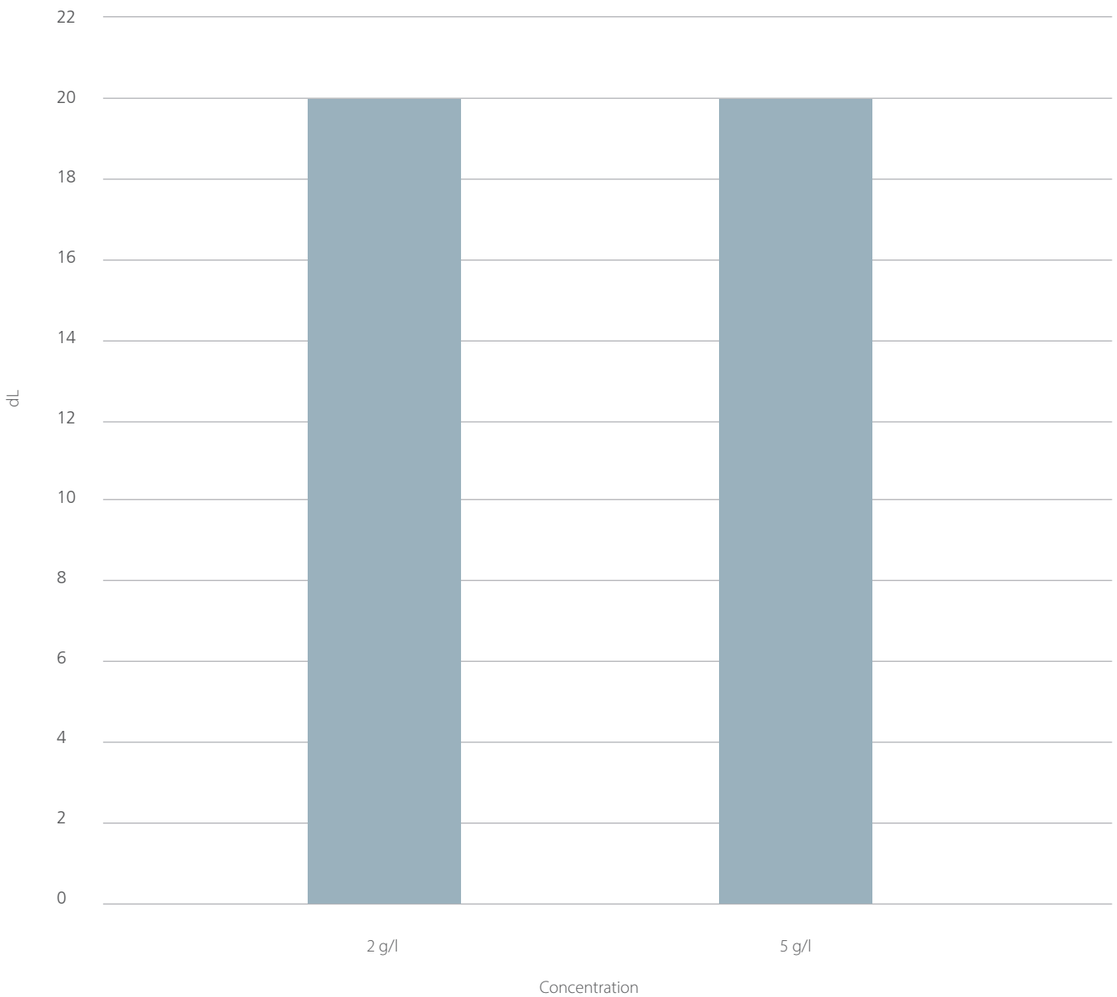
### Foam capability for ROKAcet K10; concentration of 1.0 g/l; temperature 25°C




## Detergency on a cotton fabric

Determination of detergency on a cotton fabric is tantamount to assessing the effectiveness of washing with the use of surfactants. Detergency tests were performed according to PCC EXOL SA own method, using EMPA 125 fabric (cotton), soiled with a mixture of oils and pigments that were washed in ROKAcet K10.

### Cotton fabric detergency results in dL units for ROKAcet K10




The cleaning process is described by the dL parameter in accordance with the CIE LAB method. The standard is the soiled fabric, so the higher the value of the dL parameter, the better the tested fabric is cleaned.

## Alkali and acid resistance

Surfactants used in industrial cleaning have to be resistant to strong acids or alkalis. Acidic cleaning agents are mainly used to remove mineral deposits from acid-resistant surfaces, while alkaline agents are known primarily for their remarkable degreasing ability.

The analysis of this stability for ROKAcet K10 has been performed in accordance with the PN-EN 14712:2005 Standard.

| NaOH CON. [g/l]<br>Product name | 10 | 20 | 30 |
|---|---|---|---|
| ROKAcet K10 | o | o | o |

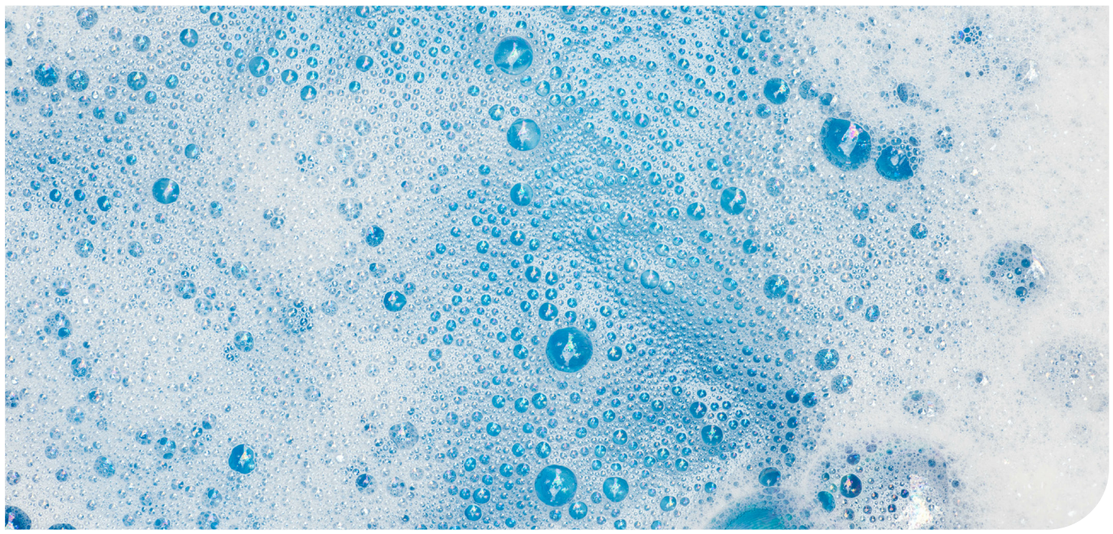
### Acid resistance (Sulphuric acid); concentration of 1%; temperature 20°C

| $H_2SO_4$ CON. [g/l]<br>Product name | 1 | 60 | 65 | 140 | 225 |
|---|---|---|---|---|---|
| ROKAcet K10 | • | • | • | • | o |

### Acid resistance (Hydrochloric acid); concentration of 1%; temperature 20°C

| HCl CON. [g/l]<br>Product name | 1 | 20 | 80 | 85 | 90 | 225 |
|---|---|---|---|---|---|---|
| ROKAcet K10 | • | • | • | • | • | o |

o macroscopic phase separation
• homogeneous, cloudy solution
• clear, homogeneous solution
• homogeneous, opalescent solution



# Kitchen and bathroom cleaners

### FLOOR CARE CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROSULfan A70** | Ammonium Lauryl Sulfate | 1.0 | Foaming and cleaning agent |
| **ROKAmina K30** | Cocamidopropyl Betaine | 10.0 | Foaming agent/foam stabilizer |
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 2.0 | Cleaning agent |
| **EXOlat C40** | Acrylic resin | 0.5 | Sequestrant |
| Commercially available mix of isopropyl alcohol (app. 40%) and ethyl alcohol (app. 60%) | | 3.0 | Solvent |
| Water & additives | | 83.5 | Solvent and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 6 ÷ 7 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | 0 ÷ -1 |
| clarification point, °C | +1 ÷ +2 |

#### Procedure:

1. Mix ROSULfan A70, ROKAcet K10, EXOlat C40, mixture of polar short-chain alcohols and water.
2. Then add ROKAmina K30 in a small portions.
3. Mix until a homogenous solution is obtained.

### SHOWER & BATH CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 2.5 | Cleaning agent |
| **ROKAnol GT7** | Alcohols, C9-16, ethoxylated | 1.0 | Cleaning agent / Degreaser |
| **EXOlat ZA** | Acrylic resin | 0.5 | Sequestrant |
| Citric acid, monohydrate | | 3.5 | Descaling agent / pH adjuster |
| Glycolic Acid, 70% | | 3.0 | Descaling agent / pH adjuster |
| Water & additives | | 89.5 | Solvent and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 2 ÷ 3 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | +1 |
| clarification point, °C | +15 |

#### Procedure:

1. Mix ROKAcet K10, ROKAnol GT7, EXOlat ZA, Citric acid monohydrate, Glycolic acid and water.
2. Then add ROKAmina K30 – mix.
3. Mix until a homogenous solution is obtained.

# Bathroom cleaners

### FOAM BATHROOM CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 3.5 | Cleaning agent |
| **ROKAmina K30** | Cocamidopropyl Betaine | 2.0 | Foaming agent/foam stabilizer |
| **EXOlat C40** | Acrylic resin | 1.0 | Sequestrant |
| Citric acid, monohydrate | | 3.0 | Degreasing agent/solvent |
| Isopropyl alcohol | | 0.5 | Degreasing agent/solvent |
| Water & additives | | 90.0 | Water and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 2 ÷ 3 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | +1 |
| clarification point, °C | +16 |

#### Procedure:

1. Mix ROKAcet K10, EXOlat C40, Citric acid monohydrate, Isopropyl alcohols and water.
2. Then add ROKAmina K30 - mix.
3. Mix until a homogenous solution is obtained.

### UNIVERSAL FOAM BATH CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 0.2 | Cleaner agent |
| **ROSULfan A** | Ammonium Lauryl Sulfate | 0.2 | Foaming and cleaning agent |
| Commercially available mix of isopropyl alcohol (app. 40%) and ethyl alcohol (app. 60%) | | 3.0 | Degreaser |
| Water & additives | | 96.6 | Water and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 4 ÷ 6 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | 0 |
| clarification point, °C | +2 |

#### Procedure:

1. Mix ROKAcet K10, ROSULfan A, mixture of polar short-chain alcohols and water.
2. Mix until a homogenous solution is obtained.

# Kitchen cleaners

### TOTAL KITCHEN CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 3.5 | Cleaning agent |
| **ROKAnol NL3** | Alcohols, C9-11, ethoxylated | 1.0 | Deep cleaning agent / degreaser |
| **EXOlat C40** | Acrylic resin | 3.0 | Sequestrant |
| Methoxydipropanol | | 5.0 | Stabilizer / Solvent |
| Water & additives | | 87.5 | Solvent and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 6 ÷ 8 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | +1 |
| clarification point, °C | +4 |

#### Procedure:

1. Mix ROKAcet K10, ROKAnol NL3, EXOlat C40, Methoxydipropanol and water.
2. Mix until a homogenous solution is obtained.

### FOAM KITCHEN CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 3.5 | Cleaning agent |
| **ROSULfan L** | Sodium Lauryl Sulfate | 2.0 | Foaming and cleaning agent |
| **EXOlat C40** | Acrylic resin | 1.0 | Sequestrant |
| Propylene glycol | | 3.0 | Solvent |
| Commercially available mix of isopropyl alcohol (app. 40%) and ethyl alcohol (app. 60%) | | 5.0 | Solvent |
| Water & additives | | 87.0 | Solvent and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 7 ÷ 8 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | 0 |
| solidification point, °C | -1 |
| clarification point, °C | +1 |

#### Procedure:

1. Mix ROKAcet K10, ROSULfan L, EXOlat C40, Propylene glycol, mixture of polar short-chain alcohols and water.
2. Mix until a homogenous solution is obtained.

### SINK CLEANER

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAcet K10** | Coconut fatty acid, ethoxylated | 4.5 | Cleaning agent |
| **EXOlat ZA** | Acrylic resin | 3.0 | Sequestrant |
| Citric acid, monohydrate | | 8.0 | Descaling agent/pH adjuster |
| Methoxydipropanol | | 2.0 | Stabilizer, degreaser, solvent |
| Water & additives | | 82.5 | Solvent and additives |

#### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 2 ÷ 3 |
| viscosity at 20°C, [cP] | under 10 |
| cloud point, °C | none |
| solidification point, °C | 0 |
| clarification point, °C | +19 |

#### Procedure:

1. Mix ROKAcet K10, EXOlat ZA, Citric acid monohydrate, Methoxydipropanol and water.
2. Mix until a homogenous solution is obtained.

## ECOLOGICAL HAND DISHWASHING DETERGENT (COMPLIES WITH ECOLABEL REQUIREMENTS)

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROKAtend LS MB** | Sodium Lauroyl Sarcosinate | 10.0 | Foaming and cleaning agent |
| **ROSULfan L MB** | Sodium Lauryl Sulfate | 34.0 | Foaming and cleaning agent |
| **ROKAcet K10 MB** | Coconut fatty acid, ethoxylated | 2.0 | Cleaning agent |
| N,N-Dicarboxymethyl glutamic acid tetrasodium salt | | 0.8 | Sequestrant |
| Citric acid, monohydrate 50 % | | 0.27 | pH adjuster |
| Water & additives | | 43.2 | Solvent and additives |
| **ROKAmina K30 MB** | Cocamidopropyl Betaine | 10.0 | Foaming agent/foam stabilizer |
| Sodium chloride | | 0.3 | Rheology modifier |

### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 6 ÷ 8 |
| viscosity at 20°C, [cP] | 3000 ÷ 4000 |
| cloud point, °C | none |
| solidification point, °C | -1 |
| clarification point, °C | +5 |

### Procedure:

1. Mix ROKAtend LS MB, ROSULfan L MB, ROKAcet K10 MB, GLDA, Citric acid monohydrate 50% and water.
2. Mix with a mechanical mixer until all the ingredients are uniformly combined with each other.
3. Then add ROKAmina K30 MB in a small portions while stirring constantly.
4. Then add sodium chloride in a small portions while stirring constantly.
5. Mix until a homogenous solution is obtained.

## NATURE HAND DISHWASHING DETERGENT (COMPLIES WITH ECOLABEL REQUIREMENTS)

| Brand name | Chemical name | Content [%] | Function |
|---|---|---|---|
| **ROSULfan AHT MB** | Ammonium Lauryl Sulfate | 30.0 | Foaming and cleaning agent |
| **ROKAcet K10 MB** | Coconut fatty acid, ethoxylated | 2.0 | Cleaning agent |
| **EXOlat ZA** | Acrylic resin | 0.8 | Sequestrant |
| Water & additives | | 56.7 | Solvent and additives |
| **ROKAmina K30 MB** | Cocamidopropyl Betaine | 10.0 | Foaming agent/foam stabilizer |
| Sodium chloride | | 0.5 | Rheology modifier |

### Chemical properties

| | |
|---|---|
| appearance at 20-25°C | clear liquid |
| pH at 25°C | 5 ÷ 7 |
| viscosity at 20°C, [cP] | 5000 ÷ 6000 |
| cloud point, °C | +5 |
| solidification point, °C | -1 |
| clarification point, °C | +10 |

### Procedure:

1. Mix ROSULfan AHT MB, ROKAcet K10 MB, EXOlat ZA and water.
2. Mix with a mechanical mixer until all the ingredients are uniformly combined with each other
3. Then add ROKAmina K30 MB in a small portions while stirring constantly.
4. Then add sodium chloride in a small portions while stirring constantly.
5. Mix until a homogenous solution is obtained.

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PCC EXOL S.A. combines innovative technologies with experience in designing, producing and selling surfactants and chemical formulations

PCC EXOL S.A. is a company that combines cutting-edge technologies with rich experience in production of surfactants (surface active agents). The company is located in Brzeg Dolny (Poland), where anionic, nonionic and amphoteric surfactant production plants have been launched. Due to the flexible production processes, the company offers a wide spectrum of surfactants and industrial formulations, which are often suited for the individual customers operating in plenty of various industry sectors. As one of the leading surfactant manufacturers, PCC EXOL S.A. carries out new investment projects and implements innovative technologies based on the global sustainability trends.

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The company comprehensive portfolio is continuously enriched with new innovative products, which meet even the strictest market requirements and adapt to the individual needs of customers. This is possible due to the dynamic development of the research facilities, flexible production, knowledge as well as experienced personnel.

PCC EXOL S.A. has the key competence necessary for a worldwide production of surfactants. The ongoing projects will soon bring the new opportunities for the company's further development and expansion into new markets. The company offers not only a wide portfolio and professional servicing but most of all flexible production and comprehensive system solutions that meet individual customer demands. The strategic PCC EXOL S.A. investor is PCC SE, operating on international markets of the chemical raw materials, transport, energy, coal, coke, petrol, plastics and metallurgy. PCC SE includes 82 companies operating in 41 different locations in 18 countries.

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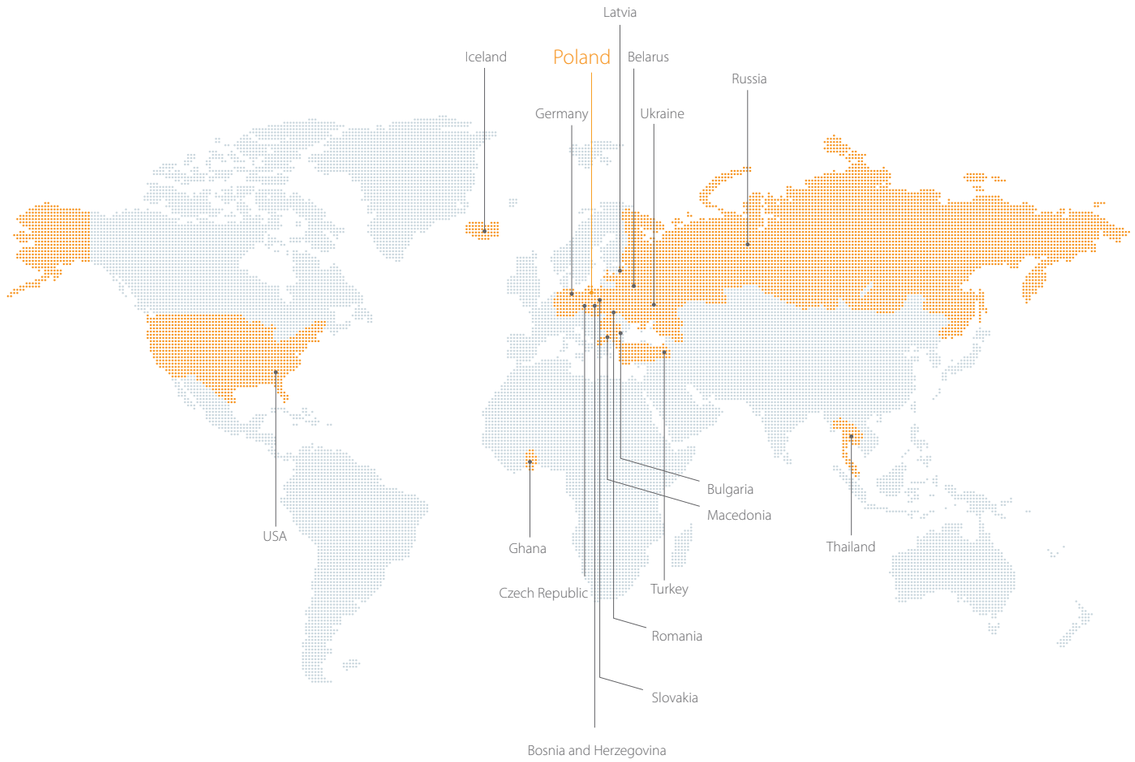


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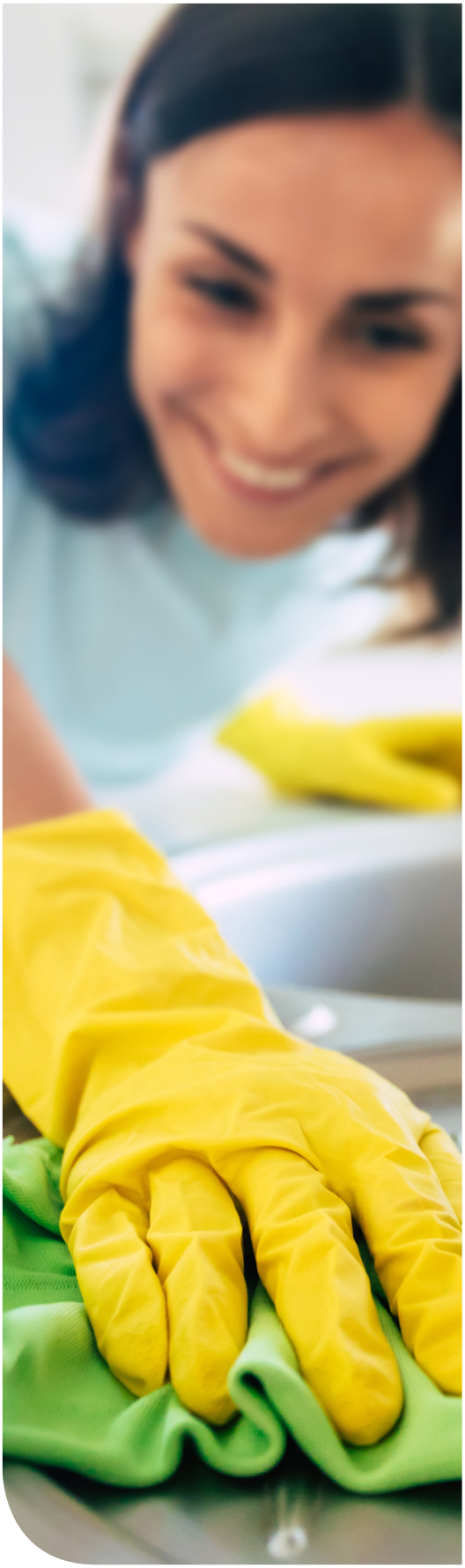

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