

ROKAnol SAE Series

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Local. Global. Integrated.


Operating in 18 countries, in 41 different locations, PCC Group currently employs more than 3 100 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.

Sustainable development is an important element of PCC EXOL's business approach. The company develops its management practices and processes to address environmental, social and ethical challenges. The scope of these activities is determined by the company's strategic priorities, operational capabilities and available, verifiable supporting documentation. Among other areas, PCC EXOL undertakes initiatives aimed at supporting the circular economy, improving energy and resource efficiency, enhancing safety performance, and promoting sustainability-related practices within selected elements of its value chain through cooperation with suppliers and customers.

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

- Energy Production

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 SAE series

Chemical description

ROKAnol SAE is a group of nonionic surfactants based on **secondary alcohol ethoxylates**. Due to their chemical structure, these products effectively reduce surface tension and provide very good wetting, detergency, emulsifying, and dispersing properties.

They are characterized by high performance across a wide range of process conditions and good compatibility with other formulation ingredients.

$$R^1–CH(–R^2)–O–(CH_2CH_2O)n–H$$

where R^1 and R^2 - alkyl chains

n' = average number of ethylene oxide units

Application

ROKAnol SAE products are used in various kind of cleaning agents. Due to their properties they are used mostly in industrial and professional cleaning products, automotive and aerospace chemicals, textile processing, agrochemicals, and metalworking processes. They are valued for effective removal of grease and oil-based soils, excellent surface wetting, and suitability for systems requiring controlled foaming. As a result, they offer a versatile solution for modern industries seeking high performance, stability, and formulation flexibility.

- Detergent formulations
- Cleaning agents
- Metalcleaning chemicals
- Textile processing
- Agrochemicals
- Others



Basic physical and chemical properties

Product name	ROKAnol SAE5	ROKAnol SAE7	ROKAnol SAE9	ROKAnol SAE12	ROKAnol SAE40W/70
Apperance at temperature. 20-25°C	Clear liquid	Clear liquid	Clear liquid	Clear liquid	Viscous liquid
Color Hazen units at 40°C	<100	<100	<100	<100	<100
pH 5% solution in water	5 – 8	5 – 8	5 – 8	5 – 8	4 – 8
Cloud point, method A, °C	<10	28 – 38	55 – 65	78 – 88	approx. 60
Density 25°C, g/ml	approx. 0.96	approx. 0.99	approx. 1.00	approx. 1.02	approx. 1.09
Viscosity at 25°C, cP	approx. 40	approx. 50	approx. 65	approx. 90	approx. 1400
Solidification point, °C	<-20	-5	approx. 2	approx. 15	approx. 4
Water content, %	<0.5	<0.5	<0.5	<0.5	approx. 30
HLB value	approx. 11	approx. 13	approx. 14	approx. 15	–

Basic physical and chemical properties

Solubility in water and other solvents is shown in table below, solubility measured with visual method in 1% and 10% at 25°C:

	Concentration	ROKANOL SAE5	ROKANOL SAE7	ROKANOL SAE9	ROKANOL SAE12	ROKANOL SAE40W/70
Water	1%	●	●	●	●	●
	10%	●	●	●	●	●
Methanol	1%	●	●	●	●	●
	10%	●	●	●	●	●
Ethyl ether	1%	●	●	●	●	○
	10%	●	●	○	●	○
Aceton	1%	●	●	●	●	●
	10%	●	●	●	●	●

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

Wetting properties

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.

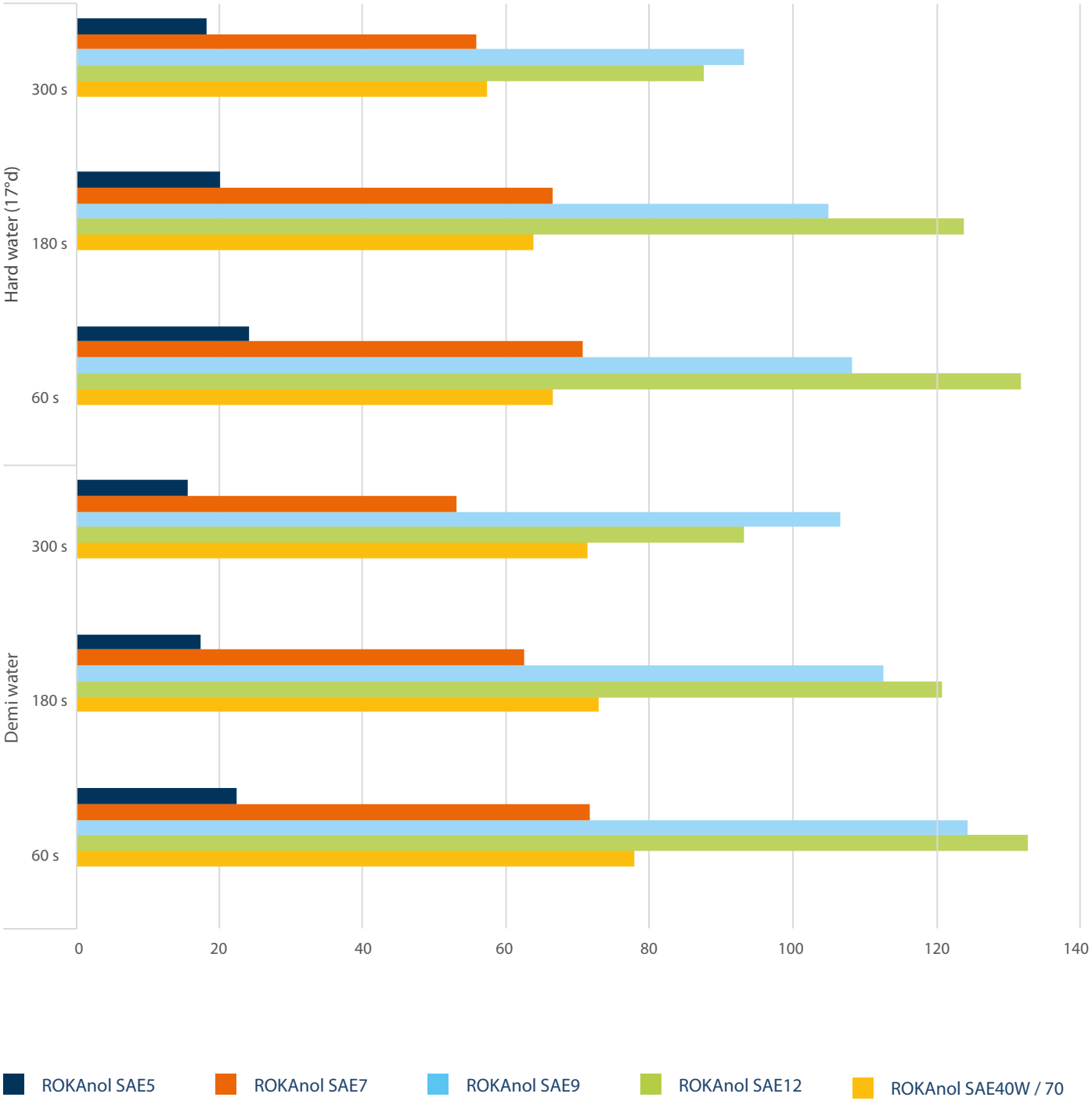
Time (s)	Description
<20	Excellent
20-50	Good
50-100	Moderate
100-300	Low
>300	Poor

Product	Properties
ROKAnol SAE5	Good
ROKAnol SAE7	Excellent
ROKAnol SAE9	Excellent
ROKAnol SAE12	Good
ROKAnol SAE40W/70	Poor



Foaming properties

Rokanols SAE exhibit rather low/medium foaming properties. The determination of foamability is conducted according to ASTM D1173 (Ross-Miles method), for solutions of 1g/l concentration in demineralized and hard water. At a temperature of 25°C. The measures of foam volume are taken in 60 s, 180 s and 300 s.



Acid and alkali resistance

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

Rokanol \H_2SO_4 conc. [g/l]	1	10	20	60	120	140	225
ROKAnol SAE5	○	○	○	○	○	○	●
ROKAnol SAE7	●	●	●	●	●	●	●
ROKAnol SAE9	●	●	●	●	●	●	●
ROKAnol SAE12	●	●	●	●	●	●	●
ROKAnol SAE40w/70	●	●	●	●	●	●	●

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Alkali resistance

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

Alkali resistance (Sodium Hyroxide); concentration of 1%; temperature 20°C

Rokanol \NaOH conc. [g/l]	10	20	30	40	60	70	80	360
ROKAnol SAE5	●	○	○	○	○	○	○	○
ROKAnol SAE7	●	●	●	●	○	○	○	○
ROKAnol SAE9	●	●	●	●	●	●	○	○
ROKAnol SAE12	●	●	●	●	●	●	●	○
ROKAnol SAE40w/70	●	●	●	●	○	○	○	○

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

Narrow aqueous gel range

Secondary alcohol ethoxylates are characterized by a narrow aqueous gel range, which ensures easy dilution, fast dissolution and excellent handling in concentrated and ready-to-use formulations.

This property reduces processing difficulties commonly associated with gel formation and supports efficient production of liquid detergents, industrial cleaners and specialty formulations.

The table below shows the approximate viscosity values [cP] of ROKAnol® SAE at various dilution levels, measured at 25°C.

Water content	ROKAnol SAE5	ROKANol SAE7	ROKANol SAE9	ROKANol SAE12	ROKANol SAE40w/70*
10%	57	7	110	125	2200
20%	68	**102000**	130	150	2000
30%	**19500**	**106000**	200	275	1200
40%	**46000**	**10600**	325	**>10^6**	600
50%	**30000**	150	**>10^6**	**>10^6**	300
60%	**30000**	125	200	160	100
70%	**30000**	73	26	25	30
80%	608	25	10	< 10	<10
90%	30	<10	<10	<10	<10



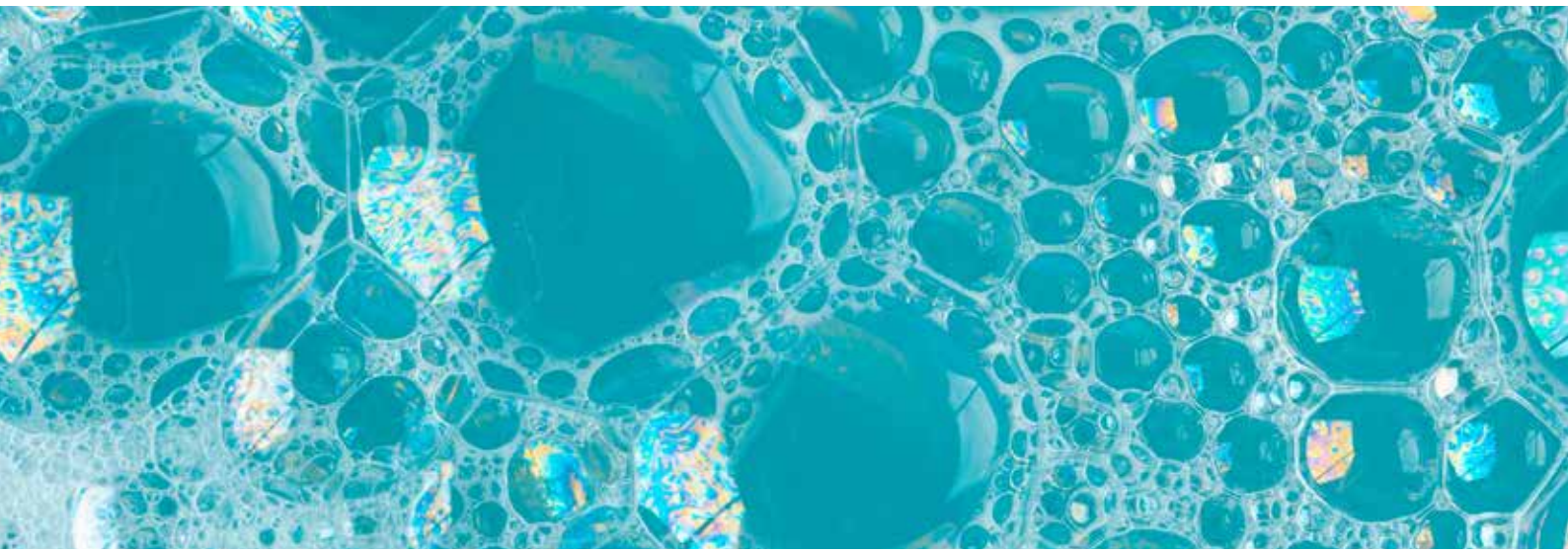
Application

Alkaline steel components cleaner

Appearance	Clear liquid
pH (solution 1%)	12-13

- Moderate foaming
- Manual or machine spray cleaning, alkaline cleaning

Ingredient	Mass percentage [%]	Function
ROKAnol SAE12	8.0	Cleaning agent
EXOfos PB-139	2.0	Corrosion Inhibition
Sodium hydroxide (50%)	8.0	pH regulator
Sodium metasilicate	1.5	Detergency enhancer
Sodium carbonate	1.5	Detergency enhancer
EDTA (Sodium salt, 40%)	5.0	Chelating agent
Water	Up to 100	–



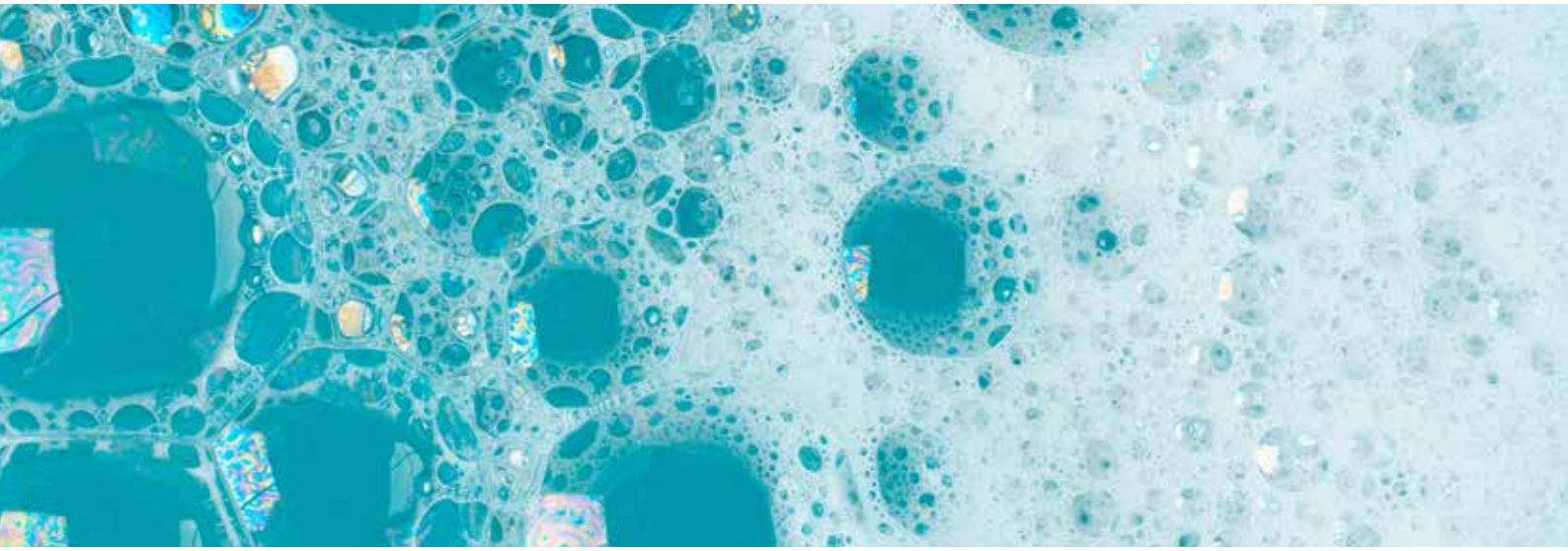
Formulation performance:

To evaluate the performance of the formulation, an in-house method was developed. Soiled plate with carbon particles was cleaned with spraying specific amount of evaluated product.

Results was compared with water cleaning efficiency. Photos before and after cleaning are used to determine the efficiency of evaluated formulation.



Plate covered with preapred soil (on the left bottom) and cleaned using alkaline steel components cleaner formulation (right bottom) in comparison with water – soiled (top left), cleaned (top right)



Aerospace component pretreatment

Appearance	Straw-colored liquid

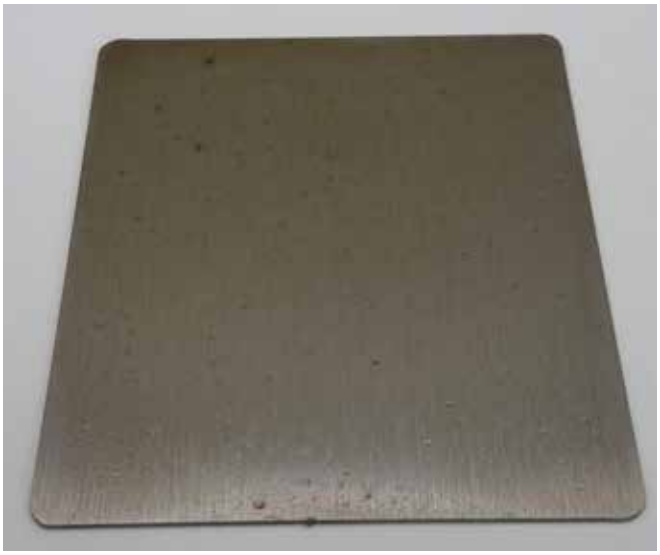
- Insoluble in water
- Fast acting
- Moderate foaming
- Dip cleaning

Ingredient	Mass percentage [%]	Function
ROKAnol NL3	15	Wetting agent
ROKAnol SAE12	10	Cleaning agent
Hydrocarbon solvent	75	Solvent

Formulation performance:

To evaluate cleaning performance, special in-house method was created. Steel plate was covered smoothly with 3 g of prepared mixture of petrolatum and engine oil, it was then left until the soil hardened. Prepared plate was dipped in solvent cleaner and left for 5 minutes, batch was occasionally moved in order to ensure liquid flow above the plate surface. Cleaned plated was then removed from the bath and cleanliness level was evaluated visually.





Aircraft surface cleaner

Appearance	Clear liquid
pH (solution 1%)	10-12

- For usage in room temperature
- Low foaming
- Suitable for manual or machine spray cleaning

Ingredient	Mass percentage [%]	Function
ROKAnol SAE5	2.5	Degreasing, cleaning agent
ROKAnol GA4	2.0	Degreasing agent
ROKAnol LP100	2.0	Detergency, low foam agent
Sodium carbonate	1.0	Builder
Sodium metasilicate	1.0	Builder
Water	Up to 100	Solvent



Formulation performance:

To evaluate cleaning performance, special in-house method was created. Steel plate was soiled with 'hydrophobic dirt' which is mixture of organic, hydrophobic substances and inorganic particles. The soil was sprayed on the surface. The cleaning process was with spraying specific amount of evaluated product on the top of the plate. Results were compared with water cleaning efficiency. Measure of efficacy is visual observation of plates before, and after cleaning.

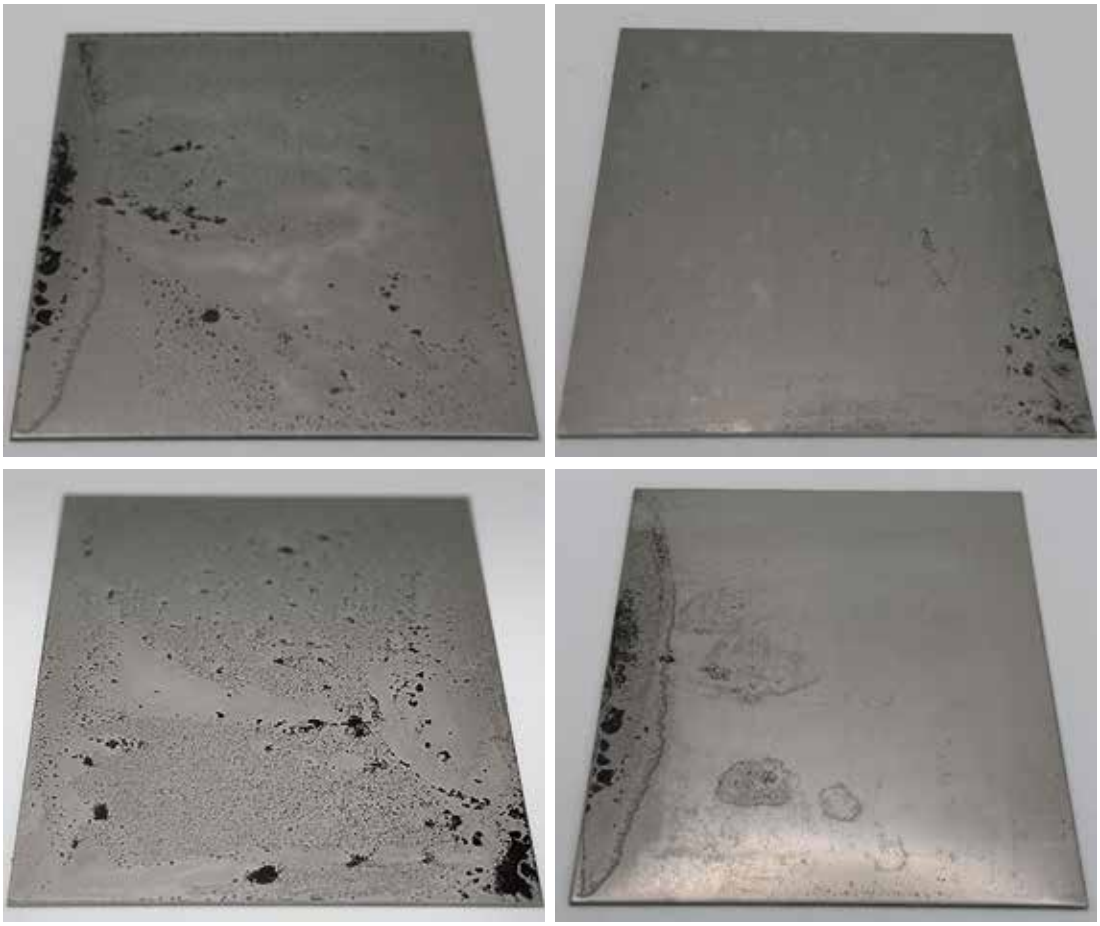


Plate covered with preapred soil (top left) and cleaned using Aircraft surface cleaner (top right) in comparison with water – soiled (left bottom), cleaned (right bottom)



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September 2026

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