



What is it?

Chemtec's ORGASIL® technology is a new and innovative chemical process for preparing metals for painting and finishing operations. The ORGASIL® process creates an organic silanes-based nanometric coating on the treated surface.

All ORGASIL® products are free of heavy metals (Zinc, Chrome, Nickel, etc.). The ORGASIL® process creates no toxic or dangerous solid wastes; it works at ambient temperature and it imparts very high corrosion resistance. ORGASIL® technology is an environmentally friendly alternative to micro-crystalline or tri-cationic phosphate systems based on zinc or other metals.

The ORGASIL® system was developed for applications requiring high corrosion resistance, such as automotive and home appliances, etc. where the user wants to avoid use of toxic products, the treatment of huge amount of dangerous sludge and water, and energy consumption and costs.



Product range

Product	Surface	Advantages
ORGASIL 01	Steel	Up to 700-800 hours of salt spray resistance on steel with TGIC-free polyester powder coating. Salt spray resistance can be much higher with epoxies and with mixed or pure TGIC polyester powder coatings.
ORGASIL 02	Aluminum and non-ferrous metals	More than 700-800 hours of acetic salt spray on aluminum with TGIC-free polyester powder coating.
ORGASIL 03	All metals	Flexible product. Testing currently underway.
ORGASIL 04	All metals Low cost	Flexible products, compatible with tap water.



Application

All ORGASIL® products are water-based and are supplied as concentrates to be diluted in water. Please make reference to the TDS of each product to determine the specific concentration. Since all ORGASIL® products must be applied on clean, degreased surfaces, the ORGASIL products are applied in multi-stage processes.

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Various process options and washer configurations are possible depending on the finished product quality level requested by the customer.

1. STANDARD APPLICATION: 5 STAGES

- acid or alkaline cleaning (*);
- rinse with tap water;
- rinse with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- ORGASIL[®] diluted in d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- rinse with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity).

⇒ This application is normally used on steel with ORGASIL[®] 01 and 03 and provides the highest level of corrosion resistance.

2. LOW-COST APPLICATION: 3 STAGES

- acid or alkaline cleaning (*);
- rinse with tap water;
- ORGASIL[®] diluted in d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity).

⇒ This application is normally used on steel with ORGASIL 04 when the priority is a low-budget. With this application corrosion resistance results are significantly reduced (by 50% or more). In addition the life of the ORGASIL[®] product is reduced. To extend the life of the ORGASIL[®] product, adding a second rinse stage before the ORGASIL[®] stage is recommended.

3. LARGE APPLICATION: 8 STAGES

- acid pickling (**);
- rinse with tap water;
- rinse with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- alkaline cleaning (*);
- rinse with tap water;
- rinse with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- ORGASIL[®] diluted in d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- rinse with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity).

⇒ This system is used only when it is necessary to pickle and clean the surface, for example where treating extruded aluminum profiles or steel with oxides, calamine, etc. This application is normally used on steel with ORGASIL[®] 01, 02 and 03, and provides the highest level of corrosion resistance.

(*) CLEANING PRODUCTS:

- alkaline cleaning: DETCHEM AST 01 + DNAD PT
- acid cleaning: DEORGATEC 1811 + DNAD PT or DBT ALU X2 + DAC 200

(**) PICKLING PRODUCTS:

- for aluminum: DBT ALU X2 + DAC 200
- for steel and galvanized steel: DEORGATEC 1811 + DNAD PT

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Features

The ORGASIL® process is based on organic silanes modified with chemically reactive groups. Metals treated are coated by a nanometric coating that is chemically bonded to the metal surface and to the coating.

This nanometric coating has the following features:

- it is highly hydrophobic (to guarantee excellent corrosion resistance);
- it is very thin: a few nanometers (nano technology);
- it is perfectly transparent;
- it provides great top coat adhesion and excellent corrosion resistance;
- it is compatible with powder coating and wet paint.

The ORGASIL® range includes products for treating steel, aluminum and galvanized steel.

All ORGASIL® products work at ambient temperature: this results in large energy savings in comparison with conventional phosphating systems.

All ORGASIL® products are water-based and are supplied as concentrates to be diluted in water. ORGASIL® products must be applied on surfaces that are clean, degreased and free of oxides, hydroxides (rust, calamine, extrusion impurities, etc).

To obtain the highest corrosion resistance it is necessary to:

- dilute the ORGASIL® products in d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity);
- rinse the treated surface before and after ORGASIL® treatment with d.i. water (less than 30 $\mu\text{S}/\text{cm}$ of conductivity).



Advantages

The ORGASIL process works at ambient temperature:

- lower energy consumption than conventional phosphate systems.

The ORGASIL process does not create any toxic sludge:

- reduction of waste water treatment costs;
- reduction of sludge disposal costs;
- reduction of maintenance costs;
- easy management of the plant;
- high energy efficiency.



Environment and Safety

All ORGASIL® products contain no heavy metals or toxic or harmful materials: ORGASIL® products are not classified as dangerous for humans or for the environment.

The workplace is safe.

The ORGASIL® process also does not create any toxic sludge to dispose of.

Companies that have ISO 14.000 certification or are planning to apply for it will obtain great advantages from the safety of ORGASIL® product line.

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Limitations

All ORGASIL® products are stable in a fairly wide pH range.

If the pH values are out of that range, the organic silanes are irreversibly hydrolyzed and become unusable. It is then necessary to dispose of the bath and replace it.

For this reason, it is necessary to take precautions to stabilize the pH of the ORGASIL® bath:

- use d.i. water to dilute the ORGASIL® product and in all rinsing stages;
- hang the parts properly to reduce the chemical drag-out between the stages of the washer and thus to reduce contamination;
- provide adequate time and space in the washer to guarantee the best drip-off of chemicals between all the stages;
- depending on the shape of the parts and to the conveyor speed, it may be necessary to increase the number of rinse stages.

If the pH of the ORGASIL® stage is stable within the proper range, the life of the ORGASIL® bath is between 6 and 12 months. It is therefore very advantageous to customers to keep the pH stable.

Packaging

ORGASIL® products are supplied in plastic drums of 23 kg or 200 kg or in industrial bulk containers of 1.000 kg.

ORGASIL® products are guaranteed for 1 year from the delivery date if stored as described in the MSDS.

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