

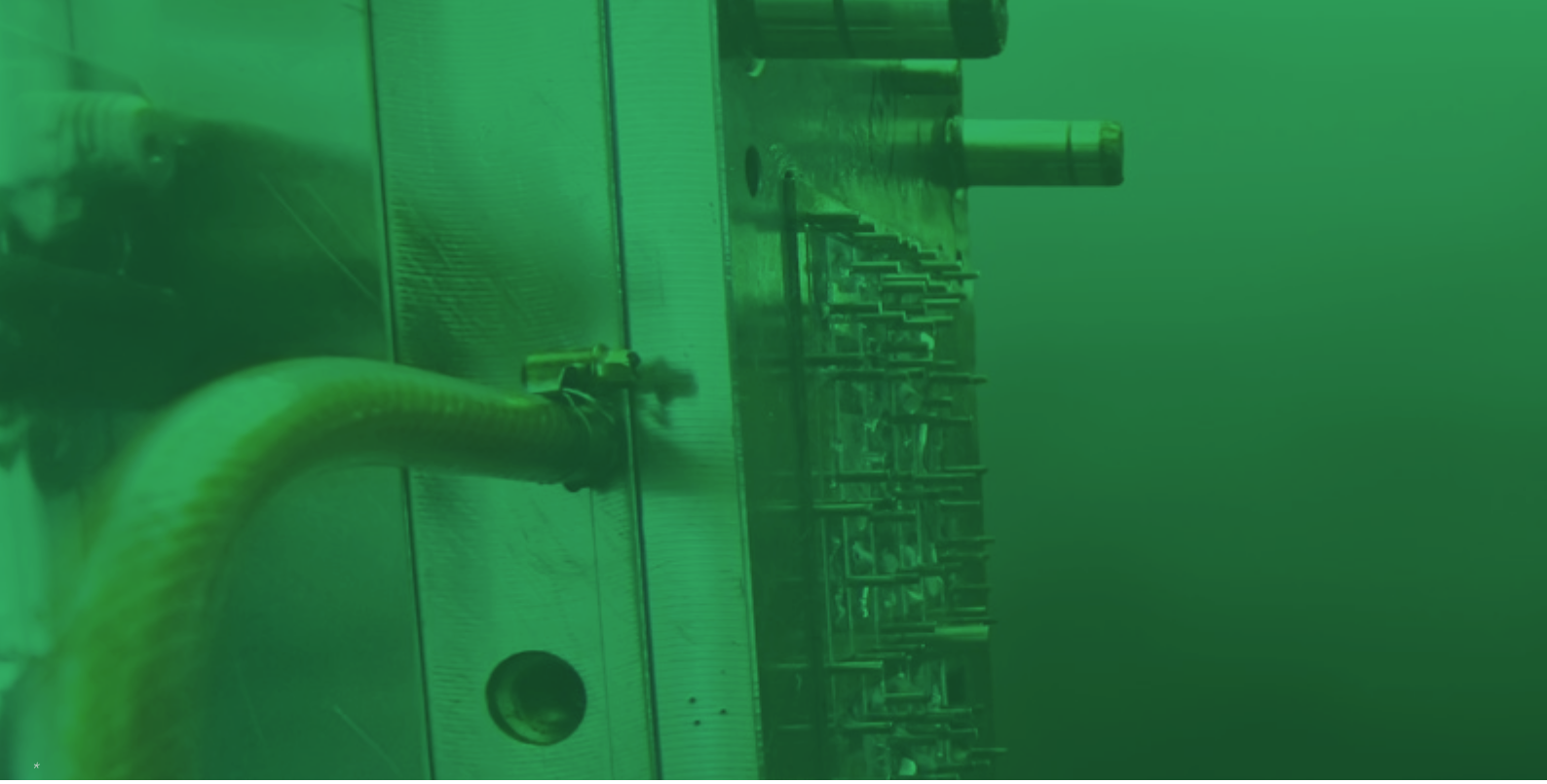
# Cleaning solutions for plastics processing

Industry guide of Bio-Circle Surface Technology GmbH



BIO-CIRCLE®

MAKING GREEN WORK.



In the plastics industry, one thing above all counts: **speed – without sacrificing quality**. It is all the more uneconomical when cycle times are getting longer and longer, the product deviates from the norm or stubborn dirt cannot be removed.

For this reason, cleaning the **cooling ducts** of the plastic injection moulding tools and the **moulds** and **parts of the injection moulding machine** is important and indispensable. Prevention instead of aftercare is the golden rule here.
And it's easy with the right cleaning products and experts at your side.

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# DIAGNOSIS

## CLOGGED COOLING AND HEATING DUCTS DUE TO CORROSION AND LIMESCALE DEPOSITS, REDUCTION OF THE CROSS-SECTION OF THE DUCTS




### Cycle phases too long

ISSUE 1



It is a creeping process – contaminated cooling ducts: the output quantity is constantly decreasing and leading to a loss of turnover.

### Temperature fluctuations

ISSUE 2



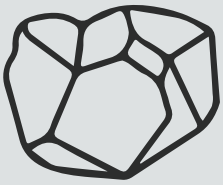
Temperatures that are too high or too low result in a reduction in the quality of the end product.

CAUSES

CAUSES

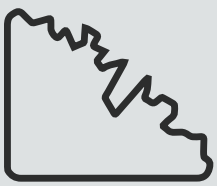
### Limescale deposits

The water used is rarely free of limescale. Elevated temperatures promote limescale deposits



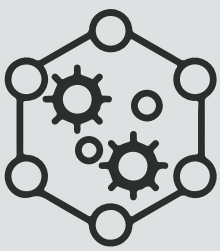
### Corrosion deposits

Rust is another antagonist, as cooling ducts are often made of material that is susceptible to corrosion.



### Biofilms

More rarely, biofilms (mucous layers) may also be present as additional contaminants.



## STEPS OF THE AUTOMATIC CLEANING PROCESS
CONNECT, FILL, SWITCH ON!

1. Connect the hose from the cleaning system to the component.
2. Leak test on connection using compressed air
3. Start the cleaning process.

# TREATMENT

## CLEANING

**Limescale, corrosion and other types of contamination accumulate over time in cooling ducts, heat exchangers and temperature control units, forming encrustations.**
**The RWR KST was developed for these special cleaning tasks to keep your systems clean and thus ensure that they function effectively.**

- Descales and de-rusts internal circuits via existing connections of the component without disassembly
- Cleans and rinses (even complex pipe geometries) by circulation rinsing
- Intensification of the cleaning performance by changing the flow direction
- Mobile cleaning system for use on injection moulds, injection moulding machines, temperature control units and heat exchangers
- Pipe diameter up to 1/2"
- Filtration of solids
- Easy and convenient to use – space-saving, quiet and easy to operate

## YOUR BENEFITS

**INCREASING PROFITABILITY**

+ Short cycle times of the production plants
+ Increased throughput volume in cooling ducts (maximum) and increased cooling effect
+ Reduced number of rejects and increased production

**Increasing occupational safety**

+ Manual cleaning is replaced by fully automatic cleaning
+ Contact with cleaning agents is prevented

**Protecting the environment and saving resources**

+ Fully automatic cleaning process:
  Cleaning is automatically terminated prematurely once constant flow from the component has been achieved.
+ A maximum of 80 litres of cleaning liquid is required for circulation rinsing; the cleaning liquid can be used multiple times.
+ Cleaning agent can be returned to the container through the drain and disposed of properly.
+ Upgrade for larger filling quantities possible using a bypass




## OVERHAULING IS ONLY DONE ONCE A YEAR?
RENT, DON'T BUY.

You would like to purchase a new cleaning system, but do not want to make a large investment? With our attractive rental conditions, you have the option of renting the RWR cleaning system for your scheduled overhaul period and thus reducing your operating expenses. Take advantage of our advice and ask for your individual offer for machine, period and cleaning agent – together we will find the right solution.

REQUEST CONSULTING
T: +49 5241 9443-0
E: service@bio-circle.de

4 Empty the component using compressed air.

5 Passivate the component using corrosion protection.

6 Empty the component of corrosion protection using compressed air

7 Disconnect the hose connection.

## RWR AND RWR-KST – PIPE CLEANING SYSTEMS & HEAT EXCHANGER CLEANING



**The RWR systems are the optimal solution for cleaning internal circulation systems without disassembly. RWR-KST specialises in the particular challenges of cleaning cooling ducts in plastic injection moulding tools. It increases the cooling effect, thus reducing the number of rejects and enabling a higher production rate.**

✓ Descales and de-rusts internal circuits.
✓ Cleans and rinses (even complex pipe geometries) by means of circulation rinsing
✓ Easy and pleasant to use:
- space-saving, quiet and easy to use
- mobile, can be used without dismantling
- completely enclosed system ensures no odours

**Geräterange RWR KST**
- RWR-80 L KST Manuall
- RWR-80 L KST Dual Automatc
- RWR-80 L KST Fully Automatic SPS (with programmable logic controller)

## Power Cleaner KST 2.0

High-performance cleaning agent specially developed for machine application for cleaning the cooling ducts inside injection moulding tools in combination with the RWR-KST.




**pH value: 0.8**

## Power Cleaner 400

Removal of the heaviest mineral deposits in the food industry. Suitable for use in pipe and heat exchanger cleaning systems (RWR).




**pH value: ~1**

## Korrosionsschutz für wässerige Systeme

The light corrosion protection is VOC-free and does not require labelling. It can be added to the rinsing cycle.




**pH value: ~8.6**


SHORTER
SETUP TIMES
FEWER
REJECTS
IMPROVED
COOLING
FEWER
SOLVENTS,
FEWER VOCS
VOC

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# DIAGNOSIS

## CONTAMINATION OF MOULDS, TOOLS AND PRODUCTION PARTS BY SEPARATING AGENTS SUCH AS PE, PVC, PP, OILS, GREASES, EROSION RESIDUES




### Unusable mould inserts

**ISSUE 1**

Gas can only escape during production if the mould inserts are clean, thus preventing burnt spots.

### Declining productivity

**ISSUE 2**

The manufacturing process is affected by contaminated mould inserts and extruder screws.

### Loss of quality

**ISSUE 3**

The contaminated mould inserts prevent the correct casting of parts.

CAUSES

CAUSES

### Contamination of the screw

Burnt-in plastic residues restrict the functionality of the extruder screw, which is essential for trouble-free production.



### Persistent contaminations

The consequences are a decline in productivity and a drop in the quality of the end product.



## EFFECTIVE CLEANING OF PLASTIC INJECTION MOULDS

### MASTER MOULD 100

The cleaner is a water-based ultrasonic cleaner for cleaning moulds used in plastic injection moulding. It is effective against plastic outgassing, plastic residues, grease, corrosion protection agents and flash rust with light corrosion.

**pH value: 13,4**

*Order no.: A020910*




### MASTER MOULD RL

The solution for cleaning large plastic injection moulds. Even stubborn dirt such as outgassing from recycled plastic is effortlessly removed. This extends the lifespan of your tools and minimises downtime.

**pH value: 3**

*Order no.: A001911*

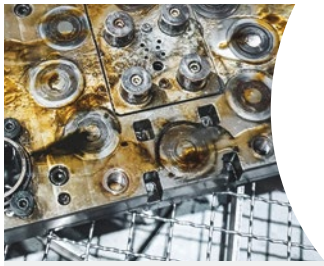





# TREATMENT

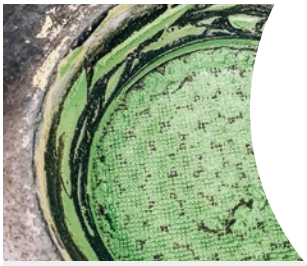
## PARTS WASHERS FOR AUTOMATIC CLEANING, RESPECTFUL OF THE ENVIRONMENT, SAVING TIME AND INCREASING SAFETY.

AUTOMATIC CLEANING





AUTOMATIC CLEANING





### HTW
### HOT-WATER PARTS WASHER

The fully automatic Hot-Water Parts Washers (available in various sizes) are characterised by their high cleaning performance and easy handling.

**The benefits at a glance:**

+ Perfect for cleaning your mould inserts
+ Economical: energy-efficient
+ High-performance: three-dimensional nozzle system, electrically driven rotating basket, etc.

### ULTRASONIC
### CLEANING DEVICES

Ultrasonic waves remove dirt from even the smallest nooks, edges and recesses. The cleaning performance is enhanced by setting the optimum temperature. Ideal for cleaning small parts such as extrusion matrices or closure moulds

**The benefits at a glance:**

+ Non-abrasive technology
+ Perfect for cleaning small geometrical parts
+ Reduction of maintenance times through parallel work
+ Customised to your requirements: devices in different sizes

## REINIGER




### ALUSTAR 300

The machine cleaners are specially designed for cleaning high-quality steel types.

**Suitable for:** HTW, high-pressure parts washers

**Field of use:** mould inserts

**pH value: ~13-14**




### POLY STRIP 100

The cleaner removes resins, polymers and varnishes even at high layer thickness.

**Suitable for:** Ultrasonic Cleaning Device

**Field of use:** extrusion matrices, closure moulds

**pH value: 0 / ~ 7 in aqueous solution**

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## BIO-CIRCLE HP VIGO

The HP Vigo – manual parts cleaning at high pressure in a closed washing chamber: for pre-cleaning or high-pressure cleaning of all kinds of parts.

**The benefits at a glance:**

+ Perfect for parts with coils, such as extruder screws
+ Effective: removes even the toughest dirt
+ Precise work with high-pressure nozzle (up to 80 bar)
+ Just one work step: subsequent drying with a compressed air pistol





MANUAL CLEANING

## BIO-CIRCLE HP

Combines the best of two machines: flow brush and high-pressure nozzle. The high-pressure parts washer can be used with the lid open or closed, works in a closed circuit and cleans heavily soiled parts.
Afterwards, the parts can be blown off with compressed air.

**The benefits at a glance:**

+ High-pressure nozzle and flow brush
+ High loading capacity
+ High occupational safety
+ Circulation system





MANUAL CLEANING

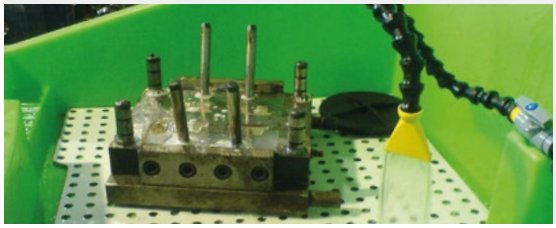
## BIO-CIRCLE GT-i – PARTS WASHERS

The optimal solution for natural parts cleaning. The simple, fast, safe and environmentally friendly cleaning makes the parts washer ideal for pre-cleaning and maintaining production parts. The BIO-CIRCLE systems work without solvents.

**The benefits at a glance:**

+ Solvent-free, environmentally friendly
+ Long service life thanks to BIO-CIRCLE liquids
+ Suitable for apprentices
+ High occupational safety
+ Efficient cleaning performance










### CORROSION PROTECTION 100

Corrosion inhibitor for alkaline and neutral cleaning agents for short-term storage of steel and iron tools.

**Suitable for:** additive for neutral and alkaline cleaning agents

**Field of use:** moulding tools

**pH value: ~ 8**




### BIO-CIRCLE L EVO

Replaces the solvent-based cleaner and increases efficiency, with microorganisms.

**Suitable for:** HP Vigo, HP, parts washer

**Field of use:** Maintenance and servicing of machine parts, components, tools, etc.

**pH value: ~ 8**

# PRODUCT RANGES OF OUR CLEANING SOLUTIONS IN PLASTICS PROCESSING

LOW ENERGIE

OUR LOW ENERGIE TIP!

## CB 100 Range

Safe to use and environmentally friendly: CB 100 removes the heaviest soiling from steel, stainless steel, aluminium and other metals. Ready-to-use degreaser with the Nature Boost effect

**Suitable for:** BIO-CIRCLE GT parts washers, HP Vigo, HP, Vario, CLEAN BOX
**Field of use:** Substitution of petroleum and solvents without the use of temperature
**pH value: 8.6-10.8**

NSF · READY TO USE · NATURE BOOST · VOC free! · unlabelled



## BIO-CIRCLE L Range

The BIO-CIRCLE L cleaners are innovative, effective surfactant cleaners for use in the BIO-CIRCLE GT-i parts washer.
All cleaners contain microorganisms that break down the removed oil and thus guarantee a long service life.

**Suitable for:** BIO-CIRCLE GT parts washers with circulation and filter system, HP Vigo
**Field of use:** Cleaning and degreasing of tools and small parts in the areas of maintenance, production, manufacturing
**pH value: 8.5-9.5**

NSF · READY TO USE · VOC free! · unlabelled



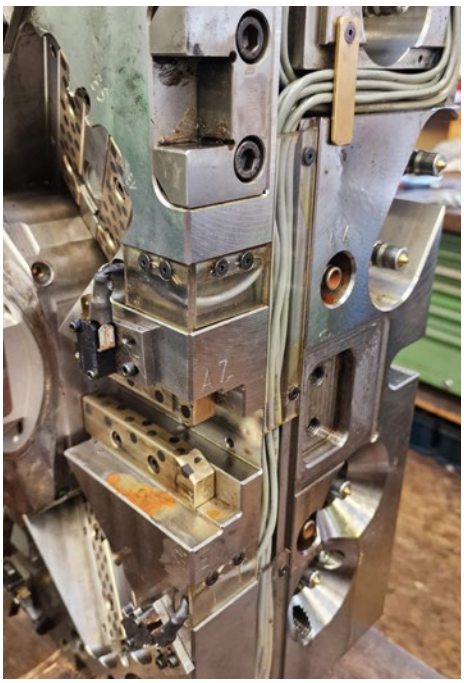
## Applications before and after storing the tools

### Before storing

- Preservation of moulds with High-performance rust protection wax
- Protects all metals from corrosion during outdoor storage and transport
- Water-displacing
- More than 100 cycles in the Kesternich test

READY TO USE





### After storing

- Cleaning of the wax by GS 200
- The cleaning agent removes carbonisations, grease, anti-corrosion waxes, adhesive residues, bitumen, Tectyl, silicone, rubber, etc.
- VOC-reduced
- High flashpoint
- NSF-certified



unlabelled · VOC reduced! · READY TO USE · NSF · NATURE BOOST

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# *Success Stories*

*«By using the RWR cleaning system and the appropriate cleaning medium, we were able to clean the cooling ducts of our mould tools on the plastic injection moulding machines quickly and efficiently. This enables us to achieve greater energy efficiency in our moulds, reduce production waste and increase the life expectancy of the expensive components. and increase the life expectancy of the expensive components. If requested and ordered by the customer, we carry out the overhaul of the moulds with Bio-Circle as a competent partner.»*

**Andreas Scherrer, Proprietor / Managing Director**
Büchler Reinli + Spitzli AG, Flawil

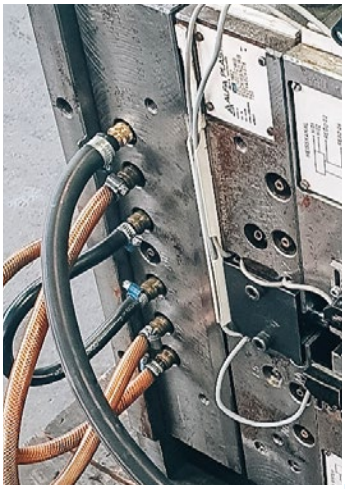
BÜCHLER REINLI | SPITZLI
www.brsflawil.ch



# TECHNICAL CENTRE









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## IN OUR WELL-EQUIPPED TECHNICAL CENTRE, YOU HAVE THE OPPORTUNITY TO CONVINCE YOURSELF OF THE QUALITY AND CLEANING PERFORMANCE OF OUR PRODUCTS ON SITE.

**Carry out washing tests on your parts under the guidance of our application engineer and find the right cleaning solution for your needs.**

**Other services we offer you:**

- Telephone hotline for chemical, biotechnological and technical questions as well as application information on our products
- Analysis of your Bio-Circle cleaning baths
- Product training for dealers and training for users at the Bio-Circle Academy
- On site or digital
- Support in complying with legal regulations (e.g. VOC reduction, substitution of hazardous substances)

**We are looking forward to seeing you!**






BIO-CIRCLE®




# BIO-CIRCLE
# THE PIONEER IN ITS INDUSTRY

Bio-Circle Surface Technology GmbH from Gütersloh is an expert in biological cleaning solutions for industry. The company specialises in the distribution of highly efficient, hazardous substance-free and solvent-reduced cleaners and cleaning systems. This means more occupational safety, more productivity, higher efficiency, protection of the environment, lower operating costs for occupational safety measures, storage and disposal. The environmentally friendly, sustainable and user-friendly products stand out thanks to over 30 years of experience in research and development.

## PHILOSOPHY

Our corporate philosophy ‘MAKING GREEN WORK.’ makes it clear that we not only want to create a green area for ourselves, but also for other companies through our products and technologies.

By developing suitable systems and system solutions in parts cleaning, we want to increase occupational safety, fulfil the needs of users and use resources in such a way that they are preserved for future generations.

SAFETY IN PRODUCTION

EASY HANDLING

HIGH ECONOMIC EFFICIENCY

EMPLOYEE PRO-TECTION

# Saving energy through process optimisation

**Constantly rising energy costs are forcing many companies to optimise their processes. Even small adjustments can generate significant savings.**

**Tip 1**
You are using a cleaning agent that needs to be heated?
Try lowering the temperature by 1°C. You can save about 6–10 % energy with every degree Celsius.

**Tip 2**
You are not dependent on using a temperature-based cleaning agent and work with solvent-based products?
Switch to a solvent- and hazardous substance-free alternative such as the CB 100 range.

**Tip 3**
You are about to purchase a Hot-Water Parts Washer?
Make sure that the new cleaning device is equipped with insulation to avoid heat loss.

# OUR QUALITY SEALS

**Nature Boost**
Optimum performance, protection for employees and reduction of environmental influences. Successful cleaning in industry through the power of nature. Nature Boost cleaners are based on renewable raw materials. They convince with their excellent dissolving power, especially for strong greases, oils, adhesives and paint. Nature Boost is so impressive because it stands for non-flammable, VOC-free, label-free products.

**VOC-free, VOC-reduced**
The European Solvent Regulation (1999/13/EC) aims to significantly reduce the use of solvents and the emissions of volatile organic compounds into the environment, thereby protecting human health. When developing and manufacturing our products, we take care to develop and produce VOC-free or VOC-reduced products. With the water-based Bio-Circle products, solvents can be completely replaced in many applications.

**Label-free**
Thanks to efficient systems and label-free products, we are able to optimise our customers' processes. Although cleaning is carried out using label-free products, the cleaning quality is maintained. The very time-consuming handling of hazardous substances is eliminated. There is no need for hazardous substance storage, hazardous substance training or the creation of operating instructions. The health of employees and the environment are protected. Trainees can also work with the products.

**NSF – Cleaning in the food industry**
The NSF-certified, water-based Bio-Circle cleaners can be mixed with water and are suitable for use in the food industry due to their residue-free rinsing properties.

**Miscible with water**
Many of our cleaning agents are concentrates. They are easy to mix with water and therefore very economical. Please adjust the mixing ratio depending on the application and soiling.

**Clean Blue – Energy efficiency**
The low-temperature cleaners from Bio-Circle - Clean Blue - have been developed for machine and manual use. They save energy and powerfully remove heavy soiling even at room temperature. The cleaning agents can be used flexibly at all temperatures.

**Ready to Use**
These cleaning agents are ready to use. Depending on the cleaner, they can be applied manually or mechanically. The user is relieved of one work step, as there is no need to calculate the mixing ratio.

**Our delivery service (Germany)**
**Delivery time:** Approx. 2-3 days.
**Delivery:**
Free delivery incl. packaging from an order value of € 600.-. For orders under € 600.- order value (OV) we charge the following service fees (SF):

| | |
|---|---|
| **Service fee:** | Up to € 100.– OV SF € 16.50 |
| | Up to € 200.– OV SF € 19.50 |
| | Up to € 600.– OV SF € 22.50 |

**Collection by the customer:**
You can collect your products directly from our production facility in **Gütersloh from Mondays to Thursdays between 8.00 am and 4.30 pm and Fridays between 8.00 am and 3.00 pm.**
Please call us in advance on **+ 49 (0) 52 41 / 9 44 30**, so that we can prepare your order for collection.

**Payment:**
Within 8 days with 2% discount or within 30 days net without deduction. On request, we will debit the invoice amount from your account. You will receive a 3% discount within 8 days.
To do this, please give us your direct debit authorisation.

**Reservation of ownership:**
All delivered items shall remain our property until all our claims arising from the business relationship with the customer have been settled in full.

The prices do not include the currently applicable VAT.

# Also popular in the industry

| | pH value from MSDS | VOC content subject to levy (Switzerland) | Flash point in °C | Parts washer | Ultrasound | RWR | Steel/stainless steel | Aluminium | Non-ferrous metals | Plastics | Varnished surfaces | Zinc-coated surfaces | Hazard symbol | VOC-free acc. to VOCV | VOC-reduced | NSF | Label-free | Clean Blue | Water-miscible | Ready to us |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALUSTAR 300** | 13-14 | 0 | - | ■ | ■ | ■ | ■ | ■ | | ■ | | | ◆ | VOC free! | - | - | - | ● | H2O | - |
| **BIO-RUST F** | 6.8 | 0 | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | VOC free! | - | - | ◇ | - | - | READY TO USE |
| **E-NOX Clean** | 0.8 | 5 | - | | ■ | | ■ | ■ | | ■ | | | ◆ | - | VOC reduced! | - | - | - | H2O | READY TO USE |
| **E-NOX-I** | 1 | 2.5 | - | | | | ■ | ■ | | | | | ◆ | VOC free! | - | - | - | - | - | READY TO USE |
| **E-NOX Shine** | 11,4 | 1 | - | | | | ■ | ■ | ■ | ■ | ■ | ■ | - | VOC free! | - | NSF | ◇ | - | - | READY TO USE |
| **FOR CLEAN** | 10 | 0 | - | | ■ | | ■ | | | ■ | ■ | | - | VOC free! | - | - | ◇ | ● | H2O | READY TO USE |
| **FT 100** | 10.8 | 12 | 48 | | | | ■ | ■ | ■ | ■ | | ■ | - | - | VOC reduced! | NSF | ◇ | - | - | READY TO USE |
| **FT 300** | 10.8 | 17.3 | 41 | | | | ■ | ■ | ■ | ■ | | ■ | - | - | VOC reduced! | - | ◇ | - | - | READY TO USE |
| **OMNI** | - | 5 | 100 | | | | ■ | ■ | ■ | | | ■ | ◆ | - | VOC reduced! | - | - | - | - | READY TO USE |
| **Poly Strip 100** | - | 9.5 | 100 | | | | ■ | ■ | ■ | | | ■ | ! | - | - | - | - | - | - | READY TO USE |
| **Power Cleaner 200** | 1.5 | 2.2 | - | | ■ | | ■ | ■ | | ■ | | | ! | VOC free! | - | - | - | - | H2O | - |
| **STAR 200** | 13.5 | 0 | - | ■ | ■ | ■ | ■ | | | ■ | | | ◆ | VOC free! | - | - | - | - | H2O | - |
| **STAR 300** | 14 | 0 | - | ■ | ■ | ■ | ■ | | | ■ | | | ◆ | VOC free! | - | - | - | - | H2O | - |
| **UNO S V** | 13.5 | 5 | - | | | | ■ | | | | | | ◆ | - | VOC reduced! | NSF | - | ● | H2O | READY TO USE |
| **UNO W** | 13 | 0 | - | | ■ | | ■ | | | | | | ◆ | VOC free! | - | - | - | - | H2O | READY TO USE |

■ einsetzbar ■ bedingt einsetzbar □ nicht einsetzbar

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