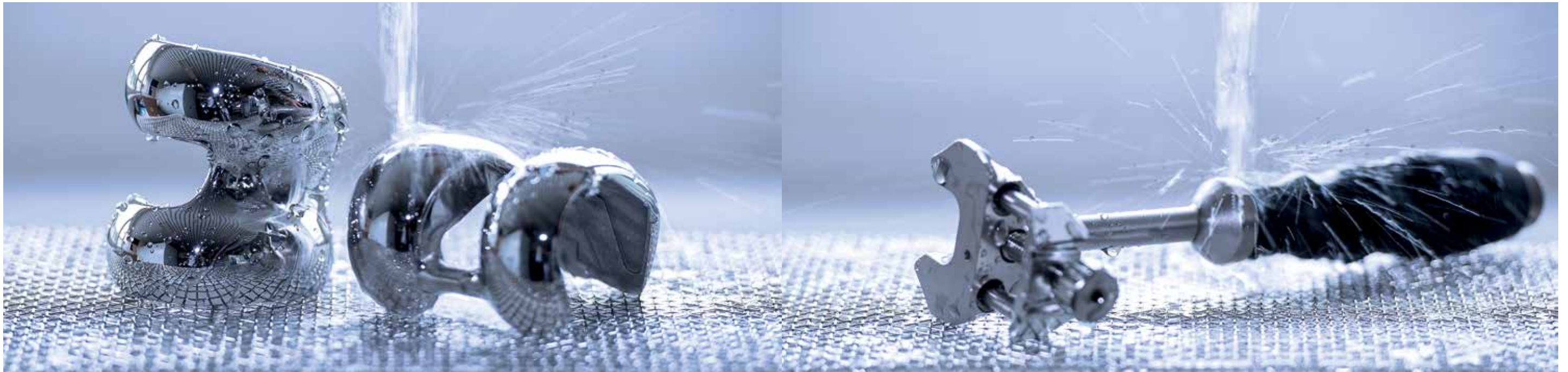




deconex® – parts cleaning in the medical technology industry



It's a clean thing

Borer Chemie AG – your professional partner

Borer Chemie AG is a leading technology firm at the cutting edge of the global field of cleaning for professional applications in parts production, laboratory applications, the pharmaceutical sector and hospital hygiene.

Its cleaning products are developed, manufactured and shipped from its headquarters in Zuchwil, Switzerland. First-class Swiss quality is found in the company's products as well as its **process development** and customer service. To this end, we guarantee quality from the raw material to the finished product and keep our customers proactively informed about product changes. We have a professional sales network to serve our global customers.

Our company is certified to **ISO 9001:2008** and **ISO 13485:2012**.

Comprehensive advice: our strength - your added value

With our many years' experience of cleaning-related matters in the medical technology industry and our expertise in surface technology, we are able to advise you on every aspect of high-demand cleaning.

Our professionals work with you to comprehensively plan the cleaning process. Your upstream and downstream processes, as well as your preferences and specifications, for example regarding the system type and productivity, are all factored in. We remain a neutral partner - the decision is yours.

We can either advise you at your premises or at our technology centre, providing you with detailed and professional advice at all times. Following a detailed check of your specifications, we recommend the right **deconex® products for your cleaning process**.

Safety for people

Safe and stable cleaning processes

To achieve a high standard of quality in the production of medical technology parts, all of the production processes must be perfectly coordinated with each other. We have developed a **7-step process** in which we work with you to systematically document your needs and requirements in order to determine the best possible cleaning method. We offer you support throughout, **from the idea to a cleaning process that can be validated**.

Safe, high-performance medical products

The cleanliness of your implants and instruments is our number one priority. This is why we recommend process parameters that constantly fulfil the acceptance criteria of your cleaning results. We are happy to offer you comprehensive advice on this - from the choice of system technology through to regular checks of the cleaning baths at your premises.

Safe, water-based cleaning agents

Safety for patients and users

deconex® MT cleaning agents are based on the high requirements of medical product manufacturers. With deconex® MT cleaning agents, hard-to-rinse ingredients have been completely avoided.

This means that the products are:

- **free from corrosion inhibitors**
- **free from perfumes**
- **free from dyes**

These ingredients are therefore excluded entirely from coming into contact with the implants and instruments.

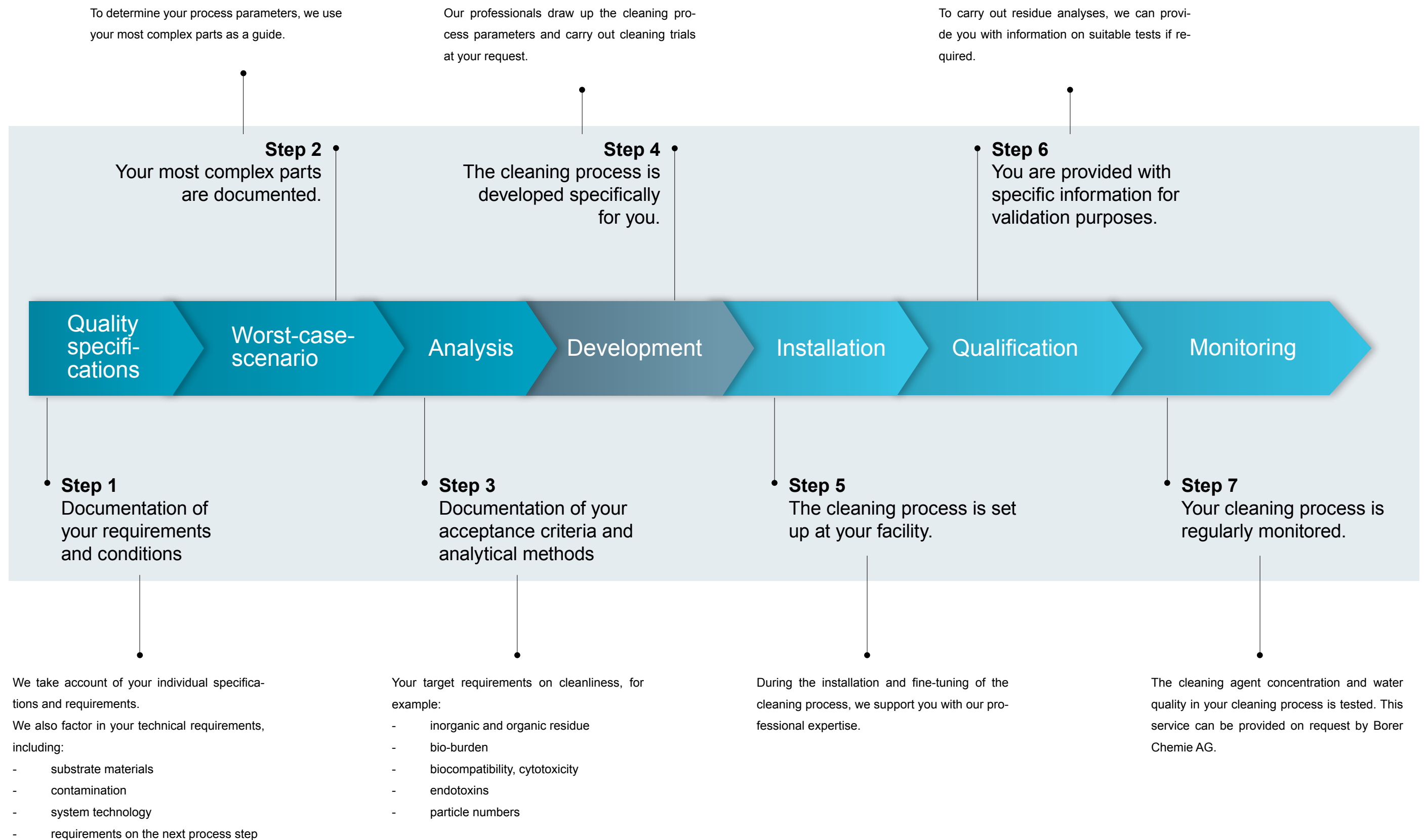
The MT cleaning agents are all formulated as water-based products. They contain neither volatile nor flammable ingredients. Increase safety in your company.

We assist you with cleaning-related questions surrounding clean and safe parts with:

- the 7-step process
- comprehensive technical advice
- MT cleaning agents designed for medical technology

The 7-step process


You are fully supported for a cleaning process that stands up to validation



The cleaning stages

The right cleaning for each production stage of your parts

Between processing stages and as preparation for the next cleaning stage in the sequence




Intermediate cleaning – in the process

During the shaping stages, parts are machined, ground and polished. With these and other processing steps, lots of contamination occurs - such as oils, cooling lubricants, shavings and polishing agents. In this case, very high cleaning performance is needed.

Your parts are prepared perfectly for the next stage of the process.

Before final assembly, before final processing




Fine cleaning – for semi-finished products

When it comes to manufacturing semi-finished products, a high standard of cleanliness is essential. Contamination such as polishing paste residue, traces of oil, fingerprints and dust needs to be removed.

The parts are perfectly prepared before they go through the final processing stages; either on your premises or your customer's.


Before sterilisation



Final cleaning – for finished products

In this stage of cleaning, maximum care must be taken to ensure that the cleaning result meets the acceptance criteria. For this reason, multiple rinsing is a very important factor during final cleaning in order to ensure the maximum possible cleanliness. The parts are then disinfected as necessary and then packaged and sterilised.








Before final rinsing, before sterilisation



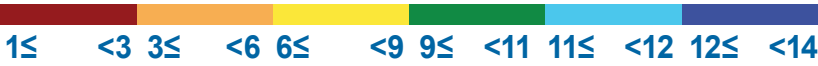
Passivation – protect your stainless steel

Effectively protect your stainless steel parts from corrosion. With the passivation process, a protective layer is rapidly built up from an ideal ratio of chromium (Cr) and iron (Fe) on the part surface. Thanks to its ideal formulation with various acids, passivation is effective and complies with ASTM 967.

The cleaning agents

| | Ultrasonic cleaning, immersion bath cleaning | | | Spray cleaning | | | Passivation | pH guideline value* | Description |
|----------------|---|---|---|---|---|---|---|---------------------|--|
| |  |  |  |  |  |  |  | | |
| deconex® MT 12 | ● | ● | ● | | | | | 11.2 | Alkaline cleaning agent, used in combination with deconex® MT 13, for stubborn residue, particularly suitable for stainless steel and titanium. |
| deconex® MT 13 | ● | ● | ● | | | | | 11.9 | Highly alkaline cleaning agent, used in combination with deconex® MT 12, for stubborn residue, particularly suitable for stainless steel and titanium. |
| deconex® MT 14 | | | | | ● | ● | | 11.9 | Highly alkaline cleaning agent, for the highest standard of cleanliness, removes light residue, especially suitable for stainless steel and titanium. |
| deconex® MT 15 | ● | ● | ● | | | | | 12.0 | Highly alkaline cleaning agent, designed for the highest standard of cleanliness, especially suitable for titanium as well as stainless steel. |
| deconex® MT 16 | ● | | | ● | | | | 12.7 | Highly alkaline cleaning agent, for stubborn residue, especially suitable for stainless steel and titanium. |
| deconex® MT 19 | | | | | | | ● | 12.7 | Highly alkaline cleaning agent, prepares stainless steel surfaces for passivation with deconex® MT 41. |
| deconex® MT 21 | | | | | ● | ● | | 7.0 | Neutral cleaning agent, for the highest standard of cleanliness, removes light residue, suitable if aluminium is also being cleaned. |
| deconex® MT 22 | ● | ● | ● | ● | | | | 11.8 | Alkaline cleaning agent, suitable if aluminium is also being cleaned. |
| deconex® MT 27 | | | | ● | ● | ● | | 10.7 | Mildly alkaline cleaning agent, for the highest standard of cleanliness, suitable if aluminium is also being cleaned. Can also be used as a finish. |
| deconex® MT 30 | | | | ● | ● | ● | | 2.6 | Acidic cleaning agent, is used for better rinsing properties as a finish, suitable if aluminium is also being cleaned. |
| deconex® MT 31 | | | | ● | ● | ● | | 2.3 | Highly acidic cleaning agent, is used for better rinsing properties as a finish, especially suitable for stainless steel and titanium. |
| deconex® MT 32 | ● | ● | ● | | | | | 10.4 | Neutral cleaning agent, is used for better rinsing properties as a finish, especially suitable for stainless steel and titanium. |
| deconex® MT 41 | | | | | | | ● | 2.2 | Acidic cleaning agent, for the passivation of stainless steel. |

* pH guideline value = 1% product in de-ionised water





The cleaning processes

Whether it be ultrasonic or spray cleaning, we have the right processes for you

| Cleaning processes in the ultrasonic method | | Cleaning | Finish | Rinsing | Aluminium | Stainless steel | Titanium | Fibre composite materials | Plastics | Ceramic |
|---|--|----------------------------------|----------------|----------|-----------|-----------------|----------|---------------------------|----------|---------|
| | Intermediate cleaning | | | | | | | | | |
| | For stubborn residue such as: processing oils, polishing pastes | deconex® MT 15 | deconex® MT 32 | DI-water | | x | x | x | x | x |
| | For stubborn residue such as: processing oils, polishing pastes | deconex® MT 16 | deconex® MT 32 | DI-water | | x | x | x | x | x |
| | For particularly stubborn residue such as: processing oils, polishing pastes | deconex® MT 13 deconex® MT 12 | deconex® MT 32 | DI-water | | x | x | x | x | x |
| | For stubborn residue such as: processing oils, polishing pastes | deconex® MT 22 | deconex® MT 32 | DI-water | x | x | x | x | x | x |
| | Fine / final cleaning | | | | | | | | | |
| | For small amounts of residue such as: fingerprints, traces of oil, dust, salts | deconex® MT 15 | deconex® MT 32 | DI-water | | x | x | x | x | x |
| | For light residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 13 deconex® MT 12 | deconex® MT 32 | DI-water | | x | x | x | x | x |
| | For light residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 22 | deconex® MT 32 | DI-water | x | x | x | x | x | x |
| Cleaning processes in the spraying method | | | | | | | | | | |
| | Intermediate cleaning | | | | | | | | | |
| | For stubborn residue such as: polishing pastes, processing oils | deconex® MT 16 | deconex® MT 31 | DI-water | | x | x | x | x | x |
| | For particularly stubborn residue such as: polishing pastes, processing oils | deconex® MT 16 | deconex® MT 27 | DI-water | | x | x | x | x | x |
| | For stubborn residue such as: polishing pastes, processing oils | deconex® MT 22 | deconex® MT 30 | DI-water | x | x | x | x | x | x |
| | For particularly stubborn residue such as: polishing pastes, processing oils | deconex® MT 22 | deconex® MT 27 | DI-water | x | x | x | x | x | x |
| | Fine / final cleaning | | | | | | | | | |
| | For light residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 27 | deconex® MT 31 | DI-water | | x | x | x | x | x |
| | For light residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 14 | deconex® MT 31 | DI-water | | x | x | x | x | x |
| | For small amounts of residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 21 | - | DI-water | x | x | x | x | x | x |
| | For light residue such as: residual polishing paste, traces of oil, fingerprints, dust, salts | deconex® MT 27 | deconex® MT 30 | DI-water | x | x | x | x | x | x |
| | Passivation | | | | | | | | | |
| | For the passivation of stainless steel to provide increased protection from corrosion with prior cleaning to degrease the substrate. | deconex® MT 19 | deconex® MT 41 | DI-water | | x | | | | |

Rinsing is crucial

To achieve the best cleaning result, we recommend the right rinsing stages. In the final rinsing bath, a very high standard of water quality with de-ionised (DI) water is required for the final cleaning stage (< 1 µS/cm).



Borer Chemie AG creates added value for its customers with high-quality cleaning concepts.



We represent cleanliness, stable processes and compliance with regulations. Our employees – whether developing your cleaning process, fine-tuning your installation or monitoring – are all committed to delivering precisely this. And by so doing, we are able to create added value in your process chain.

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