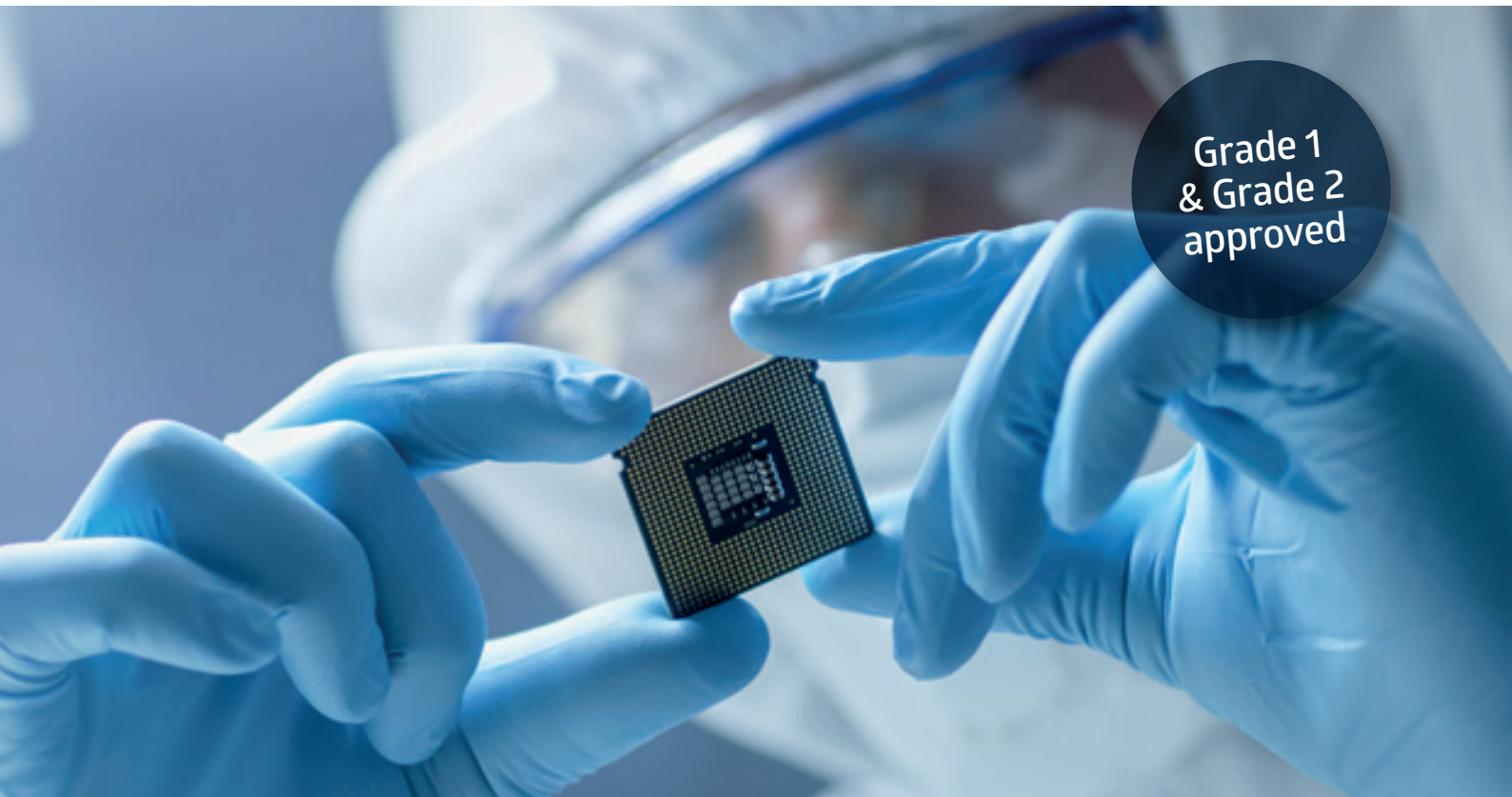


deconex[®] High Purity Cleaning (HPC)

For components with the highest cleanliness requirements



Grade 1
& Grade 2
approved

deconex® HPC Standard
 Processing fluid
 Solution
 Reproducibility
 XPS
 Chemical
 wet cleaning
 Support
 Validation
 Grade 1 & Grade 2
 RGA Quality

deconex® HPC: A holistic package of products and services

- + Products developed specifically for the requirements of the high-purity environment
- + Processes to achieve surface cleanliness grades 2 and 1
- + Cleaning results based on in-depth investigations are available
- + Applications and process parameters available for use on various plant technologies
- + Technical advice and know-how transfer during process development through to implementation
- + Extensive documentation for subsequent validation is provided



Contact us for comprehensive advice regarding our products and services. Our HPC specialists will be pleased to help!

industry@borer.ch

You set the challenge, we supply the solution

The market demands that suppliers of precision cleaning agents offer comprehensive advice regarding the chemicals that meet the requirements of the high-purity industry. The emphasis here is on the reproducibility of the required degree of cleanliness and the resulting surface quality. To be able to offer customers the best possible solution, we work from the very beginning with project partners to ensure a goal-orientated implementation of the project. This close cooperation helps to achieve highly efficient implementation, but also high effectiveness in terms of the implementation of new processes and subsequent validation.

deconex® HPC Standard

The HPC range impresses with its real-to-real solution. The entire process realisation and its documentation, as well as the resulting laboratory tests, mean that ready-made solutions for the process implementation are available to our customers.



The deconex® HPC Standard is ideal for cleaning processes where professional implementation is crucial and where validations need to be carried out. Accelerate your project implementation process and achieve an efficient time to market with the deconex® HPC Standard.

deconex® HPC-Standard

Defined processes for achieving Grade 2 and Grade 1

Process parameters and settings

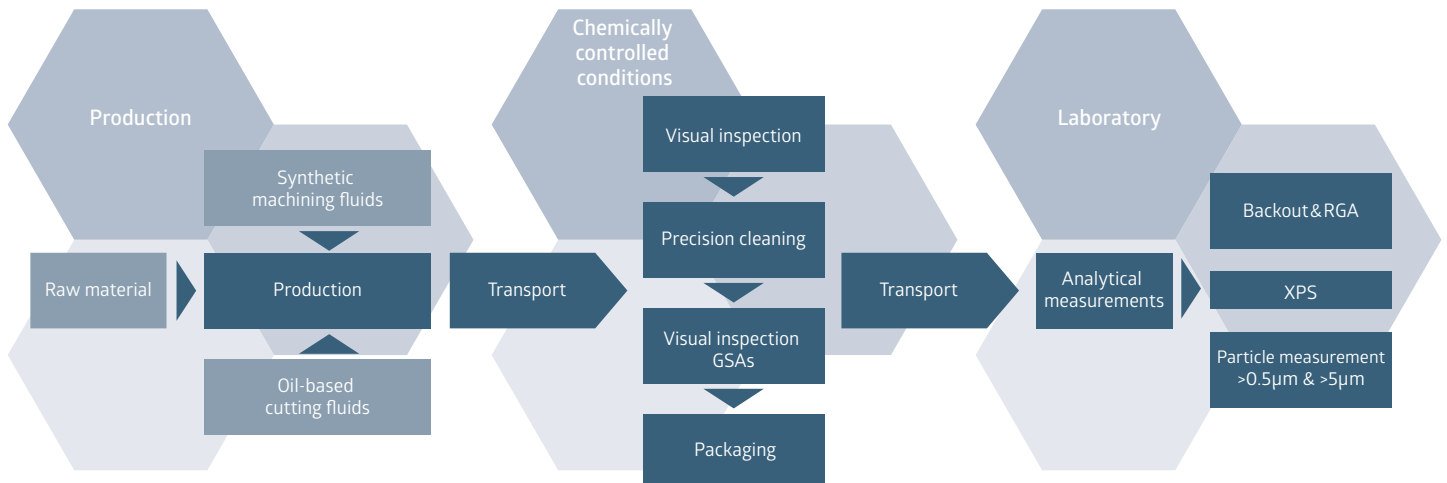
Chemical	Application	Cleanliness level and application concentration				Achievement of	
		Pre-cleaning	Fine cleaning	Final cleaning	Reworking	Grade 1	Grade 2
deconex® HPC 1307	Especially for cleaning aluminium and its alloys. Ensures stain-free cleaning even with corrosion-prone Al alloys such as 6061 or 5083.	2%	0.5%	-	-	(Yes)	Yes
deconex® HPC 1311	For cleaning stainless steel parts such as 316 or 316L. Its properties ensure residue-free cleaning thus a stain-free surface.	2%	0.5%	-	-	(Yes)	Yes
deconex® HPC 1202	Thanks to its properties and broad material compatibility, the cleaner can be used perfectly in combination with other HPC cleaners for final cleaning or neutralisation.	4%	0.5% (Grade 2)	1% (Grade 1)	-	Yes	Yes
deconex® HPC 2602	The aqueous cleaner is used where stains and discolouration lead to rejects. The treatment allows discrepancies in aluminium and steel to be effortlessly removed without altering surface properties such as roughness, texture, etc.	-	-	-	1.5%	(Yes)	Yes

The cleaning agents are used in the following system configurations: vacuum process, spraying process, dipping or flooding process with / without ultrasound, in closed as well as open systems.

In order to demonstrate the functionality of the cleaning process in combination with the process chemistry and the cutting fluid from manufacturing, we have carried out representative tests. To this end, we cleaned components according to pre-defined specifications and then had them tested by accredited laboratories. We present the test results to our customers. Use our knowledge to put together your own engineering studies

or bespoke validation projects! The investigations are based on known OEM (Original Equipment Manufacturer) specifications, such as the GSA for vacuum, surface and particle cleanliness. Achievement of the cleanliness specification for Grade 2 and Grade 1 can be derived from this and verified.

deconex® HPC Standard process: particle cleanliness and chemical contamination



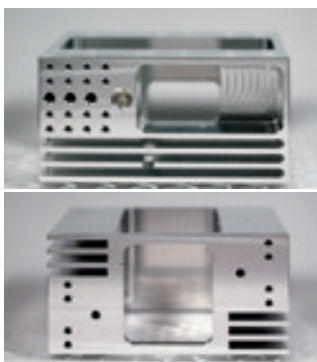


Cutting fluids

When it comes to manufacturing and transforming products, two different processing fluids are often used: synthetic or oil/water-based cutting fluids. This was taken into account in our investigations and residue-free cleaning was therefore confirmed with laboratory tests.

Test bodies (cubes)

For the investigations, recognised as well as representative parts were produced, which are used by the OEMs as worst-case parts. These parts cover all geometric criteria and can be used as a reference for future cleaning processes and to achieve cleanliness class Grade 2. For Grade 1 testing, separate XPS plates were produced and included with the cleaning and sent to the laboratories for testing.



Test cube for RGA testing



Test plate for XPS testing

Level-appropriate cleaning for the entire added value chain

Our HPC product range includes aqueous cleaning solutions that are designed for the different cleanliness levels of the individual process steps in your parts production.



1. Pre-Cleaning

During the forming process and in other processing steps, lots of contamination occurs – such as with 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.



2. Fine-Cleaning

When it comes to manufacturing components and semi-finished products, a high standard of cleanliness is essential. Contamination must be removed without leaving any residue. The emphasis here therefore is on satisfaction of the required cleanliness specifications and therefore the achievement of Grade 2 or Grade 1.



3. Final Cleaning/Neutralisation

At this cleaning stage, it must be ensured that the cleaning result meets the required specifications for Grade 1. In addition, multiple rinsing with the best possible water quality is a very important factor in the final cleaning/neutralisation. Only in this way can the particulate cleanliness of the product be achieved.



4. Rework

White, brown or matt spots on the surface often indicate a material that is susceptible to corrosion. Unsuitable process media or suboptimal process sequences lead to rejects or costly reworking. To prevent them, an immersion cleaning process with ultrasound is used for aqueous cleaning. The process can be integrated into the regular cleaning line or used in an additional offline module, which is subsequently integrated back into the regular cleaning line.

Solutions for the vacuum industry, semiconductor manufacturing and space technology

Where the highest cleanliness specifications apply, the highest demands are also placed on the cleaning chemistry as well as its process stability and reproducibility. We have developed our aqueous-based cleaning products on this basis.

Achieving cleanliness specifications in the vacuum industry and especially in semiconductor manufacturing poses a great challenge to production and cleaning processes. Materials that are susceptible to corrosion, such as aluminium and non-ferrous metals, also present further challenges that must be overcome in addition to surface cleaning. When developing the deconex® HPC product line, we were guided by the needs of our customers as well as their specifications and high cleaning requirements.

Cleaning chemistry and expert knowledge as a complete package

Our portfolio is rounded off by a comprehensive range of services. Our experts support you throughout the entire project realisation - from development to test runs and investigations to the implementation of the sophisticated cleaning processes. Your goal is our goal: achieving surface cleanliness for Grade 2 and Grade 1 on a wide range of materials.



deconex® HPC The advantages at a glance

Real-to-real solutions

- + Comprehensive, target-orientated process development
- + Process support for the cleaning processes
- + Products and process expertise from a single source
- + Ready-made solutions ready for process implementation
- + Cleaning including testing analogous to OEM specifications to which customers adhere
- + Use of reference cubes to confirm process functionality
- + Transparent testing series for achieving Grade 1 and Grade 2

High cost effectiveness

- + Reproducible cleanliness
- + Minimisation of the reject rate
- + Reduction of time-to-market through process simulation in our technology centre
- + Low concentrations in the use of cleaning chemicals

More sustainability

- + biodegradable deconex® products
- + Support for concentration determination
- + Long bath service life due thanks to adjustable concentrates
- + Environmentally friendly neutralisation of the cleaning baths

Logistics

- + International network of distributors with local warehouses
- + Analysis certificates are supplied with deconex® HPC products
- + Registration and availability of deconex® products in over 25 countries

Borer Chemie AG

The specialists in cleaning and disinfection

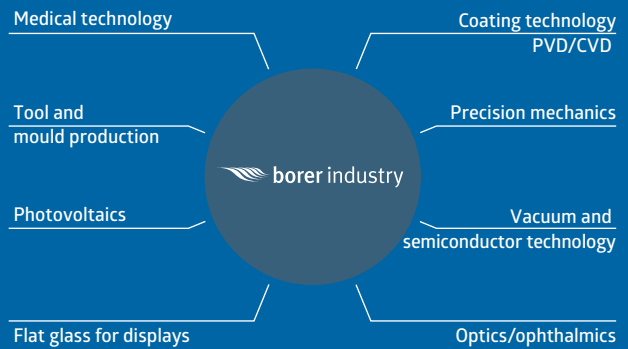
Competence and innovation – worldwide

We have been researching, developing and manufacturing products in Switzerland for demanding applications in the field of cleaning and disinfection since 1965. Our deconex® and decosept® branded products are used in the industrial sector, in hospital hygiene, in laboratories, in the pharmaceutical sector and in hand and surface disinfection. We distribute our products worldwide through a network of subsidiaries and distribution partners.



Clean solutions for all sectors of industry

Industrial manufacturing processes require customised cleaning processes adapted to their individual requirements. A goal-focused cleaning concept safeguards the quality of the final products. Borer Industry's process specialists work with customers to develop specific cleaning concepts for stable, regulations-compliant process management. Support with fine-tuning the implementation and monitoring processes round off our service.

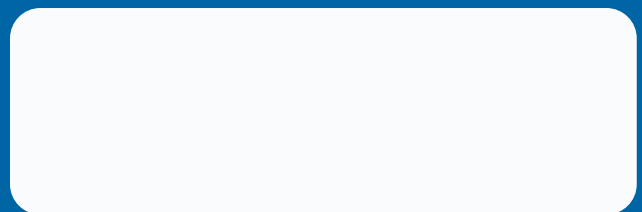


A unique service: the deconex® Test & Training Centre

In our in-house technical centre, our customers have the opportunity to test tailor-made potential system technology and chemistry for their cleaning, passivation or decoating processes. For this purpose, we have state-of-the-art machinery at our disposal as well as the expertise of our specialists.



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