

ARNOLD-TV
presents

How does
Cleancon[®] work?



Cleancon[®]

Technical cleanliness in fastening technology

- + appreciably better operating safety
- + improved assembly reliability
- + less wear
- + longer service life
- + higher quality
- + lower potential for complaints
- + fewer failures in functional and safety components

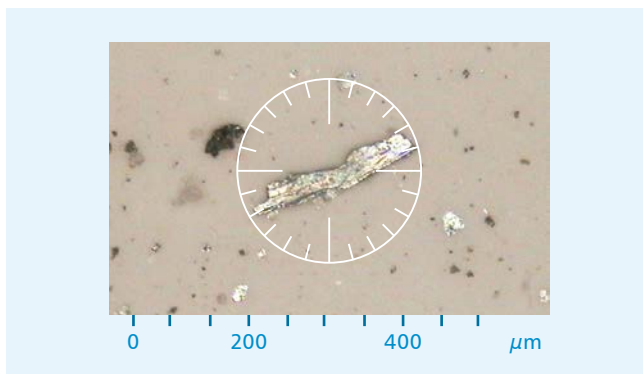
➔ www.arnold-fastening.com



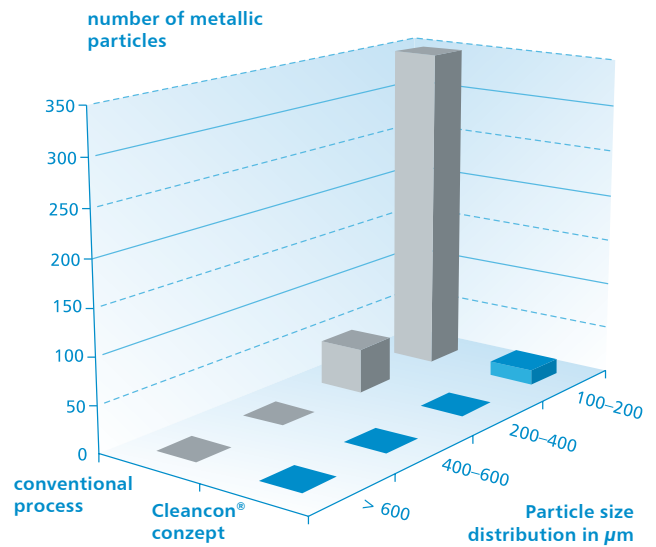
More safety due to ultra-fine cleaning

Your electronic and hydraulic components can be at risk from contamination by microscopically small particles. Every conventional manufacturing process produces such contaminating particles. And particularly in small and compact components this contamination can cause entire systems to fail. To enable us to meet your requirements for significantly improved operating safety, we have developed a special production process that guarantees technical cleanliness in the manufacture of our fasteners.

Tracking down contamination



We identify and eliminate microscopically small contaminating particles.



In conventional manufacturing the number of metallic contaminating particles 100–200 μm and 200–400 μm in size is much higher (shown in grey) than with Cleancon's® ultra-fine cleaning processes (shown in blue).

Step by step to perfect cleanliness



1. Requirements profile

- ⊕ limiting values defined
- ⊕ ambient factors considered
- ⊕ surface specified
- ⊕ test specifications
- ⊕ packaging requirements

2. Production

- ⊕ cleaning processes during manufacture

3. Clean room

- ⊕ ultra-fine cleaning
- ⊕ low-friction coating (optional)
- ⊕ packing

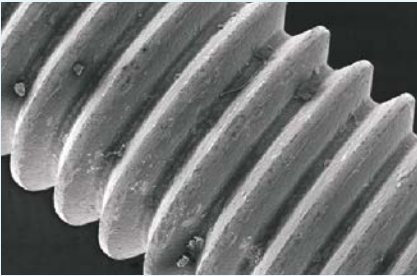
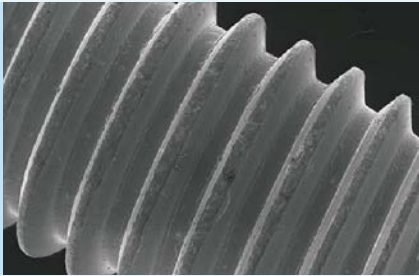

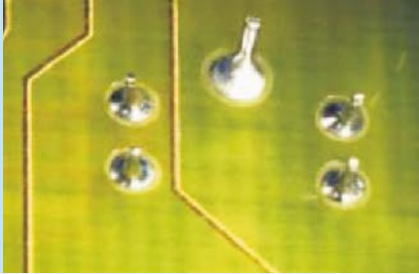
4. Cleanliness analysis to VDA 19.1 standard

- ⊕ adapted extraction procedure
- ⊕ analyse of
 - particle size distribution
 - gravimetry

5. "Clean" packaging

- ⊕ position-holding, anti-static inner packaging
- ⊕ customisable outer packaging

1:1 comparison of normal and ultra-fine with Cleancon[®]

No ultra-fine cleaning	After Cleancon [®] ultra-fine cleaning	
	<p>The contaminating particles can be clearly seen under the electron microscope (left).</p>	
	<p>Contaminated fasteners result in contaminated applications (left). On the right is a technically clean screw fastening on a PCB ultra-fine cleaning with Cleancon[®].</p>	

Cleancon[®] gives you a clean advantage

- ⊕ We make sure of your project's economic success by tailoring the process precisely to your requirements.
- ⊕ You can use our ultra-fine cleaned fasteners to implement your smaller structures, and achieve better output densities. So you can fully exploit the opportunities for component miniaturisation.
- ⊕ Since our Cleancon[®] parts indicate significantly better quality, you and we receive fewer complaints.

Moreover, you benefit from some great enhancements:

- ⊕ longer service life for your hydraulic, mechanical, fluid systems etc., because they suffer less wear.
- ⊕ fewer failures of functional and safety components, such as your electronic control systems.

Cleanroom services: cleaning, coating, packing

Our aim is for Cleancon® to meet our own extremely high requirements for technical cleanliness. That's why we have developed a special production process, at the end of which the fasteners are placed into a specially designed clean room for ultra-fine cleaning.

Since we also apply the optional low-friction coating, and pack the fasteners inside the cleanroom there are no further downstream processes that could cause contamination.

This is where we perform the following services for you:

- ⊕ the manufactured fasteners are subjected to the ultra-fine cleaning process using the most up-to-date plant technology
- ⊕ optionally: a low friction coating can be applied directly after the cleaning process
- ⊕ shipment packaging for clean consignments



Staying clean with CLEANPAC®

To ensure that the parts arrive to you immaculately clean, in the condition in which they leave our clean room, we developed our CLEANPAC® system. This innovative packaging ensures that the articles cannot rub against one another during shipment. It prevents more particles from forming. The ultra-fine cleaned particles are fastened into position with the CLEANPAC® system. The onion-skin principle enables us to create customised packaging round the anti-static inner packaging.





Our test laboratory gives you reassurance

Part of the ultra-fine cleaning process is to consult with you beforehand to specify the cleanliness values you want to achieve, and to define your requirements. We can check and provide evidence of the results in our own test laboratory. The laboratory contains a comprehensive range of state-of-the-art test equipment, capable of carrying out cleanliness analyses to VDA, volume 19.1 requirements. Using an adapted extraction process we can analyse fasteners in our laboratory, in particular for

- + particle size distribution using light microscopy
- + gravimetry

ARNOLD is your committed expert

At the request of the Automotive and Automotive supplier industries, the Fraunhofer Institute for Production Technology and Automation (IPA) in Stuttgart founded the "Montsa" Industry Association to create a discussion platform for issues surrounding "clean" assembly. As a manufacturer and service provider in the fastening technology sector, Arnold Umformtechnik is making a major contribution to research into fastening technology on the subject of "clean" assembly. Arnold has taken active part in the revision of the VDA 19 standard and is actively involved in drawing up the forthcoming regulations on the subject.

MontSa

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Fraunhofer Institut
Produktionstechnik und
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The ARNOLD GROUP

Wherever customers need us.

The ARNOLD GROUP

ARNOLD – this name is internationally renowned for efficient and sustainable fastening systems on the highest level. With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, the ARNOLD GROUP has developed over a number of years into a comprehensive supplier and development partner for complex fastening systems. With our positioning of “BlueFastening Systems” this development process will continue under a united and harmonized structure. Engineering, fasteners, and functional parts, together with feeding and processing systems, all from a single source – efficient, sustainable and international.



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