



Products

Semiconductor Chemicals

Puratron[®], Silapur, Silacid, LapSil

Chemicals for the cleaning and chemical-mechanical surface treatment of semiconductor materials

Manufacturing silicon wafers from metallurgical silicon requires numerous stages of processing. Most of these stages are supported or are initially enabled through the use of chemicals. The products for these processes made by ICB have proven themselves in many years of practical application by our customers to be exceptional.

The listed chemicals are water-based concentrates which are diluted with deionized water in order to obtain the necessary concentration for the intended application. ICB solely uses biodegradable surfactants as components of these chemicals in order to ensure compliance with EU detergent regulations for environmental protection.

The various Puratron[®] types are distinct from one another in their physicochemical properties. They mainly differ in their pH-value (acidic, neutral or basic) and foaming behavior. Additionally some of the products have application-specific properties which serve the particular requirements of the respective manufacturing step of semiconductor materials in which they are applied.

We can guarantee and if requested certify the high purity levels (very low concentrations of metal impurities) of our products. This purity is an essential prerequisite for the production of high-quality semiconductor surfaces. Maintaining the high quality of semiconductor products requires chemicals that are constant in composition and quality. Owing to our highly regulated production processes we can guarantee the desired consistency of our products. This is one of the reasons for the successful application of our Puratron[®] products in the microelectronics and solar industry for several decades.

- Die folgende Tabelle gibt einen Überblick der Chemikalien, die derzeit bei der Herstellung von Halbleitermaterialien eingesetzt werden:

	solar industry	microelectronic industry	alkaline	acidic	neutral	low-foaming	cleaning	pre-cleaning	etching	scratching	lapping	separation	texturing	grinding
Puratron®-11	■	■	■				■	■						■
Puratron®-67		■	■				■	■						
Puratron®-95		■	■				■	■						
Puratron®-85S	■			■		■		■						
Puratron®-88	■				■	■		■						
Puratron®-39	■				■	■		■			■			
Puratron®-62	■		■			■	■							
Puratron®-45M	■			■		■	■	■						
Puratron®-62 Plus	■	■	■			■	■							
Silacid	■	■			■			■						
Silapur-50		■		■			■							
Catron-9	■													■
LapSil-WF		■	■						■					
LapSil-305		■	■							■				

1. Puratron®-11 und Puratron®-67 - alkaline cleaning agents and etch additives

Due to their outstanding cleaning power Puratron®-11 and Puratron®-67 are applied in microelectronics in various cleaning stages e.g. after sawing, lapping, edge profiling or other proceedings which require the removal of particle contaminations.

In the solar industry Puratron®-11 is used for the fine cleaning of the sawed wafers during the batch process. The addition of small quantities of Puratron®-11 to alkali hydroxide solutions, which are used for etching silicon surfaces, serves the even removal of silicon and results in even silicon surfaces. At the same time the addition of Puratron®-11 to alkali hydroxide solutions reduces the etch rate by a factor varying from 10 to 20. This is why Puratron®-11 is particularly suitable when a gentle alkaline removal of substrates (e.g. doping material mask) from silicon surfaces is desired during the production process.

We recommend obtaining our advice if an intended etching process has to meet specific requirements. Puratron®-67 is solely used in microelectronics.

2. Puratron®-95 - alkaline, high performance cleaning agent and etching additive

Puratron®-95 meets the most stringent requirements for cleaning performance and etching effects, even at temperatures lower than 90°C (194°F). ICB guarantees very low concentrations of metal impurities. Puratron®-95 is especially suitable for manufacturing highly sophisticated silicon wafers (e.g. 12 inch wafers).

3. Puratron®-85S - acidic, very low-foaming cleaning agent

Puratron®-85S is a highly efficient cleaning agent which is applied in the pre-cleaning of mono- and polycrystalline silicon wafers that have been intensely contaminated with slurry in the multi-wire sawing process. Even in diluted form Puratron®-85S has a high dispersing and soil absorption capacity. This enables it to remove and absorb impressive amounts of slurry from wafer surfaces. Furthermore, there will be no more typical wafer defects like the appearance of spots or stains on the wafer surface when using Puratron®-85S. In years of application its functionality has been proven even under the most adverse process conditions, in particular with respect to cleaning performance. Designed as a low-foam cleaning agent, Puratron®-85S is especially suitable for spray cleaning.

↳ **4. Puratron®-88 - neutral, foam-free cleaning agent**

Developed as a completely foam-free alternative to Puratron®-85S with equal cleaning performance, Puratron®-88 is applied in pre-cleaning processes in which an absolute foam-free environment is desired. Depending on the cleaning equipment and the applied process parameters even small amounts of foam can interfere with the cleaning process.

↳ **5. Puratron®-39 - neutral, low-foaming cleaning agent; chemical composition for the separation of wafers**

Puratron®-39 is a highly efficient cleaning agent for the removal of saw slurry from mono- and polycrystalline silicon wafers after multi-wire sawing and additionally serves as a lubricant in the adjacent process of wafer singulation. The benefit of Puratron®-39 is its dual-purpose applicability in consecutive wafer processing steps. While its cleaning performance matches that of our other pre-cleaning products, Puratron®-39 stands out for its excellent lubricity derived from a composition of synergetic surface-active substances. Through the lubricity effect scratches on the wafer surface can be avoided and breakage rates are dramatically reduced, thus increasing wafer yield. Formulated as a low-foam cleaning agent, Puratron®-39 is especially suitable for spray cleaning processes.

↳ **6. Puratron®-62 - alkaline, low-foaming cleaning agent**

Puratron®-62 is a mildly alkaline, ultra-high purity cleaning agent designed for effectively removing organic and particle contaminations from mono- and polycrystalline silicon wafers in in-line cleaning processes. Developed as a low-foam cleaning agent, Puratron®-62 is also suitable for spray cleaning. It unfolds its full potential in cleaning processes with ultrasonic assistance. Owing to its excellent wetting capability, Puratron®-62 is thoroughly removing particle contaminations from the wafer surface. Moreover, its strong anti-redeposition power prevents particles from reattaching. Puratron®-62 contains significantly low metal impurities, meeting most stringent purity requirements essential for processing silicon wafers for the manufacturing of photovoltaic cells.

↳ **7. Puratron®-45M - acidic, low-foaming cleaning agent for the removal of metal contaminations**

Puratron®-45M is an acidic, ultra-high purity cleaning agent, developed for effectively removing iron-, copper- and other metallic contaminations in the fine cleaning of mono- and polycrystalline silicon wafers. Formulated as a low-foaming cleaning agent, Puratron®-45M is suitable for the application in both batch and in-line cleaning equipment. Even in spray cleaning, Puratron®-45M does not develop any troubling foam. It unfolds its full potential in ultrasonic-assisted cleaning processes. Puratron®-45M contains significantly low metal impurities, meeting most stringent purity requirements essential for processing silicon wafers for the manufacturing of photovoltaic cells.

↳ **8. Puratron®-62 Plus - alkaline, low-foaming cleaning agent with exceptionally high and certified purity**

Puratron®-62 Plus is an ultra-high purity cleaning agent designed for effectively removing organic and particle contaminations from chunk silicon. Owing to its high anti-redeposition power particle reattachment is avoided. Developed as a low-foam cleaning agent, Puratron®-62 Plus is especially suitable for cleaning processes where troubling foam is undesired, e.g. in barrel or spray cleaning. Containing significantly low metal impurities, Puratron®-62 Plus meets most stringent purity requirements essential for processing raw materials employed in the production of microelectronic devices. In light of ever increasing standards for highly pure solar silicon, the reduction of metal impurities in raw materials and thus the application of Puratron®-62 Plus consistently gains importance in photovoltaic manufacturing as well.

↳ **9. Silacid - additive for acidic etching processes**

Silacid accelerates the silicon removal and ensures an evenly etched surface. It is applied in microelectronics when etching silicon wafers and in the solar industry for the etching of silicon chunks before melting.

↳ **10. Silapur-50 - acidic cleaning agent for silicon wafers**

Silapur-50 distinguishes itself through an extreme low concentration of metal impurities in the low ppb-levels. It is especially suitable for removing metal impurities from the silicon surfaces and is solely used in microelectronics.

↳ **11. Catron-9 - equipment friendly grinding additive for ingot grinding**

Catron-9 is an equipment friendly grinding additive for edge and surface grinding of polycrystalline silicon ingots. Designed to maximize ingot edge and surface smoothness, Catron-9 contributes to higher yields as crack and breakage rates of polycrystalline ingots and wafers are significantly reduced. Furthermore, it is formulated to protect iron and other ferrous alloys from corrosion, extending the durability of the grinding equipment.

↳ **12. LapSil-WF - excipient for suspensions**

LapSil-WF disperses and suspends abrasives (aluminum oxide, zirconium oxide, silicon carbide and others) used for mechanical treatment of silicon wafers (e.g. scratching of silicon surfaces) in microelectronics. Since LapSil-WF is a low-foaming product it is very suitable for processes in which foam is undesired.

↳ **13. LapSil-305 - excipient for suspensions and additive for lapping**

LapSil-305 disperses and suspends abrasives (aluminum oxide, zirconium oxide, silicon carbide and others) during the lapping process of silicon wafers in microelectronics. It significantly reduces the depletion of abrasives and leads to even surfaces and substantially reduces scratches.

Quelle: <http://icb-germany.de/semiconductorChemicals>

📍 **Kontakt**

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