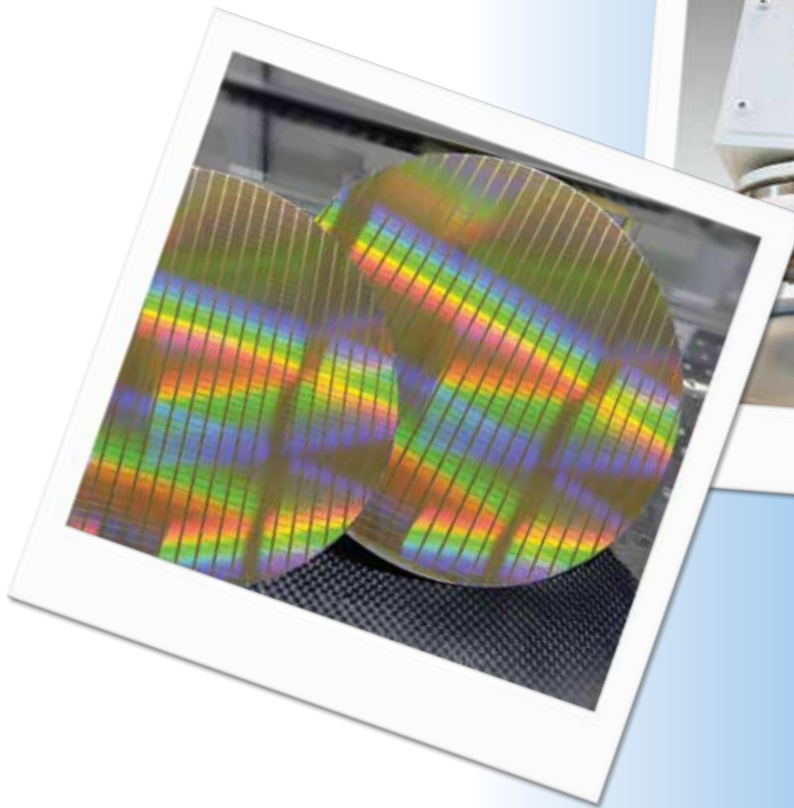


Expert Chemo-Mechanical Polishing (CMP) Solutions

Serving the Silicon Carbide (SiC)
and Wide Band Gap
Semiconductor Industry



Top right photo courtesy of Gigamat, Inc.
Bottom photos courtesy of Revasum, Inc.
BASF-Chemetall slurries are compatible
with all major CMP tool brands.

Our focus is you, our customer

We produce coolants, lubricants, abrasive compounds, slurries, and cleaners for use in the machining and finishing of electronic materials and device fabrication.

Our global team of locally available chemists, engineers, and polishing scientists bring their quality assurance expertise to you to enhance your process efficiency.

At our facilities, we maintain

- ⊕ An R&D laboratory with state-of-the-art analytical equipment.
- ⊕ A scale-up manufacturing plant.
- ⊕ Tribological machinery and lapping, polishing, and chemo-mechanical planarizing (CMP) tools.
- ⊕ High-volume manufacturing capabilities.

 **BASF**
We create chemistry

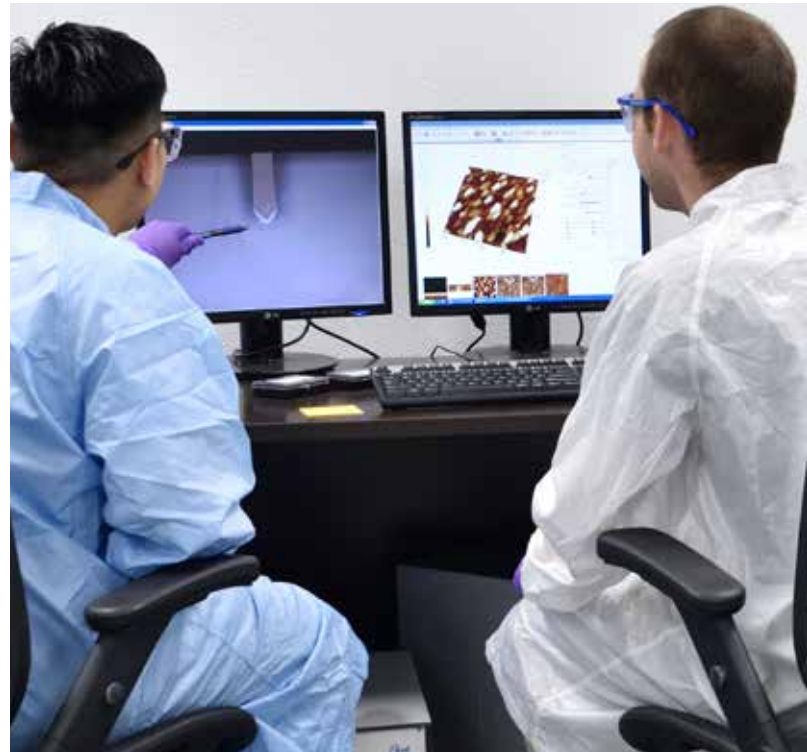
Chemetall
expect more[⊕]

Enhance wafer and device yield with the precision chemical engineering expertise of Chemetall




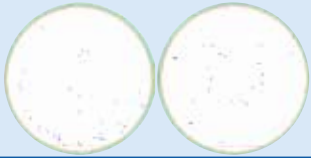

At Chemetall, we focus on increasing process efficiency for machining and finishing high-value materials. In the SiC Industry, we understand the challenges that arise when crystals are grown by bulk and epitaxial processes, and the variety of defects that can result. Our goal is to minimize the impact of these defects and maximize your high-quality wafer yields.

After crystal growth, SiC wafers destined for fabrication with RF or Power Devices must be carefully machined, finished, and cleaned. These steps may include:

- + Crystal trimming and diameter grind
- + Flats grinding
- + Wafer slicing
- + Edge rounding
- + Grinding
- + Lapping and polishing
- + Chemo-Mechanical Polishing (CMP) — fast, stock removal of bulk material with “zero” damage
- + Chemo-Mechanical Polishing (CMP) — Low Ra generation for epi-ready finish
- + Cleaning (In-Process and Post CMP)
- + Fabricated wafer thinning (backgrind/lap/polish) and dicing



One major focus area is the development of Chemo-Mechanical Polishing (CMP) slurries which deliver near-perfect surfaces on SiC wafers.

Process		Slurry	MRR (typical)	Scratch (typical)/mm	Ra (typical)
SI FACE PARAMETERS					
Batch		Sabre® Micropol AF Series	>1.5 μm/hr		<0.2 nm
Single Wafer		Sabre Micropol CS Series	8–10+ μm/hr		<0.2 nm
Final Polish	—	Sabre Micropol AF2 Series (AF2 is usable on all platforms, Batch and Single Wafer)	<2 μm/hr		<0.1 nm

Note: All MRR and Ra data are CMP tool operating parameters, polishing pad, and temperature dependent.

C FACE PARAMETERS					
Batch	—	Sabre® Micropol CS Series	>3 μm/hr	—	—
Single Wafer	—	Sabre® Micropol CS Series	>15 μm/hr	—	—

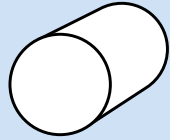
Note: All MRR and Ra data are CMP tool operating parameters, polishing pad, and temperature dependent.

Let's enhance your process steps

Our expertise

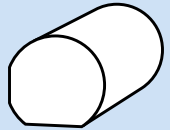
Our full line of products

Crystal Trimming & Diameter Grind



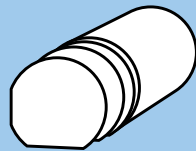
Coolants — Sabre® Microcut 28S, Tech Cool® 3700
Cleaners — Sabre Microclean 565

Flat(s) Grinding



Coolants — Sabre Microcut 28S, Tech Cool 3700
Cleaners — Sabre Microclean 565

Wafer Slicing



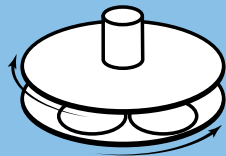
Diamond Powders — Sabre Micropowder D
Diamond Slurries — Sabre Microlap D
Vehicle — Sabre Microcut 61V
Cleaners — Sabre Microclean 565

Edge Rounding



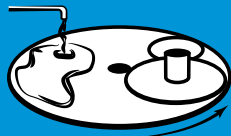
Coolants — Sabre Microcut 28S, Tech Cool 3700
Cleaners — Sabre Microclean 565

Grinding, Lapping, and Polishing



Diamond Powders — Sabre Micropowder D
Diamond Slurries — Sabre Microlap D
Vehicle — Sabre Microcut 61V
Cleaners — Sabre Microclean 565
Polishing Pads — Sabre Pol P

Chemo-Mechanical Polishing (CMP) for Bulk Material Removal, Epi-Ready Finish, and epi-SiC layer



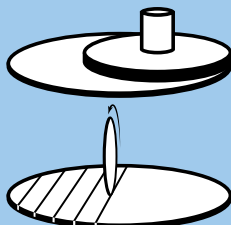
CMP for Batch Polishing — Sabre Micropol AF Series
CMP for Single Wafer Polishing (stock removal) — Sabre Micropol CS Series
CMP for Single Wafer Polishing (final finish and epi) — Sabre Micropol AF2 Series
CMP Pads — Sabre Pads
CMP Pad Cleaners — Sabre Pad Clean 185 and 186

Cleaning (Post-CMP)



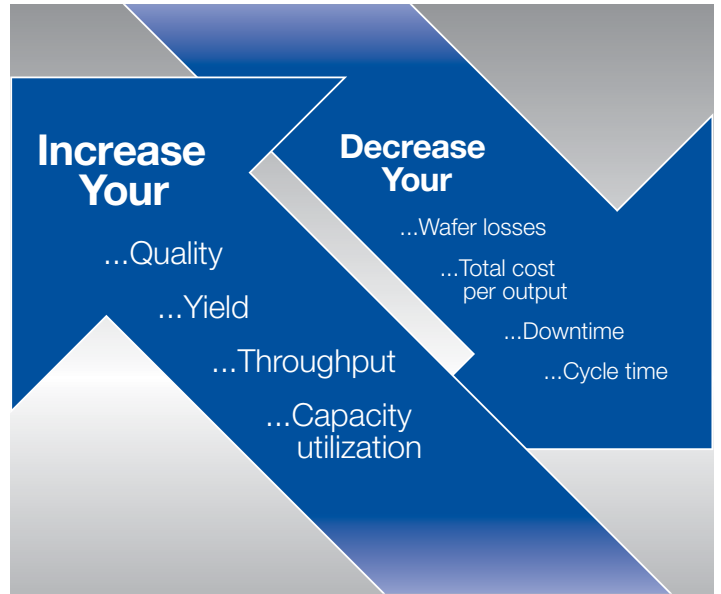
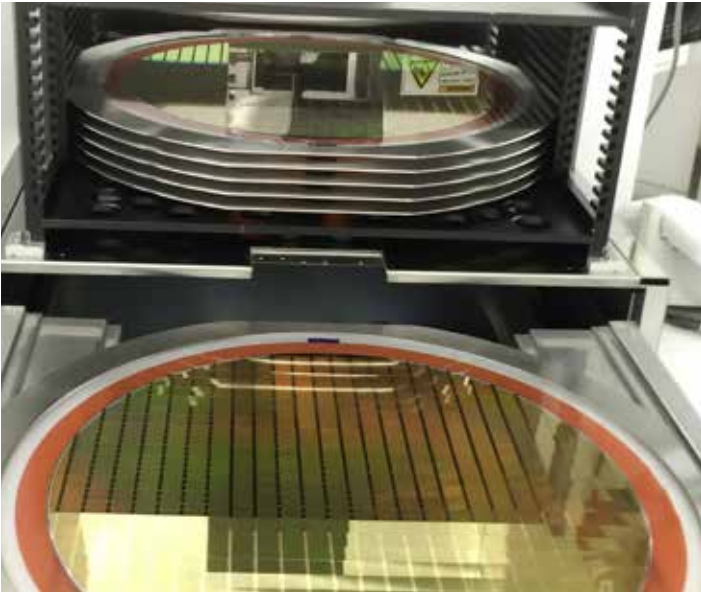
Sabre Microclean 565

Fabricated Wafer Thinning (Background/Lap/Polish) & Dicing



Coolants — Sabre Microcut 28S, Tech Cool 3700
Diamond Powders — Sabre Micropowder D
Diamond Slurries — Sabre Microlap D
Vehicle — Sabre Microcut 61V
Polishing Pads — Sabre Pol P
Cleaners — Sabre Microclean 565

Grind it. Slice it. Lap it. Polish it. CMP it. Clean it. with us!



Trust our expert service and systems to achieve your goals.

Chemetall Precision Microchemicals develops and manufactures precision engineered fluids and slurries for the sawing, dicing, grinding, lapping, polishing, and cleaning of a wide spectrum of materials used in high-end technology industries. We take a collaborative approach for product development and are dedicated to solving customers' material processing challenges.

We are the Surface Treatment global business unit of the Coatings division of BASF, operating under the Chemetall brand, a leading supplier of applied surface treatments and services for metal, plastic, and glass substrates in a vast range of industries and end markets. As process innovators, fully dedicated to your success, we develop, manufacture, and provide best-in-class technologies, systems, and expertise.

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