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Electronic Materials for a Changing World

The electronics materials industry is incredibly dynamic. Revolutionary changes are constantly happening in the world of semiconductors, flat panel displays and the rapidly evolving area of solar cell technology.

Few suppliers understand these changes like the electronic materials experts of BASF.

All of these industry sectors demand the very highest in purity, quality consistency and supply security. BASF’s business unit Electronic Materials, a leading, global supplier, is purely focused on meeting those demands.

Research, production, analytics and logistics: These are the four pillars of BASF’s success in electronic materials and mean global expertise and products of the highest quality.

For our customers this results in helping them to be more successful.

Global Reach, Local Touch

We have committed ourselves to maintaining our leadership as a global partner. That is why we have built a worldwide network of offices, production facilities, QC laboratories and service centers.

No matter where our customers are, their needs are always close to us.

R&D Capability and Broad Chemical Expertise

Staying on top of the fast changing world of electronic materials means creating consistently reliable and intelligent solutions.

We do this in a variety of ways. At BASF, we are committed to investing in only state-of-the-art R&D technology and facilities. Our Electronic Materials R&D teams are located in Germany and Taiwan and are a component of BASF’s globally integrated network. This interdisciplinary and international R&D community enables customers to access our wide chemical expertise for more innovative processes and products.

BASF also has a proud track record of collaboration and is actively developing new technologies together with leading research institutes, tool suppliers and customers to meet the demands of future manufacturing processes.

All these efforts ensure our customers attain long-term success and stay ahead in the industry.
The Quality You Demand

Our product range stands for the highest possible purity required for a wide range of processes and applications.

The wet chemicals portfolio BASF provides ranges from standard electronic grade up to the highest quality level available in the market. The challenge of quality consistency at this level of ultimate quality is to maintain impurities of cations from 1 ppm to the lowest ppt range between 100 ppt and even 10 ppt.

Quality Policy

We aim to achieve the highest customer satisfaction by the continuous improvement of processes at all levels of our operations.

This is key to the success of our business. Our long-term competitiveness will only be sustainable if we can assure stable, core processes and a maximum level of efficiency and productivity. We achieve these by applying the highest level of the ISO standards as the foundation for all our products, services and processes.

Quality Assurance

For batch release and process control, we utilize our ultra-modern laboratories in Asia and Europe. With leading analytical capabilities and our unsurpassed experience, we can provide local customers with reliable analytical services covering every field.

For more details about BASF’s quality control and analytical capability, please refer to Our Expertise in Quality Control brochure.

Production Precision

The process chain for high-purity chemicals begins with the selection of the proper raw materials.

At BASF, we obtain raw materials either by our own backward integrated production or by choosing state-of-the-art and reliable manufacturers as partners. These partners have to meet our quality criteria, appreciate the special needs of our customers and are willing to monitor, adapt and optimize processes in their production.

We then work closely with them so that they can draw on BASF’s decades of experience with regard to appropriate processes and materials.

All BASF’s production facilities are fully equipped for the manufacture of high purity process chemicals. We also employ dedicated production systems such as special purification processes, defined chemical reactions and the manufacture of special chemical mixtures.

These processes, especially at the highest quality grades, involve sampling at defined stations, monitoring of selected parameters and evaluation of data for the purposes of statistical process control (SPC), which is an essential part of the quality-control procedure. The continuous application of SPC results in a stable and consistent quality for our products.

Container Technology

Containers and chemicals together form a single unit and are an important element in the chemical process chain.

We make significant effort in keeping our chemicals at the best possible purity levels. Each type of container used is designed and tested for its contamination characteristics. To guarantee the extremely high quality requirements, BASF has developed special methods for cleaning and conditioning containers, which are strictly regulated by QS 9000 quality systems.

Our container program is designed to offer our customers the optimum, regarding qualitative requirements, system technology, safety, handling and economy.

At BASF we offer everything from bottles to bulk containers according to the needs of local customers.

- ISO tank containers of 6m³, 10ft and 20ft
- IBC of 1m³
- Drums of 20 liter to 200 liter
- Bottles of 2.5 liter or 1 gallon

To ensure quality at the point-of-use, only specially designed and approved containers are used.
Technical Support

We provide assistance to our customers for any technical matters connected to the use of our products and regarding chemical analytical issues. Close contacts to R&D and a close cooperation with our customers will help to optimize the use of our products and thus make our customers more successful.

BASF also provides joint development services, which include advanced process technology development and tailor-made products based on customers’ requirements.

Logistics and Delivery

Just-in-time delivery is an absolute prerequisite in the electronic materials industry. And BASF is a leader in this field. Due to the large amount of variables involved in global logistics, we have developed a logistical concept that specifically aims to meet the needs of our customers.

BASF can provide an all-rounded logistical package. A high percentage of our chemicals are shipped in returnable containers. To ensure the fulfillment of our customer specific needs, these containers are integrated into our logistics system.

Product Overview

All of our products and services drive performance and are perfectly matched to the demands of the market. These products and services are broadly supplied to the following industries:

- Semiconductors
- Flat panel displays
- Photovoltaic
SEMICONDUCTORS

SELECTIPUR®
Chemicals for Cleaning

As integrated circuits (ICs) have consistently migrated to smaller feature sizes, the cleaning process involved is more important than ever. With SELECTIPUR®, BASF provides the necessary high-purity chemicals for this essential step in IC manufacturing, including bumping and 3D TSV application.

Our SELECTIPUR® range of products include: H2O2, IPA, NH3, H2SO4, HCl, HNO3, CH3COOH*, and HF.

* Only available in Asia Pacific

SELECTIPUR®
Chemicals for Etching

The efficient wet etching process relies heavily on chemicals with precise recipe control. With SELECTIPUR®, we provide customized solutions that are used for a whole host of different applications in IC manufacturing, including bumping and 3D TSV application.

SELECTIPUR® E-Series for non-metal etch from VLSI ULSI/SLSI qualities: with and without surfactants across the accessible concentration band-width of NH4F, HF and surfactants and our product portfolio includes:

- Silicon Etch Series
- Silicon Oxide Etch Series
- Poly Silicon Etch Series
- Nitride Etch Series
- ITO Etch Series
- Water Reclaim Series

SELECTIPUR® M-Series for metal material etch and our product portfolio includes:

- Al Etch Series
- Cu Etch Series
- Ni Etch Series
- Ti Etch Series
- Mo Etch Series
- Cr Etch Series
- Ag Etch Series

SELECTIPUR® S-Series for etching of metal multilayer stacks and our product portfolio includes:

- Ti/TiN Etch Series
- Cu/Ni Etch Series
- Cu/NiV Etch Series
- Cu/Mo Etch Series
- Mo/Al/Mo Etch Series

BASF’s product portfolio for etching applications also comprises a set of single chemicals: H2SO4, H3PO4, HNO3, HCl, NH3, and HF. All product lines are available in different purity levels.
FOTOPUR®

Chemicals for Photolithography

Photolithography is a crucial step in electronics manufacturing. Its sophistication demands the utmost in high purity chemicals. The selection of suitable surfactants, chelating and anti-corrosion agents is therefore essential. With FOTOPUR®, we provide the perfect solution for this crucial step in semiconductor manufacturing:

Our product portfolio includes:

- **BEOL and FEOL application:**
  - FOTOPUR® C Series for defect reduction rinse solution
  - FOTOPUR® R Series for post etch/post ash/post implant residue removers

- **Bumping and 3D TSV application:**
  - FOTOPUR® D Series for photoresist/polyimide developer
  - FOTOPUR® S Series for photoresist/polyimide stripper

PLANAPUR®

Chemicals for Chemical Mechanical Planarization

Chemical Mechanical Planarization (CMP) is one of the most critical processes in advanced IC fabrication. This is due to the intensified requirements of photolithography and next-generation materials and structures. With a wide array of polishing steps and control factors, customized slurries and post-CMP cleaning solutions are becoming increasingly significant to achieve optimal yield and performance.

BASF’s goal is to provide “total chemical solutions” to the semiconductor industry. With our unparalleled experience of semiconductor processes and expertise in CMP, BASF now offers innovative planarization solutions with the most advanced technology, a customized product portfolio, and strong applications support.

Our product portfolio includes:

- PLANAPUR® S – Series for STI/ILD CMP
- PLANAPUR® C – Series for copper bulk CMP
- PLANAPUR® T – Series for copper barrier CMP
- PLANAPUR® R – Series for post-CMP cleaning
Semiconductors

CUPUR®

Chemicals for Wet Deposition

New chemicals are needed to meet the most challenging technology requirements during each step of the copper process flow. Through its years of intensive research on the copper process field, BASF has developed sophisticated wet chemical solutions for various deposition processes.

We have been working with industry leading partners to push Cu technology beyond its limits. A good example is the recent co-development with computer heavyweight IBM on the most advanced interconnect electroplating based on 32 and 22 nm IC technology.

BASF’s dedicated and professional team assists you with unmatched support for speedy implementation and reliable production.

Our product portfolio includes:

CUPUR® E
Excellent interconnect electroplating additives and electrolyte for all existing technology nodes above 55 nm.

CUPUR® α
Advanced interconnect electroplating additives and electrolyte for emerging and future technology nodes from 45, 32, to 22 nm as well as 4X, 3X, and 2X.

CUPUR® T
TSV (Through Silicon Via) gap filling solutions for both via first and via last.

Flat Panel Displays

Chemicals for Flat Panel Displays

The flat panel display market is rapidly growing and BASF is in a commanding position to help customers gain a competitive advantage by providing innovative chemicals to enhance the performance of LCD (liquid crystal display) and OLED (organic light-emitting diode) for TFT (thin-film transistor) arrays, color filters, polarizers, touch panels and glass substrates.

Our product portfolio includes:

Process chemicals
H₂PO₄, HNO₃, CH₃COOH, HF, KCH, NMP

Etching chemicals
BOE Series
Ag Etch Series
Al / Mo Etch Series
Cr / Nb & Cr BM Etch Series
Cu / Mo Etch Series
ITO Etch Series
Glass Thinner Series

Strippers
SPS-1200 Series – Water based stripper for Al
SPS-600 Series – Stripper for advanced Cu technology
SPS-250 Series – Pt removal after post-bake

Thinners
EBR-55 & EBR-10 Series – Solvent base for nozzle cleaning

Developers
TMAH
TMD-700 Series – TMAH with deformers
DEV-300 Series – Developer for negative PR

Detergent
MA Series – Substrate cleaning
LC Series – Substrate cleaning for liquid crystal removal
Committed to a Changing World

At BASF, everything we do is motivated by our uncompromising commitment to quality, reliability and innovation.

Our customers’ industries are constantly evolving and we are determined to be at the forefront of the latest developments. Change is what drives us. It ensures we will meet our customers changing needs and make them even more successful.

That is why BASF is “Committed to a Changing World”.

Chemicals for Photovoltaic

Today, the issues of CO₂ emissions and global warming are becoming more critical. Photovoltaic are one solution to meet the growing demand for alternative energy sources. We provide a wide range of chemicals at different quality levels for the manufacturing of silicon wafer-based solar cells. These include chemicals for etching, texturing and doping processes that ensure a reliable, state-of-the-art production.

With its competence in materials research, a global innovation network and extensive experience in the semiconductor industry, BASF is actively engaged in the area of energy management. Working with dedicated partners such as tool manufacturers, wafer and Photovoltaic producers, BASF is helping to develop next-generation materials and superior technologies to make the production of Photovoltaic more efficient and cost effective.

Our product portfolio includes:

**CypoSol**

Our CypoSol® product range comprises inks and pastes for the metallization of front and back content.

- CypoSol® S Series – paste for screen printing
- CypoSol® L Series – inks for Laser Transfer Printing (LTP)

**SELURIS**

Brilliant Chemical Solutions for the Photovoltaic Industry

- SELURIS® Series – Quality chemicals tailor-made for the Photovoltaic industry requirements
- SELURIS® Clean – Advanced cleaning solution for increased cell efficiency through pre- and post doping treatment
- SELURIS® Texture – Innovative texture process on multi-crystalline solar wafers for improved yield and cell performance
- SELURIS® offers solutions for etching, texturing, doping, and cleaning mono- and polycrystalline solar cells. The range is enhanced by the innovative eco-friendly cleaning fluid SELURIS® Clean. Treatment with SELURIS® Clean, before phosphoric acid doping, provides both final pre-dope wafer cleaning and efficient surface hydrophilization resulting in excellent dopant wetting and therefore a homogeneous distribution of phosphoric acid on the wafer. Post doping treatment (phosphoric acid and POCl₃) of SELURIS® Clean offers efficient removal of phosphosilicate glass and of outer less active emitter zone (dead layer) leaving a clean high performing emitter.

For more details of the products and services we cover, please refer to the respective brochures.