

Area of use

Cu-etch-200 UBM is a slightly alkaline etchant for Cu and is used for the wet-chemical removal of Cu seed layers with selectivity to metals like Ni, Au, Cr, Sn, Ti, Al. Common areas of use are for semiconductor fabrication or microsystem technology especially for the removal of seed layers after the plating of under-bump-metallization (UBM).

Advantages and Requirement Profile

Cu-etch-200 UBM offers selectivity to numerous materials. Cu-etch-200 UBM is available in different purity grades. Though alkaline, the etching solution is compatible with resist and can be used at room temperature.

Cu-etch-200 UBM fits to the following requirement profile:

- Selectivity to many materials, e.g. common metals used in electroplating industry
- Very small dimension lost
- Available in different purity grades
- Compatible to resist masking
- Usage at room temperature

Inteded Use

- Usable for manual process, tank or etching equipment
- Use in laboratory or production environment only
- Use for commercial application only

Selectivity

Cu-etch-200 UBM is compatible/etches selective to following materials:

- Resists: common Novolak as masking resist (e.g. AZ[®] Photoresist)
- Metals: no attack on Cr, Au, Pt, Sn, Al, Ni, Ti, Ta
Ag will be slowly attacked, Au will be slowly attacked at elevated temperatures
- Semiconductor materials: Si, SiO₂, Si₃N₄
(further information on request)

Etching rate / capacity

Under normal condition, the etching rate is around 200 to 250nm/min (at RT).

The etching solution stable over time and can be used multiple times depending on the requirements of application. It is recommended to dispose the solution at the latest, when the etching rate has changed by 20%.

Order number / Article number/ Shipping form

Cu-etch-200 UBM is shipped ready for use.
As a standard, all compounds used are level „pure“.

Order number: Article number + Container-Code

	Article number	Container-Code				
		1l	2,5l	5l	10l	20l
Cu-etch-200 UBM	102200-40	D	-	F	G	H

On request: - Certificate of Analysis with individual requirements regarding elements
- etching solution in other purity grade or special grade regarding specific elements

Mixture

The etching solution is ready for use.

The etching solution is stable in time, it can be used multiple times depending on the requirements of application. It is recommended to dispose the solution at the latest, when the etching rate has changed by 20%.

Etching conditions

Temperature: RT (21°C)
Tank: Tank for batch process, Petri dish for manual application
Agitation: medium;
Circulation; stirring rod; autom./ man. agitation of work piece
Etching rate: 200 to 250nm per minute (at RT)
Pretreatment: where applicable descum / oxygen plasma for improving the wetting conditions of the resist or metal mask (no wetting agents needed)

Etching result / inspection

The completed removal of the Cu can be identified by visual observation. There should be no visible residue of Cu, which should be verified by inspection with optical microscope.

General application notes

Pretreatment

Substrates should be pretreated in oxygen plasma, in order to remove any potential organic residues and to improve the wetting properties of the solution on resist masks. The surface becomes hydrophilic and no extra wetting agents are required.

Etching process

During the etching process, sufficient agitation of the solution or of the substrate is needed. If used in manual processing, the etching time required can be identified by observing a color changeover in the open etching areas. After visual qualification the etching should be continued for another 10% to 15% of the time elapsed, in order to assure the removal of any residues.

Post treatment

Thorough cleaning with DI-water / quick dump
Rinsing dryer or manually drying with nitrogen nozzle

Know issues / trouble shooting

Inhomogeneous etching result / incomplete etching

- Poor wetting / no descum or plasma executed
- Etching solution /etching capacity is consumed
- Insufficient agitation

Safety and disposal notes

The mixture is not classified as dangerous according to Regulation (EC) No. 1272/2008. Refer to the safety and handling recommendations of the material safety datasheet before use.

Do not empty into drains or the aquatic environment. Collect used or unused solution in containers and perform waste disposal according to official state regulations. Cleaned containers may be recycled.

Technical Support

NB Technologies GmbH
Fahrenheitstr. 1, 28259 Bremen
Tel.: + 49 421 2445810 FAX.: + 49 421 22379787
Email: info@nb-technologies.de
Web: www.nb.technologies.eu