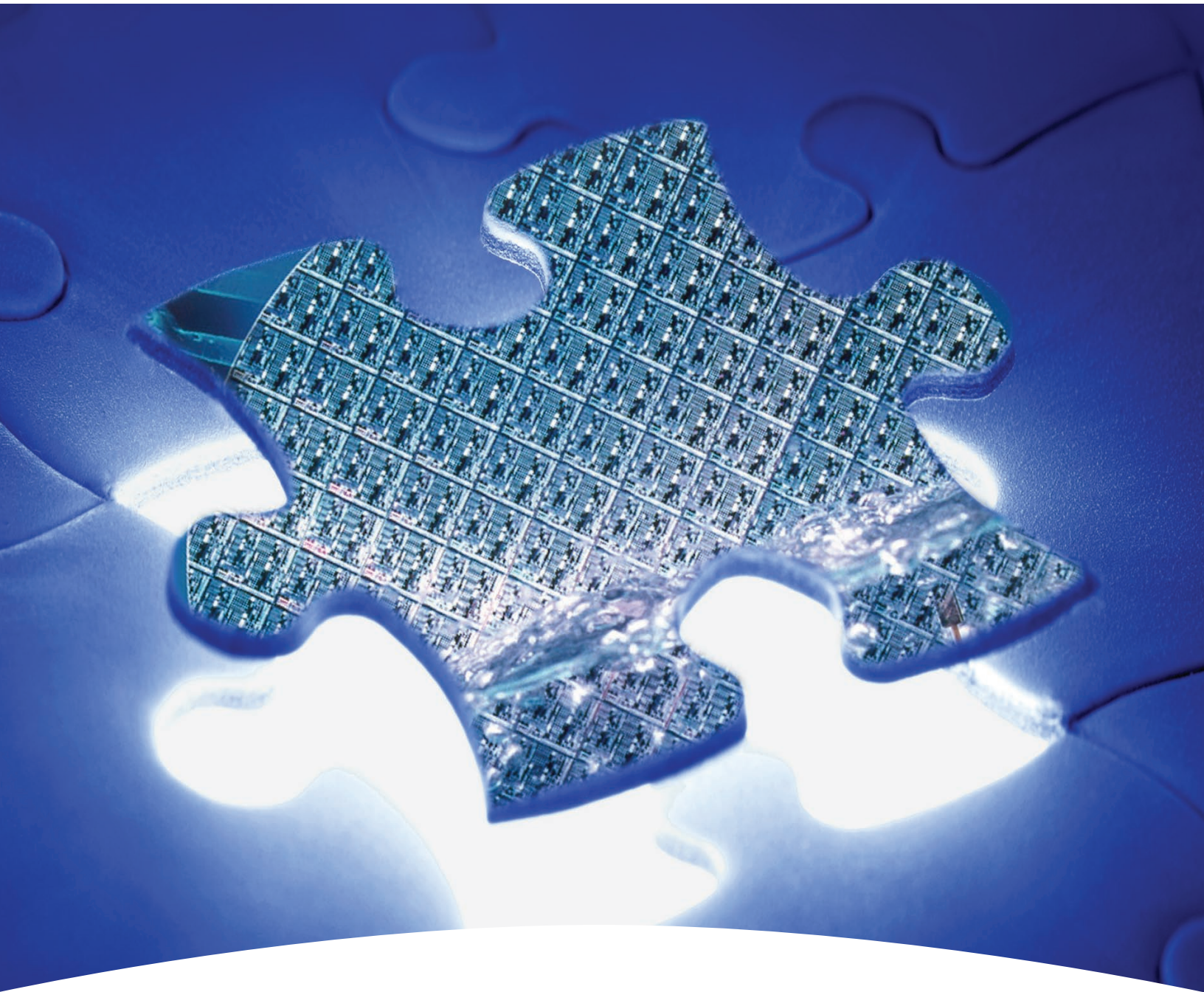


Electronic Chemicals

Honeywell



**Honeywell Advanced
Cleaning Technology**

Honeywell Advanced Cleaning Technology

HIGHLY SELECTIVE CLEANING CHEMISTRIES* FOR COPPER DUAL DAMASCENE PROCESSING

BENEFITS

- Removal of polymer sidewall residue
- Copper and porous Low-k compatible
- Removal of post etch and ash residues
- Removal of CuO_x, CuF_x residues
- Non-volatile, non-flammable formulations
- Low process temperature (<35°C)
- Short process time (60 – 90 sec.)
- Compatible with existing manufacturing equipment

*patent pending

DEMO CONDITIONS

Blanket Film Preparation Conditions:

- Wafers prepared at the Honeywell STAR center in Sunnyvale, CA
- iBARC films deposited using a TEL Act 8 SOG coater

iBARC248

Bake sequence: 60sec at 130°C, 60sec at 200°C, 60sec at 250°C
 Etch conditions: (TEL Unity 2 DRM): time = 10sec, power = 1500W, pressure = 40mT (10sccm C₄F₈, 50sccm CO, 200sccm Ar, 4sccm O₂, 100sccm N₂)
 Ash conditions: (Gasonics L-3510): time = 60sec, power = 900W, pressure = 1200mT (2000sccm O₂, 100sccm N₂)

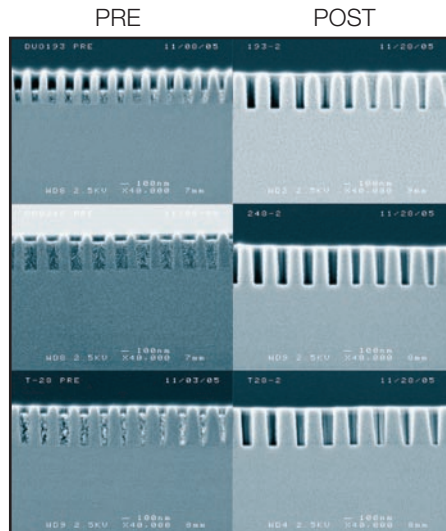


RESPONSIBLE CARE
OUR COMMITMENT TO SUSTAINABILITY

Honeywell Electronic Materials

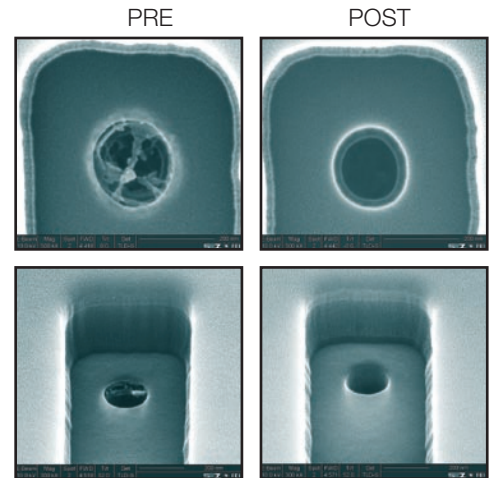
USA: 1-509-252-2102
 China: 86-21-28942481
 Germany: 49-5137-999-9199
 Japan: 81-3-6730-7092
 Korea: 82-2-3483-5076
 Singapore: 65-6580-3593
 Taiwan: 886-3-6580300 ext.312
www.honeywell.com/sm/em

DUO & T-28 Cleaning Technology



Complete Dissolution of Via Fill iBARC**

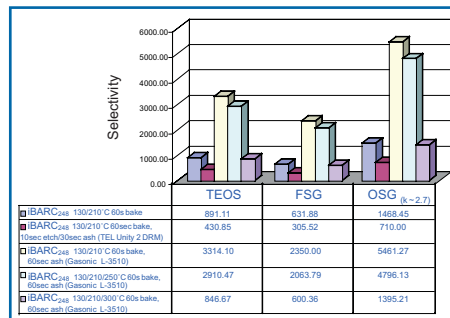
Post Ash Residue Remover



Porous MSQ Dielectrics; 65nm Reticle

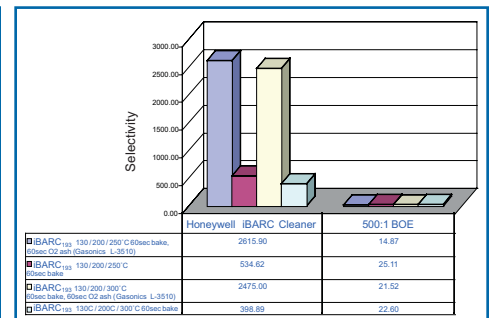
BLANKET FILM STUDIES

Selectivity iBARC248 :ILD @ 35°C



Static Beaker Tests Honeywell iBARC Cleaner @ 35°C

Selectivity iBARC193 :TEOS @ 35°C



Static Beaker Tests Honeywell iBARC Cleaner @ T = 35°C

iBARC193

Bake sequence: 90sec at 130°C, 90sec at 200°C, 90sec at 300°C
 Etch conditions: (TEL Unity 2 DRM): time = 10sec, power = 1500W, pressure = 40mT (10sccm C₄F₈, 50sccm CO, 200sccm Ar, 4sccm O₂, 100sccm N₂)
 Ash conditions: (Gasonics L-3510): time = 60sec, power = 900W, pressure = 1200mT (2000sccm O₂, 100sccm N₂)

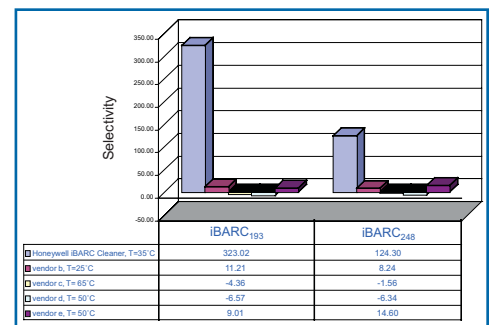
Wet Etch Conditions:

- Wafers processed at SEZ America's Research and Development Lab in Phoenix, AZ
- Blanket wafers were processed on a variation of the SEZ Spin Processor 4200, a multi-task single wafer processing machine used for front side wafer treatment on 200mm wafers.

For more information on SEZ equipment, please contact SEZ: contact_us@sez.com

- Chuck speed: 600 rpm
- Flow rate: 1 L/min
- Temperature ranged from 25°C to 65°C depending on POR of chemistries tested
- Process time ranged between 20 sec and 2 min depending on initial thickness and removal rate of iBARCs tested

Post Plasma Treatment Selectivity iBARC :TEOS



Etched and Ashed Blanket Films

* patent pending
 ** Inorganic Bottom Anti-Reflective Coating

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