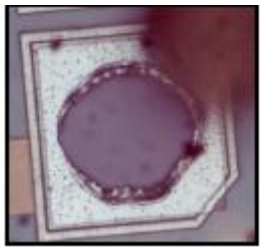
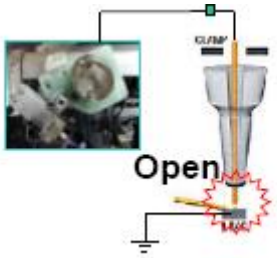
The Barriers of copper wire-bonding are

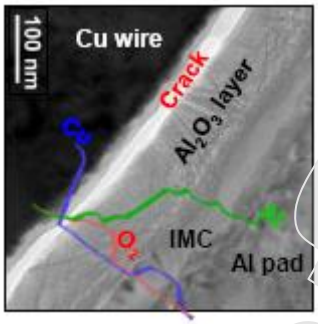
- Chip damage



- Low 2nd Bond workability




- Weak reliability in high end package and in high humid condition

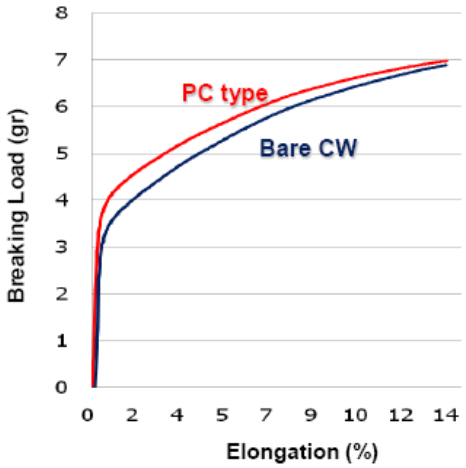



- Short floor/shelf life time.


To overcome these barriers, PdCu wire was developed.

Similarities between PdCu wire and Bare Copper wire:

- Mechanical and Electrical properties




**Mechanical properties**

| PC type | | Bare C/W | |
|---|---|---|---|
| B/L [gr] | E/L [%] | B/L [gr] | E/L [%] |
| 6.0 ~ 8.0 | 11.0 ~ 15.0 | 6.5 ~ 7.5 | 11.0 ~ 15.0 |

**Fusing current** [Unit : A]

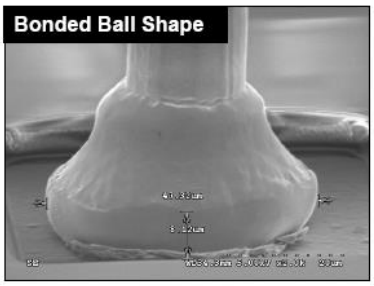
| PC type | Bare C/W |
|---|---|
| 0.5 | 0.5 |

* Test length : 10mm

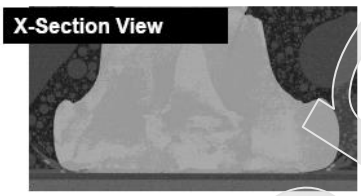
**Specific resistance** [Unit : μΩcm]

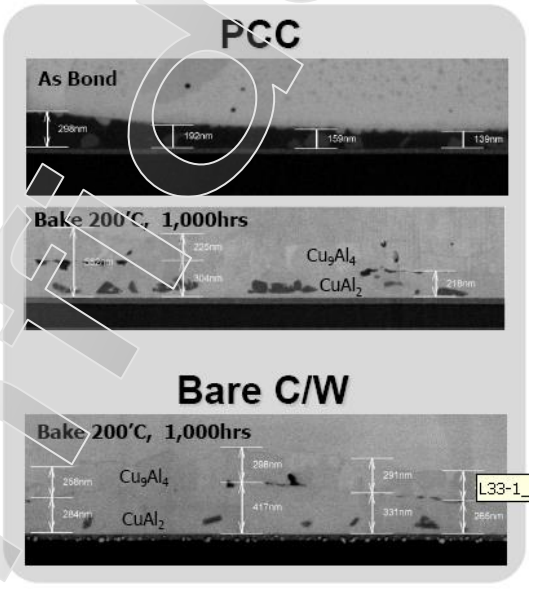
| PC type | Bare C/W |
|---|---|
| 1.8 | 1.7 |

- Intermetallic growth.



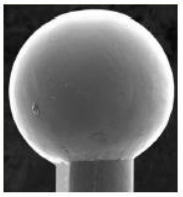
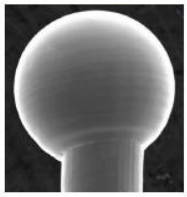
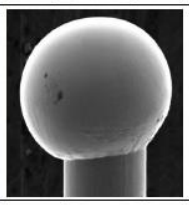
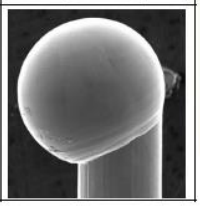

IMC growth of PCC wire is very similar With that of bare CW .



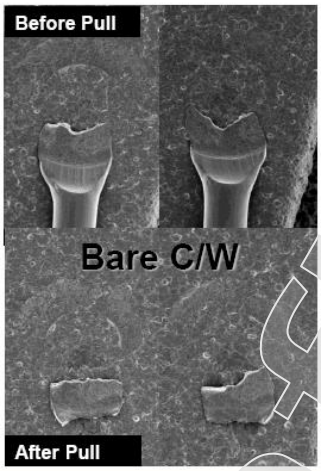



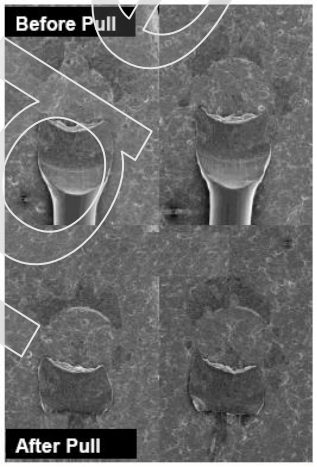
Advantages of Pdcu wire:

- Better FAB shape with both forming and the nitrogen gas.

| Gas condition | PC Type | Bare CW |
|---|---|---|
| Forming gas |  |  |
| $N_2$ gas |  |  |

- The PdCu wire will have broad, stable, even remnant in stitch bond shape.




- Longer floor life than Bare Copper wire.
- Better HAST performance