



2017 May Hot Topic Related to Supply Chain Concerns

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Subject of Your Hot Topic

Quality of incoming liquid bulk chemicals regarding **material quality**.

Example: “Effect of Incoming Quality of Sulfuric Acid on Inline Defects”

Details in SPCC presentation by GLOBALFOUNDRIES : <https://spcc2017.com/technical-program-2017/>

Hot Topic Occurrence

Small particles causing in-line issues is an **ongoing** topic with a dependency of the originating manufacturing site.

Difficult to detect any excursion in incoming particles if the particles are smaller than the detection limit. Current state of the art detection limit is 45nm by liquid particle counter.



Impact of Your Hot Topic

Yield impact at certain critical process steps

High volume device manufacturers need to have multiple sources of materials for continuous supply chain. Any particle excursion in any chemical can potentially degrade the inline defects.

Inline defect detection can also miss the defects on the wafer in similar situations where defects are smaller than the detection limit.

Resolution of Your Hot Topic

Ongoing to resolved

Sulfuric acid is usually produced using either glass or Teflon-lined steel absorption tower in high volume manufacturing environment.

The difference in manufacturing process introduces variation in the type of defects both in quality and quantity.



Expectations for Your Hot Topic

Discuss further how to improve material characteristics at more critical nodes (28nm to 7nm and below)

As LPCs are not reliable for small particle control which control schemes to establish based on test results on blank wafers and analysis with state-of-the art inspection tools?

Shall this be an (expensive) regular incoming test?

Is anyone adding such test capability & data to supplier outgoing inspection requirements?

Any way to compare the global production sites with standard tests w/o issues to exchange data?



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