

The materials integrity management company

EUV Carrier Program

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Summary

- Entegris has designed and built molded alpha prototypes
 - 200mm SMIF interface
 - Compliant with most 200mm RSP standard specifications
- Entegris met alpha-phase performance goal in three independent tests conducted June 05 – July 05
 - Bare reticle shipping
 - ≤ 5 particles @ $\geq 60\text{nm}$

The Pull

- To develop a carrier that maintains a level of contamination control sufficient for pellicleless EUV reticles

The Preferences

- To provide a carrier that can be used as both a patterned reticle shipper and process carrier
- To provide a carrier that interfaces with existing standard infrastructure

The Philosophy

- All work is considered tentative
 - Entegris is aware that SEMI standards, IDM's, and OEM's requirement are likely to change
- Go with what you know
 - Leverage as much current design BoK and infrastructure as possible to minimize economic and performance risk
- Spend resources on known deficient areas
 - Carrier seals and reticle retention

The Product



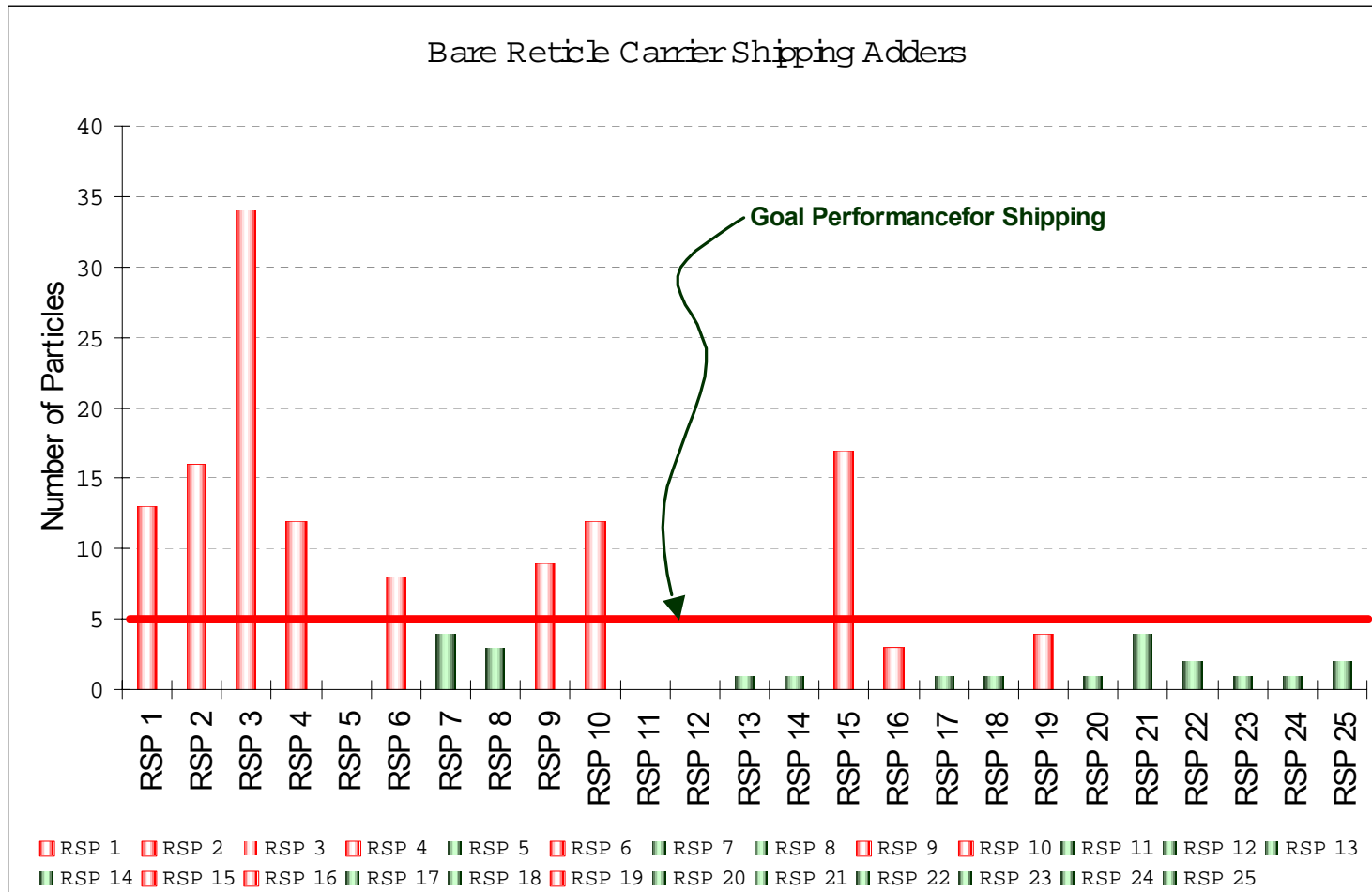
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The Product

- 100% Polymer construction
 - Entegris realizes that polymers most likely will not be suitable for EUV, but the design is not limited by materials
 - Polymers are well understood by Entegris and were used to minimize unknown variables
- 100% compatible with 200mm SMIF interface
 - 200mm chosen over 150mm because of mechanical advantages in opening/closing and load port alignment
 - Most SMIF patterning facilities use the 200mm standard
 - Offers sufficient real estate for protective enclosures

The Performance

- Results are anecdotal, but have clear patterns



The Prognosis

- Entegris has moved the discussion from feasibility to possibility
- Entegris believes that acceptable particle performance reliably can be achieved
- Entegris has identified several areas for further improvement in performance
 - Cleaning
 - Secondary packaging
 - Materials
 - Handling