



1. Title:	Status and Path to Particle-Free EUVL Reticle Protection Solution
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3. Abstract body:

In Extreme Ultraviolet lithography, the lack of a suitable material to build conventional pellicles dictates the needs for particle-free EUVL reticle protection during its entire lifetime. It includes reticle shipping, transport, mechanical handling, use in EUVL exposure tool's vacuum conditions, and storage. In this paper, we review the industry's most significant options for particle-free reticle protection, along with some of the most advanced design approaches. We discuss in-depth studies of the approaches by using the world's most sensitive particle inspection capability. Our discussions will be focused on the two worst volatile and dynamic reticle life steps, i.e., the shipping and vacuum pumping-venting steps. We will also discuss SEMATECH's on-going efforts to establish fully automated reticle handling capabilities to exhaustively test the arguably industry's most advanced reticle protection solution of EUV Dual Pod carriers. In addition, we present a path to the final EUV reticle handling solution and commercialization.

Keywords: Extreme Ultraviolet Lithography, EUVL reticle, EUVL mask, EUV reticle handling, EUV reticle protection, defect