1. Title:	Development of beta EUV mask blanks at HOYA
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3. Abstract body:
We have presented at the last EUVL symposium that a ML blank with low defects of 0.05 def/cm2 at 80 nm sensitivity was obtained. We continue to challenge further defect reduction on the ML blanks this year. We have newly started development of beta type EUV mask blanks (beta EUV blanks), consisting of CrN buffer and LR-TaBN absorber layers, for full field mask used in alpha type EUV exposure process at the beginning of this year. All of processes for beta blanks have been carried out in our production line. Main purpose except for defect reduction in this program is to achieve absorber stack layers with high quality and LTE glass substrates with higher flatness.

Based on recent improvement of polishing and cleaning processes, the substrates with high flatness of 100 nm on the both sides and low defects of 0.03 def/cm2 at 60 nm inspected by M1350 were achieved. LR-TaBN absorbers with low stress of less than 200 MPa, high thickness uniformity of +/- 1% and low defects within 0.03 def/cm2 at 150 nm were produced at initial development stage. We will present recent progress in defect reduction on the ML blanks and performance on beta EUV blanks.