Technical Note

DRY FILM PHOTORESIST: CURE DETAILS

INTRODUCTION

This Technical Note will focus on dry film photoresist UV and thermal curing details. Critical parameters of curing negative resist are proper UV exposure and appropriate thermal bakes to finalize film cure and achieve the film's ultimate properties.

GENERAL CURE DETAILS

GENERAL CONSIDERATIONS	• Cleanroom under UV filtered lights. Cleanroom is preferred, UV filtered lights are necessary. • Avoid utilizing basic pH chemistries that could interfere with the epoxy-cationic cure mechanism. This goes for local environment and atmospheric conditions. • Substrate Handling should be done in a manner that avoids contamination (general handling, high purity solvents, precleaned substrates, etc).
UV EXPOSURE	• Exposed areas have reduced solubility in developer. • Thickness dependent - thicker material will require higher UV exposure. • 365nm I-line exposure. • UV Intensity - mW/cm2 , UV Exposure - mJ/cm2 • Perform incremental steps of UV exposure to dial in best process window; ie. exposure matrix.
POST EXPOSURE THERMAL BAKE	• Not thickness dependent. • Completes the cross linking started with exposure. • Cross linked structures rendered during exposure now insoluble in developer. • Typical post exposure bake - 100°C/10 minutes.
POST DEVELOP HARD BAKE	• The hard bake improves resist structure's stability for subsequent physical or chemical processes. • Hard bake best performed directly after post exposure bake. • Typical hard bake - 175°C-200°C/1 hour.

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