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(54) Title: WATER WASHABLE THERMAL AND PLASMA RESISTANT COATING FOR LASER INTERACTIVE APPLI-
CATIONS

(57) Abstract: Compositions and methods useful for the singulation of fragile devices from substrates by the process of plasma sin-
gulation are described. Thermal resistant coatings comprising ingredients that exhibit both thermal resistance and water solubility are
demonstrated. These ingredients which have high ultraviolet interaction allow laser interaction to create masks for thin and small de-
vices, for example, substrates that are thin to 150 microns or less or have devices present that are measured 1mm on a side or smaller.
Methods are presented which apply the composition to the inorganic substrate whereby an ultraviolet sourced laser interacts with the
surface and creates a mask which subsequently is processed in a plasma chamber to separate (singulate) the devices within the substrate
and subsequently rinse with water to remove/dissolve the laser interactive and plasma protective layer. Once rinsed and clean, the
devices proceed by pick and place tooling to final integration to electronic circuitry. The invention coating is a water rinsable creation
that achieves high selectivity for both laser and plasma operations.



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