MITIGATING OXYGEN INHIBITION

IN LIGHT-CURABLE MATERIALS

Oxygen inhibition is a very common problem for materials that cure by free-radical polymerization. Early chain termination can occur when radical molecules react with oxygen in the air, resulting in an incomplete cure on any surfaces exposed to air. Oxygen-inhibited surfaces are normally tacky or sticky. Luckily, there are several physical and chemical ways to reduce oxygen inhibition.

	Advantages	Disadvantages
Inert Gas	No adverse affect on material properties	Difficult to implement Expensive
Films	Good solution if film will become part of final product	Cost & disposal of film if not part of final product
Waxes	Inexpensive	Affects material properties Time needed for migration
Thiols	Improved adhesion & thermal resistance Reduced moisture absorption	Bad odor
Increase Photoinitiator Concentration	Easy to implement	Increased residuals/by-products Reduced material properties
Amines	Low cost May improve adhesion	Yellowing after cure Residual odor Moisture sensitivity
Increase Light Intensity	Might not affect material properties	May require new curing equipment
Ethers	Can be used in large quantities	Affects material properties Reduction in water & temperature resistance

BOMAR

Bomar is a leading innovator of advanced-performance materials for energy (UV/EB), light, and other free-radical cure applications. Our scientists synthesize a broad range of select specialty oligomers, custom-designed to satisfy the unique performance requirements of emerging application technologies, while providing customers an edge in formulating products with outstanding performance, reproducibility, and cost effectiveness.

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