

## Fully Organic Packaging for Applications with Liquid Exposure

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### Abstract

Liquid Crystal Polymer (LCP), a thermoplastic dielectric material with very low water absorption (< 0.04%), high chemical stability and low thermal expansion is best suited both as a substrate material and as the encapsulate for small miniaturized electronic packages and modules. LCP stands out among other polymer materials used for microelectronics. The permeability for water and gases is the lowest among all polymeric materials. With proper design considerations LCP packages can achieve a sufficient low permittivity for exposures in liquid media.

Processing techniques for LCP substrates are the same as for other packaging substrate materials. Resolution of lines, spacing and vias are comparable. Multi-layer structure with thin dielectric layers can be made using LCP films.