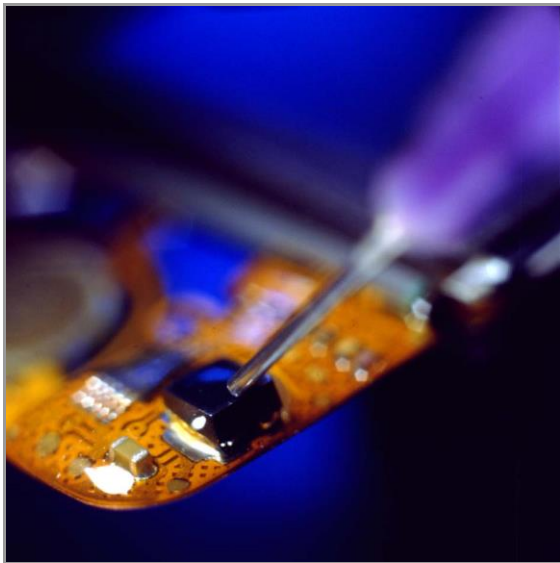


Chip Encapsulants

For Superior Protection on Flexible and Rigid Platforms

Dymax 9000 Series encapsulants cure in seconds upon exposure to UV/Visible light and are easily incorporated into automated systems for maximizing microelectronic assembly and production speeds. These tough, flexible encapsulants have high ionic purity, resistance to humidity, and resistance to thermal shock to effectively protect components and improve their reliability. 9000 Series single-component encapsulants contain no sharp, abrasive, mineral or glass fillers to abrade fine wires, and their combination of low T_g and low modulus means low stress. They have excellent adhesion to Polyimide, PET, flexible printed circuits, FR4, and ceramic boards and provide superior protection for glob top and chip-on-board applications. 9000 series encapsulants are also ideal for encapsulating ICs on flex circuits. The encapsulants are available in a wide range of viscosities, from thin to non-flowing gel, and several grades are formulated with secondary moisture cure to ensure the material cures in shadowed areas.



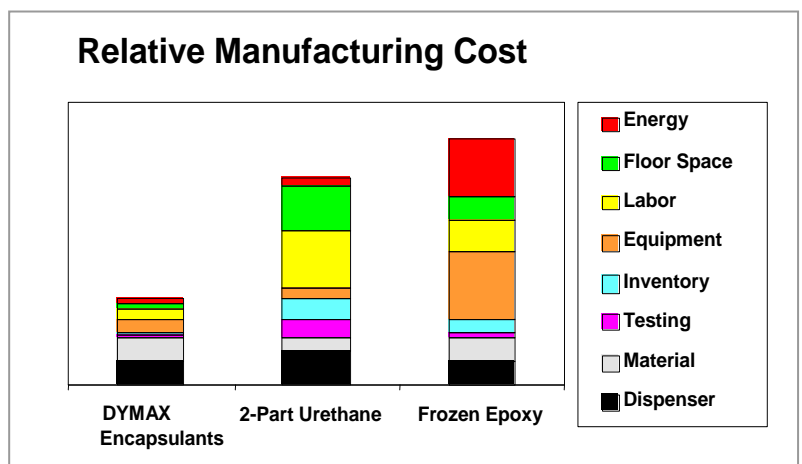
Clear UV-Curable Encapsulants

| Feature | Benefit |
|---|--|
| <ul style="list-style-type: none"> Tack-free UV/Visible light cure in seconds | <ul style="list-style-type: none"> Highest assembly throughput Minimal handling requirements |
| <ul style="list-style-type: none"> Secondary moisture cure available | <ul style="list-style-type: none"> Fast cure rate for shadowed areas |
| <ul style="list-style-type: none"> 100% solvent free | <ul style="list-style-type: none"> Very low VOCs High coverage |
| <ul style="list-style-type: none"> High ionic purity Resistance to thermal shock Resistance to moisture Low stress under thermal cycle Electrically insulating | <ul style="list-style-type: none"> Maximum post-assembly reliability |

Cost Savings of Dymax Encapsulants

- Cure in seconds; increase throughput
- Minimal floor space requirements
- Simple to dispense
- Eliminate labor costs associated with:
 - Complex dispensing system maintenance
 - Manual transferring of parts for long cure

Relative Manufacturing Cost



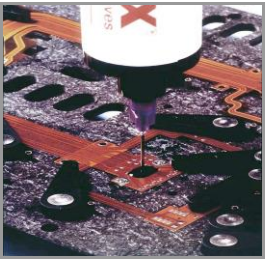
Dymax UV Light-Curable Encapsulants

| Product | UV/Visible Light | LED Light (385 nm) | Heat | Moisture | Features | Nominal Viscosity, cP (20 rpm) | Durometer Hardness | Modulus of Elasticity, MPa [psi] | Elongation at Break, % |
|-------------|------------------|--------------------|------|----------|--|--------------------------------|--------------------|----------------------------------|------------------------|
| 9001-E-V3.1 | • | • | • | | General-purpose, medium-viscosity encapsulant; good adhesion to flexible and rigid printed circuits; secondary heat cure | 4,500 | D45 | 17.2 [2,500] | 150 |
| 9001-E-V3.5 | • | • | • | | Higher viscosity 9001-E series encapsulant; moisture and thermal cycle resistance; secondary heat cure | 17,000 | D45 | 17.2 [2,500] | 150 |
| 9001-E-V3.7 | • | • | • | | Thixotropic viscosity; ideal for damming or thick coatings; secondary heat cure | 50,000 | D45 | 17.2 [2,500] | 150 |
| 9008 | • | | | | Remains flexible at low temperatures; highly moisture resistant | 4,500 | A85 | 13.8 [2,000] | 300 |
| 9101 | • | | | • | Secondary moisture cure for shadowed areas; flexible; moisture and thermal resistant | 7,000 | D30-D50 | 17.6 [2,550] | 38 |
| 9102 | • | | | • | Secondary moisture cure for shadowed areas; flexible; moisture and thermal resistant | 17,000 | D30-D50 | 18.4 [2,670] | 34 |
| 9103 | • | | | • | Secondary moisture cure for shadowed areas; flexible; moisture and thermal resistant | 25,000 | D30-D50 | 17.7 [2,560] | 36 |

| Typical Ionic Content | | |
|-----------------------|---------|-----|
| Extractable Chloride | <10 ppm | IC |
| Sodium | <10 ppm | ICP |
| Potassium | <10 ppm | AA |
| Fluoride | <10 ppm | IC |



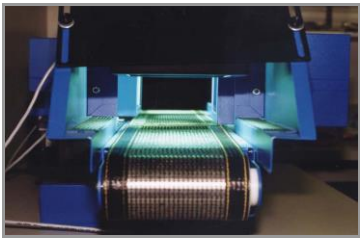
IC Kapton Flex Circuit Encapsulant



Glob Top and Black Encapsulants

Curing Options for Dymax Encapsulants

Dymax encapsulants cure in seconds upon exposure to UV light, affording the fastest processing possible. Avoid processing bottlenecks by choosing an efficient and cost-effective Dymax encapsulant with a matched Dymax UV light-curing system.



Cure large parts or arrays of parts under high-intensity conveyed light-curing systems



Automated Dymax spot light-curing system mounted on a robotic dispenser



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