



Abstract of the Disclosure

MIXING AND DISPENSING SYSTEM FOR RAPIDLY POLYMERIZING
MATERIALS

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A mixing and dispensing system for reactively combining organic chemical components to produce a rapidly polymerizing material for use in molding and encapsulating small and usually delicate devices, such as electronic components. The system uses a novel mix head incorporating a high speed rotary mixer having magnetic coupling for
10 mixing and injecting relatively low viscosity polymerizing materials into a mold. The chemical feed to the mix head is from special chemical handling equipment. The design of the system eliminates the need for material control valves and enables relatively low feed line pressures. A novel chemical handling subsystem uses special tubular containers provided by the chemical material manufacturers that mount on specially designed
15 dispensing equipment, and do not require special storage, handling, or mixing by trained personnel. The system has a mold cycle time of typically between 6 and 12 seconds in order to achieve complete polymerization, eliminating the need for curing ovens required in conventional encapsulation methods. The chemicals used in this system are not premixed, but are combined in the mix head just prior to filling a mold. They may be stored almost
20 indefinitely if properly sealed. Because of the relatively low viscosity of the rapidly polymerizing materials, damage to fragile electronic interconnections during encapsulation are greatly reduced. Other advantages of this system is no inherent corrosion problems, lower moisture absorption than epoxy, and lower mold temperatures for reduced thermal stresses.

