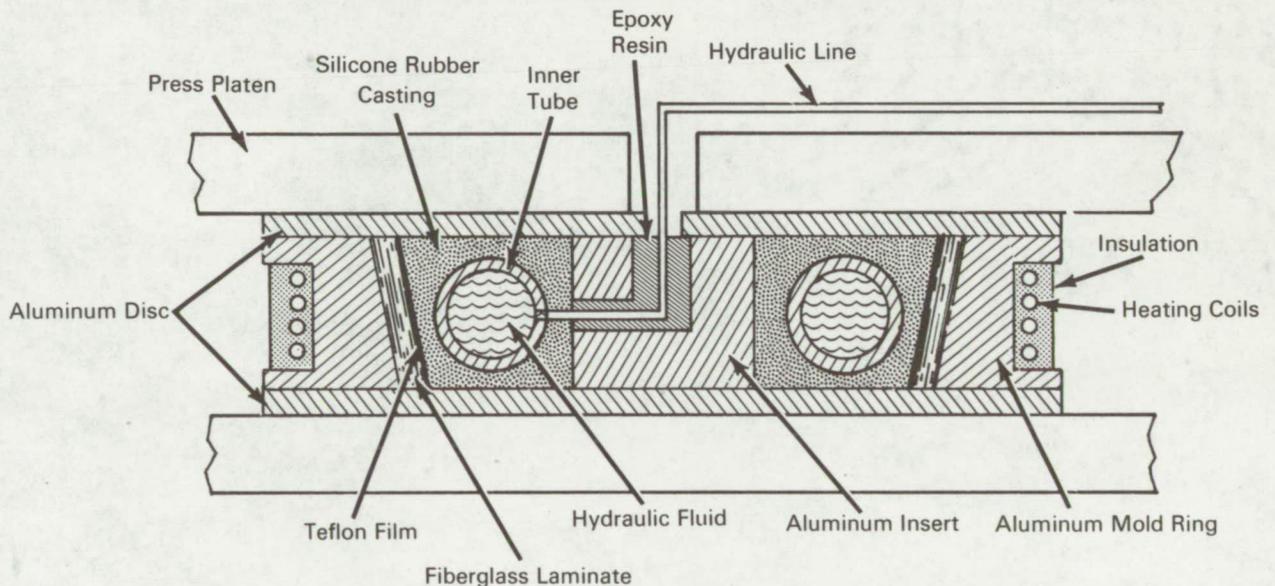


# NASA TECH BRIEF



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## Molding a High-Density Laminate



**The problem:**

To mold phenolic resin impregnated fiberglass cloth in the form of a high-density, cylindrical-ring laminate for use as a structural component.

**The solution:**

Use of a molding press to apply clamping pressure and heat to a mold containing the fiberglass cloth laminate, which has hydrostatic pressure applied to it by means of a specially designed pressure transfer plug.

**How it's done:**

The mold and its function are rather straightforward and well known in the art. The specially designed pressure transfer plug gives this molding technique a certain novelty. It consists mainly of a heavy-duty innertube (such as used in small vehicle tires), a

hydraulic line, a silicone rubber casting, and an aluminum insert that fits within the innertube and provides a passageway for the hydraulic line. It also has an epoxy resin potting about the hydraulic line within the insert.

The impregnated fiberglass cloth is applied and shaped to the inner surfaces of the molding ring which has been coated with a parting agent. The hand layup is conventional, forming a number of butt-jointed sections per layer and sufficient layers with staggered butt-joints to form the desired lamination thickness. Two layers of teflon film are placed on the inside surface of the laminate arranged in the same manner. The innertube is placed in the center with its aluminum insert and void-free silicone rubber is cast between the laminate and insert, encapsulating the innertube. The mold is next closed and heat applied

(continued overleaf)

to the press heating platens and mold coils. When attached instrumentation indicates proper molding temperature has been reached, hydraulic pressure (about 450 psi) is applied to the transfer plug inner-tube and to the laminate through the silicone rubber casting.

**Note:**

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Langley Research Center  
Langley Station  
Hampton, Virginia 23365  
Reference: B68-10092

**Patent status:**

No patent action is contemplated by NASA.

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