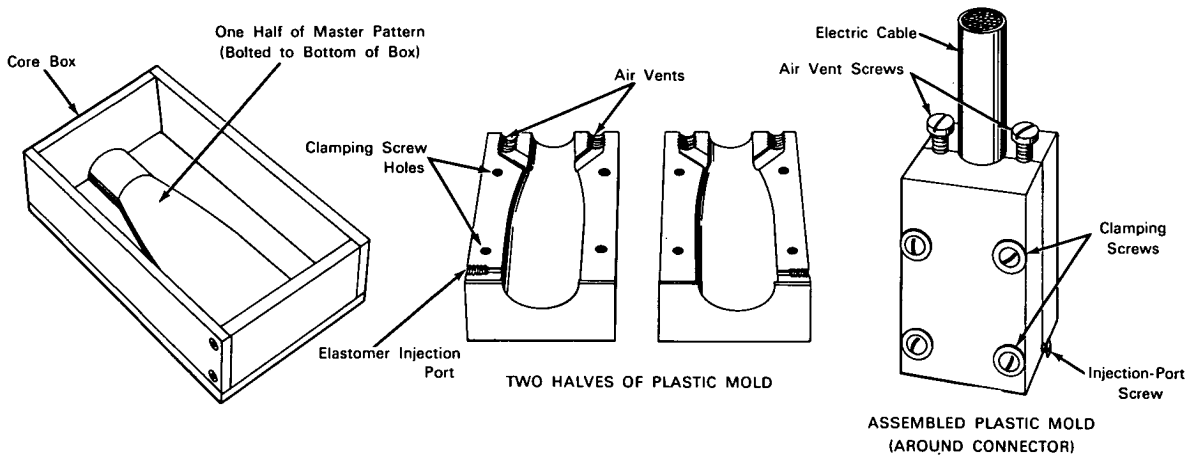
November 1964 Brief 63-10568

NASA TECH BRIEF

This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

Plastic Molds Reduce Cost of Encapsulating Electric Cable Connectors



The problem: Providing an inexpensive method of fabricating a mold used for encapsulating or sheathing electrical cable connectors with an elastomer. The cost of fabricating molds by conventional methods can be an appreciable factor when it is required to encapsulate small quantities of connectors of different configurations.

The solution: A mold made from a commercially available metal-filled epoxy resin that quickly cures at room temperature. This mold is used for encapsulating the cable connector in an elastomer.

How it's done: Two halves of a master pattern are machined from aluminum. Each half of the pattern is cleaned, coated with a mold release agent, and bolted down in the bottom of a core box. The metal-filled resin is then mixed with a hardening agent and the putty-like mixture is troweled over the pattern half to fill the core box. The resin is allowed to cure in the box for one and one-half to two hours at a temperature of 70° F (one-half to one hour at 85°–120° F). After curing is completed, the bolts are unfastened and the resin casting encasing the aluminum pattern half is removed from the core box. The pattern half is easily separated from the resin casting by tapping around the surfaces with a soft mallet. Castings of the two halves of the master pattern are assembled in a jig and drilled and tapped to provide air-vents, clamping-screw holes, and an injection port. When mated, the two halves of the castings form a complete reusable plastic mold for encapsulating a cable connector.

The connector attached to a cable is fitted into one of the plastic mold halves, and the other half of the plastic mold is placed into position to form a complete mold around the connector. Clamping screws are used to fasten the two halves of the mold firmly together. Two monomeric components that cure to form a polyurethane condensation elastomer are then mixed together and injected into the plastic mold surrounding the connector. The filled mold (with injection port closed by a screw) is kept in an oven at 180° F

(continued overleaf)

for four hours to allow the elastomer to cure. During the curing process, the air-vent screws are tightened to compensate for shrinkage of the elastomer. When curing is completed the plastic mold is disassembled, leaving an elastomeric encapsulation around the connector.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B63-10568

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: D. M. Knott (M-FS-69)