

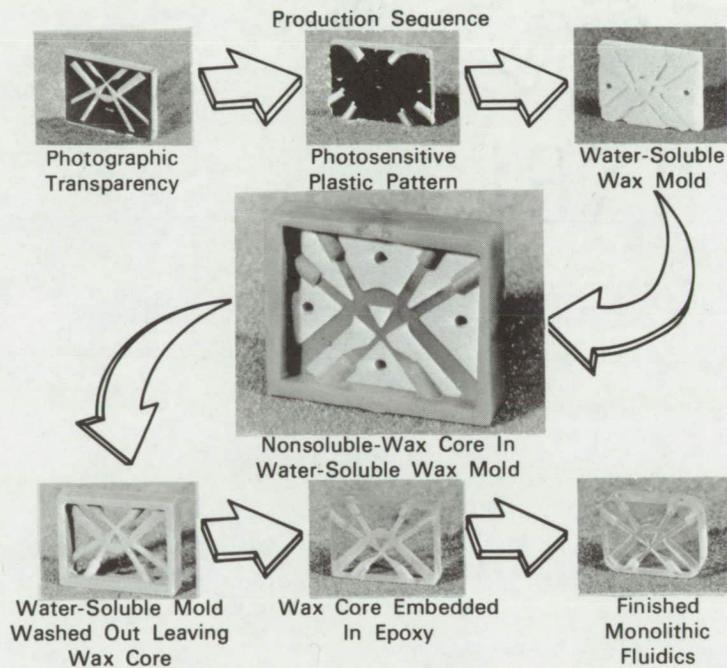
NASA TECH BRIEF

Langley Research Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Improved Wax Mold Technique Forms Complex Passages in Solid Structures



A low-cost fabricating technique produces minute, complex air passages in fluidic devices. Air jet interactions in these devices are used to perform the same functions as electronic and electromechanical control systems. The air passages and internal cavities are formed by casting around an expendable wax core later removed by melting.

The fragile wax cores are fabricated without distortion by a two-wax process using a nonsoluble pattern-wax commonly used in the "lost-wax" process and a water-soluble wax. The water-soluble wax mold is used to form the desired core of nonsoluble wax. The soluble wax is easily washed away without distort-

ing the fragile core. Significant steps in the fabrication process (see fig.) include:

1. Inject soluble wax into plastic master molds to form soluble wax mold laminates.
2. Stack soluble wax laminates in the proper sequence to form soluble mold.
3. Inject nonsoluble wax in soluble wax mold to form nonsoluble core.
4. Remove water soluble wax mold, leaving nonsoluble wax core.
5. Encapsulate wax core with plastic.
6. Melt out nonsoluble wax core to form the completed structure.

(continued overleaf)

The two-wax mold technique for making complex structures can be applied to such commercial activities as sculpturing, home projects in ceramics and metal forming, and fabricating molded ferrite cores with unusual structures.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Langley Research Center
Hampton, Virginia 23365
Reference: TSP71-10063

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

Patent Counsel
Mail Code 173
Langley Research Center
Langley Station
Hampton, Virginia 23365

Source: R. F. Hellbaum, A. R. Phillips,
and A. D. Page
Langley Research Center
(XLA-07829)