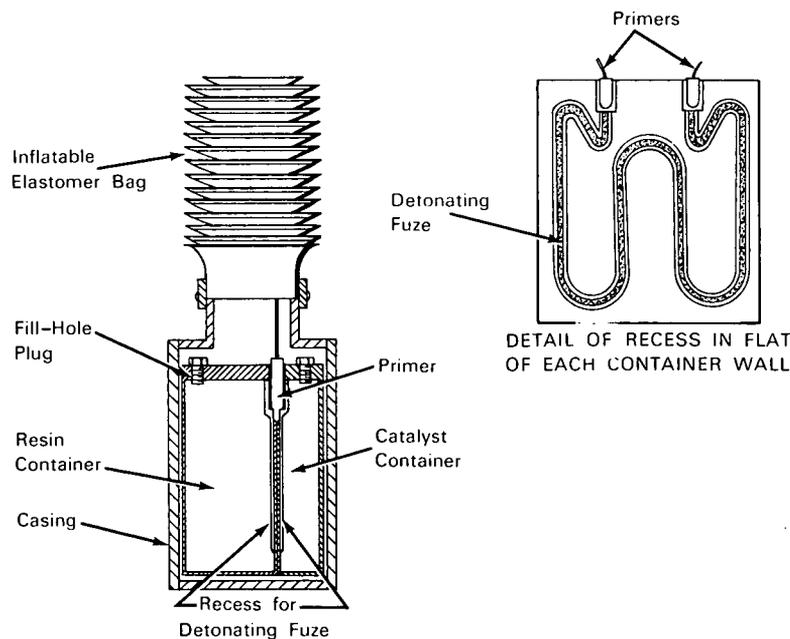


NASA TECH BRIEF



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Compact Assembly Generates Plastic Foam, Inflates Flotation Bag



The problem: To design a compact device that can be actuated to generate a plastic foam and inject it into an inflatable elastomeric bag. Plastic foam in an expanded bag will remain buoyant in water for long periods of time. This type of flotation has been proposed for recovery of instrument packages dropped into the sea from spacecraft. In situations where prolonged search may be necessary to locate an instrument package on the sea, a flotation bag or raft filled with gas may gradually lose buoyancy as the result of minor punctures and sink before recovery can be effected.

The solution: An assembly consisting of a folded elastomeric bag and two containers of chemical

components which can be brought into contact by explosive rupture of the contiguous walls of the containers to produce a voluminous, buoyant, plastic foam.

How it's done: The two sealed semicylindrical containers are housed in a casing having a tubular extension that fits into the open end of the folded elastomeric bag. The larger container is filled with a liquid resin and the smaller container with a liquid catalyst that can initiate a foam reaction. The abutting flat walls of the containers have matching sinuous grooves into which are fitted a length of mild detonating fuze cord. Primers which can be initiated by means of an electrical pulse are secured to each end of the fuze.

(continued overleaf)

When the fuze is detonated, the walls of the containers are ruptured, bringing the liquid resin and catalyst into contact over an extended area and thereby producing a large volume of plastic foam (approximately thirty times that occupied by the reactants). The generated foam rapidly expands through the annular spaces around the primers and inflates the elastomeric bag to full volume.

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Langley Research Center
Langley Station
Hampton, Virginia, 23365
Reference: B65-10090

Patent status: NASA encourages the commercial use of this invention. It has been patented by NASA (U.S. Patent No. 3,150,387, and royalty-free license rights will be granted for its commercial development. Inquiries about obtaining a license should be addressed to NASA, Code AGP, Washington, D.C., 20546.

Source: Langley Research Center
(Langley-96)