

December 1969

Brief 69-10692

NASA TECH BRIEF



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Elimination of Dissolved Gases in Hypergolic Engine Propellants

The problem:

The amount of dissolved gases in hypergolic propellants has a direct effect on the performance of small reaction control engines. The present method, in which the temperature is increased allowing the gases to bubble out, does not insure complete degassing. Also, no means are available for determining the amount of gases contained in the hypergolic propellants.

The solution:

The elimination of the dissolved gases in hypergolic propellants by exposure to ultrasonic vibration. A manometer can be connected to the ullage of the propellant container to measure the volume of gases freed.

How it's done:

The propellant container is placed in an active ultrasonic generator (e.g., the Turco PC 2000) for a specific length of time. The ultrasonic vibration created by the generator insures complete degassing of the propellants. The elimination of the dissolved gases may prevent some degradation of thrust and possible combustion instability, a highly undesirable

condition. When an absolute manometer is connected to the ullage of the hypergolic propellant container, the volume of the dissolved gases can be determined by correlating the change in height of the liquid column in the manometer to the known ullage of the container.

Notes:

1. This development is in the conceptual stage only.
2. This concept may be of interest to the manufacturers of hypergolic propellant engines.
3. No additional documentation is available. Specific questions, however, may be directed to:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B69-10692

Patent status:

No patent action is contemplated by NASA.

Source: E. W. Monroe of
Space Division,
North American Rockwell Corporation
under contract to
Marshall Space Flight Center
(MSF-16179)

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