

October 1967

Brief 67-10408

NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U.S. space program, to encourage their commercial application. Copies are available to the public at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Improved Sample Capsule for Determination of Oxygen in Hemolyzed Blood

Measurements of oxygen saturation in hemolyzed blood, based upon the spectrophotometric method described in Tech Brief B67-10252, have inherent limitations in attainable accuracy, particularly at low levels of oxygen saturation, which arise as a consequence of the operations involved in sample preparation. A sample capsule was designed to eliminate errors arising from air entrainment which may occur with standard glass syringes, both during sample withdrawal and during the introduction of a hemolyzing agent. The new sample capsule obviates the need for the addition of mercury for mixing and the need for syringe lubricant, both of which are potential sources of sample contamination.

The sample capsule consists of a measured section of polytetrafluoroethylene tubing equipped at each end with a connector and a stopcock valve. Hemolysis is accomplished by injection into the capsule of a buffered hemolyzing agent with a 5-inch No. 20 needle through a capsule end valve shielded with a 1-inch No. 15 needle. Mixing is accomplished by means of a 0.125-inch brass cube housed in the capsule. Delivery of hemolyzed blood into 0.1-mm spectrophotometric

cuvette cells is accomplished through a No. 20 needle-equipped end valve by a screw-driven pressure plate.

Notes:

1. The capsule is designed for use in closed circulating systems and is unsuitable for general purpose blood sampling from individual subjects.
2. Inquiries concerning the design and use of the sample capsule may be directed to:
Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B67-10408

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: W. M. Malik
of the Institute of Medical Sciences
at the Presbyterian Medical Center
under contract to
Manned Spacecraft Center
(MSC-11017)

Category 04