

December 1967

Brief 67-10610

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.

Handbook of Cryogenic Data in Graphic Form

A Handbook of Cryogenic Data has been compiled and contains in graphic form significant and useful cryogenic data from various sources. The data are recalculated where necessary to convert from the metric to the British system of units and to extend the range of available values.

The handbook includes such information as: the boiling heat transfer rate from copper to liquid nitrogen; temperature-enthalpy functions for liquid nitrogen; saturated liquid/gas relations; linear contractions of teflon, stainless steel, and other materials of construction; and gaseous air density and compressibility factors versus pressure.

The handbook concentrates extensive data on common materials of construction and properties of fluids frequently encountered in designing cryogenic systems. Organized into a series of graphs, this information would be a convenient reference work for the design engineer. Most of the data presented are available from various sources, such as technical reports, journals and textbooks; however, for the engineer to gather the needed information, extend the range of values, and convert all figures to a common system of units is laborious and time consuming.

All data are presented in the British system of units. The range of values given in many of the graphs has been extended by calculating values using the accepted equations of state, plotting the results, and verifying the extended portions of the curves with experimental and operational data.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
Reference: B67-10610

Patent status:

No patent action is contemplated by NASA.

Source: Marx B. Loeb
of The Boeing Company
under contract to
Kennedy Space Center

(KSC-10009)

Category 02

LV-MEC-1
RM. 2R12

LCC