

NASA TECH BRIEF

Marshall Space Flight 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.

Research on Bearing Lubricants for Use in a High Vacuum

In a research program conducted to develop solid lubricant film for use in air and in vacuum, many materials were considered and evaluated as potential solid lubricants and as binders for lubricant films. These materials included noble metals, low melting point metals, precious stones, molybdenum disulfide, graphite, and other inorganic compounds. The binder materials investigated included silicates, phosphates, and polymeric materials. A large number of the materials were selected, formulated into films, and investigated along with many commercial solid lubricant films. The lubricant films developed during this program are intended for use with gimbal bearings, rolling element bearings, sliders, journal bearings, and gears of various types. The lubricant films may also be used as anti-seize materials to prevent cold welding in space.

During the research program, work was concentrated on (1) lubricant development, (2) gear lubrication and evaluation, (3) providing coated test specimens, (4) advising NASA contractors about solid lubrication specific applications, and (5) investigation of a new method

of attaching lubricating solids to bearing surfaces by the sputtering technique.

Notes:

1. Information concerning this innovation may be of interest to manufacturers and users of solid lubricant films.
2. Requests for further information may be directed to:
Technology Utilization Officer
Marshall Space Flight Center
Code A&TS-TU
Huntsville, Alabama 35812
Reference: B72-10469

Patent status:

No patent action is contemplated by NASA.

Source: M. E. Campbell and H. Hass of
Midwest Research Institute
under contract to
Marshall Space Flight Center
(MFS-22119)