

# NASA TECH BRIEF

## *Marshall Space Flight Center*

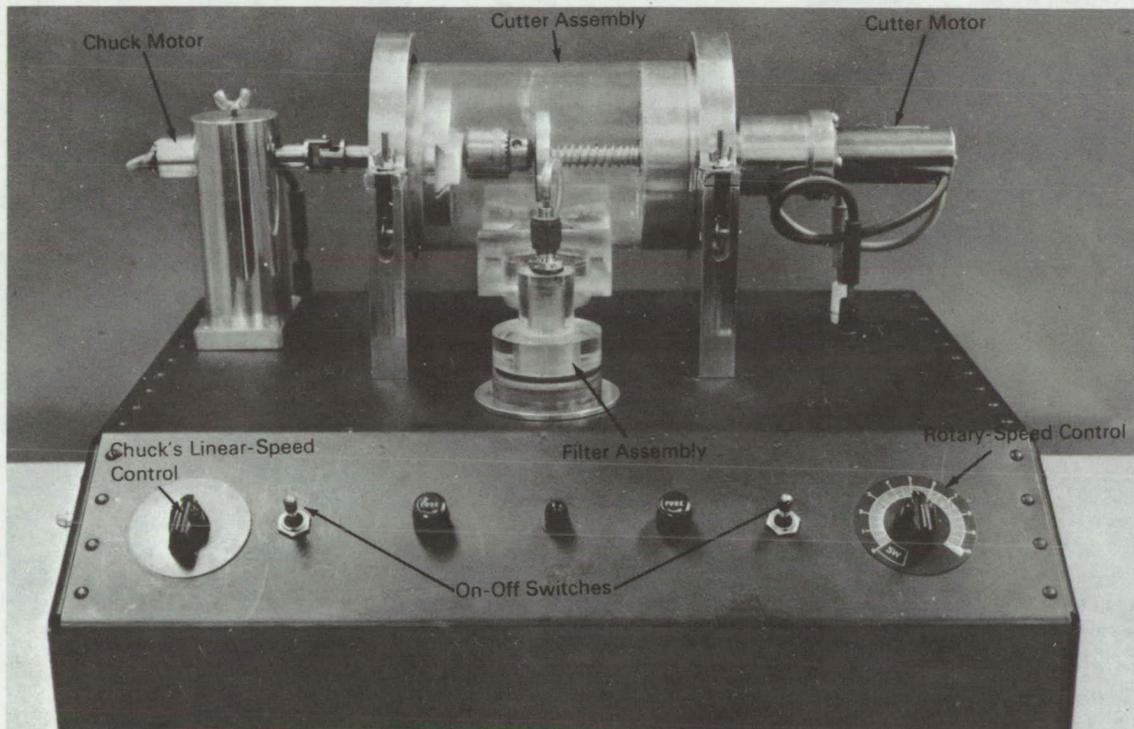


NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

### Miniature Grinder for Solid Specimens

A miniature grinder can be used to grind a wide range of solids (not including hardened steel and harder substances) to fines or ribbons. Because the machine was designed primarily for microbi-

The purpose of the device is to control the destruction of material so that the recovery of microorganisms is as great as possible. Other devices for microbial assay by destruction do not



ology, the entire operation and the grinding products are protected from exogenous contamination. Fines are ground to appropriate sizes in the micron range with the least biological trauma and the greatest degree of reproducibility. The sizes are measured by a fiber-optics sensor.

include a means for progressively removing the grindings from the destroyed area before destruction is complete. Nor do they provide sufficient control of the destructive process, or a sensor capability for monitoring the various parameters of biological trauma.

(continued overleaf)

In the miniature grinder, a sealed cylinder of methyl methacrylate houses the grinding operation (see fig.). Separate electric motors move the specimen chuck linearly and rotate the cutting assembly. Both speeds are carefully controlled.

The cutter's geometry varies, and overtravel is prevented by a limit switch. Temperature is maintained by a heat sensor with a purge tank. The grinder can operate either horizontally or vertically, and the cuttings fall through the lower wall of the grinding chamber to a compartment from which they are sucked aseptically by vacuum to a sterile filter.

The following items are incorporated: purge-control valve; purge gage; pyrometer; dwell motor; pressure gage; automatic control and reset for forward-reverse drive; strain-gage sensor bolt; clutch; safety limiting switch and dial indicator for pre-setting the controls in 0.002 cm. (0.001-in.) increments.

**Note:**

Requests for further information may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Code A&TS-TU  
Huntsville, Alabama 35812  
Reference: TSP71-10059

**Patent status:**

No patent action is contemplated by NASA.

Source: W. A. Pesch and C. P. Houser of  
Hayes International Corp.  
under contract to  
Marshall Space Flight Center  
(MFS-20005)