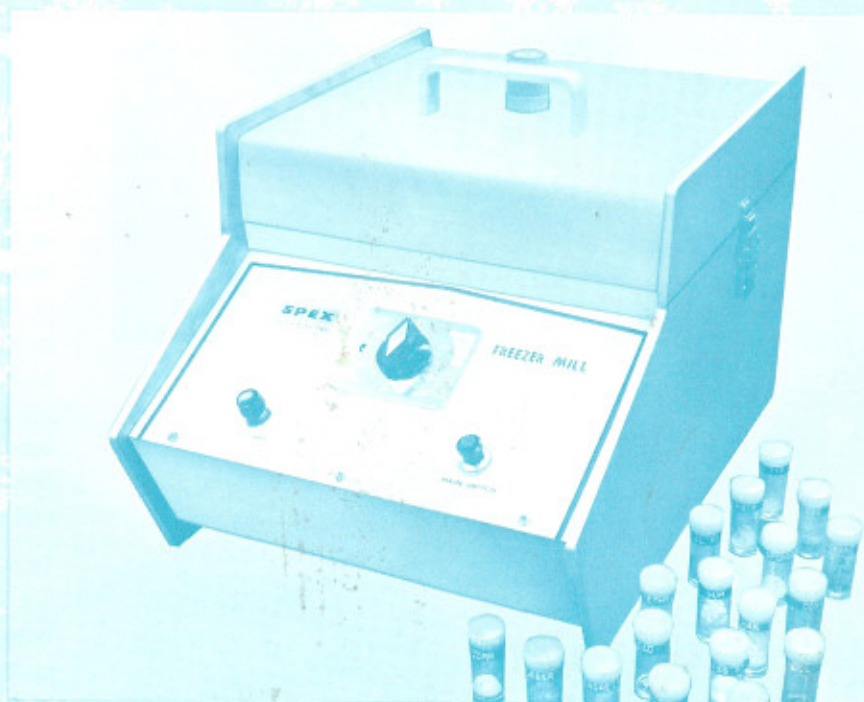


# **SPEX** Freezer/Mill<sup>®</sup>



## **NOW YOU CAN GRIND SAMPLES ELECTRICALLY UNDER LIQUID NITROGEN**

### **FOR APPLICATIONS IN:**

- Quantitative extraction.
- Infrared analysis of solids by KBr technique without decomposition.
- Homogeneous grinding of composites non-uniform in hardness.
- Blending of heat-sensitive materials.
- Thermal analysis.
- Low temperature ashing.
- Micronizing of solids prior to injection into living tissue.
- Preparation of suspensions.
- Accelerated decomposition of pharmaceuticals.
- Preparing formulations of extremely viscous liquids such as epoxy resins and hardeners.
- Doping pharmaceuticals or other soft materials with traces of heavy metals to prepare homogeneous spectrochemical standards.

**SPEX**

INDUSTRIES INC. • BOX 798, METUCHEN, N. J. 08840





# Freezer/Mill

We have a cool new grinder that makes powder out of the softest, gummiest things like animal tissue, chewing gum, hair, plastics, rubber, wax and wool. We call it the SPEX FREEZER/MILL because it does its work in a liquid nitrogen bath. Even Spex room-temperature grinders (the 5000 and 8000 Mixer/Mills<sup>®</sup>) have two stumplers: substances that are unreasonably supple so bounce around unscathed and those, like unstable organics, which decompose with localized heating from the violent impact action of the Mixer/Mills. Under LN<sub>2</sub> both classes of materials become friable.

Taking advantage of the situation, our less than one-year old FREEZER/MILL has tackled gooey blobs like oil-extended SBR rubber and broken them into 50-100 mesh particles within 2 minutes. Somewhat less challenging objects, in quantities up to 5 ml, are reduced to 100-200 mesh in that time. Provision is made for pre-cooling of two subsequent samples while one is being ground so only the first sample of the day is subjected to a cooling-down-time delay. The grinding container consists of a polycarbonate cylinder with hardened chromium-stainless steel ends and rod-pestle. Spares are available to facilitate production-type operation of the instrument and obtain maximum mileage from each filling of LN<sub>2</sub>. The original fill and chill will take 5 liters then the consumption rate is about 1/4 liter per sample.

The rod pestle is driven by solid-state circuitry, with impact frequencies adjustable from one per second to a shattering 30 impacts per second. Completely self-contained, simple and safe to operate, the FREEZER/MILL typically produces such results as we summarize in the accompanying chart. We'll be glad to expand its accomplishments list to include your particular stickler. Please send your identified sample to Mr. George Chaplenko in our chemistry lab.

\*These have been grinding everything in the world—well, almost everything and almost everywhere—normally friable, that is. If they sound interesting to you for 1-3 ml or 3-25 ml samples a request will bring more detailed literature to you promptly.



## 6700 FREEZER/MILL GRINDING RESULTS

Material	Form	Weight, g	Time, min.	Final Mesh
Nylon (a)	1/8" beads	2	2x2 (b)	100-200
Teflon	2 mil tape	3	2x2	100
Polyethylene	10 mil sheet	1	2	200
Candle wax	chunk	1.5	2	100-200
Chewing gum	chunk	1.5	2	100-200
Hair	dog clipping	0.5	2	200
Sheep wool	wad	0.5	2	200
Rubber, oil- extended	shearings 3/16"	1.5 (c)	2	25-50
Rubber band	shearings 3/16"	1.5	2x2	100
Space food	stick	2	2	100
Aluminum foil	2 mil piece	1 (d)	3x2	100-200
Steel wool	wad	0.5	2	100
Permalloy 5	shot 1/16"	2	3	30
Mouse skin	Raw, 1/2 animal	2	3	200 (e)

- (a) Three different types of nylon yielded similar results.  
 (b) Two 2-minute grinds with a one-minute cooling period between.  
 (c) Equal amount of sand added. Purpose: ethanol-toluene extraction.  
 (d) 0.5g of Tide detergent added.  
 (e) Equal weight of sodium sulfate as dehydrating agent.

**6700 Freezer/Mill**, 115 v, 50-60 Hz, can be used with or without LN<sub>2</sub> bath ..... each **\$620.00**

**6701 Grinding Vial**, including two end plugs, an impactor and four plastic center sections ..... each **\$ 35.00**

Composition of sample \_\_\_\_\_ DATE \_\_\_\_\_

Quantity to be ground \_\_\_\_\_ Number of samples  
in a single load \_\_\_\_\_ to be ground per day \_\_\_\_\_

Ultimate particle size desired \_\_\_\_\_ Purpose of grinding \_\_\_\_\_

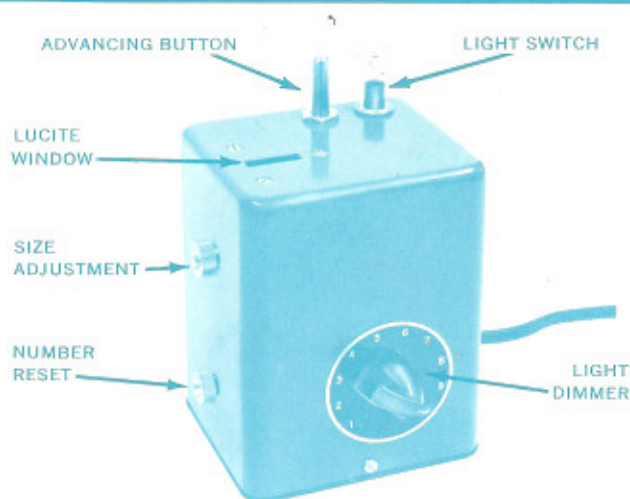
Company \_\_\_\_\_ Representative \_\_\_\_\_

Mailing address for sample return and report \_\_\_\_\_

**TEST  
GRINDING  
REQUEST**



## SERIAL MARKER



### FOR NUMBERING NEGATIVES IN:

MICROSCOPY, X-RAY DIFFRACTION,  
ELECTRON DIFFRACTION, METALLOGRAPHY,  
NUCLEAR PHYSICS, SPECTROSCOPY AND  
PHOTOGRAPHY



The Serial Marker photographically assigns a 5-digit number to any light sensitive emulsion. In the darkroom, before development, the film or plate—of any size—is held against a Lucite window through which a number is projected by pressing a switch. The number is advanced by pressing a second button. Resetting, if necessary, is accomplished by rotating the side knob.

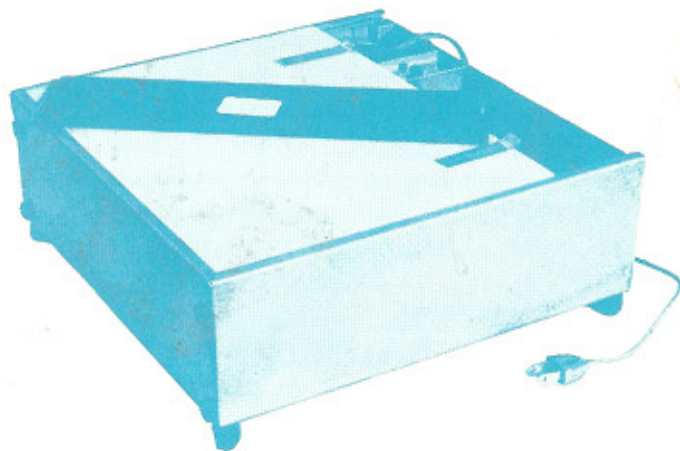
Model 3702 has a built in attenuator for controlling the exposure, and is particularly useful in those laboratories where several emulsions, differing in speed, are used. The instrument is first calibrated for each emulsion. This is done by determining the proper position of the attenuator for the emulsion with, say, a 2-second exposure. Once calibrated, the SERIAL MARKER will consistently print a correctly exposed number on similar emulsions. It is equipped with an adjustable gate so that the identifying number may be printed in the same relative place on each film or plate.

**3702 Serial Marker**, for numbering photographs consecutively. Operates on 115 volts ac; attenuator for adjusting light intensity; size of 5-digit number may be varied from 3 x 15 mm to 4 x 20 mm; fence for aligning plates or films; spare 7.5 watt lamp.

Each \$83.00

## GLOW-BOX

Here's a viewing box that should be evaluated in terms of its versatility and usefulness rather than its low cost. The 11" x 9" viewing surface, of 1/4" thick Plexiglas, is illuminated with a high-intensity, rapid-start, cool, circular fluorescent lamp. The overall dimensions of the box (11-1/4" x 11-1/4" x 4" high) permit it to be stored and used in a desk drawer where it is instantly available yet out of the way when not wanted. Retractable legs permit the box to be flush-mounted or tilted for better viewing. The dimensions of the viewing surface are sufficient for examining two 4" x 10" plates or an 8-1/2" x 11" film. Other suggested uses for the Glow-Box are: 1) illuminating samples as they are being titrated; 2) color comparison; 3) tracing; 4) comparing graphs on different sheets of paper.



**3710 Glow-Box**, viewing box as described above; weight 7 lb., complete with 22-watt, circular fluorescent lamp, 115 vac, carrying handle; finished in baked hammertone grey enamel. 12" x 12" x 4", 11 lbs. .... Each \$41.00

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BULK RATE/U. S. POSTAGE

**PAID**

Permit No. 166/ Plainfield, N. J.

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