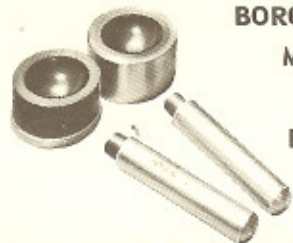
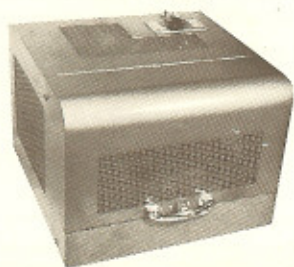


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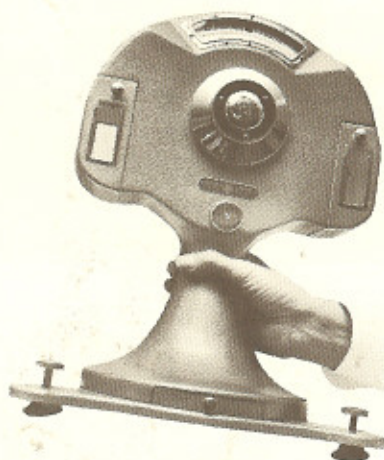


BORON CARBIDE  
MORTARS  
and  
PESTLES



MIXER/  
MILL

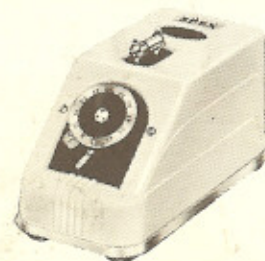
BUFFER and  
INTERNAL STANDARD



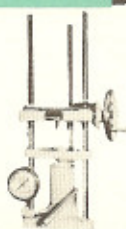
ULTRAMATIC BALANCE

SPEX

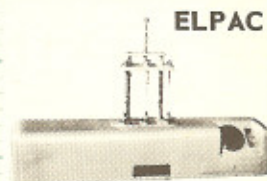
# SAMPLE PREPARATION CATALOG



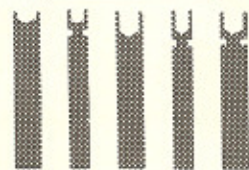
WIG-L-BUG



LOOMIS  
PRESS



ELPAC



ELECTRODES

SPECTROGRAPH

## BORON CARBIDE MORTARS and PESTLES



3201 Mortar and pestle, boron carbide. Mortar cavity  $\frac{1}{2}$ " d by  $\frac{5}{32}$ " deep, highly polished. Pestle  $\frac{1}{4}$ " d attached to aluminum handle.  
Per set.....\$45.00

Boron carbide is one of the best materials for hand grinding. Possessing a hardness close to diamond, it is also extremely inert, resisting attack by most acids and alkalis. In addition, boron carbide is unbonded so that the only possible metallic contaminating element is boron itself. Here it differs from, say, tungsten carbide which is usually bonded with cobalt. The material from which the mortars are produced is made by the Norton Company. Compressed under great pressure, its density approaches the theoretical value.

We can supply mortar and pestle combinations with cavities ranging from  $\frac{1}{2}$ " to 3" in diameter. Also available are double cavity mortars—a crater on both ends of a cylinder. Please write us for price and delivery information on these special sets.

3202 Mortar and pestle, boron carbide. Mortar cavity 1" d by  $\frac{1}{4}$ " deep, highly polished. Pestle  $\frac{9}{16}$ " d attached to aluminum handle  
Per set.....\$85.00

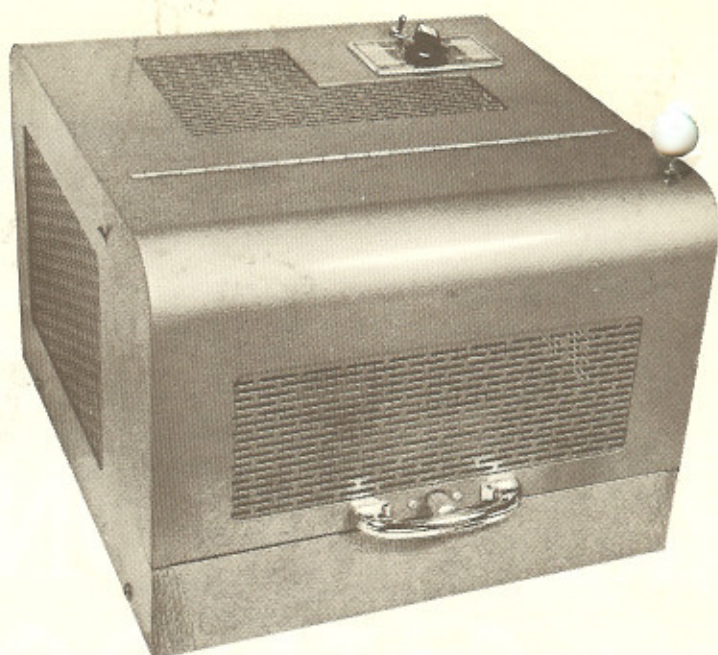
## MIXER/MILL... DESIGNED FOR SAFE ENDURING PERFORMANCE

A high-speed impact shaker, the MIXER/MILL is designed for mixing and grinding laboratory size samples quickly, conveniently, and uniformly. In optical emission and x-ray spectrographic laboratories this instrument is ideal for mixing and grinding both samples and standards.

Special adapters are now available for mixing or grinding as many as SEVEN samples simultaneously. Describe your problem to us so we can recommend the most suitable adapters.

### FOR MIXING

Plastic balls and vials are provided so that metallic contamination is completely avoided. Up to 100 ml of sample can be thoroughly mixed in 2 minutes or less. Although many sizes may be used, we recommend the 4 oz. polystyrene jars with plastic screw-on caps (8002). Also stocked are 2.5 oz. polystyrene vials (6135). Both are used with 3 or 4 Plexiglas ball-pestles  $\frac{3}{8}$ " in diameter (3112).

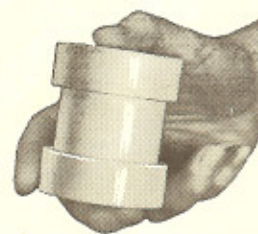


### FOR GRINDING

The MIXER/MILL is capable of pulverizing 10-25 ml in a single load. The actual grinding time depends on many factors such as the hardness of the material and before and after particle size. As an example, 5g of coarse sand may be ground to 97% -300 mesh within 20 minutes. For this purpose three types of containers are offered.

One grinding vial (8001) is a case-hardened steel tube 1-5/16" dia. by 2" long with a hardened tool steel plug at each end. It is readily disassembled for removal of materials and cleaning of the vial. The inside of the tool steel plugs is concave to facilitate grinding with the 1/4" or 1/2" steel balls provided.

The second is our newly developed 99% alumina-ceramic vial (8003). This has the advantage of high corrosion resistance, making it impervious to most chemicals. A ceramic with extremely high impact resistance is particularly desirable where ferrous contamination must be avoided. This vial is also constructed with removable ends (as pictured at right). Machined to close tolerances, no particles will escape when the instrument is used as directed.



### TUNGSTEN CARBIDE GRINDING VIAL

Tungsten carbide bonded with a small amount of cobalt is not only one of the hardest materials known but also one of the toughest. Further, any trace contamination of the sample is with an element not normally sought in spectrographic laboratories. Our 8004 WC vial is housed in an aluminum cylinder with screw-on caps. Neoprene gaskets (provided) may be used for wet grinding.

## SPEX MIXER/MILL PRICE LIST

8000	Mixer/Mill, Grinder and mixer. 1/3 HP Motor, 115 vac, (available on special order for other supply voltages) 1-hour timer. Complete in shock-mounted housing attractively finished in brown vinyl, safety switch, continuously variable jaws, but without vials or ball-pestles. (Net weight 64 pounds, crated 85 pounds).....	Each	\$296.00
6135	Mixing Vial, polystyrene with polyethylene caps, 1-1/4" dia. x 3" long, 60 ml capacity, about 40 ml mixing capacity.		
	Per 100 .....		\$ 12.00
	Per 1000 .....		\$ 90.00
3112	Ball-Pestles, clear Plexiglas, 3/8" dia.		
	Per 100 .....		\$ 1.80
	Per 1000 .....		\$ 12.00
8001	Grinding Vial. Case hardened steel body with screw-on ends of hardened tool steel, 2-1/8" dia. x 2-1/8" long, capacity 65 ml, grinding capacity about 25 ml. With four 1/4" dia. and two 1/2" dia. hardened steel balls. Ea.		\$ 40.00
8002	Mixing Jar, polystyrene with screw-on plastic cap, 2-1/8" dia. x 2-1/2" long, 130 ml capacity, about 100 ml mixing capacity.		
	Per 100 .....		\$ 20.00
	Per 1000 .....		\$170.00
8003	Ceramic Vial, made of 99% alumina-ceramic with a 1/2" dia. ball of the same material. Capacity 40 ml, grinding capacity about 15 ml. ....	Each	\$ 32.00
8003A	Ceramic Ball, made of 99% alumina-ceramic, 1/2" dia. spare (one furnished with 8003) .....	Each	\$ 2.25
8004	Tungsten Carbide grinding vial, with two tungsten carbide ball-pestles, capacity 20 ml, grinding capacity about 10 ml .....	Each	\$125.00
8004A	Tungsten Carbide ball-pestles, 7/16" dia. (spare) .....	Each	\$ .85

# THE SAUTER ULTRAMATIC PRECISION BALANCE

**RUGGED:** cast aluminum housing. Easily portable with leveling screws and bubble level for ease in setting up.

**NO PARALLAX:** all readings are made in one position against anti-parallax mirror.

**SINGLE KNOB CONTROL:** covers the entire weighing range.

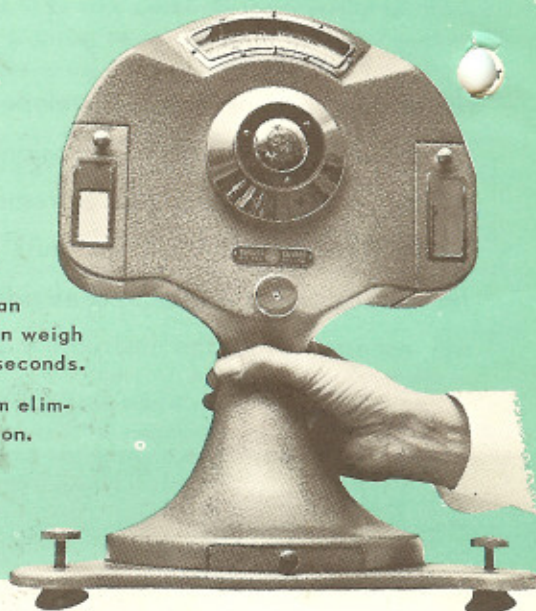
**NO WEIGHTS REQUIRED:** from zero to capacity of reading scale.

**SUSTAINED ACCURACY:** use of special alloys eliminates errors caused by magnetic forces and variation of temperature.

**SIMPLE, RAPID OPERATION:** with a little practice an untrained person can make a single weighing in 5 seconds, or can weigh a powder directly into a plastic vial in 15 seconds.

**NO FRICTION OR BEARING SURFACES:** the patented suspension system eliminates pivots and bearing friction.

**SPECIALLY ADAPTED** for use with the *WIG-L-BUG*



The Sauter Ultramatic Precision Balance is ideal for the spectrographer—emission, x-ray and infra-red. It is capable of weighing the small quantities of materials used in a matter of seconds, with all the accuracy he requires. In addition, the balance is fitted with a weighing pan designed specifically to hold the  $\frac{1}{2}$ " d x 1" long plastic vials used in the Wig-L-Bug electric mortar.

Just place the empty vial in position, tare it and then preset the balance for the desired weight of charge. Then add the material to the vial until the balance is in equilibrium. The entire weighing can be accomplished in fifteen seconds.

Although the Ultramatic Balance is available in various capacities ranging from 1 mg to 12.5 grams, the optimum instrument for the spectrographer is the 500 mg model with range extension permitting up to five times the normal weighing range. This allows taring of the vial and direct reading to 0.5 mg, equal to one-half of one scale division.

**7001 Sauter Ultramatic Precision Balance:** 500 mg model, with range extension permitting weighing up to 2500 mg capacity. Includes special weighing pan designed to hold  $\frac{1}{2}$ " d x 1" long plastic vial (3111); a round pan; weight for checking linearity of reading scale; 2 x 500 mg and 1 x 1 g weights for weight range extension and a pair of horn tipped tweezers; vinyl dust cover . . . . . \$275.00

**WE INVITE INQUIRIES ON THESE BALANCES IN CAPACITIES RANGING FROM 1 MG UP TO 12.5 GRAMS.**

## POLYETHYLENE GLOVES

Impervious to practically all corrosive chemicals, lint-free and inexpensive enough to be considered expendable after a few wearings, polyethylene gloves will find a great many uses in your laboratory.

As pictured, the glove may be used for either the left or right hand. A heat seal extends around the outside, making the glove watertight. Because it is so flexible, one size will accommodate almost any hand.

**3906 Polyethylene gloves,** as described above  
Per 144 . . . . . \$7.95

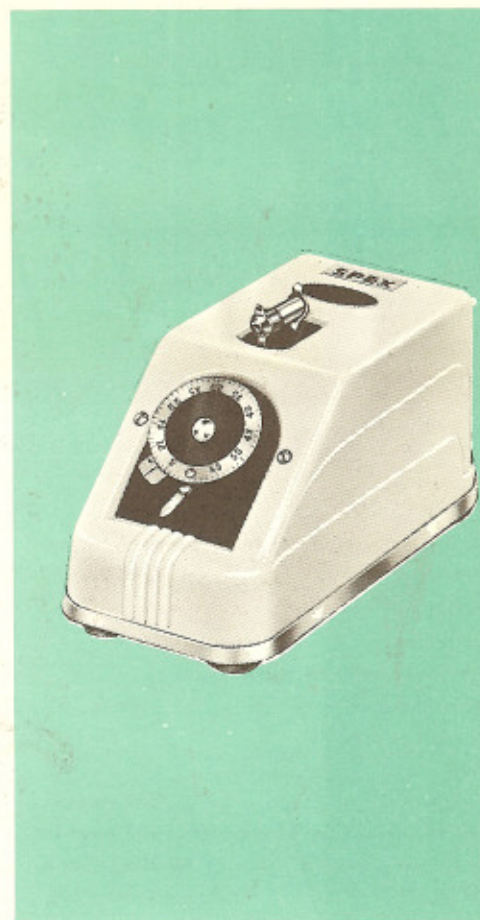


# THE WIG-L-BUG

A widely accepted dental tool for triturating amalgams, the standard instrument is particularly useful for mixing and grinding samples for spectrochemical and x-ray analysis.

Using our plastic, metal and new agate vials, the Wig-L-Bug will become indispensable to you as it has already in over 1000 laboratories in this country and dozens of countries abroad. Use the plastic vials for mixing powders or preparing mulls with mineral oil. For grinding hard materials, use the hardened tool steel or agate vial. With these, you can obtain -200 mesh materials in 2-3 minutes. For preparing KBr pellets, use stainless steel or agate vials, and grind for under 1 minute.

- |  |   |               |
|--|---|---------------|
| 3110B*   | Wig-L-Bug, black housing, 115 volts, 50-60 cy., with 3113 vial adapter  | \$ 55.00      |
| 3110W*   | Wig-L-Bug, ivory housing, 115 volts, 50-60 cy., with 3113 vial adapter  | \$ 60.00      |
| 3140*  | Wig-L-Bug, 115 volts, 50-60 cy., with 3113 vial adapter, 1-hour timer and fan-cooled motor                    | \$ 65.00      |
| * Available on special order for other supply voltages.                    |   |               |
| 3113   | Adapter for 1/2" dia. x 1" long vials   | Each \$ 4.00  |
| 3111   | Vial, 1/2" dia. x 1" long, polystyrene with polyethylene slip-on cap, 2 ml capacity                           |               |
|  | per 100   | \$ 3.80       |
|  | per 1000  | \$ 30.00      |
|  | per 1000 (in lots of 5000 or more)  | \$ 24.00      |
| 3112   | Ball-pestles, clear Plexiglas, 3/8" dia.  |               |
|  | per 100   | \$ 1.80       |
|  | per 1000  | \$ 12.00      |
|  | per 1000 (in lots of 5000 or more)  | \$ 10.00      |
| 3119   | Ball-pestles, clear Plexiglas, 1/8" dia. (for small samples)  |               |
|  | per 100   | \$ 1.20       |
|  | per 1000  | \$ 8.00       |
|  | per 1000 (in lots of 5000 or more)  | \$ 6.00       |
| 3114   | Vial, stainless steel 1/2" dia. x 1" long, 2 ml capacity with stainless steel ball-pestle 1/4" dia.           | Each \$ 6.50  |
| 3115   | Adapter for 3116 or 3118  | Each \$ 11.00 |
| 3116   | Vials, 1/2" x 2" long, polystyrene with polyethylene slip-on cap, 5 ml capacity (Require 3115 Adapter)        |               |
|  | per 100   | \$ 5.00       |
|  | per 1000  | \$ 40.00      |
|  | per 1000 (in lots of 5000 or more)  | \$ 30.00      |
| 3117   | Vial, tool steel (hardened) 1/2" dia. x 1" long, 2 ml capacity with hardened steel ball-pestle 1/4" dia.      | Each \$ 6.50  |
| 3118   | Vial, Agate 9/16" dia. x 1-5/16" long, 2 ml capacity with Agate ball-pestle 1/4" dia. (Requires 3115 Adapter) | \$ 40.00      |
| Net Weight—8 pounds (basic instrument)    Gross Weight 10 pounds (approx.) |   |               |

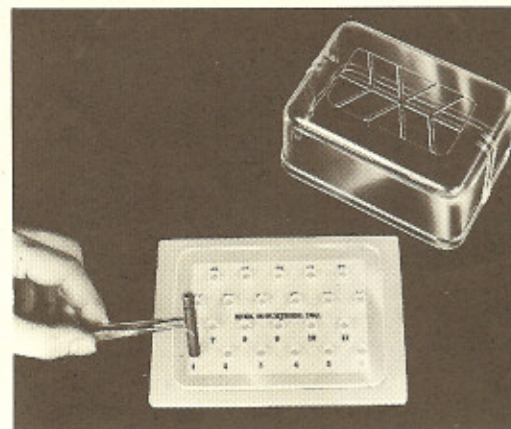


## PLASTIC ELECTRODE STANDS

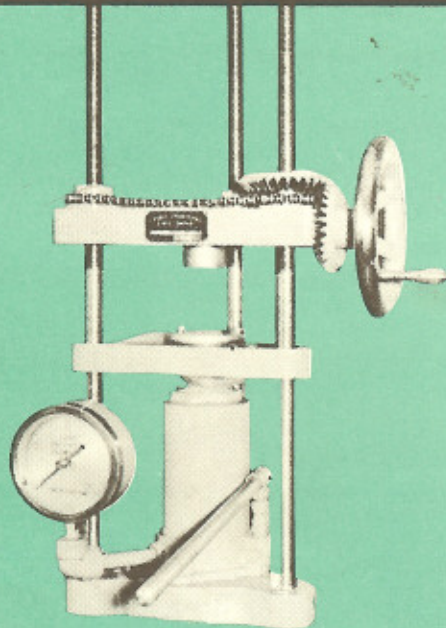
Designed for loading up to 22 electrodes, stands are available for 1/4" d, 3/16" and 1/8" d electrodes. The base of the stand is of Plexiglas and has 22 stations, each numbered to avoid mix-ups. The holes are so spaced that one of our funnels may be placed over an electrode without interference from an adjoining one. The base and clear plastic dust cover will resist mineral acids which might be accidentally spilled in filling an electrode.

In order to distinguish among two or three stands with which your technician is working, they may be obtained in three colors: white, black and red.

- |      |   |              |
|------|---|--------------|
| 3051 | Plastic Electrode Stand, for 1/4" electrodes, white black or red base (specify color)   | Each \$20.00 |
| 3052 | Plastic Electrode Stand, for 3/16" electrodes, white, black or red base (specify color) | Each \$20.00 |
| 3053 | Plastic Electrode Stand, for 1/8" electrodes, white black or red base (specify color)   | Each \$20.00 |



# LOOMIS 20-TON HYDRAULIC PRESS



## SPECIFICATIONS

Maximum vertical opening between platen and head	22-3/8"
Horizontal clearance between any two stanchions	9-9/16"
Vertical stroke of moving platen	6 1/2"
Overall height	44-3/16"
Overall width	23-7/8"
Depth	16"
Weight	280 pounds
Weight, crated for shipment	350 pounds
Maximum pressure	40,000 pounds
Gauge	Maximum indicating, calibrated in 500 pound units

The pressed pellet technique is used extensively in three branches of applied spectroscopy—optical emission, x-ray and infrared. For all three, the sample in powder form is compacted to a uniformly dense button having smooth, parallel faces. To prepare such buttons not only is a sturdy, convenient-to-operate press required but the instrument must be designed so that the platen moves exactly parallel to the head. This feature insures reproducible pellets and also proper alignment of the hardened dies which might otherwise be damaged.

### ● EMISSION SPECTROSCOPY

A typical example of the use of the press in emission spectroscopy is the ASTM method for the analysis of alkaline earth titanates (E-2 SM 10-3). Here a 1/2" diameter pellet is formed at a pressure of 80,000 psi (15,700 pounds) after the sample is mixed with lithium carbonate. Another example is the recently published method by the Alcoa Research Laboratories on a universal quantitative method of analysis (Anal. Chem. 30:494, 1958 by W.H. Tingle and C.K. Matochka). Here the sample—325 mesh powder is pelletized in a 1/2" die at 44,000 psi (8,600 pounds) after it is mixed with graphite powder to make it conductive.

### ● X-RAY SPECTROSCOPY

For x-ray fluorescence, the standard disc is 1 1/4" in diameter. The 20-ton capacity of the Loomis Press permits an actual pressure of 32,800 pounds on this size disc. Adler and Axelrod (Norelco Reporter III,65, 1956) describe a method using such pellets pressed at 20,000 - 30,000 psi for the x-ray analysis of rocks and minerals. Pellets are especially valuable for the determination of light elements, eg., silicon, calcium, magnesium, sulfur and phosphorus by x-ray techniques. Since the radiation of these elements is completely absorbed by layers above the particles, only those on the surface are effectively sampled by the x-ray beam. Thus by compacting the powder at 30,000 psi, the surface area is increased and sensitivity of the light elements is improved by as much as 50%. For both light and heavy elements, pressed pellets improve the reproducibility of the determinations by permitting the x-ray detector to sample a more uniform surface.

### ● INFRARED SPECTROSCOPY

In infrared spectroscopy, the major use of the Loomis Press is for the preparation of KBr pellets. The sample is first ground in a Wig-L-Bug with potassium bromide. It is then placed in an evacuable die and pressed at around 40,000 psi. For micro work, a 1/4" diameter die is often used. This is especially fragile and the precision features of the Loomis Press assure its long-life as it forms pellets optically clear, with accurately parallel faces.

To obtain extreme rigidity, the Loomis 20-ton Hydraulic Press has three stanchions instead of the usual two. The extra stanchion minimizes cocking of the moving platen as pressure is applied. In order to make sure that the head remains parallel to the hydraulically operated platen, the former is adjusted by means of a handwheel which, through a chain drive, moves the three supporting nuts as a single unit. The die plunger is bolted to the center of the head to facilitate pelletizing and to assure equalization of stress on the instrument and die.

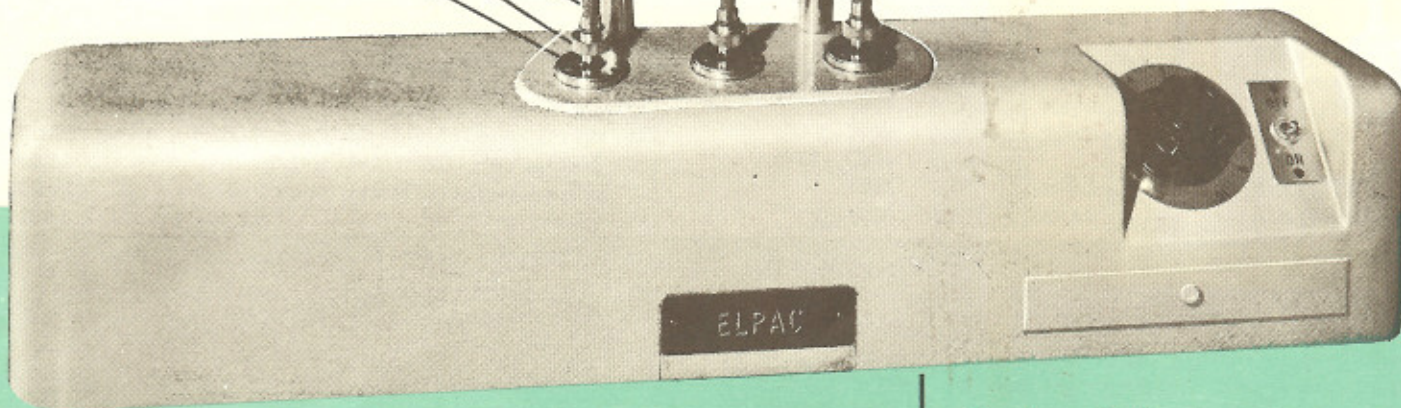
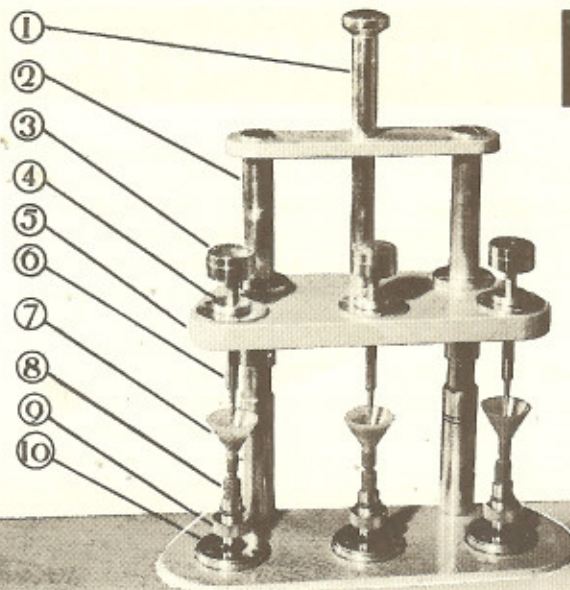
## PRICE LIST

- 3620 Loomis 20-ton Hydraulic Press, with three stanchions and handwheel to adjust the head and maintain it parallel to platen at all times; capacity 40,000 pounds indicated on maximum indicating gauge; platens ground smooth and parallel within 0.002"; centering bolt to attach die plunger in true center and so equalize stress. . . . \$675.00
- 3621 Die for preparing 1/2" diameter pellets, hardened tool steel; with push-out device for ejecting discs. . . . \$138.00
- 3622 Die for preparing 1 1/4" diameter pellets, hardened tool steel; with push-out device for ejecting discs. . . . \$210.00

Note: If the Press is to be used with evacuable dies supplied by infrared spectrometer manufacturers, a special centering plate may be required. Please furnish name and serial number of your instrument so we can quote properly.

# ELPAC

for automatically  
loading  
graphite electrodes



Precision and speed are the two keywords in the production control laboratory. A new instrument designed to push back these frontiers another notch is the Elpac, which automatically loads powders into spectroscopic electrodes by means of a vibrating tamper. In but seconds, the powder is compacted to form a uniform, dense tablet right in the electrode crater.

Patented by Dr. A. Strasheim and E.J. Tappere at the National Physical Research Laboratory of the South African Council for Scientific and Industrial Research, the instrument is manufactured by Jayco Instruments (Pty.) Ltd., Cape Town. It is distributed exclusively in the United States and Canada by ourselves.

In operation, three electrodes are placed in holders on the base of the Elpac with a funnel mounted on top of each. A quantity of powder is dumped into the funnels and the tampers lowered into position. When switched on, the tampers move up and down at a speed determined by the setting on a rheostat. The mechanism consists of a cam against which the three tampers are spring loaded in an oil bath. Ruggedly built, the Elpac is designed for routine use in the production laboratory where the increased speed of a normally time-consuming operation will be welcomed. An equally important bonus is earned, however, when the Elpac is used. Because variations in loading are minimized, the precision and accuracy of the final results are enhanced. Dr. Strasheim has shown improvements by as much as a factor of two over hand-packing methods.

- 1) Material is packed into electrodes in seconds as compared with minutes by hand.
- 2) Weighing operation is removed entirely.
- 3) Machine packed electrodes give superior precision of analysis values compared with hand packed electrodes.
- 4) Amount of material packed into electrodes is reproducible within 1%.
- 5) Three electrodes may be packed simultaneously.
- 6) An inexperienced machine operator can pack more material into each electrode than an experienced technician can pack by hand. A 30% increase is not uncommon and offers greatly improved sensitivity.
- 7) Elpac is adaptable for use with 1/8" electrodes which are so valuable for cutting down on arc wandering.
- 8) Center-post electrodes may be packed as easily and accurately as ordinary ones.

The electrode (8) is secured in the interchangeable holder (9) which is screwed to the vibrator (10). A 60° plastic funnel (7) is fitted over the electrode cavity. Bracket (5) is lowered on the guides (2) by means of rod (1) and the plunger (6) allowed to rest in the bottom of the electrode cavity.

The plunger, which has a provision for specific weights (3) at one end, slides freely in the self-aligning bushing (4). The analytical powder is introduced into the funnel by means of a spatula, and the machine switched on with the rheostat set at a suitable motor starting speed. Rheostat setting may be adjusted to suit the relevant material and plunger sizes.

## ELPAC PRICE LIST

- 4500 Elpac, 3-station machine for automatically loading electrodes used in spectrochemical analysis, 115 vac; 0-90 sec. timer; 3 weights 5g, 3 weights 10g, 3 weights 20g; accessory box; without plungers, electrode holders or funnels.  
Gross weight 50 lbs., net 30 lbs.  
Each. . . . . \$610.00
- 4501 Plungers, hardened steel, 3 required (specify electrode type and/or i.d. of electrodes).  
Per set of 3. . . . . \$18.00
- 4502 Electrode Holders, 3 required (specify 1/8", 3/16" or 1/4" dia. or any combination thereof). Per set of 3. . . . . \$16.00
- 4503 Funnels, molded polyethylene (specify electrode type) Per 100 . . . . . \$10.00

# SPECTROSCOPIC PREFORMED ELECTRODES

High Purity graphite except Spectro-Tech which are moderately High Purity

Spex	ASTM	National	UCP	UCP Spec- tro-Tech*	Dia. "	Description	Price per 100
4000	S-12	L-3912	100-L	ST-508	1/4	necked crater, 5/32" dp.	\$20.00
4001	S-13**	L-3903	101-L	ST-510	3/16	necked crater, 3/16" dp., 1-1/4" l.	20.00
4002	S-8	L-3900	103	ST-505	1/4	crater, 3/16" dp.	20.00
4003		L-3948	104-L		1/4	angular platform, center post	25.00
4004		L-3906	105-S		3/16	necked crater, 3/32" dp.	18.00
4005	S-14	L-3909	105-D		3/16	necked crater, 3/16" dp.	18.00
4006	C-5		100-U	ST-500	1/4	rounded upper, 1/16" r.	18.00
4007	C-8	L-3960	101-U		1/4	flat necked upper	18.00
4008	C-7	L-3963	104-U		1/4	undercut, center post upper	20.00
4009			105-U	ST-450	3/16	rounded upper, 1/16" r.	18.00
4010	C-2	L-3966	108	ST-502	1/4	pointed upper, 120°	18.00
4011	D-1	L-4075	106		1/2	solution disc, 1/8" thick	14.00
4012*	D-3	L-4078	1907		1/2	platrode, extruded	16.00
4013		L-3936	201		1/4	porous cup, chamfered floor, 1-1/2" l.	22.00
4014		L-3927	203		1/4	porous cup, .025" floor, 1-1/2" l.	22.00
4015		L-3933	204		1/4	porous cup, chamfered floor, 7/8" l.	20.00
4016	S-5	L-3982	4196	ST-504	1/4	crater, 1/16" dp.	20.00
4017	S-1	L-3919	1964		1/8	pedestal, 1-1/2" l.	14.00
4018	S-3	L-3918	1990		1/4	anode cap, 9/32" dp., thin wall	14.00
4019	C-1	L-4036	1992		1/8	pointed upper	14.00
4020		L-3979	5440		1/8	crater, 1/4" dp.	18.00
4021	S-4	L-4012	1988		1/4	necked crater, 1/16" dp.	20.00
4022		L-3915	300		1/4	boiler cap	25.00
4023		L-3916	301		3/16	boiler cap	25.00
4024	C-3	L-3921	107	ST-507	1/4	flat rod	16.00
4025	P-1**	L-3939	102		1/4	center post crater, 3/16" dp., 1-1/4" l.	22.00
4026		L-3970	2022		1/4	mandrel for rotating electrode, 2" l.	24.00
4027	D-2	L-4072	861		1/2	solution disc, .200" thick	14.00
4028*	D-3	L-4081	1909		1/2	platrode, molded	16.00
4029		L-4000			3/16	necked crater, 3/16" dp.	18.00
4030		L-4006			3/16	necked crater, 3/32" dp.	18.00
4031		L-4048	1994		1/4	porous cup, .040" floor	22.00
4032			2025		1/4	mandrel for Combination Analyzer	22.00
4033		L-3905	781		1/8	necked crater, 1/8" dp.	18.50
4034		L-3975	2509		1/8	crater, .059" dp.	18.00
4035		L-3977	5000		1/8	crater, 3/16" dp.	18.00
4036		L-3985	5840		1/4	crater, 1/2" dp.	21.00
4037		L-3928	5680		1/4	porous cup, .025" floor	22.00
4038	S-2	L-4024	1998		1/4	anode cap, 9/32" l.	14.00
4039		L-3951			3/16	rounded upper, 1/32" r.	18.00
4040		L-3954	5710		3/16	rounded upper, 1/16" r., 2" l.	18.00
4041		L-3957			1/4	rounded upper, 1/32" r.	18.00
4042		L-4018	1989		1/4	necked crater, 3/16" dp.	20.00
4043		L-4042			1/8	pedestal, 1" l.	12.00
4044		L-4030	1991		1/4	anode cap, 1/32" dp.	14.00
4045		L-3930	200		1/4	porous cup, 7/8" l.	20.00
4046		L-4054	1995		1/4	center post crater, 1/4" dp.	22.00
4047		L-3924	202		1/4	porous cup, .025" floor, 7/8" l.	20.00
4048		L-3942	1588		1/4	crater, 1/4" dp.	23.00
4049		L-3945	1335		1/4	curved platform, center post	23.00
4070		L-4031			1/4	anode cap, 1/16" dp.	14.00
4071	C-6	L-3922	1509		1/8	flat rod	14.00
4072		L-3923	2615		3/16	flat rod	15.00

\* Prices on request; about 1/2 of high purity electrodes.

\*\* 1-1/2" long.

• Spex 4028 is high-density and less porous than 4012.



# GRAPHITE POWDER and RODS

Two general types of spectroscopic graphite powder are available differing principally in particle shape. These are designated by the final number 1 or 2. Number 1 is used for briquetting and Number 2 for use as a conductor and buffer.

- 4060 UCP-1—Normally supplied in -200 mesh but is also available in -100 and -300 particle sizes.
- 4061 UCP-2—Normally supplied in -100 mesh but is also available in -200 and -300 particle sizes.
- 4062 National SP-1—Consists of 80% -200 mesh.
- 4063 National SP-1C—Consists of 95% -200 mesh.
- 4064 National SP-2—Consists of 80% -200 mesh.

Prices for the above are as follows:

1 oz.	\$8.00	1 lb.	\$96.00
1/4 lb.	30.00	1 lb.	55.50 (in 5-lb. quantities)
1/2 lb.	58.00		

Spectroscopic rods are available in several types. The least expensive are the regular purity National Carbon rods having a maximum ash content of 0.1%. The next higher grade are the UCP Spectro-tech with an ash content of less than 0.04%. The highest purity rods are the National Special and the UCP Ultra-purity with an immeasurably small ash. These high-purity rods are packed individually in cellophane and an analysis slip accompanies each box. The designation U-1 on UCP rods refers to a medium hardness; U-2 to a relatively soft rod. Most preforms are made from U-1 material.

## GRAPHITE RODS 12" LONG

<b>1/8" (.120") diameter</b>			
4050	UCP Ultra-purity U-1		\$21.60/24
ST-40	UCP Spectro-tech		\$18.00/100*
L-4303	National Regular		\$13.75/100
L-3803	National Special		\$45.00/50
<b>3/16" (.180") diameter</b>			
4051	UCP Ultra-purity U-1		\$13.80/12
4052	UCP Ultra-purity U-2		\$13.80/12
ST-45	UCP Spectro-tech		\$20.60/100*
L-4306	National Regular		\$13.25/100
L-3806	National Special		\$28.75/25
<b>1/4" (.242") diameter</b>			
4053	UCP Ultra-purity U-1		\$15.84/12
4054	UCP Ultra-purity U-2		\$15.84/12
ST-50	UCP Spectro-tech		\$23.20/100*
L-4309	National Regular		\$14.75/100
L-3809	National Special		\$19.80/15
<b>5/16" (.304") diameter</b>			
4055	UCP Ultra-purity U-1		\$18.48/12
4056	UCP Ultra-purity U-2		\$18.48/12
L-4312	National Regular		\$17.75/100
L-3812	National Special		\$12.32/8

\*These prices are progressively reduced with increasing quantities.

**Note:** National Regular and Special Graphite rods are also available in diameters of 3/8" and 1/2". National Carbon also manufactures high-purity carbon rods in the same diameters and at the same price as the special graphite rods. Send for catalog A-4010 for further details on these rods.

## ELECTRODE FUNNEL

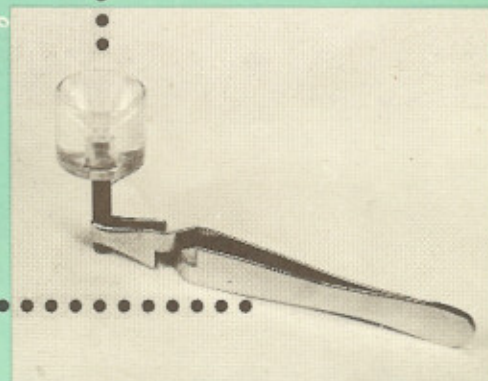
This Electrode Funnel, of plexiglas, mounts directly on top of a 1/4", 3/16" or 1/8" d electrode so that powders may be poured into the crater without spilling—an important consideration when powders are weighed for improved accuracy. The 1/4" d funnels are so constructed that they will fit on top of the 3111 and 3115 plastic vials. They are thus useful for loading weighed quantities of materials into the vials.

- 3001 Funnel for filling 1/4" electrodes )
- 3002 Funnel for filling 3/16" electrodes ) per doz. \$24.00
- 3003 Funnel for filling 1/8" electrodes )

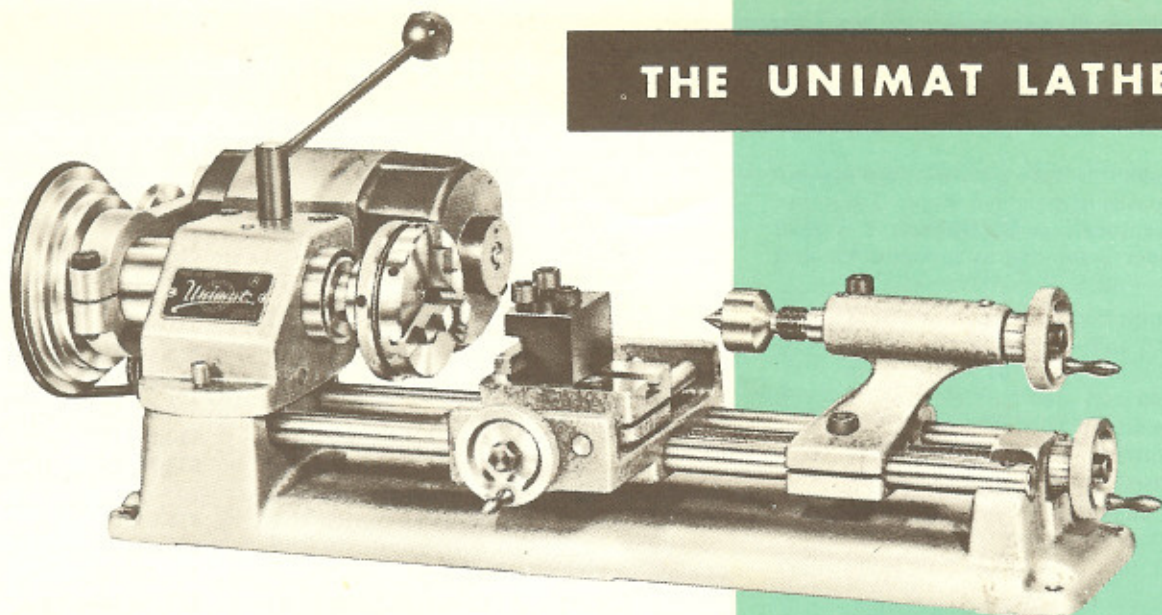
## ELECTRODE TWEEZERS

Here, at last, is a pair of tweezers specifically designed for picking up and holding graphite electrodes from 1/8" to 5/16" in diameter. Constructed of Type 430 stainless steel, it may be washed in dilute acids for the most exacting trace-element work. Self-closing, the tweezers will stand up while grasping an electrode so that the latter may be readily filled with or without the use of one of our plastic funnels. You will want several pairs of these handy tweezers, at least one for removing spent electrodes and separate ones for handling unused preforms.

- 3500 Tweezers, stainless steel, for handling spectroscopic graphite electrodes. Per pair. . . . . \$2.50



## THE UNIMAT LATHE



Popularized as an all-around tool for the home craftsman, the Unimat has drifted into many research and production laboratories where a comparably large variety of problems crop up. In the spectrographic laboratory, daily uses will be found for the machine. When set up as a lathe it will face off metallic discs and pins or shape graphite, silver and copper electrodes. For rapid drilling of craters of uniform depth, a handle swings the headstock holding the electrode to the tool.

The Unimat can be converted to a drill press so the spectrographer can obtain chips for solution work. It can be converted to an electric hand drill or a small milling machine for other purposes. The headstock rotates to machine parts off axis.

The most unusual thing about the Unimat is its extremely low price -- less than \$150.00 for the machine and an assortment of accessories. It is about 16" long and weighs just 30 pounds. We shall be happy to send you a catalog detailing the instrument, its applications and the great variety of accessories. The basic instrument and principal accessories are listed below:

7200 Unimat, dimensions of lathe bed: 14½" long x 4" wide x 5" high. Complete with 3-jaw reversible chuck which will hold pieces up to 2¼" d., rotating headstock, tailstock, cross-slide, 3500 rpm, 1/15 hp motor, 115 vac, 1/4" drill chuck, face plate, lathe dog, grindstone arbor, tool post, 2 dead centers, upright steel post, eleven speed belt drive. In wooden chest. Shipping weight 38 pounds.

Each . . . . . \$129.50

7201 Set of 6 tool bits . . . . . Per set . . . . . 2.25

7202 Lathe Chuck, 4-jaw, independent . . Each . . . . . 22.50

7203 Collet Holder, including ¼" collet. Each . . . . . 13.50

7204 Collet, from 1/64" to 5/16" d in 64ths (specify) . Each . . . . . 3.90

7205 Live Center, for high-speed turning Each . . . . . 4.00

## SPATULA

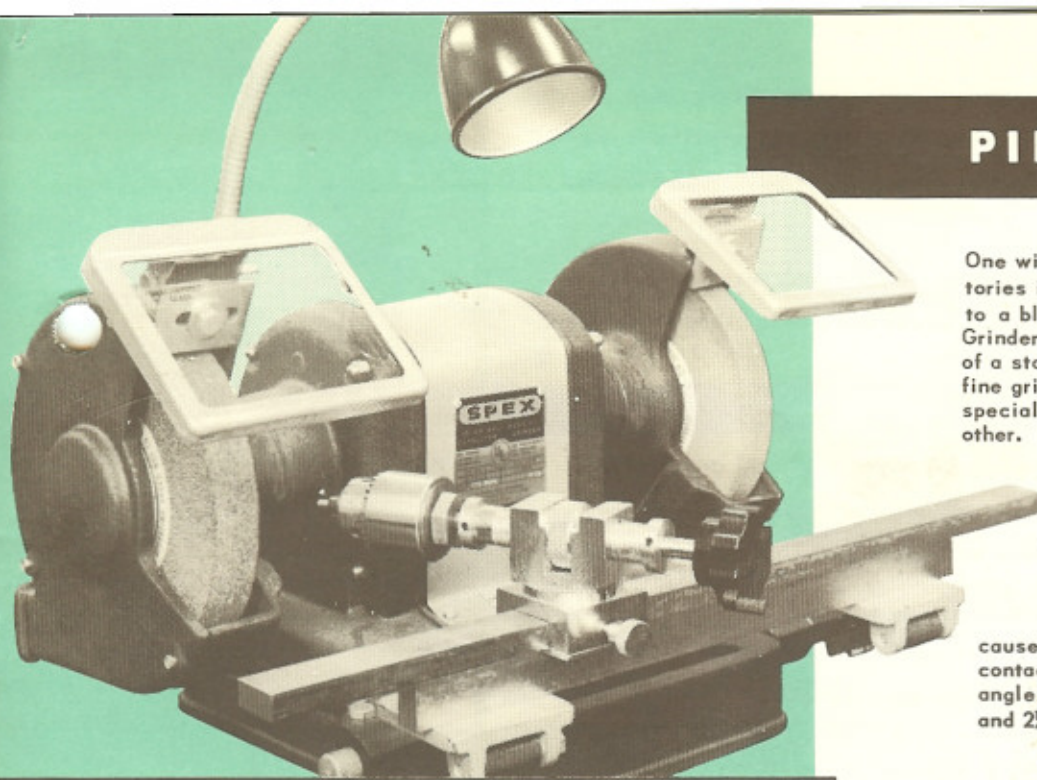


3905 Spatula, of Monel with plastic handle. The tip of this spatula is but 3-mm wide and 22-mm long. It is particularly handy for transferring the small quantities of powders with which spectrographers deal.

Each . . . . . \$ .50

Per dozen . . . . . \$5.00

## PIN GRINDER

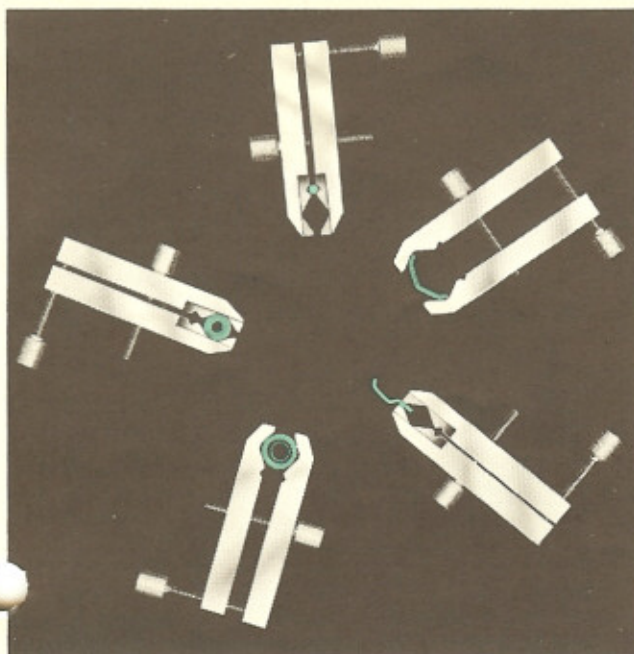


One widespread technique employed in production laboratories is to cast two pins about  $\frac{1}{4}$ " d, machine the ends to a blunt point and spark between the two. The Spex Pin Grinder is designed for this purpose. Basically, it consists of a standard double spindle grinder having a coarse and fine grinding wheel. A horizontal bar is so mounted that a special fixture holding the pin can slide from one to the other.

In operation, the pin is inserted into a drill chuck on the fixture and a ring nut turned until the end of the pin comes in contact with the periphery of the wheel. Rotating the crank causes the entire surface of the end of the pin to come in contact with the wheel and grind a smooth point. The angle of the point may be adjusted. Pins up to  $\frac{3}{8}$ " d and  $2\frac{1}{2}$ " long may be ground.

7300 Pin Grinder, as described in text. 115 vac,  $\frac{1}{2}$  hp capacitor start motor; including gooseneck lamp, shatter-proof glass eye shields, one coarse aluminum oxide wheel, one fine silicon carbide wheel, dust chutes. Shipping weight 142 lbs.  
Each . . . . . \$248.00

## PETREY STAND SAMPLE CLAMP



3300 Petrey Stand Sample Clamp grips small and/or irregular samples which alone cannot be mounted, making positioning practically automatic. Constructed of chromium-plated brass, the clamp is an excellent conductor of electricity and heat, and will retain its attractive appearance for years even in laboratories where chemical fumes are a problem.

Each . . . . . \$32.00

## GENERAL INFORMATION

### CATALOG SPECIFICATIONS

Although catalog information is as representative of the product as possible, we must reserve the right to make changes in specifications, prices and also to delete or add items.

### PRICES AND TERMS

Prices listed are F.O.B. Scotch Plains, N.J., net 30 days to rated firms, with the following exceptions. High purity graphite electrodes, powders and rods are shipped F.O.B. Destination, and terms are 2/10 net 30. This also applies to plates and film shipped within a radius of 150 miles from our plant. Plates and film shipped elsewhere are F.O.B. Scotch Plains, N.J., 2/10 net 30.

Foreign orders will be accepted subject to U.S.A. regulations. We reserve the right to add an export charge where excessive handling or special packing is required.

### GUARANTEE

Each item is guaranteed to conform to specifications in the catalog or to later specifications for an improved model of that item.

**SPEX****INDUSTRIES, INC.****P.O. BOX 98****SCOTCH PLAINS, N. J.****BULK RATE  
U.S. POSTAGE  
PAID****Long Island City, N.Y.  
Permit No. 184**

Return Postage Guaranteed. Form 3547 Requested

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