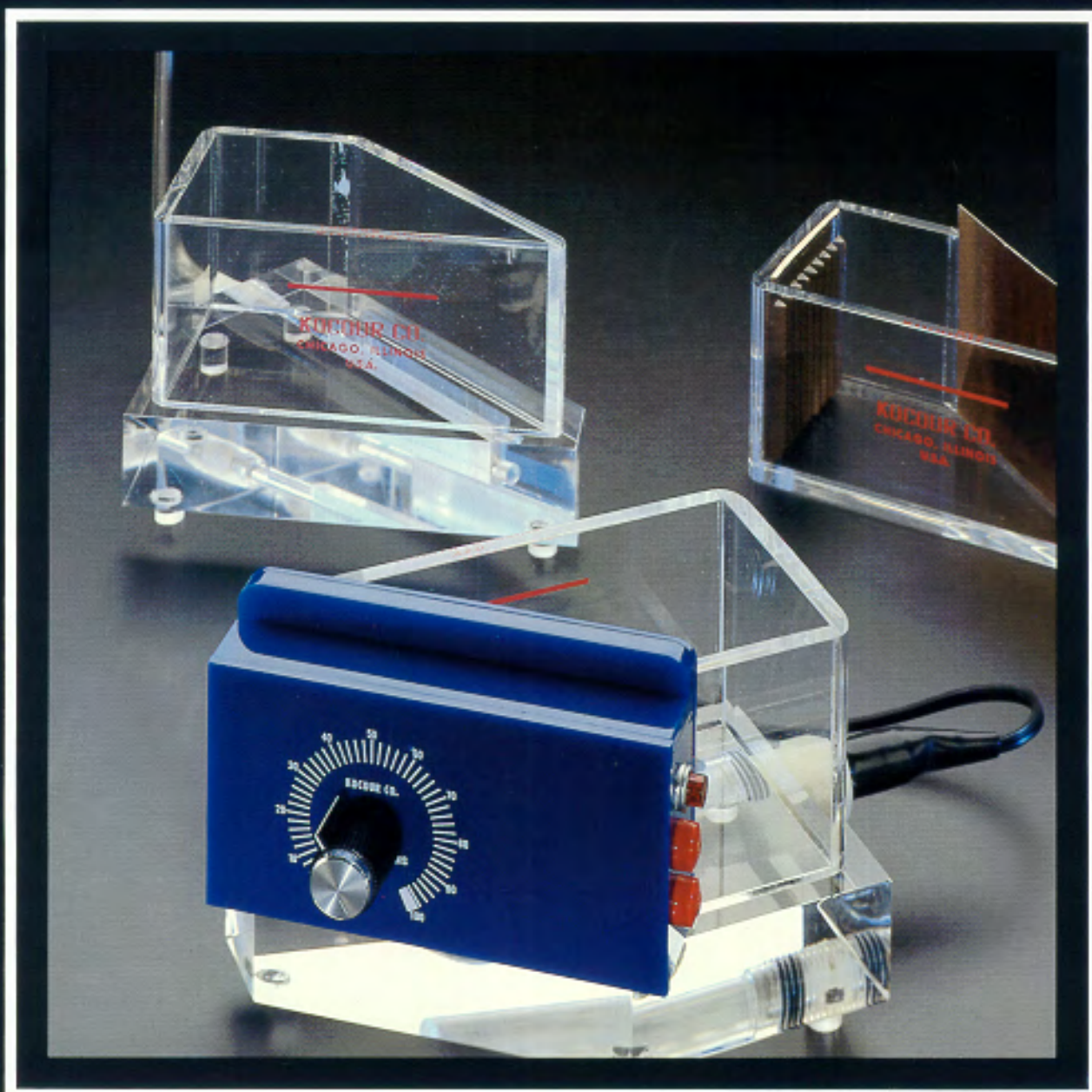
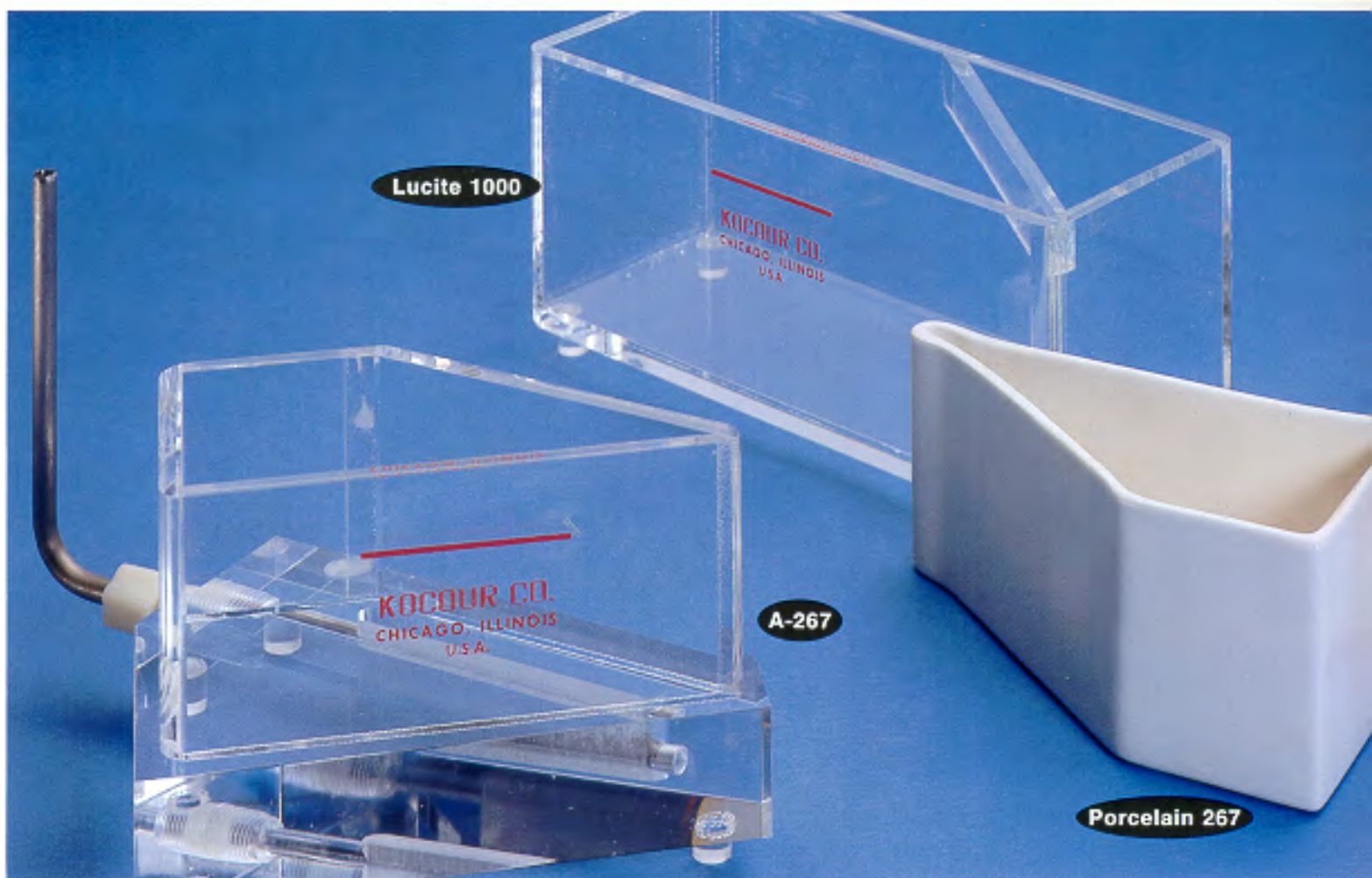


Hull Cells

KOCOUR



Pioneers in Control for the Plating Industry Since 1923



Hull Cell Testing Equipment

In 1935, the E.I. duPont De Nemours Co. asked the Kocour Company to manufacture a plating test cell just developed in their laboratory. The cell, called a Hull Cell, is a miniature plating unit designed to produce a cathode deposit that records the character of

electroplate at all current densities within the operating range. It is among the most useful tools available to the plating chemist for control of plating electrolytes. They provide an indispensable adjunct to standard analytical methods, enabling the skilled operator to determine and control the effects of addition agents, impurities, and purification treatments on the plating electrolyte, many of which can be determined by no other method. Practically every plating solution can be controlled or evaluated to varying degrees by the use of the Hull Cell. Kocour Company offers a complete selection of Hull cells, accessories and related equipment to enable the progressive plater to make the most of this useful method of plating process control.

Heated Lucite Hull Cell

267 ml. and 1000 ml.

The heated Lucite Hull Cell which accommodates standard cathodes and anodes, is constructed on a special base accommodating a teflon coated stainless steel immersion heater (100 watt, 115 volts AC) and thermostatic Control.

A heated Lucite Hull Cell is also available in 534 ml. capacity.

Air Agitated Heated Lucite Hull Cell

267 ml. and 1000 ml.

The thermostatically controlled heated cell also has a special air manifold to duplicate exactly air agitated plating baths. Air pump not included.

Plain Lucite Hull Cell Set

267 ml. and 1000 ml.

Constructed of $\frac{1}{4}$ " thick lucite . . . Includes a thermometer, corrugated and plain anodes, polished cathodes, wire and wire clips and complete directions.

An Unheated Air Agitated Cell is available for use in room temperature baths.

Other Hull Cells

Several other Hull Cells are also available for special purposes and individual preferences.

Solid Porcelain Hull Cell

267 ml.

This cell is recommended for general use . . . extremely hot solutions . . . and is especially desirable for chromium solutions.

Polyethylene Hull Cell

267 ml.

This cell can be used with most plating solutions.



Operating Parameters which may be controlled**Brass**

Color Control
Free Cyanide Control
Brightener Control

Cadmium

Brightener Control
Detection of Organic Impurities
Detection of Carbonate Buildup
Control of Inorganic Impurities — especially Lead, Chromium, Tin and Copper

Chromium

Outstanding for Control of Catalyst Ratio
Detection of Chloride and Metal Contamination

Copper

Free Cyanide Content
Lead, Zinc and Chromium contamination
Carbonate
Addition Agents

Gold

Color Control
Addition Agents

Nickel

Primary and Secondary Addition Agents
Pitting
Organic Decomposition Products
Copper, Zinc, Chromium or Iron Impurities
pH Brittleness

Silver

Free Cyanide and Silver Content
Operating pH
Addition Agents

Tin

Caustic Content
Addition Agents

Zinc

Sodium Cyanide to Zinc Metal Ratio
Zinc Content
Copper, Lead, Cadmium and Tin Impurities
Effect of Purification Treatments
Addition Agents

**Hull Cell Cathodes**

Kocour Hull Cell Cathodes are heavy gauge, highly polished to a mirror finish and the surface is fully protected.

Available in brass, copper, and steel in two sizes for the 267 ml. and 1000 ml. Hull Cell. Packaged in 50's.

Hull Cell Anodes

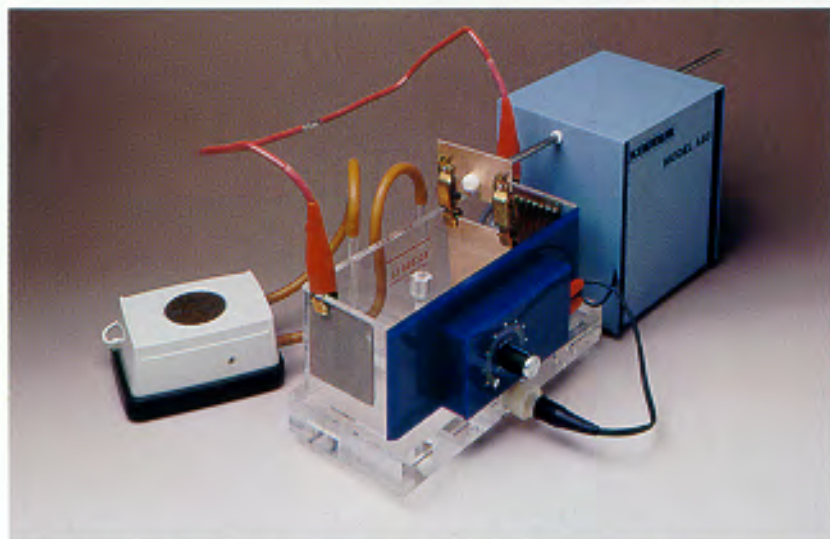
Kocour Anodes for Hull Cell Tests are of high quality. Available in brass, cadmium, copper, high phosphorized copper, lead, nickel, tin, zinc, tin/lead (60-40), silver, tin/lead (90-10), stainless steel 316, & platinumized titanium in one size which can be used with either the 267 ml. or the 1000 ml. size Hull Cell.

**Titanium Baskets**

Duplicate actual shop conditions when using chips or buttons.

Bags

Poly bags are available for anodes and baskets. Provide protection against roughness.



Printed Circuit Aspect Ratio Cell Assembly

The Kocour PCAR cell duplicates all of the variables (push-pull agitation + air agitation + temperature) in thru-hole electroplating of pre-drilled and electroless copper plated P.C. boards.



Hull Cell Agitator— Model A83

The Reciprocating Agitator is designed to simulate cathode rod agitation in Hull Cell Tests.

Operates 110 volt,
60 Hz, AC.



Air Pump

An inexpensive but reliable air supply for air agitated cells.
110 volt.

Power Supplies — Rectifiers

The **Kocour Rectifiers** for the Hull Cell Test are expressly designed units which utilize filtered circuits capable of continuously producing minimum AC ripple. This filtered current output is essential for testing many plating baths. Kocour Rectifiers are strongly recommended for Hull Cell Tests because results are misleading when single phase unfiltered current is used.

Silicon Rectifier - Model 5C

A filtered DC current source for laboratory and Hull Cell tests. Input 115 volts, 60 Hz. Output 0 - 12 volts DC at 5 amps. with less than 5% ripple and continuous control from 0 to maximum. Full wave center tap rectification. Calibrated voltmeter and ammeter accurate within 2% or full scale. Primary and secondary fuse protection.

Dimensions: 16" X 8" X 9".
Net Weight: 16½ lbs.

Silicon Rectifier - Model 15A

Designed specifically for the plater's laboratory and testing needs. Model 15A is a highly filtered and very efficient DC current source for Hull Cell Tests and laboratory requirements. Input 115 volts, 60 cps AC. Output 0 - 15 volts DC at 15 amps. with less than 5% ripple.

Silicon Rectifier - Model 25B

An excellent plater's general purpose filtered DC current source. Input 115 volts, 60 cps AC. Output 0 - 12 volts DC at 25 amps. with powerstat voltage control. Ammeter and voltmeter. Complete thermal and fuse protections and continuous voltage control from 0 to maximum. Less than 5% ripple.



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