

Acid Saw



Cutting and
Sectioning



The Model 750 Acid Saw

The Model 750 Acid Saw is designed for damage free cutting of materials by acid or solvent action. It is used as an acid saw to cut single crystals of soft materials including copper, zinc, lead, silver and indium without introducing dislocations. It can also be used as a string saw using water or other solvents for cutting soluble crystals. Any material can be cut that is attacked or dissolved by nitric acid or any other acid or solvent that does not attack the stainless steel or PVC of which the Model 750 is constructed.

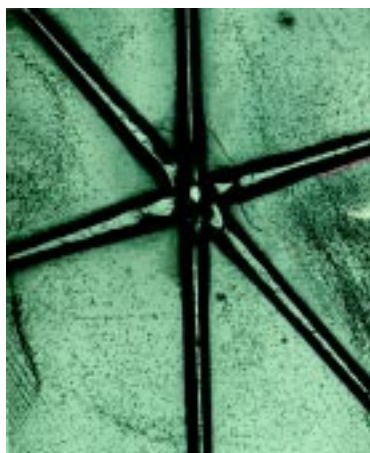
Operation

The sample can be fixed to a PVC mounting table using modeling clay or another suitable adhesive. The mounting table can subsequently be positioned so the crystal can be cut at any angle. Crystals up to 2.25" can be cut without modification to the saw.

The actual cutting takes place as the cutting fluid is carried to the sample and the products of the reaction are subsequently carried away on a reciprocating wire. Two sets of glass capillary plates serve to guide the wire, supply cutting fluid to the wire and to return the products of the reaction to the fluid reservoirs. The reservoirs are filled through holes in the cover plates. Drain plugs, which project through the cover plates, are unscrewed to drain the fluid. The vertical position of the reservoirs is adjustable to aid in setting up a cut, or for cutting large crystals.

Cutting Oriented Crystals

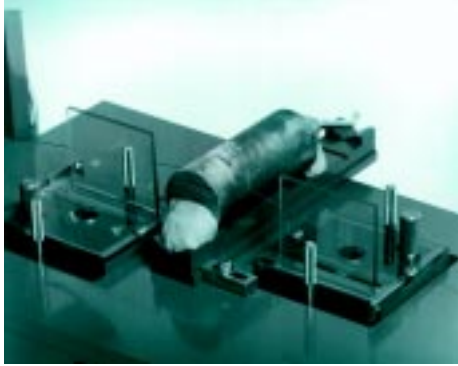
Oriented crystals can be cut on the Model 750 by utilizing the optional Model 250 2-Axis Goniometer and the optional Model 75002 Slide Assembly. The Model 75002 Slide Assembly is mounted on the Model 750 Acid Saw and aligned perpendicular to the cutting wire. A crystal is mounted on the Model 250 Goniometer, oriented and transferred to the Model 75002. The Model 250 Goniometer can subsequently be transferred to the Models 451 or 460 Crystal Polishing Instrument for damage free electrolytic or chemical polishing. The Model 250 can also be transferred to the Model 25010 Oriented Crystal Lapping & Polishing Fixture for mechanical polishing.



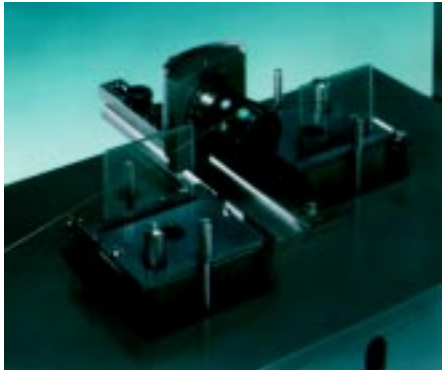
Cu Crystal cut with Model 750 Acid Saw shows no increase in dislocations.



Cu Crystal cut with Spark Cutter shows large increase in dislocations



Close up of Standard Sample Mount



Model 75002 with Model 250 mounted on Model 750

The Model 75003 Slide Assembly

The Model 75003 Slide Assembly functions in a manner similar to the Model 75002 and can be used with the Model 250 Goniometer. The Model 75003 also incorporates a 1" (25mm) micrometer for precise sample alignment..

CUTTING VARIABLES

Cutting Fluid:

Fluids which most rapidly attack the crystal make the fastest and straightest cuts. Nitric acid, concentrated or diluted with water, is suitable for most metal crystals.

Wire Speed:

It is very important to be able to vary the rate at which the fluid is fed to the crystal for cutting different materials. This rate can be varied by either changing the motor speed or the stroke of the wire.

Wire Tension:

The wire tension can be changed by adding or removing small weights attached to the end of the reciprocating wire.

Wire Type:

A .005" diameter stainless steel wire is standard and satisfactory for most applications. Synthetic or cotton threads may be used in place of wire for special cutting operations.

Specifications

Dimensions:	20" W x 16" H x 10" D
Net Weight:	16 Lbs.
Construction:	PVC & 303 Stainless Steel
Maximum Sample Size:	2.25"
Electrical Input:	100 VAC 50/60 Hz 110 VAC 50/60 Hz 220 VAC 50/60 Hz



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