



ULTRAFINE LABORATORY ABRASIVES

Metallographers often encounter specimens which require excellent edge retention and sample flatness. Polishing slurries, regardless of the mineral used, have a tendency to round the edge of the specimen at the interface with the mounting media. This inevitably is the edge of interest. New equipment on the market addresses this problem with a combination of diamond slurries and platens of differing hardness. PSI has an alternative method, utilizing Ultrafine Laboratory Abrasives, which produce outstanding results on your current metallographic equipment.



Ultrafine Laboratory Abrasives, manufactured by 3M Company, are a paper backed silicon carbide product. Intended to be used in wet applications, these fixed abrasives are exceptional in extending the fine grinding steps beyond the 600 grit. Graded on the ANSI system, the United States abrasive standard, this product is available in 1000, 1200, 1500, 2000, and 2500 grit. Forms available include discs, sheets and rolls.

By extending the fine grinding step past the traditional 600 grit, the critical mount/specimen edge and specimen flatness are maintained. Fine grinding to this degree continues the basic function of grinding, which is to successively remove the sample deformation introduced in the specimen by the previous step.

Continuing this procedure to the finest grade possible encourages repeatability of sample preparation. One polishing step with your finest compound on a nylon or pellon cloth completes the sample preparation. The napless polishing cloth is

required to maintain surface flatness and to prevent aggressive polishing action above the sample surface in the critical edge region.

As this article is written, our customers have had success with this procedure on the following materials: Steels below Rc60, High Temperature Alloys, Electronic Components, Some Hard Faced or Nitride Layers, and Soft Ductile Materials. Please contact the PSI Office to discuss your specific requirements.

SUGGESTED PROCEDURE

(Polisher/Grinder Wheel)

STEP	SUPPORT	GRADE	LUBE	TIME	RPM
1	SiC	240	H ₂ O	1 min	300
2	SiC	320	H ₂ O	1 min	300
3	SiC	600	H ₂ O	1 min	300
4	SiC	1000	H ₂ O	1 min	300
5	SiC	2000	H ₂ O	1 min	300
6	Nylon/Pellon	1 μ	Diamond	30 sec	150

Please Note: This procedure is intended as a starting point for your trials. Deviation from these steps is expected.

PSI maintains a large inventory of the popular abrasive discs used in the materials lab. By sourcing 3M Products, quality and consistency of PSI Abrasive Discs is assured.

PSI maintains a large inventory of the popular abrasive consumable sizes and grits in the form of belts, discs, rolls, sheets, and strips. Custom sizes are available upon request.