PRECISION SURFACES INTERNATIONAL, INC.
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PSI

PRODUCT DATA SHEET

DIAMOND DISCS

PSI Diamond Discs, manufactured by the 3M Company, consist of carefully graded diamond particles bonded to a 1/16" flat plate.

Metal Bond Diamond Discs consist of diamond particles electroplated to a 1/16" flat brass plate with a nickel bond. This process provides maximum bond strength, resulting in extended disc life and an aggressive cutting action. Metal bond discs are available in grades 6, 15, 30, 45 micron and 220 and 100 mesh.

Diamond Discs, are designed to fit the most popular met lab polisher/grinders. Both 8" and 12" diameter discs are available with a pressure sensitive adhesive (PSA) backing and an arbor hole, if required. For flatness sensitive applications, diamond discs can be supplied with a 1/2" thick aluminum back with edge-to-edge flatness better than ±.0005".

Diamond Discs are used on a variety of engineered materials, with the common denominator being the presence of very hard constituents. If the material in question has a hardness less than Rc60 or Knoop 800, it can be worked more economically and efficiently with other abrasives. Diamond Discs have proved successful on the following materials: carbides, ceramics, chromium, ferrites, hardened metals, nitrides, silicon carbide, tungsten carbide alloys, zirconia & zirconium boride.

DISC CUT RATE in^3/min @ 400sfpm					
Material	**220 mesh**	**30 µ**	**9 µ**	**6 µ**	**Hardness Knoop**
Tungsten Carbide @4.5psi	.0001	.00006	-	-	2600
Finish	3-4	2-2.5	2	1	
Ceramic (96%Al2O3) @5.8psi	.0008	.0003	-	-	2100
Finish	14-15	10-12	8-9	6-7	
Silicon (single crystal) @4.2psi	.0015	.0007	-	-	163
Finish	10-12	3-5	1-2	1	

The choice and sequence of grades depends upon the material and job (condition of material at start, stock to be removed and required finish). Where rough surfaces are encountered and/or where considerable stock is to be removed, the 100 mesh grade is recommended. Optimum life and performance will be achieved if diamond discs are used in sequence, starting with the coarsest grade compatible with the work requirements and processing through successively finer grades until the desired finish is achieved. As with conventional abrasives, grades can be skipped to optimize time and equipment.

When using diamond discs, be sure they are applied to a clean, balanced polisher. Always use with plenty of lubrication. Water is best, but any lubricant compatible with the sample can be used. Use relatively light pressure on the specimen when using diamond discs, allowing the diamond particles to do the work. The texture of the finish obtained can be controlled by regulating pressure and lubricant flow. Diamond discs perform most effectively at speeds of 500 sfpm or less.

ORDER INFORMATION			
PART #	**DESCRIPTION**	**PART #**	**DESCRIPTION**
PSI-470-6	DD,MB,8"xNH,6 micron	PSI-476-6	DD,MB,12"xNH,6 micron
PSI-470-15	DD,MB,8"xNH,15 micron	PSI-476-15	DD,MB,12"xNH,15 micron
PSI-470-30	DD,MB,8"xNH,30 micron	PSI-476-30	DD,MB,12"xNH,30 micron
PSI-470-45	DD,MB,8"xNH,45 micron	PSI-476-45	DD,MB,12"xNH,45 micron
PSI-470-220	DD,MB,8"xNH,220 mesh	PSI-476-220	DD,MB,12"xNH,220 mesh
PSI-470-100	DD,MB,8"xNH,100 mesh	PSI-476-100	DD,MB,12"xNH,100 mesh
DD=Diamond Disc		MB=Metal Bond	NH=No Hole