

Metallographic Application Note

Manual Preparation of Samples Using the CAMEO[®] Magnetic Disc System

Many applications in quality control laboratories do not have the luxury of having mounted specimens for grinding/polishing. Whether it is a lack of time or the size of the part, it may have to be prepared using manual methods. A traditional method would include several silicon carbide and polishing steps.

Silicon carbide is great for getting samples flat, but it wears out quickly and extra pressure is needed to make it work. Using the CAMEO grinding/polishing system allows the operator to apply even pressure throughout the process. Whether you are working with soft or hard materials, the CAMEO discs cut consistently throughout the process and provide a superior surface finish.

Methods for steel and aluminum are shown on the following tables and can be adequately prepared in three quick steps. The CAMEO discs can be used multiple times and are easily attached and removed from the magnetic film. Polishing cloths can be placed on an FAS disc, which is a rigid metal plate with a teflon coating. The FAS disc can then be applied to the magnet. The teflon coating allows the polishing cloth to be easily removed without leaving any residue to clean up.

When you are preparing samples manually, it is important to minimize the time spent grinding and polishing. This minimizes fatigue to the operator and also reduces the risk of injury due to repetitive motion. The easier and quicker the process is for the operator, the better the typical results in the metallographic process.



Table 1—Procedures Used to Manually Grind/Polish Un-Mounted Steel Sample Using CAMEO Magnetic Disc with the SS-2000 Grinder/Polisher

Grinding	Time (min.)	Dir.	Head Speed (RPM)	Pressure (lb.)	Wheel Speed (RPM)
Platinum #1 disc/ water	1 to 2	CCW	0	firm	200
Polishing					
Silver disc/ 6 micron CAMEO suspension/microid extender	2	CCW	0	firm	200
3 micron diamond/ compound/Ultrasilk/ FAS disc/Ultralap extender	2	CCW	0	firm	200

CAMEO[®] System

Table 2—Procedures Used to Manually Grind/Polish Un-Mounted Aluminum Casting Sample Using CAMEO Magnetic Disc with the SS-2000 Grinder/Polisher

Grinding	Time (min.)	Dir.	Head Speed (RPM)	Pressure (lb.)	Wheel Speed (RPM)
Platinum #2 disc/ water	1 to 2	CCW	0	firm	200
Polishing					
Gold disc/ 6 micron CAMEO suspension/microid extender	2	CCW	0	firm	200
3 micron diamond compound/Ultrasilk/ FAS disc/Ultralap extender	2	CCW	0	firm	200



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