

1200 (P-4000) Grit vs. 1200 Fine Grit

Descriptions

1200 (P-4000) grit abrasive discs are *sputter coated*. This causes the silicon carbide (SiC) particles to be randomized, which provides more of a “polishing” action.

1200 (P-4000) grit is recommended for general removal of deformation from a previous step.



1200 Fine grit abrasive discs are *electrostatically coated*. This causes the SiC particles to stand on end, which provides more of a “cutting” action.

1200 Fine grit is recommended for soft materials that smear, step grinding for failure analysis, or when continued material removal is desired (typically after 600 grit).



Surface Finish Comparison

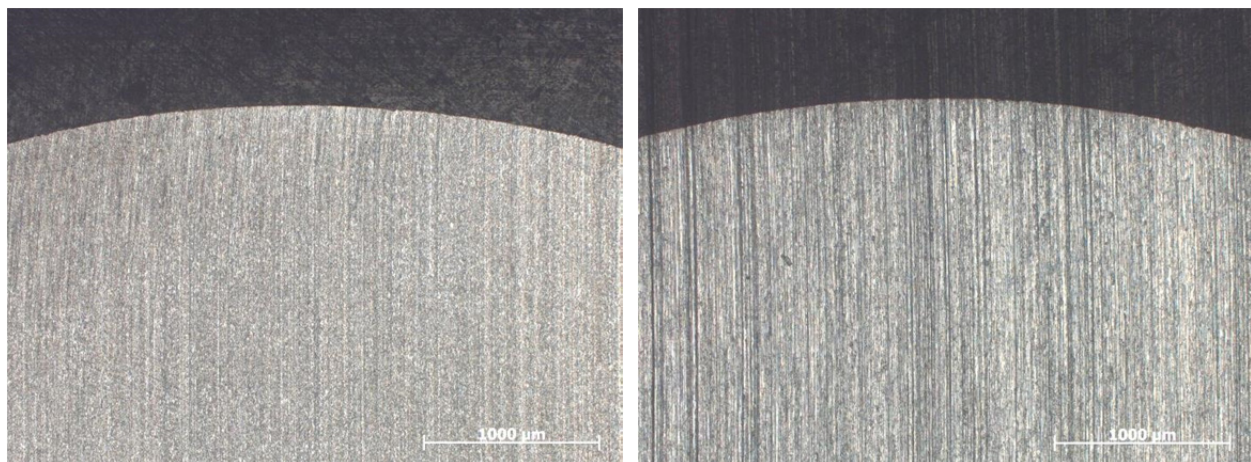


Figure 1: 5X objective, Brightfield. **Left:** Aluminum rod ground using **1200 (P-4000) grit**. **Right:** Aluminum rod ground using **1200 fine grit**.

Material Removal and Durability

Aluminum rods were encapsulated in green phenolic mounting powder, while steel rods were encapsulated in red phenolic mounting powder (Figure 2). They were ground separately to a 600 grit finish using the MetPrep 3™ grinder/polisher with PH-3™ power head.

The mounts were then ground using 1200 (P-4000) grit and 1200 fine grit to compare material removal using the procedure outlined in Table 1. Only **one abrasive disc** was used for each test; the disc was not changed in order to determine durability for each set of conditions. Material removal was checked every minute using a digital indicator measurement system.



Figure 2: Aluminum rods (green) and steel rods (red) were mounted in phenolic.

Table 1: MetPrep 3™ with PH-3™ Grinding Parameters

Variable	Specification
Platen RPM	300
Sample RPM	150
Direction	Comp
Force (per sample)	6 lbf
Time	1 min

Testing was first performed using three aluminum and steel mounts and then repeated using only one of each mount, to compare material removal under different conditions (Figure 3). The data shows that 1200 fine grit discs remove much more material over the same amount of time than 1200 (P-4000) grit discs. The removal rate dropped off after 2-3 minutes, indicating that they should be discarded after that timeframe for the best results.

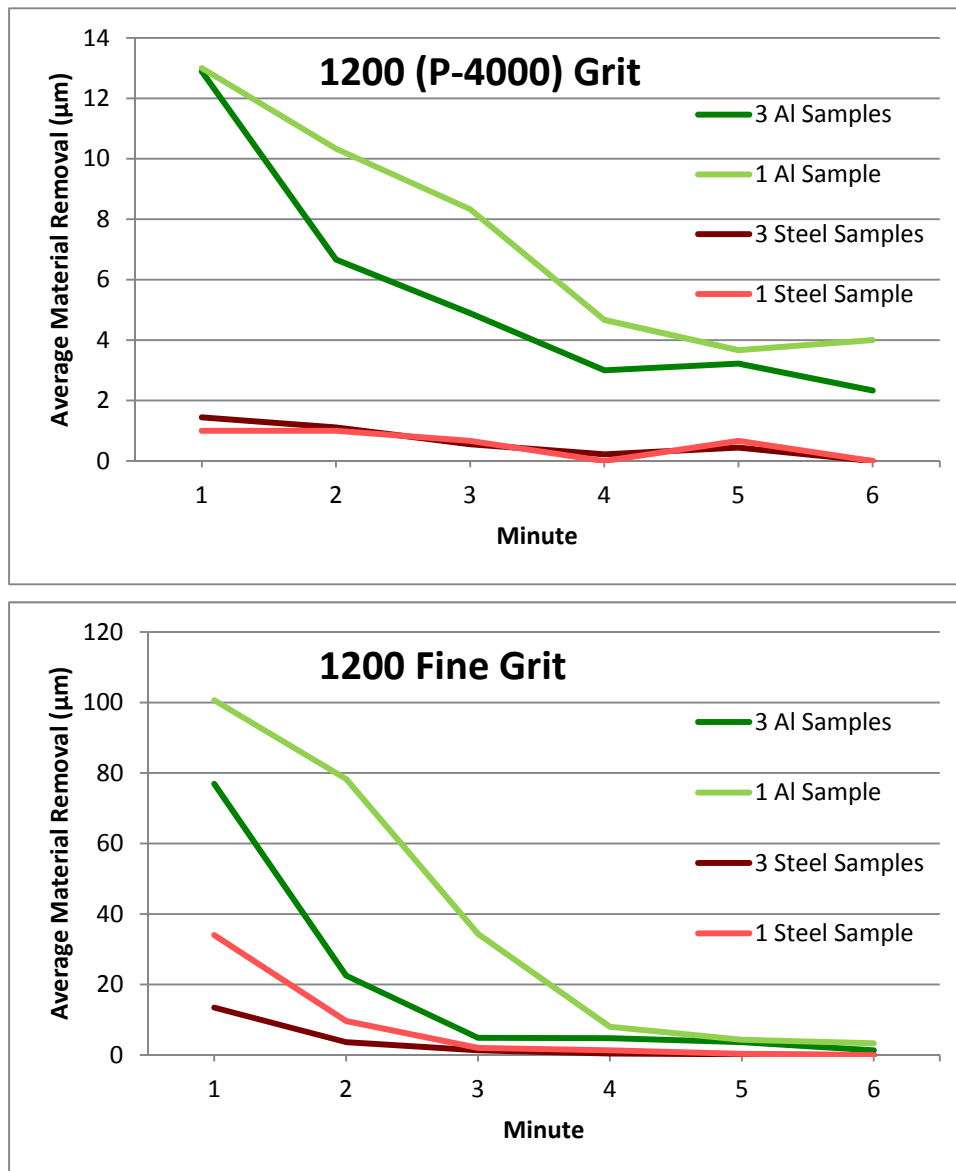


Figure 3: Graphs showing rates of material removal for the rod samples.