Copper and Copper Alloys

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Color Guide to Materials Preparation

Copper and Copper alloys are difficult to prepare because of their softness and the secondary phase which typically is an iron oxide that can be dislodged (pulled out) and/or scratch the polished surface during preparation. The key to polishing is to reduce the amount of smeared difformation caused by grinding while retaining the inclusions during final polishing.

Hardware I

1. Extec Labcut 250B Abrasive Cutting Machine (www.extec.com/labcut250B)
2. Extec Labpress 40 Automatic Mounting Press (www.extec.com/labpress40)
3. Extec Labpol 12-3DI Auto Polisher/Grinder (www.extec.com/labpol12-3DI)

or

4. Extec Labpol 12 Auto Polisher/Grinder (www.extec.com/labpol12)

Sectioning II

A rubber – silicon carbide abrasive blade is preferred for medium hardness materials.

Mounting III

Compression mounting with phenolics is typically used like our number 14505 black epoxy-mounting compounds.

Grinding/Polishing Method -- Copper and Copper Alloys

Surface	Code	Abrasive/ Type Size	Lubricant	Code	Pressure (psi)	Time	Wheel Speed	Head Speed/ Direction
Coated Abrasive	VI	320 SiC	Water		5 psi	60 seconds	120 rpm	60rpm/Comp
Coated Abrasive	VI	400 SiC	Water		5 psi	60 seconds	120 rpm	60rpm/Contra
Coated Abrasive	VI	600 SiC	Water		5 psi	60 seconds	120 rpm	60rpm/Contra
Coated Abrasive	VII	P1200 SiC	Water		5 psi	60 seconds	120 rpm	60rpm/Comp
Coated Abrasive	VII	P2400 SiC	Water		5 psi	60 seconds	120 rpm	60rpm/Contra
S-Plan	VII	1um Diamond	Water Soluble Diamond Extender	I	5 psi	3 minutes	120 rpm	120rpm/Comp
S-Plan	VIII	0.25 um Diamond	Water Soluble Diamond Extender	I	5 psi	2 minutes	120 rpm	120rpm/Comp
Multi Cloth or Chemic Cloth	VIII	Colloidal Silica .06um	The last 10 seconds wash with Distilled Water		5 psi	90 seconds	120 rpm	120rpm/Contra

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