Pure Silver

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Discover the Truth of Material

Purpose:

Observe the microstructure of pure silver. The electronics and electrical industries account for the largest consumption of silver, primarily for electrical contacts, composites, and soldering materials. Additionally, due to its lustrous white appearance, high chemical stability, and collectible value, silver is widely used in jewelry, decorations, silverware, cutlery, ceremonial gifts, medals, and commemorative coins. Samples undergo cutting (TableCut200), mounting (TJ2228 cold-curing resin), grinding/polishing (Alpha610), and etching with a 1:1 solution of 3% hydrogen peroxide and ammonium hydroxide to observe the matrix microstructure.

Recommended parameters for different specimen size				
Sample size/ diameter (mm)	25	30	40	50
Individual force loading mode, individual sample pressure force (N)	-5	0	+(5~10)	+(5~10)

*Standard pressure: ϕ30mm (adjust according to sample size).

Recommended Equipment and Consumables (select grinding/polishing consumables based on sample conditions):



TableCUT-200 manual/automated precision cutting machine

Cutting

Equipment	TableCUT-200 manual/automated precision cutting machine	
Cutting disc	S20 Silicon Carbide Cutting wheel	Order No: 01.02.422
Cutting coolant	TJ 1410 Metallographic Cutting coolant	Order No: 01.07.857
Fixture	Horizontal push fixture	
Cutting method	Horizontal cutting (Y-axis)	
Cutting parameters	Feed rate	0.1mm/s
	Cutting mode	No pulse mode
	Cutting disc rotation speed	3000rmp

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TJ 2228 Epoxy Slow-Cure Resin

Cold Mounting

Equipment	/
Cold mounting resin	TJ 2228 Epoxy Slow-Cure Resin A: Order No: 02.04.871
	B: Order No: 02.04.872
Mixing Ratio	A: B=2: 1
Curing Time	8-12h
Peak Temperature	<32℃

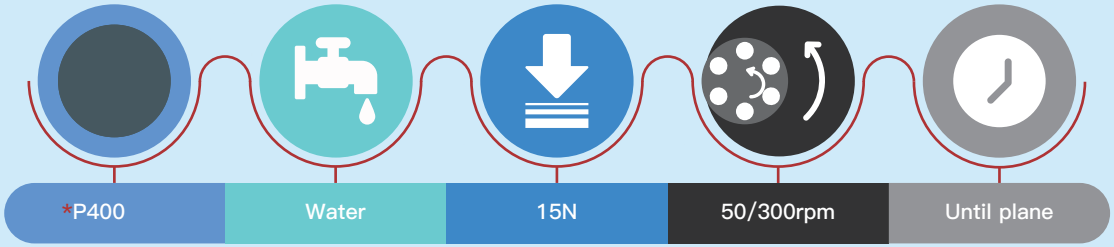
Basic Guide

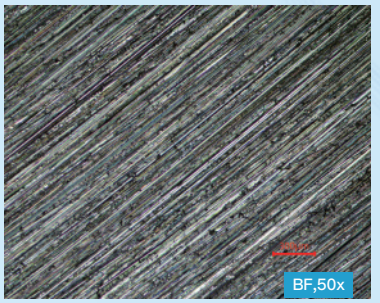
- **Cutting**
  1.Use an S20 resin-bonded silicon carbide cutting wheel for pure silver. Refer to the Trojan Cutting Guide for specific models.
  2.Use a constant-speed cutting mode with a maximum cutting speed ⩽0.25 mm/s.
- **Mounting**
  Silver is soft and temperature-sensitive. Use cold-curing resin for mounting.
- **Grinding**
  1.Begin with P400 silicon carbide sandpaper/lapping films until the sample surface is flat and cutting damage is fully removed.
  2.Continue rough polishing with NL-CP hard-woven, durable synthetic polishing cloth and 9μm diamond polishing suspension.
  3.Clean the sample, sample holder, and hands after each grinding step.
- **Polishing**
  1.Clean the polishing cloth, sample holder, and hands before polishing. Repeat cleaning after each step.
  2.Do not mix polishing disks with different abrasive particle sizes.
  3.Rinse the sample surface with alcohol and dry with a blower to remove water residue.
  4.After each polishing step, inspect under a metallographic microscope to ensure scratch size matches the abrasive grit and direction is random.
  5.Clean polishing cloths with running water and a soft brush after use, then air-dry.
  6.Dedicate polishing cloths used for pure silver exclusively to silver samples.

Preparation Procedure——Pure Silver

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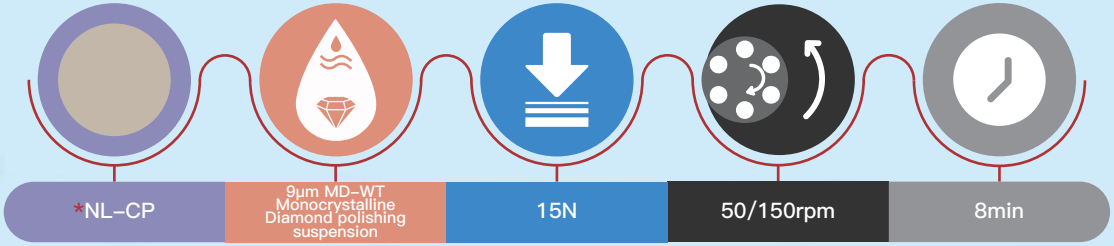
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*Apply wax to sandpaper before use to prevent abrasive embedding.

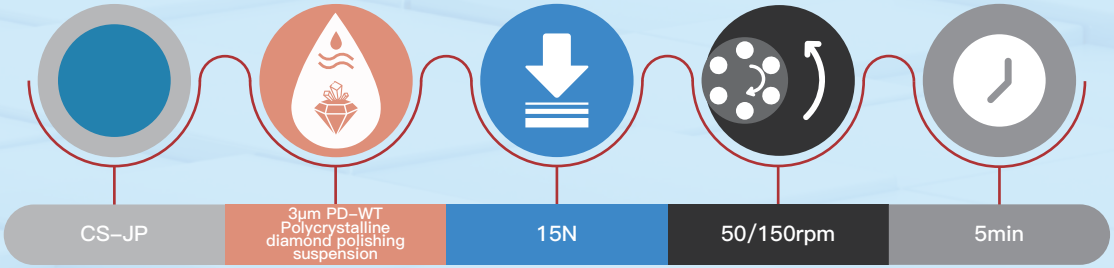
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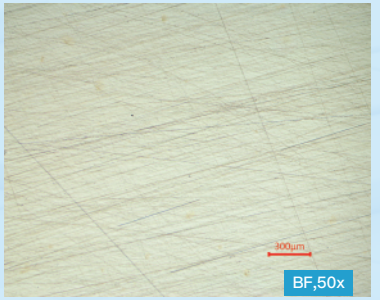




*NL-CP hard-woven, durable synthetic polishing cloth can be replaced with P800, P1500, P2000, or P4000 sandpaper.

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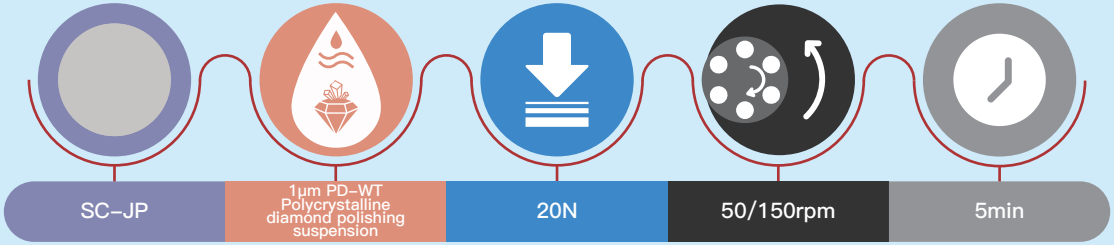




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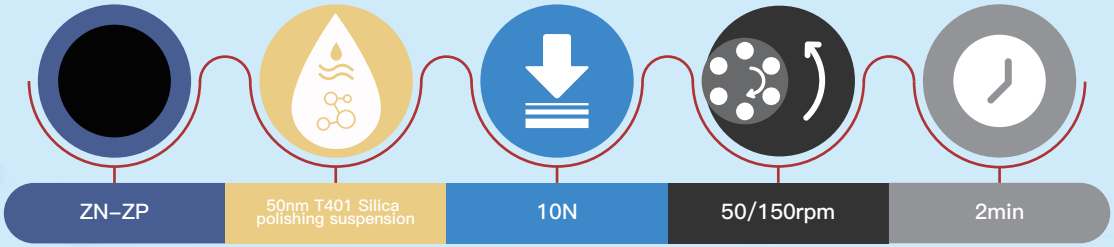
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Immerse in a 1:1 solution of 3% hydrogen peroxide and ammonium hydroxide for 10–60 seconds to reveal the microstructure.

