Lead Brass

TROJAN
Discover the Truth of Material

Purpose:

Observe the microstructure of lead brass. Lead brass exhibits excellent machinability, mechanical properties, and resistance to cold/hot pressure processing, making it ideal for soldering and welding. It is widely used in structural components such as screws, washers, gaskets, bushings, nuts, and nozzles. Samples undergo cutting (Table–Cut200), mounting (FLEX–PRESS fully automatic modular hot mounting machine), grinding/polishing (Alpha610), and etching with a ferric chloride–hydrochloric acid aqueous solution to observe the microstructure (MN80 metallographic microscope).

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

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).



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	Fast lock vise and Vertical fixture	
Cutting method	Veritcal clamp （Y axis)	
Cutting Parameters	Feed rate	0.2mm/s
	Pulse setting	Pulse cutting
	Cutting disc rotation speed	2500rpm

Lead Brass

TROJAN
Discover the Truth of Material



FlexPRESS Automated Modular Hot Mounting Machine

Hot Mounting

Equipment	FlexPRESS Automated Modular Hot Mounting Machine
Hot mounting resin	EP2237 Epoxy Edge–Retention Hot Mounting Resin Order No：02.01.710
Heating Power	100%
Holding time	5min
Temperature	180℃
Pressure	180bar
Cooling Conditions	Cool to 40℃
Cooling rate	High
Top heating	Enabled

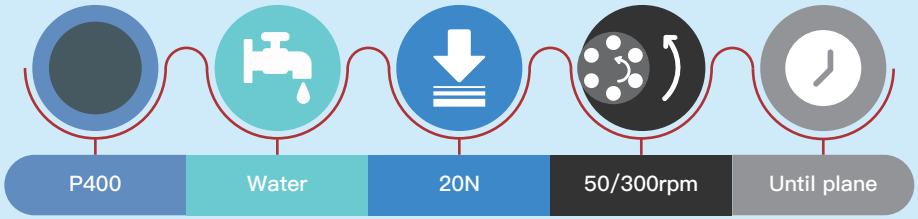
Basic Guide

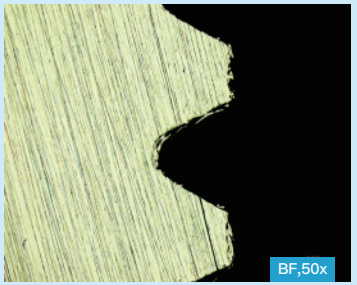
- **Cutting**
  1.Use a silicon carbide cutting wheel. Refer to the Trojan Cutting Guide for specific models.
  2.Select pulse mode for cutting, with a recommended maximum cutting speed ⩽0.25 mm/s.
- **Mounting**
  Use high–edge–retention cold/hot mounting resin.
- **Grinding**
  1.Begin with P400 silicon carbide sandpaper/lapping films/diamond grinding discs until the sample surface is flat and cutting damage is fully removed.
  2.Continue fine grinding with P800, P2000 sandpaper or a POS disc + 9 μm 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 lead brass exclusively to such samples.
  7.If surface protrusions remain after polishing, regrind and repolish while reducing polishing time with silica + ZN suspension.

Preparation Procedure——Lead Brass

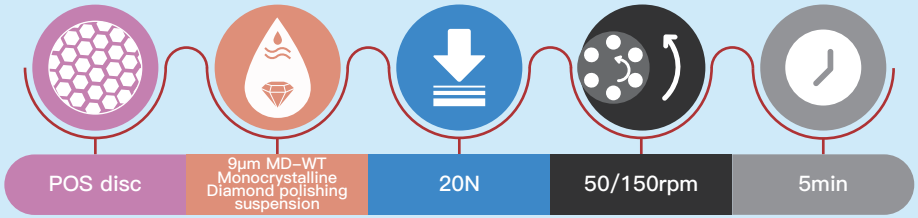
TROJAN
Discover the Truth of Material

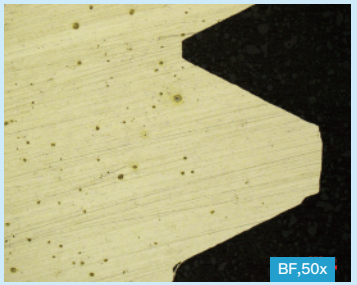
1



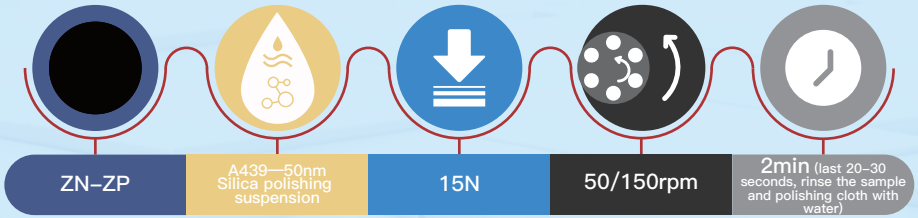


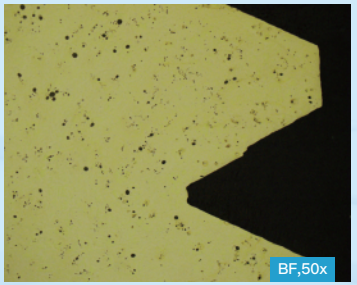
2





3





Immerse in a solution of 10g ferric chloride, 30mL hydrochloric acid, and 120mL water for 10—20 seconds. The microstructure will show:Matrix: β-phase + white needle/block-shaped α-phase.Black dots and gray particles: Lead phase.

