



TROJAN
Discover the Truth of Material



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Mounting Application Guide 2024

Provide Professional Metallographic Equipment,
Consumables and Application Solutions

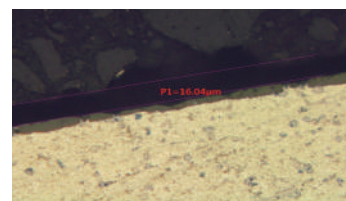
TROJAN (SUZHOU) MATERIAL TECHNOLOGY CO.,LTD
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Mounting

Ease of handling and edge retention are two reasons for choosing mounting. Edge retention is the protection of the edges of the specimen, which is essential for assessing the tissue integrity of the specimen surface. The ease of operation will provide great convenience for both manual and automatic grinding. Factors to consider when mounting include the size and shape of the sample, sensitivity to temperature and pressure, the number of specimens to be mounted on a daily basis, and the time it takes to complete the preparation.



Excellent edge retention



Gap

Edge retention

Metallographic mounting allows irregular samples to be easily held and maintain specimen edges during metallographic preparation. This is critical when assessing the structural integrity of the sample surface.

Ease of handling

The second benefit of mounting is the ease of sample preparation and storage. Mounted samples are easier to polish by hand, and can also be processed using automatic grinder&polisher.

Correct mounting

The pressure and heat of the mounting process should not cause any damage to the microstructure of the specimen. It is important to choose the appropriate mounting method and mounting material for different materials.

Hot Mounting

Hot press mounting is the process of embedding samples under heat and pressure. This minimizes shrinkage, so the edge integrity and surface imperfections of the sample are preserved during preparation. Many mounting machines have controlled cooling circulation systems, further enhancing edge protection while reducing mounting time. The inlaid specimen obtains consistency in size and shape and is easy to mark. After investing in an mounting machine for the first time, hot mounting appears to be more economical.



Cold Mounting

Epoxy and acrylic resins are commonly used for specimens that are sensitive to high temperatures and pressures. Epoxy resin has the characteristics of good physical adsorption capacity, low shrinkage and permeability into the voids and cracks of the specimen. Acrylic is mostly used to mount specimens that require a short time. Both colorants and fillers can be added to mounting materials. The colorant makes the holes in the specimen more visible and the interface between the resin and the specimen shows up more clearly. The conductive filler allows direct SEM testing of the mounted specimen. Vacuum mounting equipment removes air bubbles from the specimen and resin, reduces or eliminates the gap between the specimen and resin, fills the resin into the void, and improves the final mounting effect of the specimen.



Weighing and dosage



Mix and stir



Glue filling



Glue filling

Selection Method

Each material, application and need will require a specialized mounting method. When selecting a mounting consumable, the following factors should be taken into consideration: the wear resistance of the material, the required electrical conductivity, the need for further analysis, the requirement for transparency, and the way in which the grinding and polishing will be carried out with a single point of force or center loading.

Before selecting the appropriate mounting resin for your application, consider the required edge protection, time, transparency and permeability. The best system to use for each target property is as follows.

Hardness

Harder



Softer

Hot mounting resin(Shore D)

- EP 2237(90-94)
- BB 2232(90-92)
- PT 2231(88-91)
- MA 2275(88-90)
- TM 2261(86-88)
- DC 2239(80-83)

Cold mounting system(Shore D)

- TJ 2800(82-83)
- TJ 2220(82)
- TJ 2568(82)
- TJ 2227(82)
- TJ 2226(82)
- TJ 2210(80)
- TJ 2562(80)
- TJ 2221(78)

Mounting Equipment



MT-1H
Auto Mounting Press



MT-2H
Auto Mounting Press



ThetaVAC-2
Vacuum Cold Mounting Machine



UVmount
Curing Machine



ThetaMount
Pressure Cold Machine



Theta Vacuum
Cold Mounting Machine

Hot Mounting Material

Specimens that are not pressure and temperature sensitive can be hot mounted. Selection of the appropriate hot mounting material and use of optimum mounting parameters are essential to obtain satisfactory mounting specimens. The specimen should be cleaned before setting, and no dirty impurities such as grease or oxidized skin should remain on the surface of the sample. Ordinary mounting materials can be used when making ordinary samples. For those with edge retaining requirements, edge-retaining mounting materials should be used. Transparent mounting materials are also often used. Each hot mounting material has its own optimal parameters.



PT 2231 Universal hot mounting material

Features: Low price, black, green and red phenolic grit.
Application: For routine applications suit for most products.



BB 2232 Edge retaining mounting material

Features: Extreme hardness, very good grinding and polishing properties, does not stick on embedding instruments, non-adherent.
Application: All hard materials, e.g. hardened gears, hard metals and ceramics.



TM 2261 Transparent hot mounting material

Features: Transparent and very clear. allows easy sample observation.
Application: Same as TM 2235 and can be dissolved by Trojan special solvent.



DC 2239 Conductive hot mounting material

Features: Excellent electrical conductivity, almost completely eliminating voltage loss.
Application: Suitable for SEM analysis.



EP 2237 High quality epoxy edge retaining hot mounting material

Features: Thin, extreme hardness, optimal edge connection, good adhesion to the specimen surface, very good grinding and polishing properties.
Application: All hard materials, e.g. hard gears, metals and ceramics.



MA 2275 Mineral-filled edge-retaining mounting material

Features: High hardness, optimum edge connection, good adhesion to the sample surface, very good grinding and polishing properties, suitable for black surface specimen.
Application: Medium hard materials like normal hard metals, steel in general, aluminum, copper materials, etc.

Tips:

- ◆ Allow the specimen to cool to room temperature while maintaining pressure before removing it from the mounting machine. This will minimize shrinkage and improve edge retention.
- ◆ If the moisture content of the hot mounting material exceeds the standard, the specimen will not be mounted properly.
- ◆ Be sure to keep hot mounting materials tightly sealed between uses.
- ◆ Radial cracking in hot mounts is usually caused by sharp corners or by the specimen being too large relative to the mold cavity. Chamfering sharp corners or increasing the distance between the edge and the wall can help eliminate this defect.
- ◆ Bulging is caused by insufficient mounting time. Increase the mounting time.
- ◆ Failure to fuse or loss of light is usually a sign of insufficient heat mounting temperature or pressure. Ensure that the temperature and pressure parameters of the heat setter are set to match the applicable hot mounting material.

Selection of Hot Mounting Material

Hot mounting is the ideal solution when high quality, uniform size and shape specimens with short mounting times are required. Hot mounting uses pressure and temperature to place the mounting material in the mounting cylinder, and then pressurizes and heats it to form.

Product	PT 2231	BB 2232	TM 2261	EP 2237	DC 2239	MA 2275
Description	Phenoloc Resin	Glass fiber filled Phenolic	Transparent	Glass fiber filled Epoxy	Conductive	Mineral filled melamine resin
Components	black/red/green grit	black grit	White powder	black grit	Black-Brown Grit with powder	light yellow to White powder
Heat time	4-6min	4-6min	6-8min	5-7min	4-6min	4-7min
Cooling time	2-3min	2-3min	7-10min	4-6min	4-6min	5-8min
Cooling speed	High/Medium	High/Medium	Low	Medium	High	Medium
Pressure	100-300bar	100-150bar	100-150bar	100-300bar	100-300bar	100-300bar
Heat temperature	150-180°C	140-180°C	160-180°C	150-180°C	150-180°C	150-180°C
Hardness (Shore D)	88-91	90-92	86-88	90-94	80-83	88-90

*The above parameters are for a Φ30mm mold. A larger diameter can appropriately extend the heat preservation and cooling time.



Cold Mounting Material

Epoxy and acrylic resins are commonly used for mounting specimens that are sensitive to high temperatures and pressures. Epoxy resin has good physical adsorption capacity, low shrinkage and the ability to penetrate into the voids and cracks of the sample. Acrylic is mostly used for specimens that require short mounting times. Stain and fillers can be added to both mounting materials. The stain makes the holes in the specimen more visible and the interface between the resin and the specimen shows up more clearly. The conductive filler allows direct SEM inspection of the mounted specimen. Fillers increase the wear resistance of all cold mounting resins.

Acrylic Resin



TJ 2210 Acrylic Resin

Features: High transparent, good flow and penetration, especially for PCB and other electronic components. (10-12 minutes)



TJ 2800 Acrylic Resin

Features: Translucent, good edge protection, low shrinkage. Cure With the mounting pressure pot. (8-10 minutes)

Epoxy Resin



TJ 2220 Epoxy Fast (2:1)

Features: Transparent yellowish fast cure epoxy system, good adhesion. (30-60 minutes)



TJ 2221 Epoxy King (2:1)

Features: Clear, general purpose fast cure epoxy system. (1-2 hours)



TJ 2226 Epoxy Resin (4.5:1)

Features: Clear, transparent, general purpose slow cure epoxy resin. (4-8 hours)



TJ 2568 Epoxy Quick (4.5:1)

Features: Clear, fast curing epoxy system, low shrinkage, excellent adhesion. (45-90 minutes)



TJ 2562 Epoxy Thin (3:1)

Features: Clear, low viscosity and very low peak temperature, good adhesion. (10-20 hours)



TJ 2227 Epoxy Resin (2:1)

Features: Colorless and transparent, electrically conductive, suitable for SEM analysis. (4-8 hours)



TJ 2400 UV Curing Resin

Features: Resin with fast curing speed, high transparency and low heat release.

Tips:

- ◆ Acrylic Resin
Pour the mixture into the mold quickly to prevent gelation. Not suitable for use in vacuum mounting systems and disposable molds.
- ◆ Epoxy Resin
Mounting time can be reduced by gently heating the resin in an oven. Mounting speeds up 2-3 times for every 10°C increase in temperature. (Fast-mounting resin should not exceed 30°C, slow mounting resin should not exceed 50°C)
For better results, tilt the cup containing the resin and hardener slightly and use a stirring motion to gently mix the resin and hardener.

Selection of Cold Mounting Resin

The specimen is sensitive to high temperature and pressure.
Before grinding and polishing, the gaps in the sample need to be filled with media.

Choose the resin according to your needs.

System	Acrylic System		Epoxy System					
	Used for rapid cure times, or need large volume sample preparation.		Used for excellent flow and penetration, or when better adhesion, chemical resistance, less shrinkage and clarity are required.					
Products	TJ 2210	TJ 2800	TJ 2220	TJ 2568	TJ 2221	TJ 2226	TJ 2227	TJ 2562
Part A	Powder	Powder	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Part B	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
A:B (w/w)	10:8	10:5	2:1	4.5:1	2:1	4.5:1	4.5:1	3:1
Pot life	2-4min	2-4min	4-8min	5-10min	5-10min	10-20min	10-20min	30-60min
Cure time 25°C	8-12min	8-10min	30-60min	45-90min	1-2hour	4-6hour	4-6hour	10-12hour
Peak temperature	80°C	85°C	144°C	125°C	112°C	90°C	90°C	<32°C
Hardness (Shore D)	80	82-83	82	82	78	82	82	80
Edge protection	Good	Better	Better	Excellent	Good	Excellent	Better	Better

*The above parameters is in 30mm mold. 25°C

*The TROJAN Dissolver is a blend of solvents that when heated removes cured resin from a specimen.



Mounting Accessories

Sample Holder

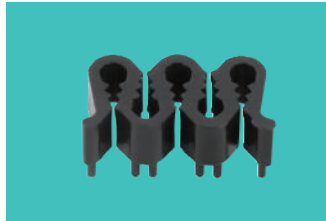
TROJAN offers a complete solution for mounting fittings. Metal fixtures can be used for fixing hot mounting specimens and plastic fixtures can be used for fixing cold mounting specimens.



Stainless Steel Clip



Plastic Coil Clip



S Black Plastic Clip



Black X-shaped sample clip



White X-shaped sample clip



Transparent X-shaped sample clip



Red X-shaped sample clip



Green X-shaped sample clip

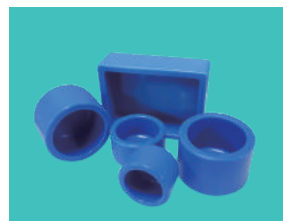
2-Part Mounting Cups

The bottom of the 2-Part mounting cups can be separated, and the mounted specimen can be easily removed. It is recommended to use it with the EtaKit cold mounting separator.



Specification: $\Phi 25 \times 20$ mm, $\Phi 30 \times 23$ mm, $\Phi 32 \times 25$ mm, $\Phi 40 \times 27$ mm

Silicone Mold Cups



Silicone Mold Cups

Durable, reusable silicone mold cups are widely used for acrylic and epoxy mounting systems.



Transparent Silicone Mold Cups

Transparent, durable, reusable silicone mold cups are widely used for UV light-curing embedding materials.

Teflon Mold Cups

Durable, reusable Teflon mold cups are very easy to remove mounting samples after curing.



Specifications: $\Phi 25$ mm; $\Phi 30$ mm; $\Phi 40$ mm

Disposable Slicing Mold

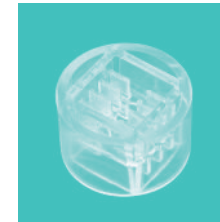
Economical choice for high volume mounting requirements.



Specification: 24*20*10mm, single compartment



Specification: 22*11*8mm, single compartment



Specification: $\Phi 30$ mm, round outside and square inside.



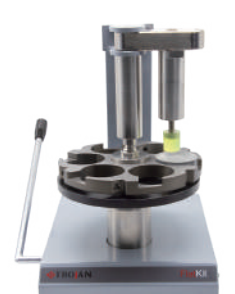
Specification: 20*20*12.3 mm, square outside and round inside



Specification: 20*20*12.3 mm, square outside and round inside

Etakit Cold Mounting Separator

Used for rapid demoulding after the mold is fixed and formed.



Sample Flattener

Product Information

Hot Mounting Consumables

PT 2231 Universal hot mounting material

●	02.01.310	1kg
	02.01.320	4kg
	Black 02.01.325	20kg
●	02.01.311	1kg
	02.01.321	4kg
	Green 02.01.326	20kg
●	02.01.312	1kg
	02.01.322	4kg
	Red 02.01.327	20kg

DC 2239 Conductive hot mounting material

●	02.01.910	1kg
	02.01.940	4kg
	Black 02.01.945	20kg

BB 2232 Edge retaining mounting materials

●	02.01.210	1kg
	02.01.220	4kg
	Black 02.01.225	20kg

EP 2237 High quality epoxy edge retaining hot mounting material

●	02.01.710	1kg
	02.01.720	4kg
	Black 02.01.751	20kg

TM 2261 Transparent hot mounting material

○	02.01.140	1kg
	02.01.144	4kg
	Transparent 02.01.145	20kg

MA 2275 Mineral-filled edge-retaining mounting material

●	02.01.960	1kg
	02.01.965	4kg
	Light yellow 02.01.970	20kg

Cold Mounting Consumables

Acrylic Resin

TJ 2210 Acrylic Resin

White, Resin, Powder	02.03.411	1kg
Hardener, Liquid	02.03.412	800ml
White, Resin, Powder	02.03.421	2.5kg
Hardener, Liquid	02.03.423	2000ml

TJ 2800 Acrylic Resin

White, Resin, Powder	02.03.511	1kg
Hardener, Liquid	02.03.512	1000ml

Epoxy Resin

TJ 2220 Epoxy Fast (2:1)

Epoxy Resin, Liquid	02.04.660	2kg
Hardener, Liquid	02.04.661	1kg

TJ 2221 Epoxy King (2:1)

Epoxy Resin, Liquid	02.04.721	2kg
Hardener, Liquid	02.04.722	1kg

TJ 2226 Epoxy Resin (4.5:1)

Epoxy Resin, Liquid	02.04.773	1kg
Epoxy Curingagent, Liquid	02.04.774	230g

TJ 2568 Epoxy Quick (4.5:1)

Epoxy Resin, Liquid	02.04.857	1kg
Hardener, Liquid	02.04.858	230g

TJ 2562 Epoxy Thin (3:1)

Epoxy Resin, Liquid	02.04.853	1.5kg
Hardener, Liquid	02.04.854	0.5kg

TJ 2227 Epoxy Resin (2:1)

Epoxy Resin, Liquid	02.04.920	1kg
Epoxy Curingagent, Liquid	02.04.921	0.5kg

TJ 2400 UV Curing Resin

UV Curable Resine	02.05.110	1.5kg
UV Curable Resine	02.05.120	0.5kg

Product Information

Mounting Accessories

Sample Holding Clips

Plastic Coil Clip, 6*100mm	07.01.010	100pcs
Plastic Coil Clip, 6*100mm	07.01.012	1000pcs
Stainless Steel Clip, 7*120mm	07.01.016	100pcs
Stainless Steel Clip, 7*120mm	07.01.017	1000pcs
S Black Plastic Clip, 20*10*8mm	07.05.001	100pcs
Black X-shaped sample clip	07.06.010	100pcs
White X-shaped sample clip	07.06.020	100pcs
Transparent X-shaped sample clip	07.06.030	100pcs
Red X-shaped sample clip	07.06.040	100pcs
Green X-shaped sample clip	07.06.050	100pcs

Silicone Mold Cups

Φ20*18mm(depth)	08.02.018	10pcs
Φ25*18mm(depth)	08.02.020	10pcs
Φ30*18mm(depth)	08.02.022	10pcs
Φ40*25mm(depth)	08.02.030-1	10pcs
50*70*20mm(rectangle)	08.02.050	10pcs
180*106*30mm(rectangle)	08.02.058	10pcs

2-Part Mounting Cups

Φ25*20mm	08.02.002	10pcs
Φ30*23mm	08.02.004	10pcs
Φ32*25mm	08.02.006	10pcs
Φ40*27mm	08.02.008	10pcs

Teflon Mold Cups

Teflon, easy release, Φ25mm	08.02.110	1pc
Teflon, easy release, Φ30mm	08.02.120	1pc
Teflon, easy release, Φ40mm	08.02.132	1pc

Transparent Silicone Mold Cups

Φ20*18mm(depth)	08.02.022-3	10pcs
Φ25*18mm(depth)	08.02.024-4	10pcs
Φ30*18mm(depth)	08.02.030-3	10pcs
50*50*20mm(rectangle)	08.02.055-1	10pcs

Disposable Mounting Cups

24*20*10mm, Single lattice	08.01.013	500pcs
22*11*8mm, Single lattice	08.01.015	500pcs
22*11*8mm, Single lattice	08.01.016	1000pcs
Φ30mm, Externally circular and internally square	08.01.030	100pcs
Φ30mm, Externally circular and internally square	08.01.032	200pcs
Φ30mm, Externally circular and internally square	08.01.035	500pcs
20*20*12.3 mm, Externally square and internally circular	08.01.038	500pcs
20*20*12.3 mm, Externally square and internally circular	08.01.039	1000pcs



For a complete list of consumables, please visit our website at www.trojanworld.com or refer to our product catalog. TROJAN continuously improves its products; therefore, technical specifications are subject to change without notice. Thank you for your understanding.