TROJAN

Discover the Truth of Material

2025

Mounting Application Guide

Professional Metallographic Equipment, Consumables, and Application Solutions

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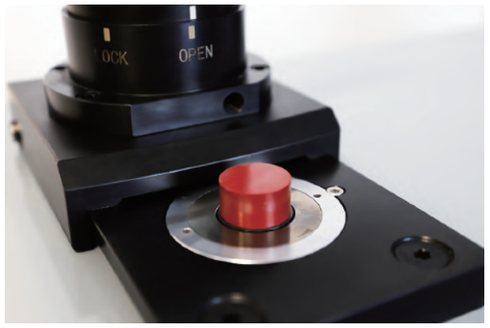
Mounting Consumables

Trojan offers comprehensive cold/hot mounting resin solutions tailored to all material types. Featuring simplified mixing ratios, superior mechanical properties, environmentally compliant formulations, and–batch–certified quality consistency, our resins ensure reliable specimen preparation with consistent high–quality results, thereby enhancing your metallographic analysis efficiency.

Hot Mounting

For applications requiring high–quality mounting,precise dimensional control, and short mounting cycles, hot mount–ing emerges as the optimal solution. Simply position the specimen in the hot mounting press with hot mounting consumables to initiate the process. To ensure premium mounting quality, Trojan recommends using our hot mouning presses specifically engineered for compatibility with dedi–cated hot mounting consumables.All Trojan hot mounting presses feature fully parametercontrolled systems, enabling precise regulation. For specialized requirements such as edge–retention or conductive mounting resin for SEM analysis, Trojan engineers provide customized material and parameter recommendations.



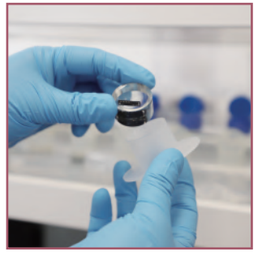
Cold Mounting

For samples sensitive to temperature and pressure, cold mounting is recommended. This method involves mixing resin components in a specific ratioto complete the mounting process. The primary systems include acrylic resin, epoxy resin, and UV–mounting resin. Cold mounting resins demonstrate excellent fluidity and can effectively impregnate and fill porous or cracked specimens when used with vacuum mounting equipment , offering distinct advantages over hot mounting methods. Notably, UV–mounting resin features an exceptionally fast curing time, solidifying within 1 minute for highly efficient mounting.

Weighing

Mixing

Pouring



Demolding

Hot Mounting Resins

Selecting the correct hot mounting material is crucial in the sample preparation process. To achieve optimal protection of the sample, ensure precise metallographic analysis, meet observation criteria, and maximize preparation efficiency, the compound must be specifically matched to the material's hardness, chemical composition, microstructure, and observation requirements.

PT 2231Universal Hot Mounting Resin

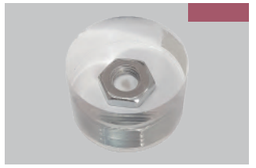
Features: Good thermosetting properties, widely used.
Application: Suitable for most materials.

Order No:			Package
Black	Green	Red	
02.01.310	02.01.311	02.01.312	1kg
02.01.320	02.01.321	02.01.322	4kg
02.01.325	02.01.326	02.01.327	20kg

BB 2232Edge–Retention Hot Mounting Resin

Features: Exceptional hardness, superior grinding/polishing characteristics, excellent demolding performance.
Application: Suitable for hard materials such as hardened gears, hard alloys, and ceramics.

Order No:	Package
02.01.210	1kg
02.01.220	4kg
02.01.225	20kg



TM 2261Transparent Hot Mounting Resin

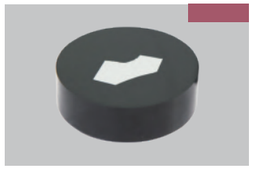
Features: Fine particle size,rapid mounting process,colorless and transparent.
Applications: Suitable for mounting specimens requiring optical clarity or as a top layer for label display; dissolvable in Trojan–specific solvent.

Order No:	Package
02.01.140	1kg
02.01.144	4kg
02.01.145	20kg

DC 2239Conductive Hot Mounting Compound

Features: Superior electrical conductivity,virtually eliminates voltage loss.
Applications: Designed for SEM analysis.

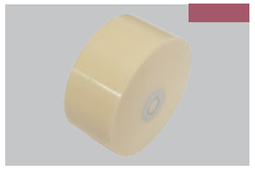
Order No:	Package
02.01.910	1kg
02.01.940	4kg
02.01.945	20kg



EP 2237Edge Retention Mounting Resin

Features: Extremely high hardness, optimal edge protection, excellent adhesion to sample surfaces.
Application: Suitable for hard materials, such as hardened gears, hard alloys, and ceramics.

Order No:	Package
02.01.710	1kg
02.01.720	4kg
02.01.751	20kg



MA 2275Mineral–Filled Edge Retention Hot Mounting Resin

Features: High hardness, good adhesion to sample surfaces, and excellent grinding and polishing performance.
Application: Suitable for medium–hard materials, such as standard hard alloys, general steels, aluminum, copper,and other materials.

Order No:	Package
02.01.960	1kg
02.01.965	4kg
02.01.970	20kg

Guide–Hot Mounting

When preparing high–quality samples with uniform dimensions and shapes, as well as requiring shorter mounting times, hot mounting is the most ideal solution. Hot mounting involves placing the sample and mounting material into a mounting cylinder,followed by applying pressure and heat to achieve molding.

Material	PT 2231	BB 2232	TM 2261	EP 2237	DC 2239	MA 2275
Description	Universal Hot Mounting Resin	Edge Retention Hot Mounting Resin	Transparent Hot Mounting Resin	Epoxy Edge Retention Hot Mounting Resin	Conductive Hot Mounting Resin	Mineral–Filled Edge Retention Hot Mounting Resin
Appearance	Black/Red/Green Particles	Black powder	White powder	Black Particles	Dark Brown Particles and Powder	Light Yellow Particles and White Powder
Heating Temperature	150–180˚C	150–180˚C	160–180˚C	150–180˚C	150–180˚C	150–180˚C
Heating Pressure	150–250bar	150–250bar	150–300bar	150–300bar	150–250bar	150–300bar
Holding Time	4–6min	4–6min	6–8min	5–7min	4–6min	4–7min
Cooling Rate	High	High	Low	Medium	High	Medium
Cooling Time	2–3min	2–3min	7–10min	4–6min	4–6min	5–8min
Hardness (Shore D)	85–90	90–93	85–87	90–93	90–92	92–95

*The above parameters are for a Φ30mm mold. For larger diameters, the holding and cooling times should be extended accordingly.

Tips:

- Allow specimens to cool under maintained pressure until reaching room temperature before removal from the mounting press.This will minimize the shrinkage rate and improve edge retention.
- Excessive moisture content in the hot mounting compound can result in improper mounting . Therefore, ensure that the compound is sealed and stored properly after each use.
- Radial cracking in mounted specimens typically originates from sharp sample edges or oversized specimens relative to mold cavities. To eliminate this defect, it is advisable to round off sharp corners or increase the distance between the specimen edges and the cylinder wall.
- Blistering occurs due to insufficient heating time. Increase the heating time.
- Lack of fusion or dullness is usually a sign of insufficient heat mounting temperature or pressure. Ensure that the temperature, pressure, and other settings on the hot mounting machine match the requirements of the applicable mounting material.

Selection Guide

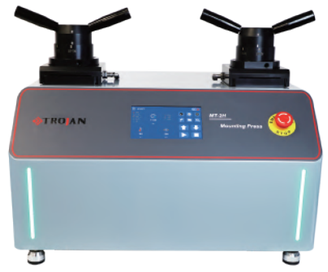
Each material, application, and requirement necessitates a specialized mounting method. When selecting mounting consumables, consider the following factors:： material wear resistance， required conductivity, further analytical requirements， transparency requirements and individual force or central loading force during grinding and polishing.

Before selecting the appropriate mounting resin for your application, consider the required edge protection, time, transparency, and permeability. The optimal system for each target characteristic is as follows:

Hardness	Hot Mounting Resin (Shore D)	Cold Mounting Resin (Shore D)
Hard	EP 2237(90–94)	TJ 2800(82–83)
↑	BB 2232(90–92)	TJ 2220(82)
	DC 2239(80–83)	TJ 2568(82)
	MA 2275(88–90)	TJ 2227(82)
	PT 2231(88–91)	TJ 2400(80)
	TM 2261(86–88)	TJ 2226(82)
		TJ 2210(80)
		TJ 2562(80)
Soft		TJ 2221(78)

Mounting Equipment

MT–1H Auto Mounting Press



MT–2H Semi–Automatic Hot Mounting Machine

FlexPRESS Mounting Press

UVmount Mounting Device

ThetaMount Pressure Cold Mounting Machine

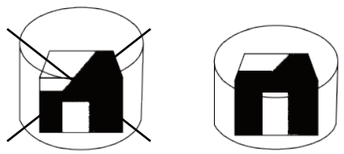
ThetaVAC–2 Vacuum Cold Mounting Machine

Optimization of Hot Mounting Process

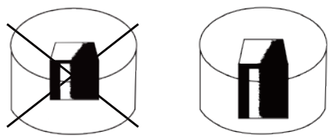
Optimize the progress time

When samples are to be mounted in series, we recommend optimizing the heating and cooling time.
One of the factors limiting heating and cooling time is the relatively low thermal conductivity of the resin.
An efficient method to reduce processing time: minimize the distance the heat needs to travel through the resin.
When hot mounting metal components (which have high thermal conductivity), heating and cooling time can be reduced under the following conditions:

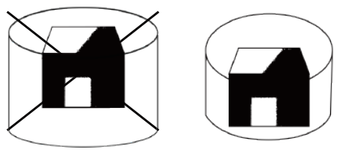
- The amount of resin used should be optimized.



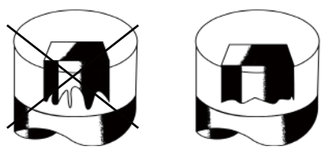
- Samples with a higher height rather than a lower one.



- Choose the smallest possible size cylinder.



- Good thermal contact between metal and ram.



When optimizing time, the time should be monitored and gradually reduced during the hot mounting pro-cess.Insufficient heating and cooling time will result in artifacts (see "Trouble shooting – Hot Mounting").

Cost Savings

When using the higher-cost BB 2232 or EP 2237 mounting resins, significant cost savings can be achieved by the following method: first, add a small amount of the required resin to form the preparation surface, and then fill the remaining area with the lower-cost PT 2231mounting resins.

Application of Release Agent

It is recommended to always apply a release agent to the mounting ram before starting the mounting process to form a thin layer. This helps prevent the sample from sticking to the equipment due to resin adhesion afterwards.

Crack prevention

The minimum distance between the cylinder wall and the sample must be greater than 3mm to prevent cracks in resin. This is especially important for samples with sharp edges. For mounting of small,thin samples, the Trojan fixture can be used to clamp them. Only metal fixtures should be used for hot mounting process.

Sample Cleaning

To achieve the best mounting results, the sample must be cleaned, dried, and degreased. If necessary, alcohol or other suitable degreasing solutions can be used for cleaning.

Preheating

For porous or pressure-sensitive samples (such as ores, electronic components, etc.), it is recommended to soften the resin by heating before applying pressure. Preheating is also useful when using thermoplastic resins,especially TM 2261 resin. Typically, preheating can only be done when the pressure is set to zero.

Heat-Sensitive Samples

The temperature in the mounting process can be reduced to a minimum of 150°C (suitable for all resins). This is useful when handling heat-sensitive materials. If the temperature is lowered, the recommended heating time should be increased.
For samples with very temperature sensitivity, hot mounting should be avoided. Trojan cold mounting resin can be used as an alternative.

Porous Samples

Thermoplastic resin (TM 2261) can penetrate porous samples very effectively. Preheating the resin ensures the best results(see preheating). For samples with a high porosity, hot mounting should be avoided. Trojan epoxy cold mounting resin can be used as an alternative.

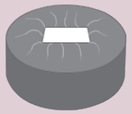
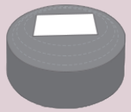
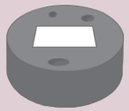
Pressure-Sensitive Samples

Thermoplastic resin (TM 2261) should be used. The best results can be achieved through initial preheating (see preheating). For samples with very high pressure sensitivity, hot mounting should be avoided. Trojan cold mounting resin can be used as an alternative.

Sample Removal

Crucial: The correct resin and parameters must be matched for each individual sample. Thermoplastic mount-ing can be reprogressed. Samples mounted with thermosetting resin cannot be reprogressed and must under-go remounting.Trojan cannot guarantee that samples can be removed from mounted samples without damage.

Trouble Shooting –Hot Mounting

Problem	Cause	Solution
 Radial Cracking	The distance between the edge/corner and cylinder wall is insufficient, or the sample has sharp corners.	Increase the diameter of cylinder wall or reduce the size of the sample. The minimum distance between the sample and the cylinder wall should be 3mm to prevent cracks.This is especially important for samples with sharp corners.
 Shrinkage	Incorrect resin selection.	Remount the sample using a resin with a lower linear shrinkage value.
 Blistering	Insufficient heating time.	Increase the heating time or raise the progress temperature.
	Overcured Surface.	Lower the progress temperature.
	Entrapped gas with mount.	Preheat the resin.
 Bulging	Insufficient cooling.	Increase the cooling time.
 Porosity	Excessive temperature.	Lower the preparation temperature.
 Voiding within large mounts	Insufficient heating time.	Increase the heating time.
	Excessive Temperature.	Lower the sample preparation temperature.
	Insufficient force/pressure.	Increase the mounting force/pressure.
 Dull surface after completion	Insufficient heating time.	Increase the heating time.
 Adhesion between mount and rams	Insufficient use of mould release agent.	Use mould release agent. The release agent must always be applied to the mounting rams to form a thin layer before starting the mounting process. This prevents the resin from sticking to the rams, allowing for easy separation of the mounted sample.
	Insufficient heating time.	Increase the heating time.
	Excessive force/pressure.	Reduce the mounting force/pressure.
 Raw material visible on mount*	Resin cured without applied force/pressure.	Increase the force/pressure during the heating cycle.
	Insufficient heating time.	Increase the heating time and/or temperature.
*Only applicable to thermosetting resins.		

Selection Guide–Cold Mounting

Epoxy and acrylic resins are commonly used for mounting samples sensitive to temperature and pressure. Epoxy resin has excellent physical adsorption capabilities, low shrinkage, and high permeability, making it effective for filling and impregnating samples with porosity and cracks. Acrylic resin is typically used for samples requiring a shorter curing time. Dyes and fillers can be added to both resins. Dyes enhance the visibility of pores in the sample, making the interface between the resin and the sample clearer. Samples mounted with conductive fillers can be directly subjected to SEM analysis. Fillers increase the wear resistance of all cold mounting resins.

Resin	Acrylic Resin		Epoxy Resin					
	Rapid curing or the preparation of large quantities of samples.		Excellent flowability and permeability. Used for applications requiring better adhesion, chemical resistance,minimal shrinkage, and high transparency.					
Model	TJ 2210	TJ 2800	TJ 2220	TJ 2568	TJ 2221	TJ 2226	TJ 2227	TJ 2228
Part A	Resin powder	Resin powder	Epoxy resin liquid	Epoxy resin liquid	Epoxy resin liquid	Epoxy resin liquid	Epoxy resin liquid	Epoxy resin liquid
Part B	Hardener, liquid	Hardener, liquid	Hardener, liquid	Hardener, liquid	Hardener, liquid	Hardener, liquid	Hardener, liquid	Hardener, liquid
A:B (W/W)	10:8	10:5	2:1	4.5:1	2:1	4.5:1	2:1	2:1
Mixing Time	2–4min	2–4min	4–8min	5–10min	5–10min	10–20min	5–10min	10–20min
Curing Time 25˚C	8–10min	8–10min	30–60min	45–90min	1–2hours	4–8hours	2–3hours	8–12hours
Peak Temperature	80˚C	85˚C	144˚C	125˚C	112˚C	90˚C	90˚C	40˚C
Hardness (Shore D)	80	82	82	82	78	82	82	80
Edge Retention	Good	Better	Better	Excellent	Good	Excellent	Excellent	Better

*Φ30mm mold, under room temperature conditions of 20–25˚C.
*The Trojan DSV10 solvent can be used to dissolve resin that has already cured.

Acrylic Resin

Acrylic resin has good permeability and stable chemical properties. It is typically used for rapid curing or the preparation of a large number of samples.

TJ2210 Acrylic Resin

Features: High transparency, good flowability and permeability, making it especially suitable for PCB and other electronic components.
Curing time: 8–10 minutes
Part A：**Part B**=10：8

Ordering Information

Order NO:	Description	Package
02.03.411	Resin, Powder	1kg
02.03.412	Hardener, liquid	800ml
02.03.421	Resin, Powder	2.5kg
02.03.423	Hardener, Liquid	2000ml

TJ2800 Acrylic Resin

Features: Semi–transparent, good edge retention, and low shrinkage rate. It performs better with a cold mounting press.
Curing time: 8–10 minutes
Part A：**Part B**=10：5

Ordering Information

Order NO:	Description	Package
02.03.511	Resin,, Powder	1kg
02.03.512	Hardener, Liquid	1000ml

Epoxy Resin

Epoxy resin offers excellent flowability, better chemical properties, adhesion, low shrinkage, and high trans-parency.

TJ2220 Epoxy Resin

Features: Colorless transparent or light yellow fast-curing epoxy system with good adhesion.
Curing time: 30-60 minutes
Part A：**Part B**=2：1

Ordering Information

Order NO:	Description	Package
02.04.650	Epoxy resin	2LB
02.04.651	Epoxy hardener	1LB
02.04.660	Epoxy resin	2kg
02.04.661	Epoxy hardener	1kg

TJ2221 Epoxy Resin

Features: Colorless and transparent, a versatile fast-curing epoxy resin.
Curing time: 1-2 hours
Part A：**Part B**=2：1

Ordering Information

Order NO:	Description	Package
02.04.711	Epoxy resin, Liquid	2LB
02.04.712	Epoxy hardener, Liquid	1LB
02.04.721	Epoxy resin, Liquid	2kg
02.04.722	Epoxy hardener, Liquid	1kg

TJ2226 Epoxy Resin

Features: Colorless and transparent, a general-purpose slow-curing epoxy resin.
Curing time: 4-8 hours
Part A：**Part B**=4.5：1

Ordering Information

Order NO:	Description	Package
02.04.773	Epoxy Resin, Liquid	1kg
02.04.774	Epoxy Hardener, Liquid	230g
02.04.777	Epoxy Resin, Liquid	4.5kg
02.04.778	Epoxy Hardener, Liquid	1kg

TJ2568 Epoxy Resin

Features: Colorless and transparent, fastcuring epoxy system, low shrinkage,excellent adhesion.
Curing time: 45-90 minutes
Part A：**Part B**=4.5：1

Ordering Information

Order NO:	Description	Package
02.04.857	Epoxy Resin, Liquid	1kg
02.04.858	Epoxy Hardener, Liquid	230g
02.04.855	Epoxy High Penetration Resin, Liquid	4.5kg
02.04.856	Epoxy Hardener, Liquid	1kg

TJ2562 Epoxy Resin

Features: Colorless and transparent, low viscosity epoxy system with good adhesion.
Curing time: 10-20 hours
Part A：**Part B**=3：1

Ordering Information

Order NO:	Description	Package
02.04.853	Epoxy Resin, Liquid	1.5kg
02.04.854	Epoxy Hardener, Liquid	0.5kg

TJ2227 Conductive Epoxy Resin

Features: Colorless and transparent, conductive, suitable for SEM analysis.
Curing time: 2-3 hours
Part A：**Part B**=2：1

Ordering Information

Order NO:	Description	Package
02.04.920	Epoxy Resin, Liquid	1kg
02.04.921	Epoxy Hardener, Liquid	0.5kg

TJ2228 Epoxy Resin

Features: Colorless and transparent, a versatile slow-curing epoxy resin.
Curing time: 8-12 hours
Part A：**Part B**=2：1

Ordering Information

Order NO:	Description	Package
02.04.871	Epoxy Resin, Liquid	2kg
02.04.872	Epoxy Hardener, Liquid	1kg

UV Resin

Low energy UV curing resin, high transparency and low heat release,cures in about one minute.Ideal for fast batch preparation of samples.

TJ2400 UV Resin

Features: Fast curing speed, high transparency, low exothermic heat.
Curing time: 30S-60S

Ordering Information

Order NO:	Description	Package
02.05.110	TJ2400 light resin	1kg

Optimization of Cold Mounting Process

Optimize the progress time

Choose the cold mounting resin with the shortest curing time based on edge protection, vacuum impregnation and peak temperature during curing.
The curing of epoxy resin is greatly influenced by temperature. In winter, it can be cured in a constant tem–perature cabinet.
For samples with large quantities, short time requirements, and lower edge preservation demands, UV curing resin can be prioritized.
Maintain the flowability of the epoxy resin.
In lower temperature conditions, epoxy resin A can be stored in a temperature–controlled cabinet to ensure it maintains good flowability during use.

Sample Cleaning

Ultrasonic cleaning of the sample before cold mounting to remove stains and grease from the surface is the prerequisite for achieving good embedding results.

Porous Samples

For porous samples, vacuum cold mounting can be used to infiltrate the resin into the sample's pores, ensur–ing good support for the pores during the subsequent grinding and polishing process.

Cold Mounting for Acrylic Resin

Using acrylic resin with a pressure mounting machine can enhance the transparency of the sample and reduce or eliminate bubbles in the resin.

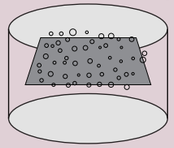
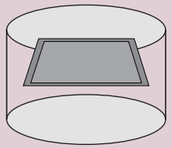
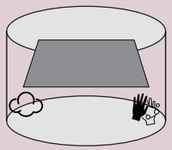
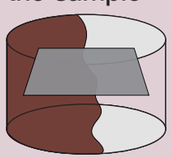
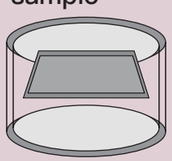
Sample Removal

Silicone molds allows for easy and quick demolding. For two–part mold mounting, the Etakit cold mounting separator can be used for fast and effortless demolding.

Sample Size

For cold mounting of oversized specimens, a multi–stage pouring method can be implemented to prevent structural collapse.

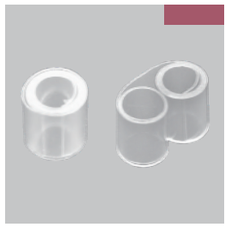
Trouble Shooting –Cold Mounting

Problem	Cause	Solution
Air bubbles along the sides of sample 	Lab temperature＞28℃.	·Uncover during curing; ·Use a smaller amount of resin; ·Maintain a lower temperature when mixing the resin.
	Mold diameter exceeds 50mm.	·Fill up only half of the mold's height; ·If a 20 mm high specimen is required cure in two steps; ·Uncover during curing; ·Use a smaller mold.
	Insufficient degreasing of the specimen.	Thoroughly clean and degrease the specimen before mounting.
	Excessive stirring of mixture.	Gently stir to avoid introducing air.
High Shrinkage 	Excessive temperature during process.	Place in a well–ventilated area or freezer.
	Insufficient degreasing of the specimen.	Thoroughly clean and degrease the sample before mounting.
	Incorrect mixing ratio.	Use correct mixing ratio accord–ing to the mold size.
	Insufficient mixing of resin and hardener.	Mix thoroughly.
	Excessive resin amount or extended operation time before pouring.	Reduce the amount, and pour promptly after mixing.
Sticky or rubbery surface 	Lab temperature ＜20℃.	·Fill the mold completely; ·Use a larger mold; ·Place it in the accelerator for heating.
	Incorrect ratio.	Use the correct ratio based on the mold size.
	Mold diameter less than 25mm.	·Use a larger mold; ·Place it in the accelerator for heating.
Indraft at the bottom of the sample 	The temperature was too high during process.	Place it in a well–ventilated area or in the freezer.
Gap between resin and sample 	Incorrect resin.	Use edgeretention resin.
	Insufficient degreasing of the sample.	Thorough cleaning and degreasing of the sample before mounting.
	Incorrect ratio.	Use the correct ratio according to the mold size.

Mounting Accessories

Sample Holding Clips

Trojan offers a complete solution for mounting accessories. Metal fixtures can be used to secure samples for hot mounting and cold mounting, while plastic fixtures are suitable for securing samples for cold mounting.



Plastic Coil Clip

07.01.010 6*100mm 100pcs

07.01.012 6*100mm 1000pcs

Stainless Steel Coil Clip

07.01.016 7*120mm 100pcs

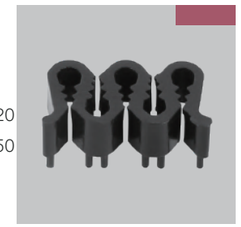
07.01.017 7*120mm 1000pcs

X–shaped Plastic Clip

(black/white/red/green/transparent)

Packaging：100pcs

Black	07.06.010	White	07.06.020
Red	07.06.040	Green	07.06.050
Transparent	07.06.030		



S–shaped Black Plastic Clip

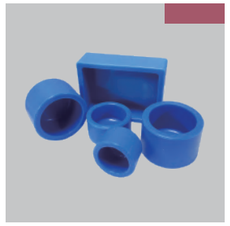
07.05.001 20*10*8mm 100pcs

2– part Mounting Cups

The 2–part Mounting Cups feature a detachable bottom, allowing easy removal of samples after mounting. It is recommended to use in conjunction with the EtaKit separator.

Packaging：10pcs

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



Silicone Molds

Silicone cutting molds are durable and widely used for acrylic resin and epoxy resin. Reusable, with easy sample demolding.

Packaging：10pcs

08.02.018	Φ20*18mm
08.02.020	Φ25*18mm
08.02.022	Φ30*18mm
08.02.030–1	Φ40*25mm
08.02.050	50*70*20mm
08.02.058	180*106*30mm

Transparent Silicone Molds

Transparent, durable, and reusable silicone molds, widely used for UV–curing embedding materials.

Packaging：10pcs

08.02.022–3	Φ30*18mm
08.02.030–3	Φ40*27mm
08.02.055–1	50*50*20mm

Teflon Mounting Cups

Made of Teflon material, durable, heatresistant, with an oval–shaped bottom for easy demolding.

Packaging：1pc

08.02.110	Teflon, Φ25mm
08.02.120	Teflon, Φ30mm
08.02.132	Teflon, Φ40mm

Disposable Sample mold

Used for cold curing.

❶ 08.01.013	24*20*10mm	500pcs
❷ 08.01.015	22*11*8mm	500pcs
❸ 08.01.030	Φ30mm	100pcs
08.01.035	Φ30mm	500pcs
❹ 08.01.038	20*20*12.3 mm	500pcs

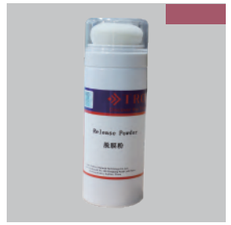
Etakit Splitter

Used for the quick demolding of samples afterfixation and molding in the 2–part mounting cups.

Packaging：1pc

Used for 2–part mounting cups.

13.20.003



Release agent

Application: Prevents hot mounting resin from adhering to the ram.

Material: Ultra–fine stearate powder.

02.09.002 20g

Quantitative resin feeder

Application: Quantitative addition of hot mounting resin to prevent dust contamination in the air.

24.01.300 1pc