



T.A.O.
BANGKOK
CORPORATION LTD.

PAD PRINTING PORTFOLIO FOR TEXTILE AND FOOTWEAR



www.taobangkok.co.th



T.A.O. Your Trusted partner.

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Pad Printing technology for textile & footwear

History of Pad Printing



Early Swiss Pad Printer

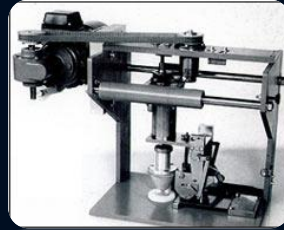
Before 1956

- Crude printers
- Swiss watch dial industry used manual pad printers
- Gelatin printing pads
- Used Slow Drying Oil Based Inks



1965

- First official prototype of tampon printing of clock faces



1968

- Introduction of cold vulcanized silicone pads and solvent inks



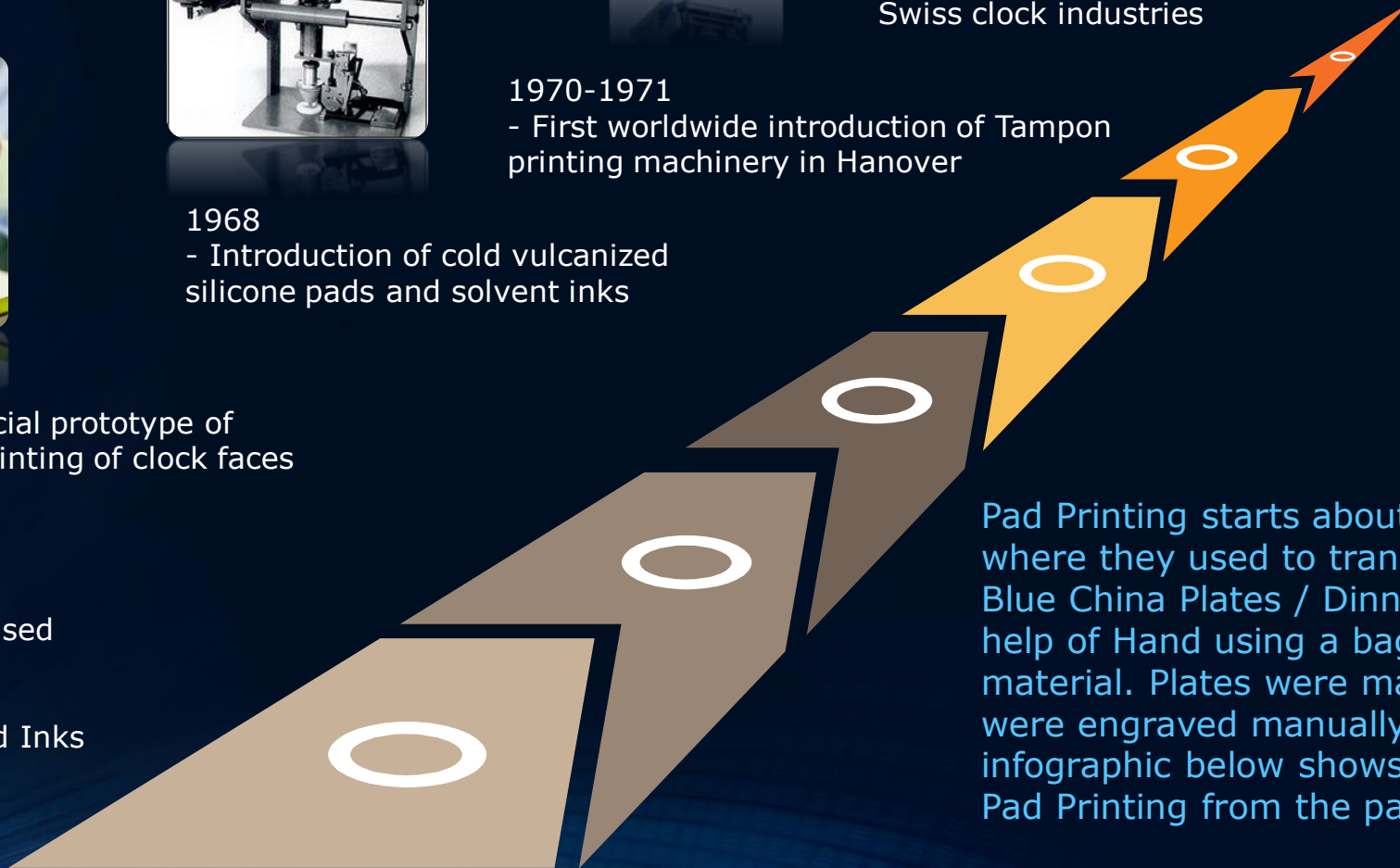
1970-1971

- First worldwide introduction of Tampon printing machinery in Hanover

1971-1980

- First patented electro-mechanical tampon printing machine launched
- 100 machines were ordered by Swiss clock industries

Pad Printing starts about 200 years ago, where they used to transfer motifs on to Blue China Plates / Dinnerware with the help of Hand using a bag of soft gelatin material. Plates were made of copper which were engraved manually by hand. The infographic below shows the development of Pad Printing from the past.



Pad Printing technology for textile & footwear

Route of Label Printing to Pad Printing

PAD PRINTING – the most efficient & lean method for embellishment of Apparel & Footwear at the moment



Sewn-in Label

- Tag ribbon sewing on fabric
- Output: Discomfort / Skin irritation
- Process: High production minimums
- Lead-time: Very long lead times



Tagless Heat Transfer

- Output: More comfort than sewn-in, but film peel off caused skin irritation
- Process: Very high production minimums
- Lead-time: same as sewn-in label
- Both of technologies create lots of waste – ribbons for sewn-in and plastic waste for heat transfer.

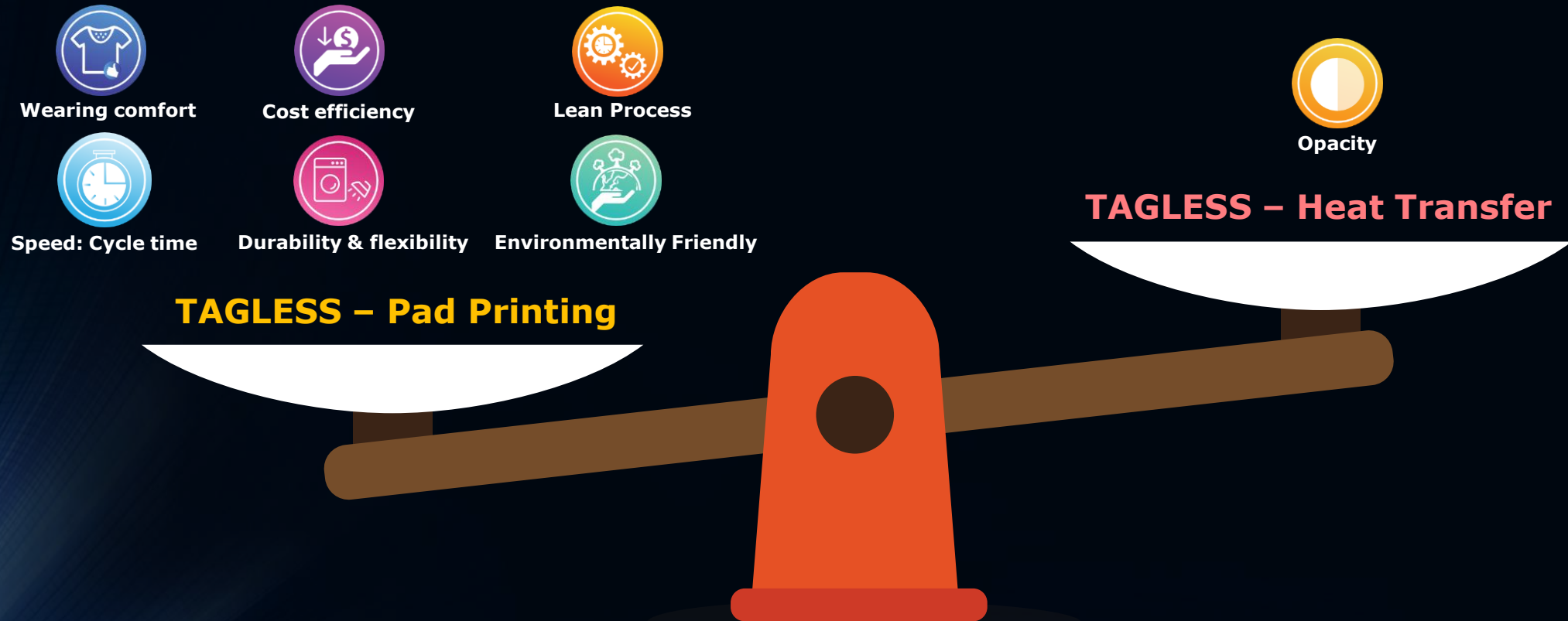


Tagless Pad Printing

- Output: Soft touch and flexible
- Process: Very easy processing
- Lead-time: Enable “just-in-time” production and short production runs and change graphics on demand possibility of new design can be changed within 1 hour
- Environment: Highest consumer safety and more environmentally friendly

Pad Printing technology for textile & footwear








Advantages and Comparison of Pad Printing and Heat Transfer



At present, when it comes to decorating on textile and footwear, pad printing solution stands out to be the most efficient and lean method.

Pad Printing technology for textile & footwear

Advantages and Comparison of Pad Printing and Heat Transfer

Characteristics	TAGLESS – Pad Printing	TAGLESS – Heat Transfer
 Wearing comfort	<ul style="list-style-type: none">• Soft touch	<ul style="list-style-type: none">• Skin irritations• Allergic reaction
 Cost efficiency	<ul style="list-style-type: none">• 0.0007 \$ per print (approx. 0.0224 THB)	<ul style="list-style-type: none">• small print runs: 0.0113 \$ per piece (approx. 0.36 THB)• Large print runs: 0.08 \$ per piece (approx. 2.56 THB)
 Lean Process	<ul style="list-style-type: none">• Direct prints• Very easy and lean processing• Easy to Change graphics	<ul style="list-style-type: none">• Transfer labels• Space consuming• Very high production minimums• Long lead-times
 Speed: Cycle time	<ul style="list-style-type: none">• 500-1,000 pcs. per hour	<ul style="list-style-type: none">• 400 labels per hour
 Opacity	<ul style="list-style-type: none">• Good opacity	<ul style="list-style-type: none">• High opacity
 Durability & flexibility	<ul style="list-style-type: none">• 50 industrial washes• very good resistance against ironing	<ul style="list-style-type: none">• 5 - 10 industrial washes
 Environmentally Friendly	<ul style="list-style-type: none">• No Plastic• Saving energy cost	<ul style="list-style-type: none">• Plastic waste• Electricity cost

Pad Printing Process

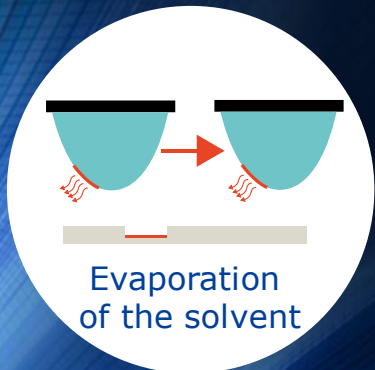
Step 1



Step 2



Step 3



Step 4



Scan QR Code
For more information

Pad Printing Process

Machine: Printing System

T.A.O. Bangkok Corporation is the authorized distributor of KENT machines in Thailand and Vietnam.

KENT is the worldwide manufacturer of high quality pad and screen printing systems for over 30 years.

Co-developing the pad printing machines with KENT, T.A.O. can provide the complete decorating solutions from single color to multi color printing systems for Textile & Footwear industries in a superior and greener printing experience.



Pad Printing Process

Machine: variations

Different types and models are provided from single color to multi-color Pad printing systems to best fit your application.

Textile



KENT GP-21N



KENT GP-21N-PPS-2



KENT GP-125-PPS-2



KENT GP-100N



KENT TURBO-90

Footwear



KENT KIPP 200



KENT G-TURBO-350



KENT G-TURBO-90S-2

Pad Printing Process

Plate

Plates are used to contain the desired artwork "image" etched in its surface. Their function is to hold ink in this etched cavity, allowing the pad to pick up this ink as a film in the shape of the artwork, which is then transferred to the substrate. The quality of the plate and the printing image affect the quality of the print directly.

There are different types of clichés:



Thin steel plate

Size:

100x220x0.30 mm
100x250x0.30 mm
100x260x0.30 mm

- Hardened carbon steel cliché, polished surface, thickness from 0.2 to 0.5mm.
- Plates are coated with a negative photosensitive emulsion on both faces.
- All clichés are supplied cut and punched as per customer's request.
- Plates are also available in large sizes.
- **Impression: 200,000 prints***

Thick steel plate

Size:

100x220x10 mm
100x250x10 mm

- Made of 10 mm oil-tamper or chromium steel.
- These hardened steel plates are processed in house and have a very long working life.
- Thick steel plates are recommended for very high-volume printing.
- **Impression: 800,000 prints***

Laser plate

Size:

100x250x0.50 mm
100x215x0.65 mm
100x220x0.65 mm
100x260x0.65 mm

- A magnetic aluminum cliché with a special coating.
- This cliché can be also used in the crosswise doctoring operation.
- The line motif is created by laser ablation with extremely accurate engraving depth and contour sharpness.
- **Impression: 30,000 prints***

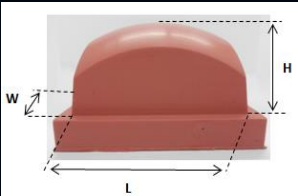
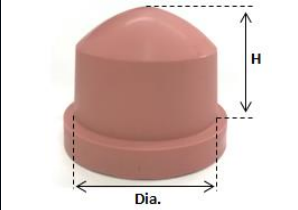
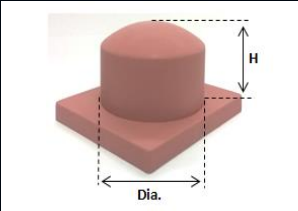
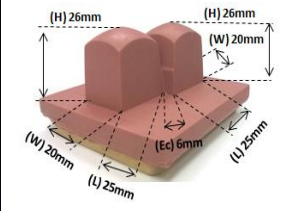
*Depending on the usage and maintenance

Pad Printing Process

Silicone Pad

Pads are three-dimensional objects typically molded of silicone rubber. They function as a transfer vehicle, picking up ink from the printing plate, and transferring it to the part (substrate). They vary in shape and diameter depending on the application.

We offer a wide range of the highest quality silicone pads, designed specifically for industrial pad printing applications. Since each product decoration is unique, there are many different shapes and sizes from which to choose. All are available in various levels of hardness.

A Model		Rectangle – Rectangle <ul style="list-style-type: none">• For the big area image
B Model		Round – Round <ul style="list-style-type: none">• “ideal” form rolling well• Perfect ink transfer
C Model		Round – Rectangle <ul style="list-style-type: none">• “ideal” form rolling well• Perfect ink transfer
D Model		Special shape <p>We can manufacture the printing pads tailored to the needs, depending on the specifications and applications</p>

There are 2 ink series that work exceptionally well for pad printing on textile & footwear. Here they are:



Tampa® Tex TPX

- Formulation complies with California Proposition 65 C
- Certified according to Oeko-Tex® Standard 100
- Flexible ink film for full wearing comfort
- High opacity applicable on colored materials
- Very good resistance against washing and ironing highest quality safety
- Easy processing for process safety and efficiency
- Very good adhesion on various materials universal application possibilities



Tampa® Sport TPSP

- Highly flexible ink film for full wearing comfort
- Very good resistance to washing and ironing
- Easy processing for process safety and efficiency
- Very good adhesion
- wash resistance, and exceptionally high flexibility

Thinners

The addition of thinner influences the viscosity, flow properties, and release characteristics of the ink from the pad but also has a substantial influence on the drying speed, packaging characteristics, as well as adhesion to the substrate.

Special thinners offering specific characteristics are also available. The standard range of thinners includes thinner TPV and the fast drying thinner TPV 2.





When you will use Thinner:

- Viscosity – typical problems
- Ink is too thick
 - Missing edges in the print – bad ink release
 - Ink shows thin threads at the printed image
 - Ink dries too fast
 - in the cliché
 - on the pad
- Ink is too thin
 - Details in the printed image are not sharp, bad edge definition
 - Fine negative lines smears
 - Less ink opacity
 - Bad ink release characteristics

(ink laydown on the pad grows)



Standard thinners

Thinners	Evaporation Value	Solving strength	Danger symbol
TPV	30-50	Very good	Free of aromatic hydrocarbons 
TPV2	10-20	Very good	Free of aromatic hydrocarbons 
TPV3	200-250	Very good	Free of aromatic hydrocarbons 
TPV9	20-30	good	

Retarders

Retarders are solvents with a significantly slower evaporation rate. They are only added to the ink if the drying of the ink on the pad or in the cliché is to be slowed. This may be necessary if the cycle time is very slow or if a shuttle is used on multi-color machines.

Retarders	Evaporation Value	Solving strength	Danger symbol
SV1	450-500	Good	R63, possible risk of harm to the unborn child 
SV5	250-300	Good	

Hardeners

The addition of hardener can increase adhesion to difficult substrates as well as increasing the chemical and mechanical resistance. It should be noted, however, that the addition of hardener will reduce pot life to 8-16 hours, depending on the ink type. For 2-component inks, hardener must be added.

Hardener H1

Hardener H1 is non-yellowing and is, therefore, suitable for outdoor applications. Other characteristics: relatively flexible ink film, long pot-life, slow drying.



Hardener HX

Hardener HX is non-yellowing and is therefore suitable for outdoor applications. Other characteristics: relatively flexible ink film, long pot-life, slow drying. HX is made without the use of aromatic hydrocarbons.



Cleaning agents

The cleaners are used for cleaning the equipment for screen and pad printing. There are 2 types of cleaning agent available, which are:

Cleaner UR3

Cleaning agent for screen and pad printing. Fast evaporation with mild odor

Cleaner UR4

The new "solvent Naphta"- free. UR4 can be used for many solvent-based and UV-curable ink systems directly on the printing machine.

Advantage of UR4 Cleaner



No toxicity for aquatic life.



Environmentally friendly



Not harmful the kidneys



"Solvent Naphtha" Free



Non-hazardous to the respiratory system



Not damage the nervous system



Sample on substrate

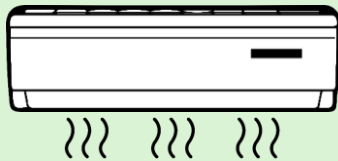


Textile



Footwear

Proper storage of inks & additives - to extend the shelf life and maintain their qualities



Store inks & additives in a room temperature at 25°C

Relative humidity not more than 70%

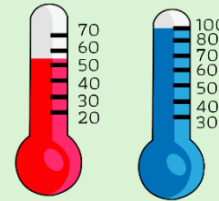


If stored in a room with no air conditioner, the room must have a good ventilation system.



Ink Additives

Keep the inks and additives tightly sealed, preventing from evaporation



Store inks and additives in a room with temperature above 25°C

Relative humidity over 70%

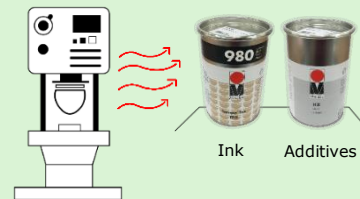


Store inks & additives in the area with direct sunlight



Ink Additives

Not close the lid tightly, causing evaporation and dust entering






Ink Additives

Store the inks and additives near the machine. While the machine is working, there will be heat around the machine, which will affect the quality and shelf life of the inks and additives.



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For more information

Controlled Parameters	Range of Control	Needed Equipment	Reasons and Remarks
1. Temperature 	20-25°C	Air conditioner	Prolong pot life of mixture (7-8 hr. at approx. 20°C)
2. Relative Humidity 	50-70%	Air conditioner	Higher temperature reduce pot life. Controlling of optimal evaporation rate provides: - Good transfer from plate to pad - Good transfer from pad to substrate
3. Good Ventilation 			As printing room is normally large, Ventilation should be designed considering enough air change in the level that has less effect to Air conditioning. Excessive exhaust consumers electricity without any additional benefit.

Recommendations for Store / Mixing / Printing rooms:

- Each room separate from one another, as different in function.
- Each room near to each other as convenience of process flow.
- Avoid source of heat near rooms such as equipment that generate heat, e.g. boiler, condenser
- Fire protection and fire fighting system
- Keep room and all equipment clean. Avoid dirt and dust.
- Table surface and all surfaces may be spilled with ink made of easily clean material such as:
 - Stainless steel for table surface
 - Tiles for wall
 - Epoxy or coated floor



Printing in the right conditions is one of the biggest influences to your print quality and performance.

Temperature 20-25°C
Humidity 50%-70%

Printing Conditions

- A lower temperature can extend the pot life to 7-8hrs
- Humidity control is essential to print quality and pot life

Storage conditions

- Under these conditions the ink storage life can be extended



Equipment for Health and Safety is significant. Here are the list of Personal Protective Equipment (PPE) needed during the operation.



PPE – mixing room

Gloves
Goggles
Jackets
Masks

PPE – printing room

Masks
Goggles

Safety warning signs

Mixing room
Machine

Appropriate material disposal equipment
Ventilation system

Our inks supplied for Textile and Footwear are in compliance with
STANDARD 100 BY OEKO-TEX and AFIRM RSL.



since
2011



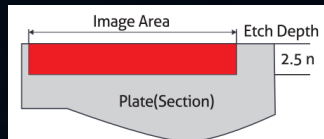
since
2017



Cliché depth

Influences Opacity

- Higher opacity
- Blocks base color
- Could fill holes
- 30→50 µm deep



Ink Film Thickness(wet)
Approx 12 microns



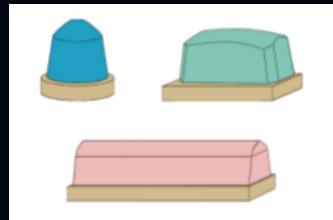
Pads

Harder the better

- Print consistency
- Prevent pin holes
- 10-20 Shore A

Shape

- Print consistency
- Air release ≠ pin holes



Shore A	Description
18 Shore A	Hard
12 Shore A	Middle
6 Shore A	Normal
3 Shore A	Soft

hits

Standard = 1 hit

More opacity = 2-3 hits

- Higher abrasion resistance
- Blocks base colour
- Could fill holes



Ink

Solvents

- Slower solvents in High temp
- Faster Solvents in low temp



Solvent release

Provided by TAO

We specialize in Industrial Printing & Decoration



Customers

Business Partners

T.A.O. Bangkok Corporation Ltd.



ABOUT T.A.O.

T.A.O. Bangkok Corporation Ltd. is the service provider in Printing, Packaging and Decorative Industries. The company operates more than 20 years in Thailand and over 6 years in Vietnam. Trusted by more than 18 of the world's leading manufacturers of 300 products, we are the authorized distributor and have been recognized by the local and international customers.



Services

T.A.O. provides the consultation with requirement analysis as the customer-oriented to get end to end approach. Our services also include Color Matching, Quality Control, Customer Service and completed after-sales services to meet our customers' satisfaction.



Certificates & Awards



Certified ISO 9001:2015



Awarded for Employees' Good Health Promotion



Awarded for "Zero Waste to Landfill according to 3Rs" - Good practice of waste utilizations Management









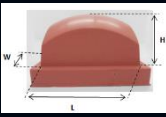
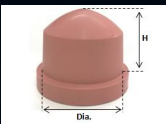
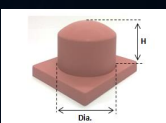
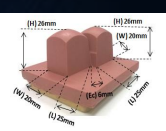
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Machine for Textile

 <p>More information </p>	<p>KENT GP-21N</p> <p>Features :</p> <ul style="list-style-type: none"> - Membrane switch control panel - Footswitch start/stop continuous print function - Digital pad stroke (DPS) for variable printing depth 	 <p>More information </p>	<p>KENT GP-100N</p> <p>Features :</p> <ul style="list-style-type: none"> - PCL control touch screen panel - Auto pad clean - Air blower - Digital pad stroke (DPS) for variable printing depth
 <p>More information </p>	<p>KENT GP-21N-PPS-2</p> <p>Features :</p> <ul style="list-style-type: none"> - Pneumatic pad shuttle system (PPS) - Membrane switch control panel - Footswitch start/stop continuous print function - High speed and smooth machine operations 	 <p>More information </p>	<p>KENT TURBO-90</p> <p>Features :</p> <ul style="list-style-type: none"> - Use sealed ink cup system - Able to use laser engraved green plate, thin steel plate, 10mm steel plate and polymer plate - PLC control touch screen panel
 <p>More information </p>	<p>KENT GP-125-PPS-2</p> <p>Features :</p> <ul style="list-style-type: none"> - Membrane switch control panel - X & Y adjustable work table - Footswitch start/stop continuous print function 		

Machine for Footwear

 <p>More information </p>	<p>KENT KIPP 200</p> <p>Features :</p> <ul style="list-style-type: none"> - Pneumatic pad carriage and up/down (Servo pad carriage optional) - Compatible with long life, economy of green plate, 10 mm steel plate, thin steel plate and polymer plates
 <p>More information </p>	<p>KENT G-TURBO-350</p> <p>Features :</p> <ul style="list-style-type: none"> - Turbo pad clean design for multi-color - Both pad & printing plate platform in / out design for max. product size
 <p>More information </p>	<p>KENT G-TURBO-90S-2</p> <p>Features :</p> <ul style="list-style-type: none"> - Granite stone machine structure for performance & stability as well as protect our environment - Wide machine stand - Two independent pad cylinders

Silicone Pad	
	A Model Rectangle – Rectangle
	B Model Round – Round
	C Model Round – Rectangle
	D Model customized



More information

Plate	
	Thin steel plate Size: 100x220x0.3mm 100x250x0.3mm 100x260x0.3mm
	Thick steel plate Size: 100x220x10 mm 100x250x10 mm
	Laser plate Size: 100x250x0.50 mm 100x215x0.65 mm 100x220x0.65 mm 100x260x0.65 mm



More information

Inks	
	Tampa® Tex TPX Solvent-based
	Tampa® Sport TPSP Solvent-based





Tampa® Tex TPX
More information





Tampa® Sport TPSP
More information

Provided by TAO

TAO Products & Accessories for pad printing



Hardener	
	H1 non-yellowing characteristics: relatively flexible ink film, long pot-life, slow drying.
	HX non-yellowing characteristics: relatively flexible ink film, long pot-life, slow drying HX is made without the use of aromatic hydrocarbons.

Retarders	
	SV1 Evaporation Value : 450-500 Solving strength : Good
	SV5 Evaporation Value : 250-300 Solving strength : Good

Thinners	
	TPV Standard drying
	TPV2 Fast drying
	TPV3 Slow drying
	TPV9 Fast drying






Thinners
More information

Cleaners	
	UR3 - Fast evaporation - Mild odor
	UR4 - Free from "solvent Naphtha" - Mild odor



Cleaners
More information

Please check the specification, which meet your requirement from our customer service at order@taobangkok.co.th

	Paper cup <ul style="list-style-type: none">- Size 8 oz.- For ink mixing- 50 pcs per pack- (MOQ: 2 packs)
	Hardener squeeze bottle <ul style="list-style-type: none">- Size 240 ml- Container for HX Hardener- (MOQ: 6 bottles)
	Dropper <ul style="list-style-type: none">- Size 3 ml- Use for dropping a small amount of thinner during the operation- 10 pcs per pack- (MOQ: 5 packs)

	Wooden Stirrer <ul style="list-style-type: none">- Suitable for stirring the ink in the metal ink cup- 48 pcs per pack- (MOQ: 2 packs)
	Solvent Squeeze Bottle <ul style="list-style-type: none">- Size 500 ml- Container for solvents thinner- MOQ: 6 bottles
	Spatula <ul style="list-style-type: none">- Size L (12"), S (9.6")- Steel spatula, durable and flexible- MOQ: 2 pcs

	Cleaner Dispenser <ul style="list-style-type: none">- Size 0.5 L- Container for solvent cleaner, easy to use- MOQ: 1 bottle
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Contact



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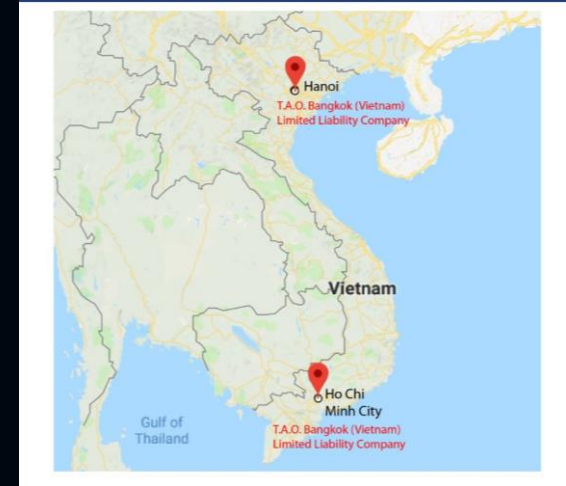


Bangkok : Headquarter office
Sinsakhon Industrial Estate, 30/11 Moo 1
Khokkam, Muang, Samutsakhon 74000
Tel: +66 (0)34 452 077-83
Fax: +66 (0)34 452 076
E-mail : info@taobangkok.co.th

T.A.O. Bangkok (Vietnam) Limited Liability Company



HANOI branch office :
Villa 1-26, Nghia Do New Urban
Area, Co Nhue 1 Ward, Bac Tu
Liem District, Hanoi, Vietnam
Tel: +84 24 6655 8339



HCMC branch office :
No. 1 Road No. 3, Quarter
4, An Phu Ward District 2,
Ho Chi Minh City, Vietnam
Tel: +848 628 10 712



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