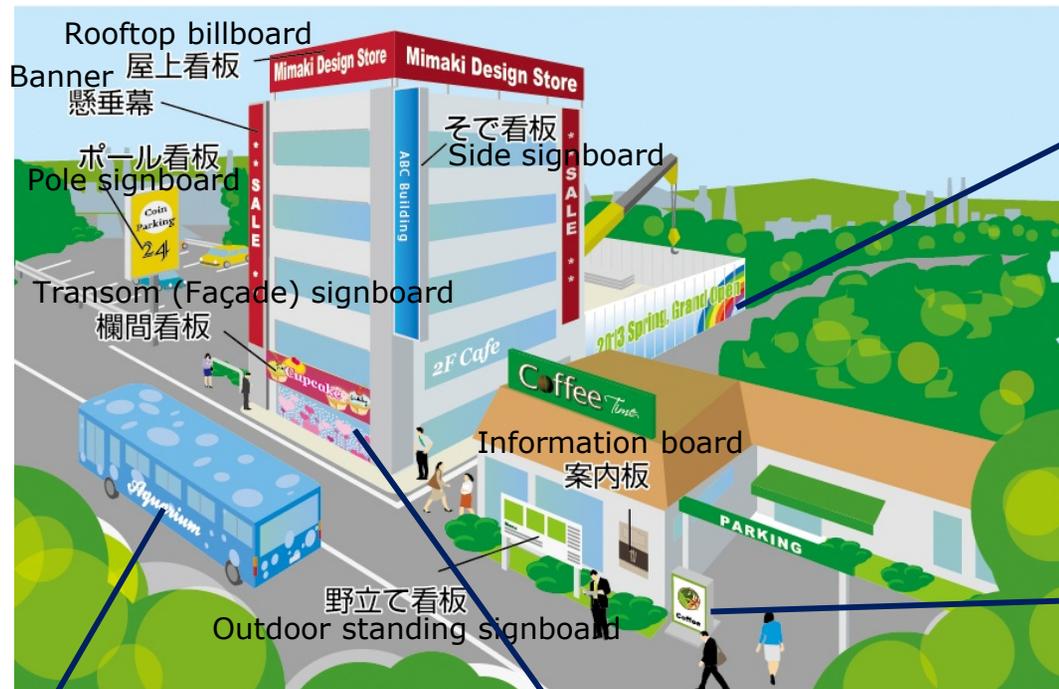


Overview: UV Ink Applications

Inkjet Printer Applications

Sign Graphics Application (SG)



Temporary enclosure



Standing signboard



Vehicle wrapping

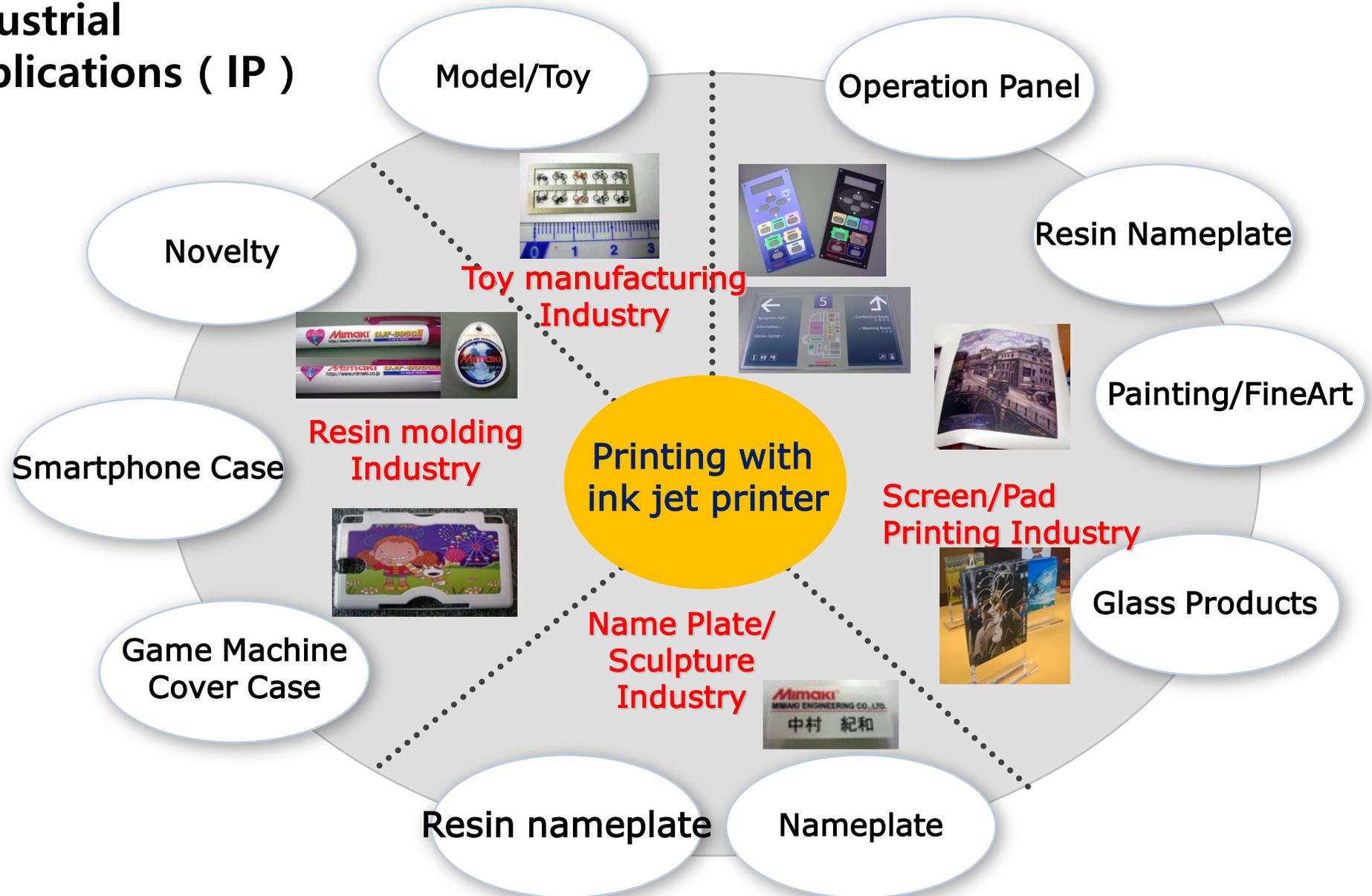


Window graphics



Inkjet Printer Applications

Industrial Applications (IP)



Module: UV Ink

IP UV Ink

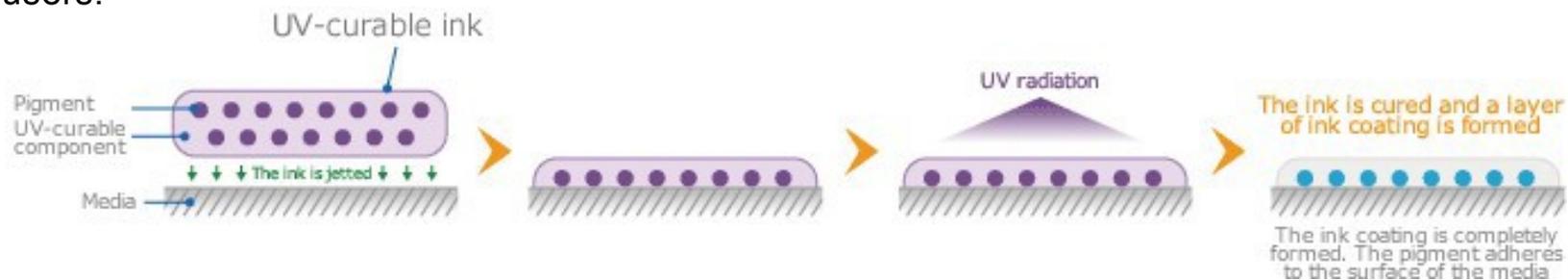
Immediate curing and adhesion by UV radiation: an ecological and energy-saving ink

The UV-curable ink is cured and adhered to the media or substrate by UV radiation. The print is already dried when it comes out of the printer, allowing a short delivery request to be met. Printing on non-absorbent materials, including plastic, glass, and metal, is available. To give shape to ideas, Mimaki offers a range of UV-curable ink products to meet demands from various industries, ranging from decorating and architecture to industrial design.

UV curable ink [LH-100], [LU-125], [LUS-120], [LUS-150], [LUS-170], [LUS-175] and [LUS-200] gained the "GREENGUARD Gold" certification by UL LLC of third-party institution of safety science of the United States.

Environmental advantages: low-VOC ink and ozone-free LED-UV light

The color components of the ink are directly cured and adhered to the media or substrate by UV radiation, and the ink emits very low levels of VOC (volatile organic carbon). The LED (light-emitting diode) light does not radiate short wavelengths that generate ozone. Use of Mimaki UV-curable ink demonstrates consciousness about the environment and the health of users.



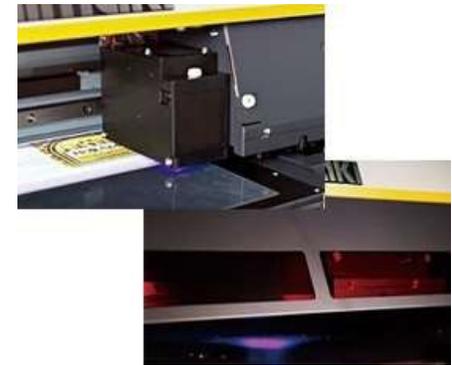
UV Ink

Mimaki released LED–UV-curable inks ahead of other global competitors

Mimaki first adopted the use of LED light to solve all the problems associated with metal halide lamps, such as long warm-up or restrike times, high power consumption, large bulbs, short lamp life, and high temperatures. The LED–UV ink curing system not only provides high quality printing with speed but also meets various demands from users with high media compatibility.

Energy saving and long life

The power consumption and heat generation of LED lights are remarkably lower than those of metal halide lamps. In addition to energy and cost saving, the long-life LED light reduces lamp wastage because of replacements.



High media compatibility with low heat generation

Thanks to the low heat generation of LED–UV light, Mimaki UV ink is capable of printing vibrant and beautiful colors on heat-sensitive materials, such as acrylic board, PVC, PET, etc.



High-speed printing

High-speed printing at 60 m²/h with vibrant and fine print results is achieved. We have been developing inks and printers for years, and hence have been able to focus our technologies for obtaining the best results from both.

UV Ink

Mimaki unique head control technology delivers smooth gradation printing

Smooth and beautiful gradation printing is available due to the excellent color reproducibility of the inks as well as by the use of Mimaki's inkjet technology.



Offering hard and soft ink types for a wide range of applications



Hard and soft ink types are provided. Hard inks are used on the surfaces of hard materials, such as plates. Soft and flexible inks are suited for membrane panels, films, vehicle-wrapping films, and packaging films. Mimaki UV inks have high media compatibility for a wide range of applications.

UV Ink

White and clear inks enable a wide variety of print expressions

White ink is used as the base layer for color printing. The white base layer enhances color printing on transparent media.



- Color printing without white ink base layer

Because of the high light transmittance of the media, printed colors are not very vivid.

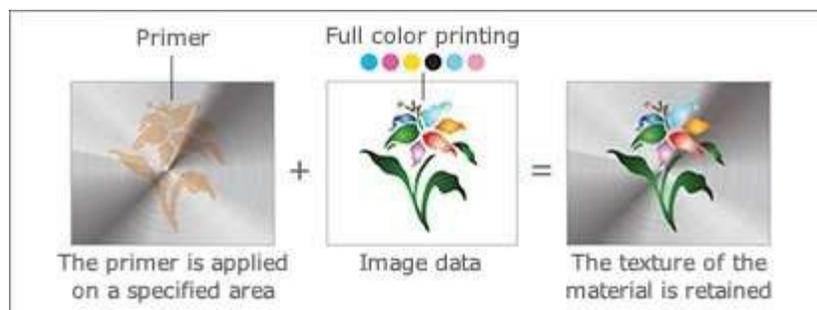


- White ink base layer with color printing

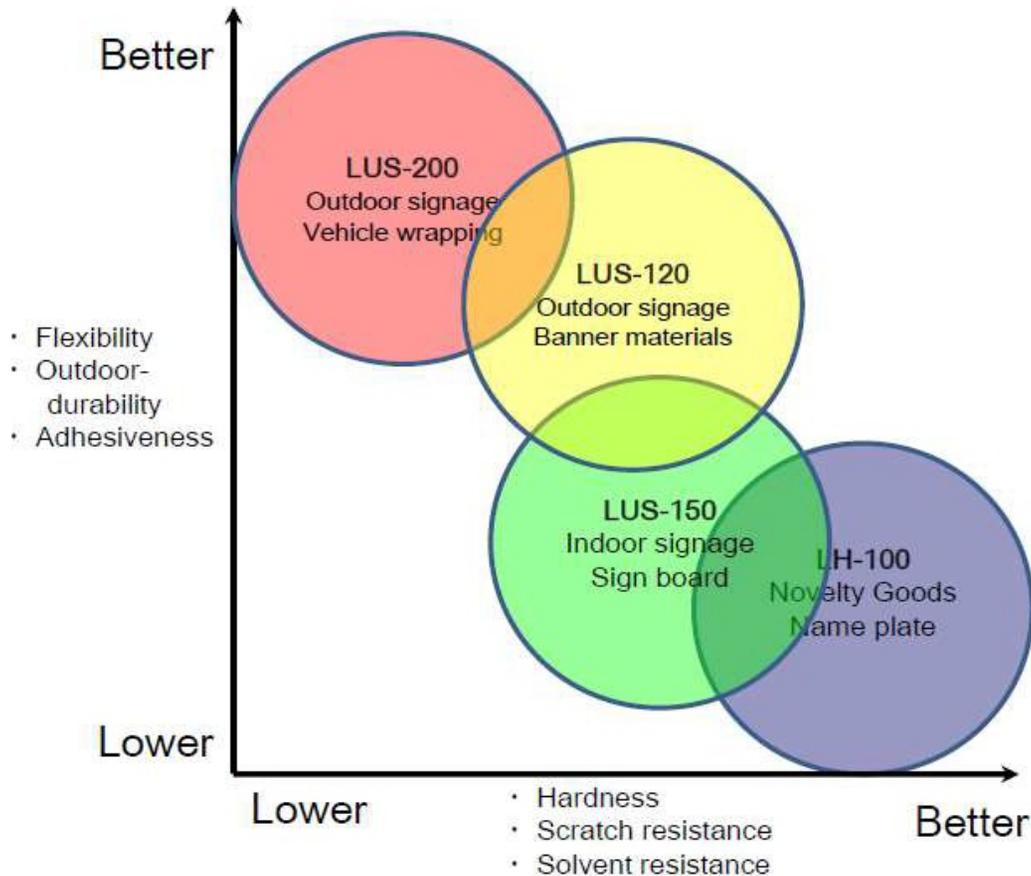
The printed image is bright and vivid on the white ink base layer.

Embossed printing is also available by combining the use of a primer with color inks. The UV ink broadens the range of possible print designs.

Patent number / JPN: 5817059 USA: US9,132,685 B2



LUS-120 ink application



Applications

LUS-120: is suited for printing on banner materials. This is also good at printing on PET Window film.

LUS-200: has good durability and adhesiveness. This is suited for outdoor application. 3M™ MCS™ Warranty can be available.

LUS-150: shows intermediate performance between LH-100 and LUS-200.

LH-100: has excellent hardness and solvent resistance. This ink is suited for small articles which are touched directly.

Precaution when printing in head gap more than 2 mm

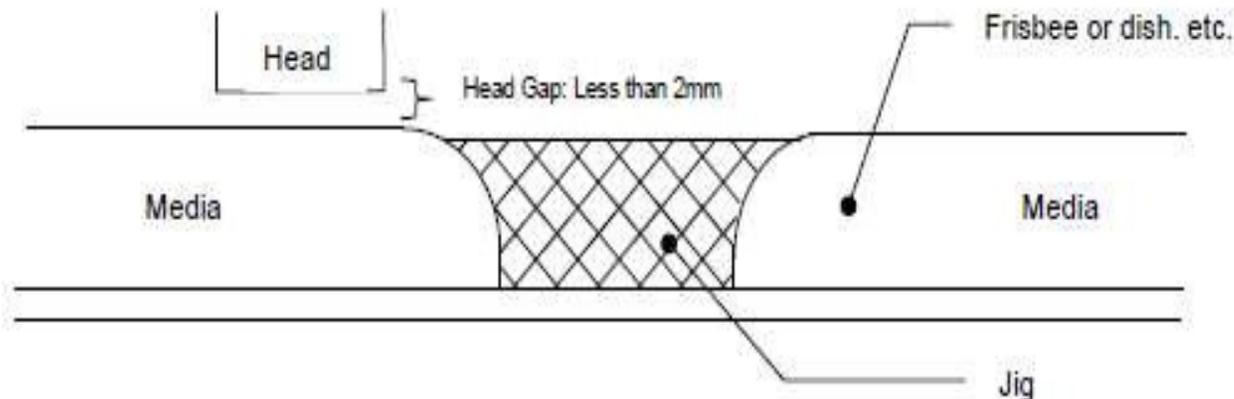
Head gap should be 1.5 mm of our recommendation from media surface to head surface. In the inkjet printer, ink drops tend to turn into mist when the gap between head and media is set wider than 2mm, since ink cannot reach the media. The wider the gap gets, the more likely it occurs. The mist of ink adheres to the head surface and to the filter of the cooling fan.

Also, the reflection of the UV light becomes higher with wider gap. In case the adhered ink is cured or gets sticky by the UV light reflection, it causes nozzle deflection and nozzle clogging. Sometimes it may lead to a failure which requires head replacing.

■Print on the highly reflective media with enough care. e.g.) Mirrors, polished stainless steel plate and etc.

- Perform test in advance, and do not use the media causing nozzle clogging and deflection.
- Please note that the head broken by reflection of the media surface may not included in the warranty.

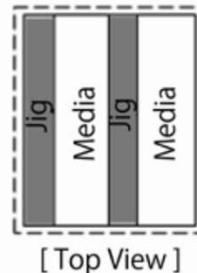
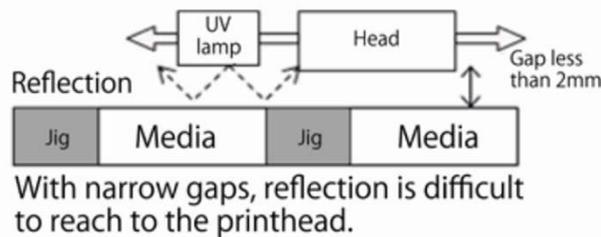
1. Please flatten the uneven surface of the media by jig or something. And please cover the R-shaped edge when printing on convexed materials such as Frisbee or dish.



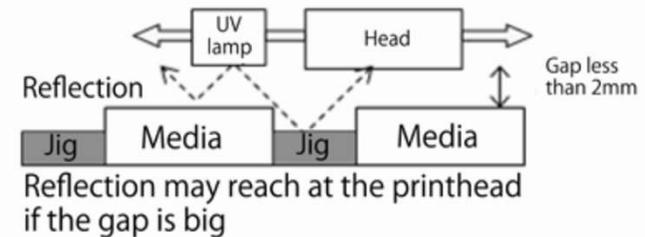
Precaution when printing in head gap more than 2 mm

2. Please cover the blank space of the table to prevent the reflection of the UV light when printing on thick materials. (Make sure it does not interfere with the head and Y bar movement.)

Good



No Good



3. Please take measures to have the media electrically discharged.
e.g.) Ionizer, electricity removal bar, water mist humidification or antistatic agent (alcohol type), Neutralization apparatus: ionizer (head fix type)
※ Ionizer is fixed as standard accessory or selectable as optional items depending on the model.
※ Do not use antistatic agent including surfactant.

UV Ink: Primer

Primer is under coat ink which can be used for improving adhesion

Mimaki has the following primers:

When printing on Plastics minimum of 45dyne level is recommended – even with primer material with low dyne levels can cause challenges- see following documents on surface energy and treatment

Features	<ul style="list-style-type: none"> ▪ Inkjet primer PR-100 can be printed by printer. The amount of primer is optimized. 	<ul style="list-style-type: none"> ▪ Inkjet primer Can be printed by printer. The amount of primer is optimized. 	<ul style="list-style-type: none"> ▪ Hand applied primer
	<ul style="list-style-type: none"> ▪ Adheres to various materials ▪ Cheaper than PR-200 	<ul style="list-style-type: none"> ▪ Adheres to various materials ▪ Adheres to more materials compare to PR-100 ▪ Adhesion for glass, stainless is improved 	<ul style="list-style-type: none"> ▪ Strong adhesion to glass

PRINTING ON PLASTIC: WHAT YOU NEED TO KNOW ABOUT SURFACE ENERGY



Paper Substrates Forgive, Plastic Ones Do Not.

One thing that has not changed is the fact that printing on plastic substrates is different than printing on paper. Plastic substrates do not absorb as paper does. Therefore inks, varnishes, and coatings will lie on the surface of these nonabsorbent substrates, and not be absorbed.

Furthermore, the surface of plastic materials lack in bond sites for ink adherence. There are many applications that simply are better in plastic than paper. Among these are such products as credit/debit, gift, phone, membership, and I.D cards, binders, and menus. Other applications include, packaging labels, packaging, folding carton, point of purchase, tags, banners, outdoor signs, etc.

Applications on plastic substrates include both rigid and flexible films. Newer or future applications include printed circuits, batteries and solar collector panels based on thin films. Plastics being used in printing are, Polyvinylchloride, Polystyrene, Polypropylene, Polyethylene, Polycarbonate, Polyester, synthetic papers, and new exotics.



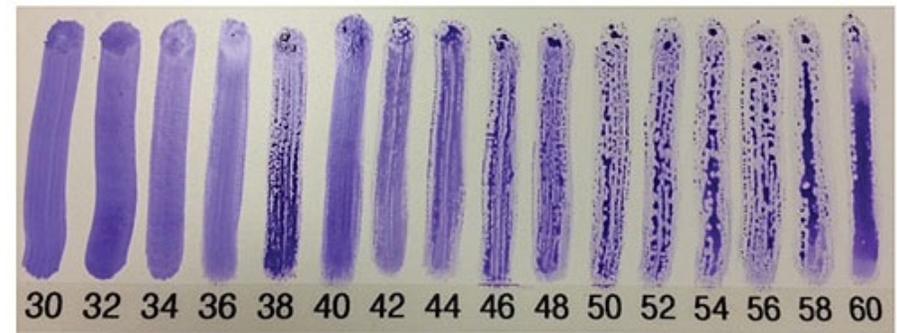
PRINTING ON PLASTIC: WHAT YOU NEED TO KNOW ABOUT SURFACE ENERGY



Surface Energy is Critical.

Most likely the most critical factor in printing on plastic substrates is its surface energy. Surface tension is measured in terms of dyne level.

When printing on plastic substrates, it is critical that one understand this property and its implications at different levels. The surface energy of a plastic is the ability of its' surface to attract a liquid and allow it to wet out the surface. Experienced printers of plastic substrates understand that the dyne level must be between 38 and 50, with 40 thought of as ideal in order to expect acceptable printing results. If the dyne level is below 38 the inks won't adhere. At the other end, if the dyne level is over 50 there will be handling problems relating to static electricity. Plastic substrates with a dyne level measured below 38 may be printed acceptably, but only after adequate surface treatment. A dyne level of 45 will help ensure adequate adhesion.

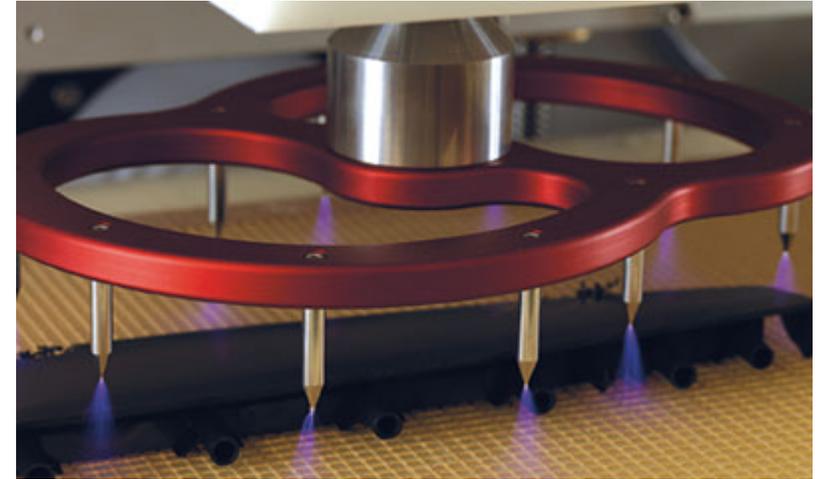


PRINTING ON PLASTIC: WHAT YOU NEED TO KNOW ABOUT SURFACE ENERGY

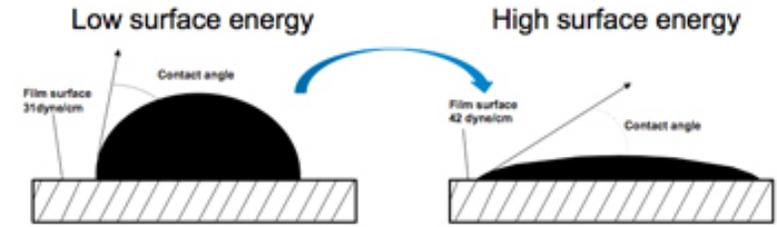


Corona Treatment of Plastic Substrates.

The majority of plastic substrates are corona treated immediately after being formed by extrusion. Plasticizers are typically added during the extrusion process as flow aids, and to provide final flexibility properties. These plasticizers want to migrate to the surface of the extruded substrate and as a result lower its' dyne level. A remedy to this lowered dyne level printing compromise is additional corona treatment just before printing. Even when corona treated the dyne level of plastic will diminish over time, therefore should be used within specifications of the media.

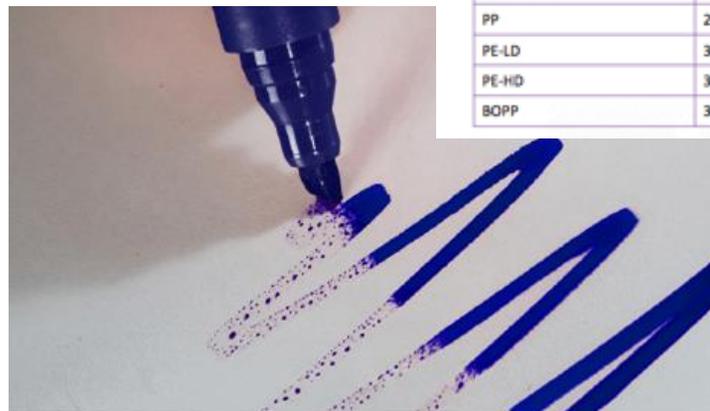


SURFACE ENERGY



Material - Basic	Dyne/cm
PP	29
PE-LD	31
PE-HD	32
BOPP	32

Process - Application	Dyne/cm
Print - solvent based ink	40-42
Print - water based ink	46-48
Coating	44-54
Lamination	45-56





The Dyne-A-Mite™ IT effectively cleans and etches surfaces to promote adhesion on both conductive and non-conductive surfaces.

Effectively Treats

ABS ASA EPO EVA HOPE LOPE PC PE PET
PMMA PP PS PU PVC PBT TPU TPO and more
Also ideal for clean-room applications

System Features

- Easy Operation - Operator friendly controls
- Remote Start/Stop
- Rugged Continuous Duty Power Supply
- Safety Interlocks
- Communication Interface Cable- for remote operation, loss of treatment indicator, safety and operational interlocks.
- Advanced Protective Circuitry- monitors and protects against over current, under power and air flow.
- Virtually No Maintenance
- Dual Head Option - can be aligned to increase treat width, extend dwell time, or be used to treat multiple angles.
- Optional Tri-functional Treater Switch

The Dyne-A-Mite IT™ delivers highly effective treatment for a wide variety of applications. It is simple to use, cost-effective and a safe treatment solution for a wide variety of applications.

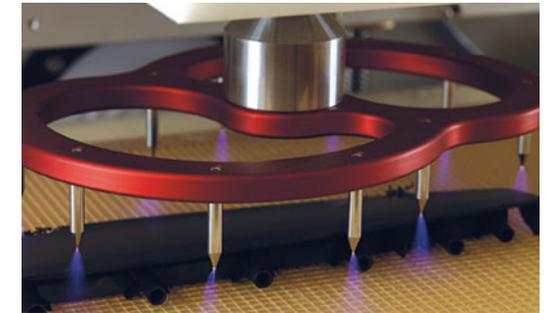
It generates a concentrated blown-ion discharge that bombards a material surface with a high-speed discharge of ions. Positive ion bombardment facilitates a micro-etching or scrubbing (ablation) effect which can remove (desorb) organic and inorganic contaminants from the surface of an object.

Without changing the substrate morphology, the system successfully changes the mechanical and chemical properties of a surface. It cleans surfaces and initiates cross-linking effects.

Blown-ion treatment allows for easier application and improved adhesion of coatings, adhesives, inks, labels and markings of all types. In-line treatment eliminates the need for costly chemical priming, etching and vacuum processes.

Dyne-A-Mite™ IT is highly effective at treating and cleaning all types of polymers, elastomers, glass and even conductive surfaces. Typical applications include removing grease, oil, oxides or silicone; pre-treatment and preparation for bonding, soldering or gluing and pre-treatment for finishing metals.

For speciality applications ask us about our Dyne-A-Mite™ IT with CO2 capabilities.



Corona Treatment of Plastic Substrates.

Device used to treat substrate.

Dyne-A-Mite IT



www.enerconind.com/treating

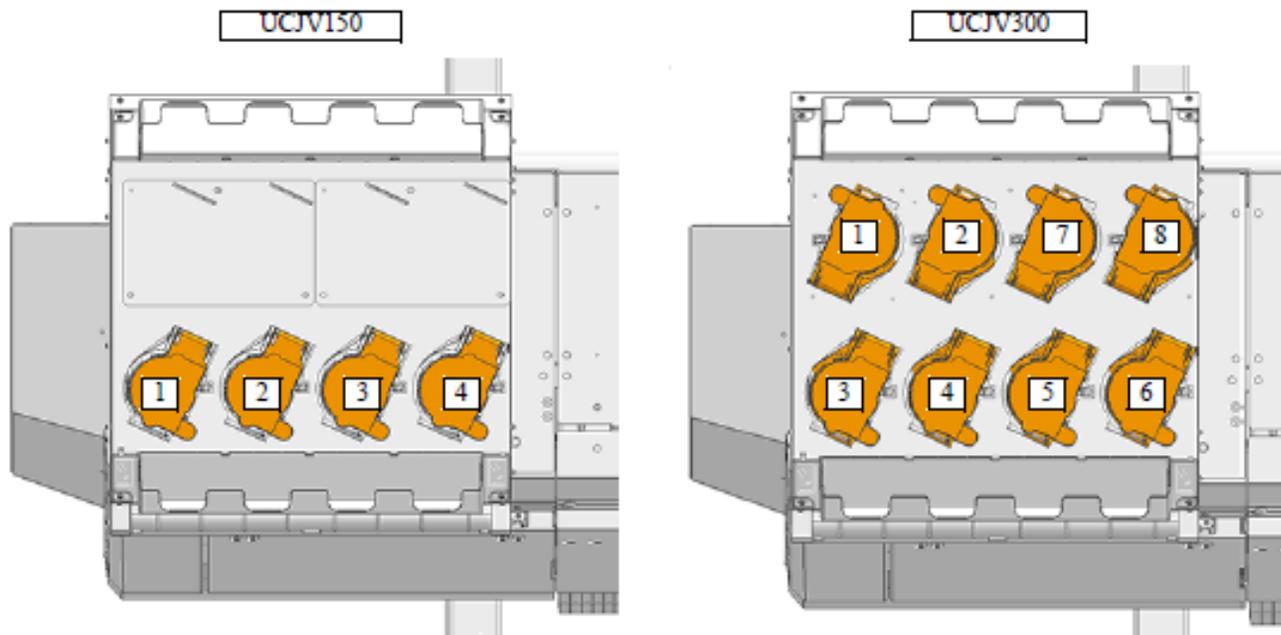
Enercon Industries Corp. - USA
262-255-6070 / info@enerconind.com

Enercon Industries, Ltd. - UK
+44 1296 330542 / info@enerconind.co.uk

Ink Configurations – UCJV Series

Notes:

- UCJV150 is 4 colour only
- LUS170 CMYKLcLmCICl can be paired with LUS200 white
- LUS170 Clear ink is vailable CMYK CIClWW
- 250cc bottles not available



	UCJV150				UCJV300							
	1	2	3	4	1	2	3	4	5	6	7	8
LUS-17x	C	M	Y	K	C	M	Y	K	Y	K	M	C
	-	-	-	-	C	M	Y	K	Lm	Lc	W	W
	-	-	-	-	C	M	Y	K	CL	CL	W	W
LUS-200	C	M	Y	K	C	M	Y	K	Y	K	M	C
	-	-	-	-	C	C	M	M	Y	K	W	W

Ink Configurations – UJV55-320

Notes:

- Distilled water needed for installation
- Can use 250cc and 1 litre bottle

■ Ink set and the ink to use

Ink type	Ink set	Ink location								
			1	2	3	4	5	6	7	8
LUS-120	4C	Supply pump	M	C	Y	K	Y	K	M	C
		Sub-tank (Nozzle line)	Y	C	M	K	M	K	C	Y
	6C+W	Supply pump	M	C	Y	K	W	W	Lm	Lc
		Sub-tank (Nozzle line)	C	M	Y	K	W	W	Lm	Lc

■ List of work procedures

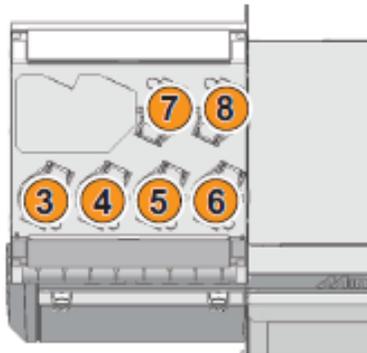
Work operation		Description	Refer to
<input type="checkbox"/> 1	Change to 6-colors + White	Change the ink route in the supply BOX and the sub tank.	5.2 (p.5)
<input type="checkbox"/> 2	Check the looseness of the fitting	Check the looseness of the fitting in the carriage and the supply unit.	–

Ink Configurations – UJFMKII

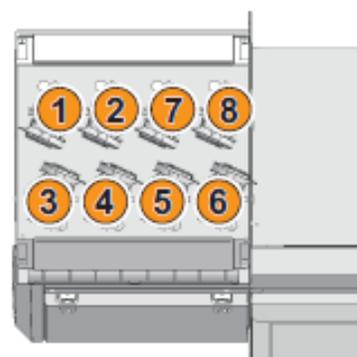
Notes:

- LUS150 bottle caps cap A does not come with this machine and will be needed. Order with machine
- PR200 is used
- LH100 Clear for LUS150 ink set
- Distilled water needed for installation
- Machine can use 250cc and 1litre bottles

3 head model



4 head model



	3 head model						4 head model							
	3	4	5	6	7	8	1	2	3	4	5	6	7	8
LH-100 LUS-120	Y	C	M	K	W	W	Lc	Lm	Y	C	M	K	W	W
	Y	C	M	K	W	Pr	Lc	Lm	Y	C	M	K	W	Pr
	Y	C	M	K	W	CL	Lc	Lm	Y	C	M	K	W	CL
	Y	C	M	K	CL	Pr	Lc	Lm	Y	C	M	K	CL	Pr
	-	-	-	-	-	-	Pr	CL	Y	C	M	K	W	W
LUS-150	Y	C	M	K	W	W	Pr	CL	Y	C	M	K	W	W
	Y	C	M	K	W	Pr	-	-	-	-	-	-	-	-
	Y	C	M	K	W	CL	-	-	-	-	-	-	-	-
	Y	C	M	K	CL	Pr	-	-	-	-	-	-	-	-

Ink Configurations – UJF 7151

Notes:

- LUS150 not supported
- Silver ink available but only available in 200cc bottle
- This is a 6 bottle machine
- PR200 is available
- PR100 not available
- Silver ink needs stirring option, ionizer option, and rubber wiper kit installed
- 3 bottles of silver required for installation
- Distilled water required for installation
- Machine can use 250cc and 1litre bottles

UJF-7151 plus Main Firmware Upgraded

2.30

2.20

The following function has been changed.

No.	Content																																																				
1	<p>LH-100 Cl and Pr inkset is supported For FILL-UP INK in [#ADJUST], LH-100 "CIPr-MCYK" has been selectable. For FW Ver 2.30, the selectable inksets are as follows:</p> <table border="1"> <thead> <tr> <th>Ink Type</th> <th colspan="6">Ink Set</th> </tr> </thead> <tbody> <tr> <td rowspan="3">LH-100</td> <td>W</td> <td>Cl</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td>W</td> <td>Pr</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td>Cl</td> <td>Pr</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td rowspan="3">LUS-120</td> <td>W</td> <td>Cl</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td>W</td> <td>Pr</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td>Cl</td> <td>Pr</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> <tr> <td>LUS-350</td> <td>W</td> <td>Cl</td> <td>M</td> <td>C</td> <td>Y</td> <td>K</td> </tr> </tbody> </table> <p>Newly added</p>	Ink Type	Ink Set						LH-100	W	Cl	M	C	Y	K	W	Pr	M	C	Y	K	Cl	Pr	M	C	Y	K	LUS-120	W	Cl	M	C	Y	K	W	Pr	M	C	Y	K	Cl	Pr	M	C	Y	K	LUS-350	W	Cl	M	C	Y	K
Ink Type	Ink Set																																																				
LH-100	W	Cl	M	C	Y	K																																															
	W	Pr	M	C	Y	K																																															
	Cl	Pr	M	C	Y	K																																															
LUS-120	W	Cl	M	C	Y	K																																															
	W	Pr	M	C	Y	K																																															
	Cl	Pr	M	C	Y	K																																															
LUS-350	W	Cl	M	C	Y	K																																															
<p>RIP is to be supported in RasterLink 6 Plus Ver. 1.1 (to be released on October 19, 2017) or later.</p>																																																					

Ink Configurations – JFX200

■ Ink set and use ink

Ink type	Ink set	インク配置							
		1	2	3	4	5	6	7	8
LUS150	4-color	M	M	K	K	C	C	Y	Y
	4-color+w (Shipping)	M	K	C	Y	M	C	W	W
	4-color + Clear + White	M	K	C	Y	Cl	Cl	W	W
	4-color + Clear + Primer+ White*1	M	K	C	Y	Cl	P	W	W
	6-color + White*1	M	K	C	Y	Lm	Lc	W	W
LH100	4-color	M	M	K	K	C	C	Y	Y
	4-color+w (Shipping)	M	K	C	Y	M	C	W	W
	4-color + Clear + White	M	K	C	Y	Cl	Cl	W	W
	4-color + Clear + Primer+ White*1	M	K	C	Y	Cl	P	W	W
LUS200	4-color	M	M	K	K	C	C	Y	Y
	4-color+w (Shipping)	M	K	C	Y	M	C	W	W
LUS120	4-color*2	M	M	K	K	C	C	Y	Y
	4-color+w (Shipping)*2	M	K	C	Y	M	C	W	W
	4-color + Clear + White*3	M	K	C	Y	Cl	Cl	W	W
LUS350	4-color+w (Shipping)*4	M	K	C	Y	M	C	W	W

*1. Supported from the firmware ver.1.70.

•PR-100:Supported the firmware ver.1.70, PR-200:Supported from the firmware ver.1.80.

*2. Supported from the firmware ver.1.90.

*3. Supported from the firmware ver.2.00.

*4. Supported from the firmware ver.2.10.

Notes:

- This machine comes with both cap A and cap B bottle caps, no need to order separate from LUS150
- PR200 is supported with fw 1.8 and up
- PR100 is supported with fw 1.7 and below
- Distilled water needed for installation
- LH100 clear used with LUS150 ink set
- OPT-J0393 Primer kit is needed when primer ink set is selected



Depending on the ink type, the available clear ink type differs.
The cases other than following combinations become ink type errors.

Ink type	Ink type of Clear ink
LUS150	LH100
LH100	
LUS120	LUS120

Ink Configurations – JFX200-EX

A 4-color ink set (P.2) is initially configured when the printer is shipped from the factory. The ink path can be switched (P.4) to change the ink set.

- Clear ink
 - When using LUS150 ink, use LH100 as clear ink.

	1	2	3	4	5	6	7	8
4-color + White + Clear ink set	C	M	W	W	Y	K	CI	CI
4-color + White + Clear + Primer ink set	C	M	W	W	Y	K	Pr	CI
4-color + White ink set *	C	M	W	W	Y	K	W	W
6-color + White + Clear ink set	C	M	CI	W	Y	K	Lm	Lc

* When using 4-color + White ink set, OPT-J499 is required.

Notes:

- This machine comes with both cap A and cap B bottle seperate fro LUS150
- PR200 is supported
- Distilled water needed for installation
- LH100 clear used with LUS150 ink set
- OPT-J0499 is needed for 4 colour + 4 white ink set
- Not sure yet if primer kit is needed

Ink Configurations – JFX500

Notes:

- Distilled water needed for installation
- PR100 and PR200 can be used with LH100 and LUS150
- LUS120 uses PR200 only
- OPT-J0392 is needed for primer ink set

■ Outline

For JFX500, install the Ink bottles to the external ink supply unit in the combinations (inkset) shown above.

■ Applicable ink sets

Array	Head resolution	Ink layout to nozzle								Ink bottle set								LH-100								
Inline	300dpi	M	M	C	C	Y	Y	K	K	M	M	C	C	Y	Y	K	K	○								
		Stagger head 1,2				Stagger head 3																				
Stagger (Color/ Spot color)	300dpi	M	M	C	C	Y	Y	K	K	W	W	W	W	W	W	W	W	M	M	C	C	Y	K	W	W	○
		M	M	C	C	Y	Y	K	K	W	W	W	W	Cl	Cl	Cl	Cl	M	M	C	C	Y	K	W	Cl	○
		M	M	C	C	Y	Y	K	K	Cl	Cl	Cl	Cl	Cl	Cl	Cl	Cl	M	M	C	C	Y	K	Cl	Cl	○
		M	M	C	C	Y	Y	K	K	W	W	W	W	P	P	P	P	M	M	C	C	Y	K	W	P	○
		M	M	C	C	Y	Y	K	K	P	P	P	P	P	P	P	P	M	M	C	C	Y	K	P	P	○

*  Nozzle not use in printing.

■ Ink set and use ink

Ink set	Use ink indication	Remarks
4color	MMCCYYKK	Setting when shipping to #070 machine number
4color + SP(stagger)	MMCCYKWW	Setting when shipping from #071 machine number
4color + SP(stagger)	MMCCYKWR	
4color + SP(stagger)	MMCCYKRR	
4color + SP(stagger)	MMCCYKWP	
4color + SP(stagger)	MmCcYKPP	

Module: Resource Links

www.mimakiusa.com

www.enerconind.com/treating

www.webconvert-ltd.com