

Foreword

Technological development now touches all areas of life. New industrial materials are being developed to fill specific needs while lifestyles are becoming more individualistic. As people's tastes and ways of thinking become more diverse, so do their needs. This emerging trend is requiring manufacturers to be more flexible than ever before.

Seiko Advance has always worked toward product improvement, as well as the development of new products with new applications to satisfy needs as they arise.

This comprehensive catalog introduces technical information about our screen inks, showing their superior workability and performance. We sincerely hope that it will prove to be a helpful reference in gaining full understanding about the characteristics of inks and their proper uses.

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SCREEN PRINTING INKS

List of products and index for this booklet (Select appropriate ink according to the printing material)

Index	Base Name	Ink Name	Ink Type	Drying Time	Gloss	Usage or Applicable Material	Standard Solvent	Slow-dry Solvent	Retarder	Washing Solvent
1	Vinyl	LOV	Evaporating	20-30min	Gloss	Hard or soft vinyl products, vinyl stickers	T-912	T-920	T-980	T-15 or T-911
2		ACT / THA	Evaporating	5-10min	None	Hard or soft vinyl products, vinyl stickers	T-912	T-920	T-980	T-15 or T-911
3		*SG700(Z)	Evaporating	20-30min	Gloss	Weather-durable, vinyl stickers	T-912	T-920	T-980	T-15 or T-911
4		JET-V1	Evaporating	Instant drying	None	PVC, PC film, vinyl stickers. Effective using by JET instant drying system	T-912	-	-	T-15 or T-911
5	Polyester	PAL Matte8	Evaporating	20-30min	None	Polyester (PET) film, polyester stickers	T-995	T-997	T-980	T-903
6		*GAP New	Evaporating	20-30min	Semi-gloss	Polyester (PET) film, polyester stickers	T-977	T-980	T-953	T-903
7	Acrylic PC	*2500	Evaporating	20-30min	Semi-gloss	Acrylic products, electric signs, acrylic nameplates	T-2500	T-2500S	T-980	T-15
8		*CAV MEIBAN(Z)YS	Evaporating	20-30min	Semi-gloss	Polycarbonate, acrylic, vinyl nameplates	T-945	T-947	T-980	T-15
9		TSN	Evaporating	40-60min	Semi-gloss	PC, PMMA, PVC, plates	T-945	T-954	T-980	T-31
10	ABS, PS	*ABS	Evaporating	20-30min	Gloss	Styrol, ABS and AS products	T-472	T-971	T-979	T-902
10		STR	Evaporating	20-30min	Gloss	Styrol, ABS and AS products	T-475	T-962	T-982	T-15
11	Urethane	*SG740	Two-part reaction	Curing at 80°C X 30min	Semi-gloss	Treated PP/PE, nylon cloth, metals (anodized aluminum), coated products	T-926	T-927	T-980	T-15
12		*VIC(Z)	Two-part reaction	Curing at 80°C X 20min	Semi-gloss	Metals, coated products, ABS, treated PP/PE	T-926	T-927	T-980	T-15
12		*MS8	Two-part reaction	Curing at 70°C X 60min	Gloss	Treated (PP,PE)	T-926	T-980	-	T-15
13		*HAC	Two-part reaction	Curing at 60°C X 30min	Semi-gloss	Hard-coated acrylic, PC and PET	T-926	T-927	T-980	T-15
14		SG460	Two-part reaction	Curing at 80°C X 40min	Gloss	Metal-coated plate, PE, PP	T-920	T-980	-	T-15
15		SG410	Evaporating	20-30min	Semi-gloss	Synthetic leather, synthetic rubber, textiles	T-941	T-942	T-980	T-905
16	Polyolefin	*HF GAP NEW	Evaporating	80°C X 30min	Semi Gloss	Polyester film	T-977	T-980 SD	T-953 SSD	T-903
17		OP22	Evaporating	20-30min	Semi-gloss	Synthetic paper, PP dumper	T-900	T-910	T-950	T-907
17		60A	Evaporating	20-30min	None	Untreated PE film, foamed polyethylene	T-900	T-910	T-950	T-907
18		PP	Evaporating	20-30min	None	Untreated polypropylene	T-900	T-910	T-950	T-907
18		PP TAISAN (antiacid)	Evaporating	20-30min	None	PP Battery case	T-900	T-910	T-950	T-907
19		PPT	Evaporating	10-20min	Semi-gloss	Untreated polypropylene	T-900	T-910	T-950	T-907
20		Epoxy ink performance chart 1000. 1300. 1300HK. 1400N. 1690N								
20-21	Epoxy / Glass	*1000	Two-part reaction	Curing at 80°C X 40min	Gloss	Metals, painted surfaces, treated PE and PP, glass	T-1000	-	T-965	T-31
22-23		*1300	Thermal cure	Curing at 150°C X 30min	Gloss	Metals, painted surfaces	T-1000	-	T-965	T-31
24		1400Q	Thermal cure	Curing at 150°C X 30min	Gloss	Metals, painted surfaces	T-980 T-990	-	-	T-31
25-26		1690N	Two-part reaction	Curing at 150°C X 30min	Gloss	Metals, glass, enamel surfaces	T-1000	-	T-965	T-31
27-28		HF LGI	Two-part reaction	Curing at 150°C X 30min	Gloss / Matt	Metals, glass, enamel surfaces	T-980	-	T-965	T-31
29		HGI RX002	Thermal cure	150°C X 30min	Gloss	Glass, aluminium, iron	T-965	-	-	T-31
30	Alkyd	*500N	Curing, oxidation	80°C X 30min	Gloss	Painted metal surfaces, reflective sheet	T-900	T-910	T-950	T-907
31	Care Label	FSX ABRASION	Thermal cure	120°C X 120min	None	Polyester, cotton, taffeta	-	-	-	-
32-35		*MIRROR EFFECT INK	Evaporating	60°C X 15-20min	Semi-gloss	PET film, PVC acrylics, polycarbonate	T-1000	-	-	T-15 or T-31
36	Toughened Glass	*HF GLV	Thermal cure	150°C X 40min	Gloss	Tempered glass, metal, metal-coated plates	T-980	-	-	T-31
37		*HF SG460SSD	Three-part reaction	150°C X 30min	Gloss	Reinforced glass	T-482			T-31
38		*HF GV2 / HF GV3	Three-part reaction	120°C X 30min	Gloss	Tempered glass	T-980	-	-	T-31

Index	Base Name	Ink Name	Ink Type	Drying Time	Gloss	Usage or Applicable Material	Standard Solvent	Slow-dry Solvent	Retarder	Washing Solvent	
39	IMD \ IML	Plastic Injection Molded Products (DSP, MP-4, *MP4 Slow Dry, RUX, *VIC, *KKS SSD, MOL, HF PID, PCI, 2500, SG700)									
39		PID	Two-part reaction	80°C X 30min	Gloss	PC, PET, Home Appliances, Phone Part	T-926	-	-	T-905	
40		PCI	Two-part reaction	80°C X 30min	Gloss	PC, Good for Foaming Process	T-900	T-910	-	T-31, T-40	
41		HFPCCL	Evaporating	60°C X 30min	Gloss	PC, PET, PMMA, Acralic	T-922	-	-	T-31, T-40	
42		VIC	Two-part reaction	80°C X 20min	Semi Gloss	Metal Coated Product, ABS Treated (PP, PE)	T-926	T-927	T-980	T-15	
43		HF SKY	Two-part reaction	80°C X 80min	Gloss	PMMA, PC, ABS, ETC	T-980	-	-	T-15	
44		*HF HSD	Two-part reaction	80°C X 30min	Gloss	Processed PP, coated surfaces ABS, PMMA, hard-coated PMMA, PC, processed PET, Aluminium	T-926	T-927	T-980	T-15 or T-31	
45		*HF BMR-S	Two-part reaction	80°C X 30min	Semi Gloss	Hard-treated acrylic	T-926	T-927 SD	T-980 SSD	T-15 or T-31	
46	BINDER	JT 27 Base Clear	Thermal Curing	80°C X 60min	Gloss	Binder for insert and inmold forming Adheres injected ABS resin.	T-912	T-920	-	T-15 or T-31	
46		JT 50 Base Clear	Thermal Curing	80°C X 60min	Gloss	Binder for insert and inmold forming Adheres injected PC resin.	T-912	T-920	-	T-15 or T-31	
47		JT 70 Base Clear	Thermal Curing	80°C X 60min	Gloss	Binder for insert and inmold forming Adheres injected PP resin.	T-912	T-920	-	T-15 or T-31	
48	Phone Battery	HF MOL	Two-part reaction	80°C X 30min	Gloss	Polycarbonate, treated PET & Urethane sheet	T-910	T-980	-	T-31	
49	Pad Ink	PAD	Two-part reaction	80°C X 30min	Semi Gloss	Plastics, coated metals, UV-coated and acid-resistant aluminium	T-640	T-952	-	T-15 or T-31	
50		*SG740	Two-part reaction	Curing at 80°C X 30min	Semi-gloss	Treated PP/PE, nylon cloth, metals (anodized aluminum), coated products	T-926	T-927	T-980	T-15	
51	Water Slide Decal	1300HK	Evaporating	20-25min	Gloss	Water Transfer Paper	T-1000	-	-	T-15	
51		WST	Peelable Varnish	40°C ~ 50 Hot Air X 10min	Semi Gloss	For Water Sliding Decal	-	-	-	T-15	
52	Solvent OC Clear	8600	Three-part reaction	60°C X 60min	High-gloss	Protects ink over PVC stickers PC plates (High glossfinish)	T-920	-	-	T-31	
53		*SG425	Two-part reaction	60°C X 60min	Gloss	Protects ink over PVC stickers PVC plates, acrylic plates, PC, PET plate	T-920	-	-	T-31	
54		*SG 429B	Two-part reaction	60°C X 60min	Gloss	Protects ink over PC stickers, PVC plates, acrylic plates, PC, PET plate	T-920	-	-	T-31	
55		7300	Two-part reaction	60°C X 60min	Gloss	Protects ink over PVC stickers, PVC plaste acrylic plates, PC, PET plate	T-920	-	-	T-31	
56		6300	Two-part reaction	60°C X 60min	Gloss	Protects ink over PVC stickers, PVC plaste acrylic plates, PC, PET plate	T-920	-	-	T-31	
57		KTO	Two-part reaction	60°C X 60min	Gloss	Protects ink over PVC stickers, PVC plaste acrylic plates, PC, PET plate	T-920	-	-	T-31	
58		SG 330	Thermal Cure	60°C X 60min	Gloss	PVC stickers, PVC plaste, acrylic plates, PC plate	T-920	-	-	T-31	
59		STS	Two-part reaction	60°C X 60min	Gloss	PVC stickers, PVC plaste, acrylic plates, PC plate	T-920	-	-	T-31	
60	UV OC Clear	UV 32N	UV Cure	UV irradiation (sec.)	Gloss	Protects ink over PVC stickers, PC	-	-	-	T-31 or T-15	
61		UV 406M	UV Cure	UV irradiation (sec.)	Gloss	Protects ink over PVC stickers, PC	-	-	-	T-31 or T-15	
62		UV 407	UV Cure	UV irradiation (sec.)	Gloss	Protects ink over PVC stickers, PC	-	-	-	T-31 or T-15	
63		UV 500A	UV Cure	UV irradiation (sec.)	Gloss	Protects ink over PVC stickers, PC	-	-	-	T-31 or T-15	
64		UV NS OC	UV Cure	UV irradiation (sec.)	Gloss	High quality over coating clear without silicone contain, Over coating on SG700 ink series	-	-	-	T-31 or T-15	
65	UV Ink	US125	UV cure	UV irradiation (sec.)	Gloss	PP bottles	US125 reducer	Sensitizer, UV688A, UV666 and UV634A (for white only) Uv636 (ALL)		T-31 or T-15	
65		US 180NS	UV cure	UV irradiation (sec.)	Gloss	PP bottles	US180NS reducer				
65		UVK100	UV cure	UV irradiation (sec.)	Gloss	PP /PET bottles	UV8073				
66		UVA	UV cure	UV irradiation (sec.)	Gloss	PVC, polycarbonate	Diluent UV 8070				
66		HUG	UV cure	UV irradiation (sec.)	Gloss	ABS, PS, PVC acrylic, polycarbonate					
66		RIG	UV cure	UV irradiation (sec.)	Gloss	Metallic coating, glass, stainless steel	Diluent UV 8085	Sensitizer, UV688A, UV666 and UV634A (for white only) Uv636 (ALL)		T-31 or T-15	
66		PZU	UV cure	UV irradiation (sec.)	Gloss	PVC, polycarbonate	Diluent UV 8071				
67		UPG UPG (Matte)	UV cure	UV irradiation (sec.)	Gloss	Soft PVC	UPG reducer				
67		UVM	UV cure	UV irradiation (sec.)	Gloss	Metals, metalic coating, processed PP, PE	UV-8085				
67		UAD	UV cure	UV irradiation (sec.)	Gloss	Acrylic, PVC, PC, processed PET	UMA reducer				
67		SPU	UV cure	UV irradiation (sec.)	Gloss	Acrylic, anodized aluminium, coated metals, processed PP	UV-8078				
68		UVG	UV cure	UV irradiation (sec.)	Gloss	Glass Bottles After Surface Treatment (LPG Flame Treatment)	UV reducer				
69		Extender Base, SOX series, UV medium series. UV high deposit medium series									
71		TJN	UV cure	TJN irradiation (sec.)	Gloss	Paper, PVC, polycarbonate, vinyl stickers	TJN mediumL UV-8071	-	-	T-31	

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LOV Series

The LOV series consists of vinyl-based inks of high-gloss finish and resistance against weathering, designed for high-quality printing on vinyl products, vinyl-coated paper, and the like. The printed film is very rugged to withstand outdoor weathering while maintaining adequate softness. Weathering resistance is assured for all colors without bleeding. Inks in this series are ideal for screen printing requiring a sharp finish.

Specifications

Ink type	Pigments and resins are blended in with low-odor, air-drying inks to produce excellent luster and durability. Solvents and drying retarders may be added as needed.
Usage	Ideal for all vinyl products including vinyl-coated paper, stickers, cloths, molded products, toys, and shower curtains.
Finish	Soft luster with good leveling.
Coverage	Approximately 30m ² per kilogram on a 250-mesh tetron screen.
Drying time	Air-dries(20°C) in approximately 30 minutes, or quicker with thermal curing.
Screen	Use of water-soluble cut film or photomechanical process is recommended.
Mesh	Tetron or nylon screens having a mesh number of 200 or larger for finer finish.
Diluent	Standard solvent (T-912) or slow-dry solvent (T-920).
Retarder	Use of T-980 gives an ideal fluidity.
Wash-up	Use T-911 or T-15 for economical wash-up.
Weathering resistance	Inks in this series are highly resistant against weathering although it varies with the color. Extra resistance against weathering is available upon request.
Clarity	Nontransparency varies with the color. Transparent color inks (eight colors) are available. Please refer to the gloss color cards for color tones.
Notes	These inks adhere very well to almost all vinyl surfaces but performance may be affected by wax or other undesired substances that may adhere to PVC leather, vinyl plastic coating, cast items, or dyes. Testing is recommended.

ACT Series / THA Series

Ease of use was emphasized in developing the vinyl-based inks in the ACT series. Outstanding compatibility for printing and workability differentiate them from other PVC inks. They are also economical, quick drying screen printing inks of good adhesion and low odor levels applicable for a wide variety of vinyl products.

Specifications

Ink type	Air-drying inks of low odor consisting of vinyl resins, and high-quality pigments.
Usage	Ideal for all vinyl products including toys, artificial leathers, and other soft vinyl, hard vinyl, PVC and stickers. Often used for marathon printing. Matte finish with good leveling of smooth screen printing
Finish	Matte finish with good leveling of smooth screen printing film.
Drying time	Air-dries (20°C) in approximately 5-10 minutes, or quicker with thermal curing, depending on the material and work environment. Overcoating can take place within 1-2 minutes, making the inks ideal for marathon printing.
Machine type	Ideal for marathon printing and high-speed cylinder press printing.
Adhesion	Inks adhere well to nearly all vinyl products. Presence of mold lubricant and plasticizer may affect adhesion. Testing is recommended.
Mesh	Tetron or nylon screens with a mesh number of 200 or higher.
Coverage	The printing area is about 25m ² per kilogram at 250 mesh.
Secondary processability	The printed material may be fabricated safely without causing ink cracks or problems due to tackiness. The printed film is flexible without peeling due to deflection. Blocking resistance is also good.
Diluent	Use standard solvent (T-912) for adjusting viscosity. Use slow-dry solvent (T-920) or retarder (T-980) when the drying time needs to be extended due to work environment, or for precision printing.
Retarder	Use of T-980 assures ideal fluidity.
Wash-up	Use T-911 or T-15 for economical wash-up.
Weathering resistance	Extra resistance against weathering is available upon request.
Notes	Use ACT-Y1215 medium HV when gold metallic powder is added.

*SG720 is a slow-drying version. Its specifications and performance are nearly identical to those of inks in the ACT series.

Comparison of Vinyl Ink Performance

Item	LOV	ACT / THA	SG 700
Drying time	30-40 minutes	5-10 minutes	30-40 minutes
Gloss	Glossy	None	Glossy
Adhesion	○	◎	◎
Blocking	△	○	○
Workability	○	○	○
Levling	○	○	○
Weathering resistance	○	◎	◎

Test conditions

◎ Excellent ○ Good △ Acceptable

Material : PVC sticker, soft vinyl film

Drying : 24 Hours at Normal Temperature (20°C)

*THA Series is a more economical products of ACT.

THA Series is manufactured in china only.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

VINYL

SG700(Z) Series

The inks in the SG700 series feature outstanding weathering resistance, flexibility, and clear overcoatability for printing on weathering-resistant marking film for outdoor signs, vehicles, etc. They produce sharp colors, are easy to mix for color matching. are ideal for printing (especially machine printing), and produce extremely stretchable ink films (80-130%). They are ideal for all vinyl products.

Specifications

Ink type	The inks in the SG700 series are air-drying inks blended with vinyl resins, other special resins, and high-quality pigments that are highly resistant to weathering.
Finish	Printability is excellent, and the inks produce an ink film with a highly glossy finish and good leveling.
Drying time	Dries naturally (20°C) in approximately 30 minutes or quicker (about 5 minutes at 60°C) with thermal curing depending on the material and work environment.
Diluent	Standard solvent (T-912), slow-dry solvent (T-920), and retarder(T-980).
Retarder	Use of T-980 gives an ideal fluidity.
Wash-up	T-911 or T-15
Weathering resistance	High resistance to weathering is an important feature of inks in this series, with the exception of 400 Ultra Blue and 208 Process Yellow.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

JET Series

The JET series is solvent based ink which is developed for high speed screen printing. The ink is mostly effective using by the Jet Instant drying system combining a UV conveyer and an automatic cylinder press. Seiko Advance is devoted to develop the system which can show the full ability of automatic screen printing machines for the realization of a better working environment, through automation, saving labor and space. As a result, the Jet instant drying system combining an UV conveyer with solvent based inks was developed.

JET-V1

JET-V1 series are high quality air drying inks consisting of vinyl resin. They produce sharp colors, outstanding weather durability and high speed screen printability.

Specifications

Usage	PVC materials, such as PVC sticker, marking film. Polycarbonate sheet. Paper, Vinyl coated paper and treated PP film.
Drying time	Printing as fast as 2500-3000 impression per hour with JET-ink by automatic cylinder press is possible and drying is easily synchronized by UV conveyer.
Feature/Finish	JET-V1 produce matte finishes with good leveling.
Diluent	T-920 (JET ink is formulated with suitable viscosity for printing straight from the container. However, the ink tends to become hard as its characteristic. Agitate well before use.)
Wash-up	T-911, T-15

Transparent overcoating by UV5430E can be applied for glossy level finishes superior to laminating, and is more economical. To increase ink surface hardness, apply UVA9126 overcoat transparent clear. Various overcoat clear options are prepared to meet your specialized printing needs.

SG700 •Jet-V1 Ink Film Test Results

Item	Condition	Result																	
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100\100																	
Heat resistance	Exposed to temperature 80± 2°C for 96 hours, then tested for peeling at 1mm pitch crosscut usinig cellophane tape	Not affected																	
Water resistance	Soaked for 24 hours in hot water (40°C± 1°C)	Not affected																	
Acid resistance	Soaked for 7 hours in 1/10N sulfuric acid	Not affected																	
Alkali resistance	Soaked for 7 hours in 1/10N sodium hydroxide	Not affected																	
Thermal shock resistance	<table><tr><td>Cycle</td><td>80°C</td><td>Room temperature</td><td>-20°C</td><td>Room temperature</td><td>40°C (95%RH)</td><td>Room temperature</td><td>-20°C</td><td rowspan="2">Subjected to shock for 3 cycles. then tested for peeling at 1mm pitch crosscut using cellophane tape</td></tr><tr><td>Time (hours)</td><td>2</td><td>0.5</td><td>2</td><td>0.5</td><td>3</td><td>0.5</td><td>2</td></tr></table>	Cycle	80°C	Room temperature	-20°C	Room temperature	40°C (95%RH)	Room temperature	-20°C	Subjected to shock for 3 cycles. then tested for peeling at 1mm pitch crosscut using cellophane tape	Time (hours)	2	0.5	2	0.5	3	0.5	2	Not affected
Cycle	80°C	Room temperature	-20°C	Room temperature	40°C (95%RH)	Room temperature	-20°C	Subjected to shock for 3 cycles. then tested for peeling at 1mm pitch crosscut using cellophane tape											
Time (hours)	2	0.5	2	0.5	3	0.5	2												
Gasoline resistance	Soaked for 1 hour in gasoline	Not affected																	
Oil resistance	Soaked for 7 hours in engine oil	Not affected																	
Weathering resistance	1,000 hours of Sunshine Wealther-o-Meter (WEL-SUN-DC, manufactured by Suga Test Instrument Corp.)																		

Test conditions

Material : White PVC Stickers Ink : (SG 700, JET-V1) 120 White Drying : 60°C for 5 minutes, then left
710 Black, SG 425 overcoat clear at room temperature for 2 days.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

POLYESTER

PAL Matte8 Series

The inks in the PAL Matte8 series are screen printing inks newly developed for polyester film (PET). All known drawbacks of the conventional inks for PET film were corrected and all industrial needs as well as the latest screen printing technology were carefully examined to develop the PAL Matte8 series.

Specifications

Ink type	Air-drying ink blended with polyester resin.
Usage	Powerful adhesion to polyester (PET) film.
Finish	Matte satin finish.
Coverage	Approximately 30m² per kilogram using Tetron 250-mesh screen.
Drying time	Sets to touch in about 7 minutes at room temperature allowing overprinting. Obtains about 90% of its physical properties after standing for 24 hours. Thermal curing at 60-80°C for 10-20 minutes is recommended to account for work environment and seasonal fluctuation.
Diluent	Standard solvent (T-995), slow-dry solvent (T-997), retarder (T-980).
Wash-up	T-903
Notes	PAL transparent inks are available separately for transparent finish, good leveling, or for metallic colors. Slow-drying PAL type inks are also available for fine line printing and other applications requiring higher work efficiency.

PAL Matte8 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardners 45° x 1kg	HB
Adhesion	1st color printing	100/100
	2nd overlap printing	100/100
	3rd overlap printing	100/100
	4th overlap printing	100/100
	5th overlap printing	99/100
	Peeling test at 1mm pitch by crosscut using cellophane tape	
Water resistance	Soaked in water for 1 week	Not affected
Moisture resistance	60°C x 95% RH x 200 hours	Not affected
Saltwater resistance	Soaked in 5% NaCl for 7 days	Not affected
Thermal shock resistance	(80°C x 1 hours, -20°C x 1 hour) x 60 cycles	Not affected
Blocking resistance	60°C x 50g/cm ² x 8 hours	Not affected
Alcohol resistance	Rubbed 25 time with methanol at 500g load	Not affected
Gasoline resistance	Rubbed 20 times at 500g load	Not affected
Wear resistance	Rubbed 100 times with cloth 1 kg load	Not affected
Erichsen test	10mm diameter	Not affected
Flex test	4mm diameter at 180°	Not affected
Secondary processability	Cutting and embossing	Not affected
Scratch test	Scratching with fingernail	Not affected
Hand rubbing test	Rubbed in hands	Not affected
Weathering resistance	400 hours of Sunshine Weather-o-Meter (WEL-SUN-DC)	Good

Test conditions

Material : PET film 125μ

Screen : 250-MESH SCREEN

Ink : PAL Matte8 120 White (diluent T-995)

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

POLYESTER

GAP New Series

The inks in the GAP New series are designed for printing on polyester film. They feature outstanding adhesion and workability.

Specifications

Ink type	Air-drying ink blended with polyester resin.
Usage	Polyester films in general.
Finish	Semi-gloss finish of good leveling properties.
Clarity	Opacity varies with the color. Eight transparent colors are also available.
Coverage	Approximately 30m ² per kilogram using a 250-mesh screen.
Drying time	Sets to touch after about 20 minutes of air-drying (at 20°C). May take longer in work environments filled with solvent vapors. Adhesion problems may result due to residual solvent if drying is insufficient. Thermal curing at 50-60°C for 5-10 minutes is ideal.
Adhesion	Adhesion is good, but varies with the film surface quality. Test before use. Overprintability is also satisfactory.
Diluent	Standard solvent (T-977), slow-dry solvent (T-980), retarder (T-953).
Wash-up	T-903
Notes	• Mediums include GAP NEW-800 medium, GAP NEW-800 matte medium, GAP NEW-850 halftone base medium, etc. • Addition (5-10%) of reinforcing agent D improves adhesion.

GAP New Ink Film Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	H
Heat resistance	(80°C x 1 hour) + (-20°C x 1 hour) x 60 times	Not affected
Water resistance	Soaked in water for 1 week	Not affected
Humidity resistance	60°C x 90% RH x 200 hours	Not affected
Alcohol resistance	Rubbed at least 60 times with methanol at 500g	Passed
Stamping resistance	Stamping test	Passed
Blocking resistance	70°C x 6 hours at 50g/cm ²	Not affected

Test conditions

Drying : GAP NEW-710 print results measured after thermal curing at 80°C x 30 minutes or 1 week of air drying.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

ACRYLIC. PC

2500 Series

The 2500 series is a family of inks for printing on acrylic resins, and features outstanding weather resistance and clarity for screen printing on nameplates and electrical signs. The inks in this series are air-drying inks of low odor. They are free of peeling, discoloration, fading, or cracking at the time of forming. Use of exclusive solvents is highly recommended as acrylic resins are affected relatively easily by solvents. Moreover, the inks in this series must never be mixed with other inks,

Specifications

Ink type	Air-drying ink of low odor level consisting of acrylic resin, other special resins, and high-quality coloring pigments of high weather resistance.
Usage	Ideal for printing on nameplates and electrical signs made of acrylic resin and other plates.
Finish	Semi-gloss (slightly varying with the color) finish with good leveling and smooth film of outstanding pattern reproduction. Outstanding transparency and coloring for electrical signs.
Coverage and shading power	Outstanding covering power of black color for nameplates.
Clarity	Eight transparent colors are available. 110 (electrical sign white) emphasizing semitransparent white is also available for lining under electrical signs.
Weather resistance	This series of inks have excellent weather resistance when printed on the interior surface of acrylic signs. Weather resistance is reduced when printed on the exterior. Also, chalking may occur with high concentration colors. Sample before use.
Secondary processability	Outstanding secondary processability (heat resistance, etc.) after printing, especially for postprinting forming of electrical signs without cracking or discoloration
Adhesion	Outstanding adhesion especially to acrylic resin plates, plus weather resistance for use with electrical signs.
Drying time	Air-dries (20°C) in about 30 minutes (sets to touch). Curing for 5-10 minutes after printing at temperature 60-80°C will further increase adhesion, Troubles due to drying conditions and other factors may result when printing on molded signboards, especially when they are let to dry on racks in poorly ventilated and cold places. These problems can be prevented by the addition of quick-dry solvent and by thermal curing Acrylics resin plates should be stored carefully as they easily absorb moisture and cracks will result when printing on moist resins.
Viscosity adjustment	Ideal viscosity varies with the printing environment. Normally, an adequate working viscosity is obtained when T-2500 is added to the ink in proportion of 5-15 to 100 (ink).
Slow-dry solvent	Use T-2500S or T-980 for summer or precision printing.
Screen	Use of water-soluble cut film or photomechanical process in combination with Tetron or nylon screens of 200-300 mesh is recommended
Wash-up	Use T-15 for economical wash-up.
Notes	The inks in this series must never be mixed with other inks. Use of exclusive solvents is highly recommended as ordinary solvents will affect drying time and cause crazing and other problems in the material and the printed film.

2500 Ink Film Test Results

Item	Result	Condition
Hardness	3H	Pencil hardness 45° x 200g
Adhesion	100/100	Peeling test at 1mm pitch crosscut using cellophane tape
Line drawing test	Not affected	Peeling test using cellophane tape at 1kg load
Water resistance	Not affected	Soaked in tap water for 1 month
Boiling resistance	Not affected	Soaked in boiling water for 8 hours
Blocking resistance	Not affected	70°C x 3kg x 24 hours

Test conditions

Material : Acrylic plate (extruded)

Drying : 1 week at room temperature (20°C)

2500 Series Ink Weather Resistance List

Color	Value	Color	Value	Color	Value	Color	Value	Color	Value
120	○5	220	○5	440	○5	500T	○5	550T	○5
200	5	265	○5	456	○5	510	5	580	○5
200T	○5	304	○5	460	○5	510T	○5	586	○5
208	5	320	○5	495	○5	513	○5	710	○5
208T	○5	350	○5	498	○5	538	○5	765	○5
210	○5	400	4~5	500	5	550	5		

*1. Value 5:

Adequate resistance after 600 hours on Weather-o-Meter (WEL-SUN-DC).

2. Value ○5:

Adequate resistance after 1000 hours on Weather-o-Meter (WEL-SUN-DC).

3. Samples:

Back printing on transparent acrylic plates plus solid white overlap printing

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

CAV MEIBAN (Z) YS Series

The CAV MEIBAN series is a family of semi-gloss inks for printing on acrylic, polycarbonate, and PVC nameplates with outstanding leveling and printability. The CAV MEIBAN series includes standard colors, while the CAV Transparent series includes transparent or metallic colors. All standard colors are set to the concentrated pigmentation type.

Specifications

Ink type	Evaporation-dry, one-pack type.
Usage	For printing on acrylic, polycarbonate, and PVC sheets to produce nameplates.
Finish	Semi-gloss finish of outstanding leveling.
Coverage	Approximately 25m ² per kilogram using Tetron 250-mesh screens.
Drying time	Dries naturally (20°C) in 30 minutes or in only 10 minutes by thermal curing (60°C).
Adhesion	Good adhesion to acrylic, polycarbonate, PVC, and ABS plates, sheets, and molded items. Overcoatability is also excellent.
Diluent	Standard solvent (T-945), slow-dry (T-947), retarder (T-980).
Wash-up	T-15
Notes	Viscosity tends to increase 4 hours after adding gold metallic powder. Printing must begin within this time frame. Transparent colors are available separately in the CAV Transparent series. Use CAV Transparent inks when metallic colors of good leveling and stability are required.

CAV MEIBAN Ink Film Test Results

Item	Condition	Result										
Hardness	Pencil hardness 45° x 500g	H										
Adhesion	Peeling test at 1 mm pitch crosscut using cellophane tape	100/100										
Heat resistance	100°C x 48 hours	Not affected										
Low temperature resistance	-20°C x 48 hours	Not affected										
Water resistance	Soaked in ion exfchanged water for 48 hours	Not affected										
Moisture resistance	60°C x 95%RH x 96 hours	Not affected										
Sweat resistance	Artificial sweat coated over ink, let dry for 2 minutes in room temperature, then removed by wiping	Not affected										
Acid resistance	Soaked in 5% H ₂ SO ₄ for 24 hours	Not affected										
Alkali resistance	Soaked in 5% NaOH for 24 hours	Not affected										
Antifreeze resistance	Antifreeze coated over ink, let dry for 30 minutes in room temperature then removed by wiping	Not affected										
Thermal shock resistance	<table><tr><td>Cycle</td><td>-20°C</td><td>Room temperature</td><td>100°C</td><td>Room temperature</td></tr><tr><td>Time (hour)</td><td>2.5</td><td>0.5</td><td>2.5</td><td>1.5</td></tr></table> *Subjected to shock for 4 cycles	Cycle	-20°C	Room temperature	100°C	Room temperature	Time (hour)	2.5	0.5	2.5	1.5	Not affected
Cycle	-20°C	Room temperature	100°C	Room temperature								
Time (hour)	2.5	0.5	2.5	1.5								
Alcohol resistance	Rubbed 100 times with methanol-dampened gauze at 500g	Not affected										
Gasoline resistance	Gasoline coated over ink, let dry for 30 minutes in room temperature, then removed by wiping	Not affected										
Shock resistance*	Drop test (500g x 30cm)	Not affected										
Flex resistance	4mm diameter x 180°	Not affected										
Mar resistance	Rubbed 100 times cotton at 500g load	Not affected										
Secondary processability	Cutting and processing	Not affected										
Blocking resistance	70°C x 20g/cm ² x 6 hours	Not affected										

Test conditions

Material : Polycarbonate resin plates (0.5mm thick) and acrylic plates (extruded). Items marked with *only apply to polycarbonate resin plates.

Ink : CAV MEIBAN-710, 120, and 510

Drying : 60°C x 15 minutes, left to sit for 3 days before testing.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

TSN (Slow Dry) Series

The TSN Series is a family of PVC-free inks. It forms a soft film after printing, and possesses great heat resistance, suitable for heat-forming

Specifications

Ink type	1-part evaporating type acrylic ink.
Usage	Suitable for heat formed products, PC, PMMA, PVC films and plates
Finish	Semi-gloss finish
Coverage	Approximately 27m ² per kilogram using a 250-mesh screen
Drying time	Air-dry: 20°C for 60 minutes
Thermal Curing	60°C for 40 minutes, or 80°C for 10 minutes
Diluent	Standard Solvent: T-945 Slow-drying Solvent: T-954 Retarder: T-980
Wash-up	Use T-31 for economical wash-up
Other	Cracking might occur based on variance in substrates. Please use compatible solvents. Based on variance in printing condition, over-drying may lead to negative conditions such as mesh-clotting. Please use TSN Slow Dry ink.

TSN Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	H
Adhesion	Peeling test at 1 mm pitch crosscut using cellophane tape	100/100
Impact Resistance	300g steel ball dropped from 50cm	Pass
Bending Resistance	2mm diameter x 180° bending	Pass
Solution resistance 1	50 rubs with methanol-doused gauze under 1kg load	NG (3 rubs)
Solution resistance 2	50 rubs with gasoline-doused gauze under 1kg load	Pass
Acid resistance	Soaked in 1/10N H ₂ SO ₄ for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Alkali resistance	Soaked in 1/10N NaOH for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Water resistance	Soaked in tap water for 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Heat resistance	80°Cx 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Moisture resistance	60°C x 95%RH x 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Thermal shock resistance	(2 hours in 80°C→30 minutes in room temperature →2 hours in -20°C →30 minutes in room temperature) for 10 cycles, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected

*Ink performance figures are experimental values, and not guaranteed.

Test conditions

Material : Polycarbonate plate
Ink : TSN120, 710
Curing : 30 minutes in 60°C, followed by 1 day in room temperature.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

ABS, PS

ABS Series

The ABS series is a family of inks for printing on a wide variety of resins including polystyrene, ABS, and AS. They are also ideal for vacuum forming with clear and sharp results. The inks may be used with or without diluents but only specified solvents may be used. They must never be mixed with other inks.

Specifications

Ink type	Air-drying inks consisting of acrylic resin, other special resins, and solvents, and specifically adjusted to prevent cracking when applied to plastics such as ABS.
Usage	Ideal for printing, coating, and spraying on polystyrene, ABS, and AS resins.
Finish	Gloss finish with good leveling.
Diluent	Standard solvent (T-472), slow-dry solvent (T-971)
Retarder	Use T-979 retarder in summer or hot temperature.
Wash-up	Use T-902 solvent for economical wash-up.
Coverage	Approximately 27m ² per kilogram using a 250-mesh screen.
Drying time	Air-dries (20°C) in about 30 minutes or quicker by thermal curing.
Adhesion	Ideal for a wide variety of plastic products, polystyrene, ABS, AS, and other molded resins, and foamed polystyrene.
Screen mesh	Use of nylon or Tetron screens of 200 or higher mesh numbers is recommended.
Notes	Cracks may occur when overprinting on injection-molded items.
Caution	ABS inks have low alcohol resistance.

STR Series

The STR series is a family of inks of high adhesion power and alcohol resistance for printing on polystyrene, and AS and ABS surfaces.

Specifications

Ink type	Air-drying inks consisting of acrylic resin, carefully formulated to prevent cracking in the plastic material.
Usage	Polystyrene, high-impact styrene, AS and ABS plates, molded items, and sheets in general.
Finish	Gloss finish of good leveling.
Coverage	Approximately 25m ² per kilogram using a 250-mesh screen.
Drying time	Dries in about 30 minutes when allowed to stand at 20°C or more quickly by thermal curing (60°C x 10-15 minutes). For alcohol resistance and other tests, wait for at least 2 days after printing.
Adhesion	Adheres well to a wide variety of plastic products, polystyrene, high-impact styrene, AS, ABS, and other molded items. Also suitable for PVC acrylic, polycarbonate, and other plates.
Diluent	Standard solvent (T-475), slow-dry solvent (T-962), retarder (T-982).
Wash-up	T-15
Notes	Cracks may occur when overlap printing on injection-molded items or near injection gates.

STR Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Heat resistance	80°C x 10 hours	Not affected
Moisture resistance	60°C x 90% RH x 100 hours	Not affected
Acid resistance	Soaked in 5% H ₂ SO ₄ for 24 hours	Not affected
Alkali resistance	Soaked in 5% NaOH for 24 hours	Not affected
Alcohol resistance	Rubbed at least 20 times with methanol at 500g	Not affected

Test conditions

Material : Styrene Plates

**STR-120 and 710 measured after thermal curing
(60°C x 30 minutes) or 1 week of air-drying**

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

URETHANE

SG740 Series

The SG740 series is a family of two-part reaction inks that dry more quickly than other two-part reaction inks for higher work efficiency. Their outstanding adhesion power and superb moisture and solvent resistance make them ideal for printing over treated POM (polyacetal), treated PE, treated PP, ABS, acrylic, PVC and other materials. SG740 is a sister series to the VIC series.

Specifications

Ink type	Quick-drying, two-part reaction ink using an isocyanate hardener.
Usage	Outstanding adhesion power makes them ideal for printing over treated PP and PE, treated POM (polyacetal) coats (especially urethane coats), ABS acrylic, PVC, nylon cloth, and other materials.
Finish	Generally semi-gloss finish and outstanding resistance with solvents although the quality varies with the color.
Drying time	Natural or thermal curing. Sets to touch in 40 minutes at room temperature (25°C), hard dry in 1 week at room temperature or 30 minutes by thermal curing (80°C) + 2 days air drying. Heat treatment at 120°C for 20 minutes is recommended for best results on metals.
Mixing ratios	Add hardener (transparent) to the main agent (colored) at the ratio of 1:10, and agitate them well before use. Use within the pot life of 6-8 hours after which the mixture will turn to gel or lose its designed physical properties.
Diluent	Use the following three types of solvents (10-15% weight) to adjust viscosity: standard solvent (T-926), slow-dry solvent (T-927), retarder (T-980).
Wash-up	Use T-15 for economical washing of the plate and other tools.
Performance	Performance is identical to that of the VIC series.
Caution	• The hardener for the SG740 series is extremely sensitive to moisture and should be used as soon as it is unpacked. Foaming and blisters may result under some printing conditions. Add CARE 20 or CARE 50 (1-2%) to the ink to prevent foaming or blisters. • The printed film is somewhat thinner compared to that of the VIC series. • Use of gold metallic powder is not recommended as it will cause a chemical reaction leading to gelation. There is no problem with silver metallic powders.

VIC(Z) and SG740 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	H
Adhesion	Treated PP	100/100
	Treated PE	
	Melamin coating	
	Urethane coating	
	ABS	
	Acrylic	
	PVC	
	Tin	
	Nylon cloth	Peeling test by rubbing in hands
Water resistance	Soaked in tap water for 1 week	Not affected
Moisture resistance	60°C x 90% RH x 200 hours	Not affected
Alcohol resistance	Rubbed 100 times with methanol x 500g	Not affected
Gasoline resistance	Rubbed 100 times with gasoline x 500g	Not affected
Xylene resistance	Rubbed 50 times with xylene x 500g	Not affected
MEK resistance	Rubbed 20 times with MEK (methyl ethyl ketone) x 500g	Not affected
Weathering resistance	600 hours of Sunshine Weather-o-Meter (WEL-SUN-DC)	Not affected

Test conditions

Material : Treated PP

Ink : VIC-120, 710, SG740-120, 710

Samples measured 1 week after printing

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

URETHANE

VIC (Z) Series

The VIC series is a family of two-part reaction urethane inks that dry more quickly than other two-part reaction inks. They feature outstanding adhesion, good moisture and solvent resistance, and may be printed over treated PP and PE as well as coated surface. ABS, acrylic, PVC, and other materials.

Specifications

Ink type	Quick-drying, two-part reaction inks using an isocyanate hardener.
Usage	Treated PP and PE coats (especially urethane coats), ABS, acrylic, PVC, nylon cloths, etc.
Finish	Generally semi-gloss finish plus solvent-resistant film, although the quality varies slightly with the color.
Drying time	Air or thermal curing. Sets to touch in 30 minutes at room temperature (25°C); 5 minutes by thermal curing at 60°C. Hard dry in 1 week at room temperature; 20 minutes by thermal curing at 80°C + 2 days air drying.
Mixing ratios	Add hardener (transparent) to the main agent (colored) at the ratio of 1:10, and agitate them well before use. Use within the pot life of 6-8 hours, after which the mixture will turn to gel or lose its designed physical properties. Pot life may vary based on environmental sectors.
Diluent	Use the following types of solvents (10-15% weight) to adjust viscosity: standard solvent (T-926), slow-dry solvent (T-927), retarder (T-980).
Wash-up	Use T-15 for economical wash-up.
Notes	VIC series hardeners are very sensitive to humidity, so VIC inks should be used as soon as possible after opening. After the addition of gold metallic powder, a reaction will occur that causes the ink to gel rapidly. The inks should not be used in cases of such reaction.

MS8 Series

MS8-series are designed for printing on treated olefin, painted surfaces, etc. They features outstanding weather resistance.

Specifications

Ink type	Two-part reaction inks using an isocyanate hardener.
Usage	Acrylic, ABS, treated olefins and printed surfaces. Excellent weather resistance makes this series very suitable for outdoor display.
Finish	High gloss with good leveling.
Drying time	Natural or thermal curing. Sets to touch in 40 minutes at room temperature (25°C); 20 minutes by thermal curing at 70°C. Hard dry in 4 days at room temperature (25°C); 60 minutes by thermal curing at 70°C.
Mixing ratios	Standard colors.....Main agent (colored inks): Hardener = 10:1 800, 850 and transparent color..... Main agent: Hardener = 10:2 Use within the pot life of 6-8 hours, after which mixture will turn to gel or lose its designed physical properties.
Diluent	Standard solvent (T-926), slow-dry solvent (T-980)
Wash-up	T-15
Notes	MS8 series hardeners are very sensitive to humidity, so MSB inks should be used as soon as possible after opening.

MS8 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 1kg	3H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Moisture resistance	40°C x 90% RH x 120 hours	Not affected
Acid resistance	Soaked in 10% HCL for 10 hours	Not affected
Acid resistance	Soaked in 10% H ₂ SO ₄ for 10 hours	Not affected
Alkali resistance	Soaked in 10% NaOH for 10 hours	Not affected
Alcohol resistance	Rubbed at least 50 times with methanol at 500g load	Not affected
Gasoline resistance	Rubbed at least 50 times with gasoline at 500g load	Not affected

Test conditions

Ink	: MS8-120 White
Material	: Acrylic plate
Drying	: 75°C x 60 minutes + 2 days at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

URETHANE

HAC Series

HAC-series is a family of two-part reaction urethane ink developed for printing on Hard-coated acrylic, PC and PET, etc.

Specifications

Ink type	Two-part reaction inks using an isocyanate hardener.		
Usage	Hard-coated acrylic, PC and PET, ABS, stainless steel etc.		
Finish	Semi-gloss with good leveling		
Drying time	Natural or thermal curing Sets to touch in 40 minutes at room temperature (20°C). Hard dry in 30 minutes at 60°C +1 day at room temperature.		
Mixing ratios	Main agent: Hardener = 10:1 Use within the pot life 6-8 hours since the mixture will turn to gel or lose its designed physical properties.		
Screen	Use of nylon or tetron screens of 200-300 mesh is recommended.		
Diluent	Standard solvent	T-926	
	Slow dry solvent	T-927	
	Retarder	T-980	
Wash-up	T-15		
Note	HAC-hardener is very sensitive to humidity, so HAC inks should be used as soon as possible after opening. Slow dry can be improved the printability. Heat-drying is recommended. Poor adhesion of overlap printing may be caused by rapid hardening.		

HAC-Series Ink Film Test Result

Item	Condition						Result
Hardness	Pencil hardness 45° x 1kg						3H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape						100/100
Water resistance	Soaked in water for a week						Not affected
Cold cream resistance	Applied cold cream (Kao made) on the printed surface after thermal shock resistance test						Not affected
Methanol resistance	Rubbed 50 Times with methanol at 500g load						Not affected
MEK friction resistance	Rubbed 30 times with MEK at 500g load						Not affected
Gasoline resistance	Rubbed 100 times with gasoline at 500g load						Not affected
Weather resistance	1000 hours of Sunshine Weather-O-meter						Not affected
Thermal shock resistance	° C	80	R/T	-20	R/T	x 20 cycles	Not affected
	Hours	2	0.5	2	0.5		

Test conditions

Ink	: HAC-120, HAC-710 Conc Black
Material	: Acrylic plate
Drying	: 60°C x 30 minutes +1 week at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

URETHANE

SG460, SG460NS Series

The SG460 and SG460NS series are a family of inks designed for use on polyethylene and polypropylene containers and metal-coated plates. It boasts superior resistance to weather, chemicals and moisture compared with normal epoxy inks. The SG460NS series is a non-silicone variant of the SG460.

Specifications

Ink type	Isocyanate hardening two-part urethane type (Can harden in Room Temperature: Plastic substrates)
Usage	Applicable for printing on metal-coated plates, and polyethylene (PE) or Polypropylene containers after surface treatments such as frame treatment.
Features	Flat glossy finish, with excellent resistance to weather, acid, alkali, solvents, water and friction.
Diluent	Standard solvent T-920 Slow-dry solvent T-980
Mixing ratio	Ink: Hardener=70:30 (Standard Colors) Ink: Hardener 60:40(Transparent Colors) Ink: Hardener 40:30(800 Medium clear) Please note that variance may occur based on differences in color. Mixed inks may gel and lose physical properties if placed in room temperature for approximately 10 hours.
Screen Mesh	Tetron/ Nylon 200-300 screen mesh recommended
Wash-up	T-15
Drying	Room temperature: 25°C for 20-30 hours (Dries to touch in 2 hours) Heated Curing: 80°C for 40 minutes or 120°C for 20 minutes
Other	SG460 hardeners are extremely sensitive to humidity, and should be used as soon as possible.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

URETHANE

SG410 Series

The SG410 series is a family of urethane resin-based, soft and thermoplastic inks for printing on synthetic leather, leather, synthetic fabric, etc.

Specifications

Ink type	Air-drying ink that forms a soft film as the solvent evaporates.
Usage	Flexible finish on synthetic leather, synthetic fabric, etc.
Drying time	Dries naturally (set to touch) in 30 minutes at room temperature (20°C) or quicker by thermal curing.
Adhesion	Outstanding adhesion on synthetic leather, synthetic fabric, etc., but not on surfaces with waterrepellent coating. Add SG410 hardener (10%) to increase adhesion. Test prior to printing.
Diluent	Standard solvent (T-941), slow-dry solvent (T-942), retarder (T-980).
Wash-up	Use T-905
Note	The ink's viscosity is largely determined by the amount of solvents. The inks in this series are relatively more viscous than others. Use T-941 as needed to adjust viscosity. Mesh-clogging might occurs when printing in 800 medium, silver, fluorescent color. Use retarder solvent or SG410-Y0802 replace of 800 medium. We also offer Organic Tin-Free SG410YS series.

Fastness Test Results of Printed Textile Ribbon

Washing		Fading	4 to 5	JIS L 0844-1986 (Method A-3)
		Staining	5	
Sweat	Acid	Fading	4 to 5	JIS L 0848-1983 (Method A)
		Staining	4 to 5	
	Alkaline	Fading	4 to 5	JIS L 0848-1983 (Method A)
		Staining	4 to 5	
Friction	Dry	Staining	4 to 5	JIS L 0849-1983 (Type II)
	Wet	Staining	3 to 4	
Dry Cleaning		Fading	5	JIS L 0860-1983
		Staining	5	

Test conditions

Material : Printed on nylon cloth using SG 410 hardener (10%), dried at 120°C for 30 minutes.

Testing institute : Japan Synthetic Textile Inspection Institute Foundation (Hokuriku branch).

Results may vary slightly with the color

POLYESTER

GAP New Series

The inks in the GAP New series are designed for printing on polyester film. They feature outstanding adhesion and workability.

Specifications

Ink type	Air-drying ink blended with polyester resin.
Usage	Polyester films in general.
Finish	Semi-gloss finish of good leveling properties.
Clarity	Opacity varies with the color. Eight transparent colors are also available.
Coverage	Approximately 30m ² per kilogram using a 250-mesh screen.
Drying time	Sets to touch after about 20 minutes of air-drying (at 20°C). May take longer in work environments filled with solvent vapors. Adhesion problems may result due to residual solvent if drying is insufficient. Thermal curing at 50-60°C for 5-10 minutes is ideal.
Adhesion	Adhesion is good, but varies with the film surface quality. Test before use. Overprintability is also satisfactory.
Diluent	Standard solvent (T-977), slow-dry solvent (T-980), retarder (T-953).
Wash-up	T-903
Notes	• Mediums include GAP NEW-800 medium, GAP NEW-800 matte medium, GAP NEW-850 halftone base medium, etc. • Addition (5-10%) of reinforcing agent D improves adhesion.

GAP New Ink Film Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	H
Heat resistance	(80°C x 1 hour) + (-20°C x 1 hour) x 60 times	Not affected
Water resistance	Soaked in water for 1 week	Not affected
Humidity resistance	60°C x 90% RH x 200 hours	Not affected
Alcohol resistance	Rubbed at least 60 times with methanol at 500g	Passed
Stamping resistance	Stamping test	Passed
Blocking resistance	70°C x 6 hours at 50g/cm ²	Not affected

Test conditions

Drying : GAP NEW-710 print results measured after thermal curing at 80°C x 30 minutes or 1 week of air drying.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

POLYOLEFIN

OP22 Series

The OP22 series is a family of screen printing inks developed for printing on polyolefines, a material that normally presents an adhering problem. Because of their low squeegee resistance, these inks are commonly used for printing on synthetic paper. Also good for half-tone printing.

Specifications

Ink type	Air-drying ink in which thermoplastic resins are blended to improve adhesion.
Finish	Semi-gloss finish
Coverage	Approximately 20m ² per kilogram using a 250-mesh or finer screen.
Drying time	Air-dries in about 30 minutes at room temperature (20°C) or more quickly by thermal curing.
Adhesion	Good adhesion to olefin material including all types of olefine-based synthetic paper. Use of polypropylene-based paper is recommended, however, to prevent curling.
Diluent	Standard solvent (T-900), slow-dry solvent (T-910), retarder (T-950).
Wash-up	Use T-907 for economical wash-up.
Notes	The ink may gel in cold weather but its original properties are not lost. Heat in a water bath or agitate well before use.

60A Series

The 60A series is a family of screen printing inks for polyethylene, polypropylene, and other olefine-based material.

Specifications

Ink type	Air-drying ink in which thermoplastic resins are blended to improve adhesion.
Usage	Polyethylene, polypropylene, and other olefine-based films or foamed sheets.
Finish	Matte and flexible finish.
Drying time	Air-dries in about 30-40 minutes at room temperature (20°C) or more quickly in thermal curing.
Adhesion	Good adhesion without special treatment to polyethylene, polypropylene, and other olefine-based materials. Resistance to scratching or blocking, however, is somewhat lower due to tackiness.
Diluent	Standard solvent (T-900), slow-dry solvent (T-910), retarder (T-950).
Wash-up	Use T-907 for economical wash-up.
Notes	The ink may gel in cold weather but its original properties are not lost. Heat in a water bath or agitate well before use.

OP22 and 60A Ink Film Test Results

Item	Condition	Result	
		OP 22	60A
Drying time	at 20°C	30min	30-40min
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100	100/100
Water resistance	Soaked in tap water for 1 week	○	○
Scratch test	Scratching with fingernail	△	x
Hand rubbing	Rubbing hands	△	△
Blocking resistance	Printed surfaces stacked	△	x
Weathering resistance	200 hours of Sunshine Weather-o-Meter (WEL-SUN-DC)	○	○

○ Good △ Acceptable X Poor

Test conditions

Material : PP sheet, PP/PE synthetic paper, PE Film.
Drying : 1 week after drying at room temperature (20°C)
**60A presents better adhesion to polyethylene.*

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

POLYOLEFIN

PP Ink Series

PP Ink is a screen printing ink for polypropylene materials that often present adhesion problems.

Specifications

Ink type	Air-drying ink to which thermoplastic resins are blended to improve adhesion power.
Finish	Matte finish
Coverage	Approximately 20m ² per kilogram using a 250-mesh or finer screen.
Drying time	Air-dries in about 20-30 minutes at room temperature (20°C) or more quickly by thermal curing.
Adhesion	Good adhesion to polypropylene and other olefin-based materials.
Diluent	Standard solvent (T-900), slow-dry solvent (T-910), retarder (T-950). (15-20% weight)
Wash-up	Use T-907
Notes	PP antiacid ink consisting of special ingredients is available for printing on PP battery containers and other items requiring high resistance against acids. PP inks may gel in cold weather but their original properties are not lost. Heat in a water bath or agitate well before use. Poor adhesion of overlap printing may be caused due to the quality of PP substrates. In this case, the adhesion will be improved by thermal curing.

PP TAISAN (Antiacid) Ink

PP TAISAN antiacid ink is a screen printing ink having a higher acid (sulfuric acid) resistance than inks in the PP series for printing on polypropylene materials. Such as car batteries. Composition and specifications are similar to the PP Ink series.

PP TAISAN Antiacid Ink Film Test Results

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	Good
Water resistance	Soaked in tap water for 24 hours, then let dry naturally for 1 hour	OK
Warm water resistance	Soaked in warm water (50°C) for 24 hours, then let dry naturally for 1 hour	OK
Alcohol resistance	Rubbing 50 times with methanol at 500g load	OK
Acid resistance	Sulfuric acid (specific gravity 1.3) dropped on samples, Heated at 60°C for 2 hours, then soaked in warm water (50°C) for 24 hours and let air-dry	Good

Test conditions

Samples : PP TAISAN antiacid ink printed on polypropylene plates, and thermal-cured at 60°C for 10 minutes.

***Acid resistance slightly varies with the color**

***Certain colors are not available**

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

POLYOLEFIN

PPT Series

The PPT series is a screen printing inks for printing on untreated or treated polypropylene materials. They produce a semi-gloss finish, and feature excellent oil and alcohol resistance, weathering resistance and printability.

Specifications

Ink type	One-part, air-drying ink in which thermoplastic resins are blended.
Finish	Semi-gloss finish
Coverage	Approximately 20m ² per kilogram using a 250 mesh/inch polyester screen.
Drying time	Air-dries (Set to touch) in about 10-15 minutes at 20°C. Takes 30 minutes in thermal curing (60°C).
Diluent	Standard solvent (T-900), slow-dry solvent (T-910), retarder (T-950)
Wash-up	T-907
Notes	The ink may gel in cold weather but its original properties are not lost. Heat in a water bath or agitate well before use.

PPT Ink Film Test Results

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Hardness	Pencil hardness 45° x 1kg	B
Scratch resistance	Scratching with fingernail	Good
Oil resistance	Rubbed 50 times at 500g load with gear oil, Motor oil, salad oil and mineral spirit.	Good
Acid resistance	Soaked in 1 wt% H ₂ SO ₄ for 3 days	Good
Alkali resistance	Soaked in 1 wt% NaOH for 3 days	Good
Water resistance	Soaked in tap water for 3 days	Good
Warm water resistance	Soaked in warm water (60°C) for 3 days	Good
Weathering resistance	500 hours of Xenon Weather-o-Meter	Good
Alcohol resistance	Rubbed 50 times with methanol at 500g load	Good

Test conditions

Samples : Untreated polypropylene
Ink : PPT 120 white, 710 black
Drying : Standing at room temperature for 24 hours after thermal curing at 60°C for 30 minutes.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

1000 Series

The 1000 series is a family of two-part reaction epoxy-based inks having equal performance for printing on a wide variety of materials including aluminum, metallic coats, stainless steel, phenol, melamine, treated olefin-type resins, glass, and ceramics. They are highly regarded for their outstanding film toughness and chemical resistance over a long period of time

Specifications

Ink type
Usage

Two-part reaction inks in which unique epoxy resin is blended.

Iron, aluminum, stainless steel, and other metals, metal-coated industrial parts, markings and plates, packages and containers made of glass, thermosetting plastics, treated olefin-based resin, etc., requiring resistance against acids, alkalines, solvents, and friction.

Finish
Drying time

Gloss finish of outstanding wear resistance and leveling.

May be air-dried or curing. Sets to touch in about 2 hours at room temperature (20°C), or by curing in 40 minutes at 80°C or 20 minutes at 120°C. Yellowing may result, however, if a white ink in this series is cured at temperature over 100°C.

Film Performance Under Different Drying Conditions

Condition	20°C	60°C	80°C	100°C	120°C	150°C
Item	x 1 week	x 60 min	x 60 min	x 30 min	x 30 min	x 30 min
Adhesion	○	◎	◎	◎	◎	◎
Hardness	△	△	○	○	◎	◎
Acid resistance	△	△	△	○	○	○
Alkali resistance	△	△	△	○	○	○
Solvent resistance	△	△	△	○	○	○

◎ Excellent

○ Good

△ Fair

△ Acceptable

x Poor

*Use this information for drying condition selection (subject to testing) according to the materials.

Adhesion

Adhesion of the inks in this series is far greater compared to other types making them applicable for printing on aluminum-coated glass, thermosetting plastics, treated olefin, etc. Beware, however, or variation in ink film performance due to the special nature of the materials (Shown below).

Variation In Ink Film Performance Among Different Materials

Material	Aluminum	Steel	Tin	Glass
Item				
Water resistance	◎	◎	◎	△
Warm water resistance	○	○	△	x
Alkali resistance	○	○	△	△
Acid resistance	○	○	△	△

Mesh

Use of 200-to-300-mesh nylon or Tetron screen is recommended. A photomechanical process assures the best results.

Mixing ration
and viscosity
adjustment

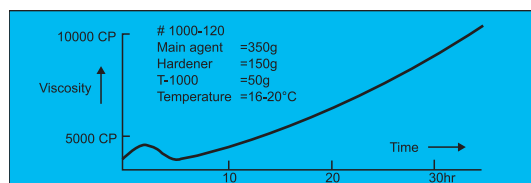
Each product in this series consists of a color base (main agent) and a hardener. Mix in the ratio of 7-3 (by weight), agitate well, and allow to set for about 10 minutes. Then, add specified T-1000 (10-20%) to obtain the ideal viscosity for printing. The film performance varies substantially at different mixing ratios (shown below) and the main agent and the hardener should be mixed carefully at an appropriate ratio (medium ratio 6:4).

Variation In Ink Film Performance at Different Mixing Ratios

Item	(Main Agent : Hardner) 8:2	(Main Agent : Hardner) 7:3	(Main Agent : Hardner) 6:4
Hardness	3H	3H	2H
Methanol resistance	◎	○	△
Alkali resistance	○	○	x
Flex test	△	○	◎

Ink viscosity increases with time once the two packs are mixed together. The pot life is 12 hours at 20°C. Unnecessarily high viscosity causes bubbles and affects adhesion to the material. Using the mixture within the pot life is highly recommended and may not be postponed to the following day. Mix only a necessary amount at a time to save cost. The following graph indicates how viscosity increases with time. Use this data when adjusting viscosity.

Viscosity Change Curve (CP=Centipoise)



Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

Wash-up	Use T-31 for economical wash-up.
Hue	High-quality pigments are used in the main agent to ensure good resistance to weathering in all colors. Use 1000-medium for metallic finishes. All standard colors are nontransparent. Transparent colors and fluorescent colors are available upon request. Refer to the separate chart about the correlation between colors and weathering resistance. Note that fluorescent colors are somewhat lacking in storage stability and weathering resistance. Use fluorescent colors on white substrate for better results.
Notes	Use T-965 retardant when the ink dries quicker on the screen plate in summer. Fogging may result in winter or in rainy weather due to moisture. This may be prevented by allowing the ink to set and curing it immediately after printing. Bubbles and pinholes may be seen during printing due to inappropriate ink viscosity or printing environments (temperature, humidity, etc.). Use Care#8 (additive) to prevent these problems if viscosity adjustment is not helpful. Avoid overdosage of the additive.

1000 Series Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	3H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Soaked in water for 1 month	Not affected
Moisture resistance	40°C x 90% RH x 120 hours	Not affected
Saltwater resistance	Soaked in 5% NaCl for 1 month	Not affected
Impact resistance	300g steel ball dropped on samples from 1m height	Not affected
Line drawing test	Cut at 1.5kg load and peeled using cellophane tape	Not affected
Erichsen test	4mm diameter	Not affected
Flex test	2mm diameter at 180°	Not affected
Acid resistance	Soaked in 5% HCl for 24 hours	Not affected
Acid resistance	Soaked in 5% H ₂ SO ₄ for 24 hours	Not affected
Alkali resistance	Soaked in 5% NaOH for 12 hours	Not affected
Alkali resistance	Soaked in 10% NaOH for 24 hours:	Not affected
Detergent resistance	Soaked in 3% detergent for 7 days	Not affected
Boiling resistance	Soaked in boiling water for 30 mins	Not affected
Methanol resistance	Soaked in Methyl alcohol for 24 hours	Slightly softened
Ethanol resistance	Soaked in ethyl alcohol for 24 hours	Slightly softened
Toluene resistance	Soaked in toluene for 24 hours	Slightly softened
MEK resistance	Soaked in MEK for 24 hours	Slightly softened
Gasoline resistance	Soaked in gasoline for 24 hours	Not affected
Kerosene resistance	Soaked in kerosene for 24 hours	Not affected
Turpentine resistance	Soaked in mineral turpentine for 24 hours	Not affected
Methanol friction resistance	Rubbed 50 times with methanol at 500g load	Not affected
Ethanol friction resistance	Rubbed 50 times with ethanol at 500g load	Not affected
Toluene friction resistance	Rubbed 50 times with toluene at 500g load	Not affected
MEK friction resistance	Rubbed 50 times with MEK at 500g load	Not affected

Test conditions

Material	:	Aluminum and soft steel plates
Screen	:	Tetron 200-mesh screen
Squeeze	:	Urethane, medium hard
Printing method	:	Hand printing
Color	:	White, black
Mixing ratio	:	Main agent 7: hardener 3
Dilution	:	Ink 100: T-1000 15 parts
Drying	:	120°C x 30 minutes

**The above information reflects 1000-120 and 710 (white and black) only.
Results vary for some test items with the color as shown below.*

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

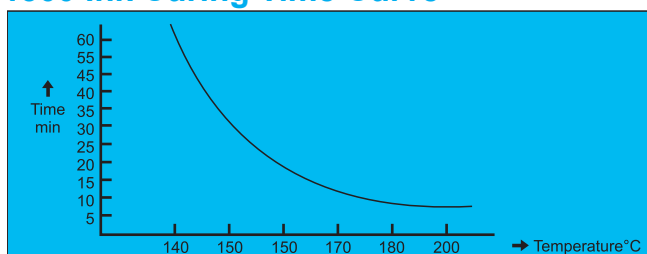
1300 Series

The 1300 series is a family of epoxy-based inks for printing on metals, metallic coats, and glass where high adhesion power and resistance against chemicals are required. Unlike the two-part reaction inks in the 1000 and 1690N series, the 1300 series consists of one-pack type epoxy inks that are dried by curing. Curing may take extra work, but the one-pack system promises greater ease of work as well as outstanding film performance on curable materials.

Specifications

Ink type	One-pack thermosetting inks in which special synthetic resins and epoxy resins are blended. This type of ink normally requires curing at high temperatures, but the inks in the 1300 series contain a catalyst so that they may be cured at a relatively lower temperatures.
Usage	Nameplates, electrical appliances, glass parts, etc. made of aluminium, zinc-plated iron, stainless steel, iron, or their coats.
Finish	Gloss finish of good leveling.
Drying time	Heating is required. Standard drying time is 30 minutes at 150°C.
Diluent	Add T-1000 (10-15 parts to 100 parts of ink) to adjust viscosity.
Adhesion	Strong adhesion power to metals and metallic coats, glass, etc. See the 1300 ink film test results for ink film performance.
Note	1) The 1300 series require curing to produce outstanding film performance. Epoxy resin is easily affected by moisture leading to chalking, especially when used for outdoors application like signboards, direction signs, etc. 2) The 1300 series must be stored in a dark, cool place with minimum exposure to air. 3) The 1300 series contain a catalyst (to promote curing) for reduce the curing time but its effects may be weakened for some colors due to the influence of fresh air or with the passage of time. The original performance can be retained by adding 1300 catalyst H up to 1% (weight). Testing is highly recommended especially when the ink has been stored a long time. 4) Excessively curing the 1300 series may result in the poor adhesion of overprinting. For multi-layer printing, each color should be cured at a temperature below 150°C and only for the final color, 150°C curing is recommend to ensure optimal adhesion of the entire ink layer. 5) The 1300 series printed film on a glass substrate may lack water and moisture resistance as compared with what was printed on metals or coated metals.

1300 Ink Curing Time Curve



1300 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	4H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Soaked in water for 1 month	Not affected
Saltwater resistance	Soaked in 5% NaCl for 1 week	Not affected
Erichsen test	3mm diameter	Not affected
Impact resistance	300g steel ball dropped on samples from 1m height	Not affected
Flex test	2mm diameter at 180°	Not affected
Detergent resistance	Soaked in 7% detergent for 1 week	Not affected
Acid resistance	Soaked in 5% HCl for 2 days	Not affected
Alkali resistance	Soaked in 5% NaOH for 2 days	Not affected
Gasoline resistance	Soaked in gasoline for 1 week	Not affected
Methanol resistance	Soaked in methanol for 1 week	Not affected
Toluene resistance	Soaked in toluene for 1 week	Not affected
MEK resistance	Soaked in MEK for 1 week	Not affected
Gasoline friction resistance	Rubbed 50 times with gasoline at 500g load	Not affected
Methanol friction resistance	Rubbed 50 times with methanol at 500g load	Not affected
Toluene friction resistance	Rubbed 50 times with toluene at 500g load	Not affected

Test conditions

Material : Soft steel plate, tin plate

Drying : 150°C x 30 minutes

Color : White, black

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

1300HK Series

The 1300HK series is a family of one-pack, curing-type epoxy inks with a built-in catalyst, ideal for screen printing on metals and metallic coats where pressing, folding, and bending resistance are required.

Specifications

Ink type	One-pack thermosetting inks in which special synthetic resins and epoxy resins are blended. This type of ink normally requires curing at high temperature but the inks in the 1300HK series contain a catalyst, so that they may be cured at a relatively lower temperature. They feature outstanding flexibility (resistance to bending) and recoatability (overprinting may be applied even after 30 minutes of curing at 150°C).
Usage	Nameplates made of aluminium, zinc-plated iron, stainless steel, iron, or their coats.
Finish	Gloss finish with good levelling.
Drying time	Heating is required. Standard drying time is 30 minutes at 150°C.
Diluent	Standard solvent T-980 or T-990
Adhesion	Strong adhesion power to metals and metallic coats.
Wash-up	T-31
Notes	• The 1300HK series require curing to ensure outstanding film performance. Epoxy resin is easily affected by moisture leading to chalking, especially when used for outdoors (signboards, direction signs, etc.). • The 1300HK series must be stored in a dark, cool place with minimum exposure to air. • The 1300HK series contain a catalyst (to promote curing) for adjusting the curing time but its effects may be affected for some colors due to effects of fresh air or time. The original performance can be retained by adding 1300-catalyst H up to 1% (weight). Testing is highly recommended especially if the ink has been stored for a long period of time. • Better solvent resistance can be obtained by adding five parts BI hardener to 100 parts ink. In this case, the pot life is about 1 week and setting time is 30 minutes at 150°C.

1300HK Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	2H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Acid resistance	Soaked in 5% HCl for 2 days	Not affected
Alkali resistance	Soaked in 5% NaOH for 2 days	Not affected
Saltwater resistance	Soaked in 5% NaCl for 1 week	Not affected
Methanol resistance	Methanol dropped on sample and wiped off 30 times at 500g load Gasoline	Acceptable
Gasoline resistance	Gasoline dropped on sample and wiped off 50 times at 500g load	Not affected
Flex test	2mm diameter at 180°	Not affected
Erichsen test	3mm diameter	Not affected
Impact resistance	300g steel ball dropped on samples from 1m height	Not affected
Toluene resistance	Toluene dropped on sample and wiped off 30 times at 500g load	Acceptable
Detergent resistance	Soaked in 7% detergent for 1 week	Not affected

Test conditions

Material : Tin plate
Drying : 150°C x 30 minutes

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

1400Q Series

The 1400Q series is a family of one-pack, curing-type polyester and melamine inks of good leveling for screen printing on metals (aluminium, anodized aluminium, tin, stainless steel) and metallic coats where resistance against solvents and alcohol is required. They feature particularly good flexibility for printing on material subjected to stamping, bending, embossing, and other mechanical processes.

Specifications

Ink type	One-pack thermosetting inks in which polyester and melamine resins are blended. This type of ink normally requires curing at high temperature but the inks in the 1400N series contain a catalyst so that they may be cured at a relatively lower temperature. They feature outstanding flexibility (resistance to stamping, bending, embossing) and recoatability (overprinting may begin after 30 minutes of curing at 150°C).
Usage	Aluminium, surface-size aluminium, anodized aluminium, tin, stainless steel, and their coats.
Finish	Gloss finish with good leveling.
Drying time	Heating is required. Standard drying time is 30 minutes at 150°C.
Diluent	Standard solvent T-980 or T-990
Adhesion	Strong adhesion to metals and metallic coats.
Wash-up	For glass printing, add 2-3% of Care#73 to improve the adhesion and water resistance. T-31

1400Q Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	2H
Erichsen test	5mm diameter	Not affected
Saltwater resistance	Soaked in 5% NaCl for 1 week	Not affected
Impact resistance	300g steel ball dropped on samples from 1m height	Not affected
Flex test	2mm diameter at 180°	Not affected
Detergent resistance	Soaked in 7% detergent for 1 week	Not affected
Acid resistance	Soaked in 5% HCl for 2 days	Not affected
Alkali resistance	Soaked in 5% NaOH for 2 days	Not affected
Gasoline resistance	Rubbed 50 times with gasoline at 500g load	Acceptable
Methanol resistance	Rubbed 50 times with methanol at 500g load	Acceptable
Toluene resistance	Rubbed 50 times with toluene at 500g load	Acceptable
Adhesion	Peeling test using crosscut cellophane tape	100/100
	Tin	
	Aluminium	
	Stainless steel	
	Anodized aluminium	
	Coated surface	
	Surface-size aluminium	

Test conditions

Ink : 1400Q-120(white)
Drying : 150°C x 30 minutes
Material : Aluminium plate

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

1690N Series

While the two-part reaction epoxy-based inks in the 1000 series are designed to deliver average performance when printed on a wide variety of materials including aluminium, metallic coats, glass, stainless steel, thermosetting plastics, and treated olefin, the 1690N series is a family of high-performance, two-part reaction thermosetting inks having far outstanding resistance against chemicals and boiling water as well as similarly outstanding adhesion to the material requiring higher ink film performance.

Specifications

Ink type	Two-part reaction ink consisting of epoxy-based ink base (main agent) and a special hardener.
Usage	Aluminium, stainless steel, anodized aluminium, and other metals as well as their coats, glass, earthenware, thermosetting plastics, and treated olefin resins, where resistance against chemicals, solvents and moisture is required.
Finish	Sharp gloss finish.
Drying time	May be air-dried with 1690 hardener, but better performance is produced when cured (150°C x 30 minutes).
Adhesion	Greater adhering power as well as flexibility than the 1000 series making it applicable to metals and glass.
Screen	Use a photo mechanical process using a 200-300 mesh nylon or tetron screen for best results.
Mixing Ratio and diluent	The 1690N series consists of a main agent and a hardener as in the 1000 series. Mix them in necessary and diluent amounts at the weight ratio of 7:3 for black colors (or for medium and all transparent colors) or 8:2 (for all other nontransparent colors). Agitate the mixture thoroughly, and add specified solvent (10-20 parts of T-1000) to adjust the viscosity. The pot life is 3 hours at 25°C approximately before gelation. Mix only necessary amounts at a time to save cost.
Wash-up	Use T-31 for economic wash-up.
Hue	Use gloss color cards (standard colors).
Hardener	Two types of hardeners are available for the 1690N series. The hardener 1690N is the standard choice whereas the 1690 is designed for quicker curing. The pot life of the 1690, however, is only 2 hours.
Notes	Stability and effects of hardeners may be affected when they are exposed to air. Keep them airtight after use.

1690N Series Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	5H
Adhesion	Glass	Peeling test at 1mm pitch crosscut cellophane tape 100/100
	Tin	
	Stainless steel	
	Aluminium	
	Anodized aluminium	
	Coated surface	
Water resistance	Soaked in water for 1 month	Not affected
Moisture resistance	40°C x 95% RH x 168 hours	Not affected
Moisture test	Wet cloth placed over samples for 1 hour and samples tested by peeling test using cellophane tape	Not affected
Bolling resistance	Soaked in boiling water for 30 hours	Not affected
Saltwater resistance	Soaked in 5% NaCl for 100 hours	Not affected
Acid resistance	Soaked in 10% HCL for 50 hours	Not affected
Acid resistance	Soaked in 10% H ₂ SO ₄ for 50 hours	Not affected
Alkall resistance	Soaked in 10% NaOH for 100 hours	Not affected
Gasoline resistance	Soaked in gasoline for 100 hours	Not affected
Methanol resistance	Soaked in methanol for 100 hours	Slightly Softened
MEK resistance	Soaked in MEK for 100 hours	Slightly Softened
Toluene resistance	Soaked in toluene for 100 hours	Slightly Softened
Methanol friction resistance	Rubbed 100 times with methanol-dampened cloth and wiped at 500g load	Not affected
Toluene friction resistance	Rubbed 100 times with toluene-dampened cloth and wiped at 500g load	Not affected
MEK friction resistance	Rubbed 100 times with MEK-dampened cloth and wiped at 500g load	Not affected
Impact resistance	500g weight dropped on samples from 1m height	Not affected
Erichsen test	4mm diameter	Not affected
Flex test	2mm diameter at 180°	Not affected

Test conditions

Material : Aluminium, anodized aluminium, glass, stainless steel, soft steel, tin, melamine coat.

Screen : Tetron 200-mesh screen.

Squeeze : Urethane, medium hard.

Drying : 150°C x 30 minutes

Printing Method : Hand Printing

Color : White, black

Mixing Ratio : white (8:2), black (7:3)

Diluent : Ink 100: T-1000 10 parts

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

Overall Comparison of Epoxy Ink Performance

Item		1000	1300	1300HK	1400N	1690N
Type		2-part	1-part	1-part	1-part	2-part
Mixing ratio		7 : 3	-	-	-	7 : 3 or 8 : 2
Pot life		8hr	-	-	-	3hr
Drying time		80°C x 40min	150°C x 30min	150°C x 30min	150°C x 30min	150°C x 30min
Hardness		3H	4H	2H	2H	5H
Impact Resistance		◎	○	◎	◎	◎
Erichsen test		◎	○	◎	◎	◎
Adhesion	Glass	○	○	◎	◎	◎
	Tin	○	◎	◎	◎	◎
	Stainless steel	◎	◎	◎	◎	◎
	Aluminum	◎	◎	◎	◎	◎
	Anodized aluminum	○	○	◎	◎	◎
	Coated surface	○	◎	◎	◎	◎
Water resistance		◎	◎	◎	◎	◎
Saltwater resistance		◎	◎	◎	◎	◎
Acid resistance		○	◎	◎	◎	◎
Alkali resistance		◎	◎	◎	◎	◎
Gasoline resistance		◎	◎	◎	◎	◎
Methanol resistance		○	◎	○	◎	◎
MEK resistance		○	○	○	○	○
Toluene resistance		○	◎	○	◎	◎
Boiling resistance		○	○	○	○	◎
Weathering resistance		△	△	△	○	△

◎ Excellent ○ Good △ Acceptable

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

HF LGI Series

The HF LGI series is a family of two-part reaction epoxy-based inks having equal performance for printing on a wide variety of materials including aluminum, metallic coats, stainless steel, phenol, melamine, treated olefin-type resins, glass, and ceramics. They are highly regarded for their outstanding film toughness and chemical resistance over a long period of time

Specifications

Ink type
Usage

Two-part reaction inks in which unique epoxy resin is blended.

Iron, aluminum, stainless steel, and other metals, metal-coated industrial parts, markings and plates, packages and containers made of glass, thermosetting plastics, treated olefin-based resin, etc., requiring resistance against acids, alkalines, solvents, and friction.

Finish
Drying time
by curing in

Gloss finish of outstanding wear resistance and leveling.

May be air-dried or curing. Sets to touch in about 2 hours at room temperature (at room temperature), or 30 minutes at 150°C.

Film Performance Under Different Drying Conditions

Condition	20°C x 1 week	60°C x 60 min	80°C x 60 min	100°C x 30 min	120°C x 30 min	150°C x 30 min	
Item							
Adhesion	○	◎	◎	◎	◎	◎	
Hardness	△	△	○	○	◎	◎	◎ Excellent
Acid resistance	△	△	△	○	○	○	○ Good
Alkali resistance	△	△	△	○	○	○	△ Fair
Solvent resistance	△	△	△	○	○	○	△ Acceptable
							x Poor

*Use this information for drying condition selection (subject to testing) according to the materials.

Adhesion

Adhesion of the inks in this series is far greater compared to other types making them applicable for printing on aluminum-coated glass, thermosetting plastics, treated olefin, etc. Beware, however, or variation in ink film performance due to the special nature of the materials (Shown below).

Variation In Ink Film Performance Among Different Materials

Material	Aluminum	Steel	Tin	Glass
Item				
Water resistance	◎	◎	◎	△
Warm water resistance	○	○	△	x
Alkali resistance	○	○	△	△
Acid resistance	○	○	△	△

Mesh

Use of 200-to-300-mesh nylon or Tetron screen is recommended. A photomechanical process assures the best results.

Mixing ration
and viscosity
adjustment
substantially

Each product in this series consists of a color base (main agent) and a care-182. Mix in the ratio of 100-2 (by weight), agitate well, and allow to set for about 20 minutes. Then, add specified T-980 in HF LGI (15-20%) to obtain the ideal viscosity for printing. The film performance varies at different mixing ratios (shown below) and the main agent and the care should be mixed carefully at an appropriate ratio (medium ratio 100:2).

Wash-up

Use T-31 for economical wash-up.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

HF LGI Series Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	3H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Soaked in water for 1 month	Not affected
Moisture resistance	40°C x 90% RH x 120 hours	Not affected
Saltwater resistance	Soaked in 5% NaCl for 1 month	Not affected
Impact resistance	300g steel ball dropped on samples from 1m height	Not affected
Line drawing test	Cut at 1.5kg load and peeled using cellophane tape	Not affected
Erichsen test	4mm diameter	Not affected
Flex test	2mm diameter at 180°	Not affected
Acid resistance	Soaked in 5% HCl for 24 hours	Not affected
Acid resistance	Soaked in 5% H ₂ SO ₄ for 24 hours	Not affected
Alkali resistance	Soaked in 5% NaOH for 12 hours	Not affected
Alkali resistance	Soaked in 10% NaOH for 24 hours:	Not affected
Detergent resistance	Soaked in 3% detergent for 7 days	Not affected
Boiling resistance	Soaked in boiling water for 30 mins	Not affected
Methanol resistance	Soaked in Methyl alcohol for 24 hours	Slightly softened
Ethanol resistance	Soaked in ethyl alcohol for 24 hours	Slightly softened
Toluene resistance	Soaked in toluene for 24 hours	Slightly softened
MEK resistance	Soaked in MEK for 24 hours	Slightly softened
Gasoline resistance	Soaked in gasoline for 24 hours	Not affected
Kerosene resistance	Soaked in kerosene for 24 hours	Not affected
Turpentine resistance	Soaked in mineral turpentine for 24 hours	Not affected
Methanol friction resistance	Rubbed 50 times with methanol at 500g load	Not affected
Ethanol friction resistance	Rubbed 50 times with ethanol at 500g load	Not affected
Toluene friction resistance	Rubbed 50 times with toluene at 500g load	Not affected
MEK friction resistance	Rubbed 50 times with MEK at 500g load	Not affected

Test conditions

Material : Toughend Glass
Screen : Tetron 200-mesh screen
Squeeze : Urethane,medium hard
Printing method : Hand printing
Color : White, black
Mixing ratio : Main agent 100: cure 182-2
Dilution : T-980 15 Parts
Drying : 150°C x 30 minutes

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

EPOXY / GLASS

HGI RX002 Series

The HGI RX002 series is a family of acrylic urethane based inks designed for thermal curing. They feature outstanding adhesion to glass, metals and coated metals, and are highly resistant to weathering and moisture.

Specifications

Ink type	One-pack thermal curing ink blended with acrylic urethane.
Usage	Applicable to glass, aluminium, iron and coated metal.
Features	• Gloss finish with excellent levelness. • Requires thermal curing at high temperatures. • One-pack ink with high printability. • Highly suitable for outdoor use, designed for outdoor glass surfaces. • Improved resistance to moisture and boiling water compared to existing products for glass.
Diluent	Standard solvent T-965
Wash-up	T-31
Screen	200-300 mesh/inch polyester or nylon screens
Drying Time	30 minutes at 150°C
Notes	• HGI RX002 series inks may exhibit inferior performance due to moisture in air. • Store in dark and cool spaces with minimum exposure to air. • Multi-layered printing may result in poor adhesion. When performing such operations, please allow previous layers to set to touch dry (at a lower temperature, 10 minutes at 100°C recommended) and hard-dry only after all layers are applied. • Viscosity of the ink may vary based on colour. Please adjust with diluent accordingly.

HGI RX002 Ink Film Test Results

Item		Condition	Result	
Hardness		Pencil hardness 45° x 1kg	3H	
Adhesion	Glass	Cellophane tape peeling test at 1mm incision	100/100	
	Tin			
	Aluminium			
	Iron			
	Coated plates			
Layered printing		Cellophane tape peeling test after overlapped printing with 120 white and 710 black	Overlapped once	100/100
			Overlapped twice	100/100
			Overlapped three times	100/100
Methanol resistance		Rubbed 50 times with methanol-dampened cloth and wiped with 500g load		Normal
Humidity resistance		Placed in 60°C 90% RH environment for 1 week		Normal
Boiling resistance		Soaked in boiling water for 8 hours		Normal
Weather resistance		Exposed to Xenon Weather-o-Meter for 1000 hours		Acceptable

Test conditions

Ink : HGI RX002 120 White, 710 Black
Material : Glass, aluminium, iron, coated metal
Screen : Polyester 250-mesh screen
Squeeze : Medium-hard
Printing method : Hand printing
Dilution : T-965 20%
Drying : 30 minutes at 150°C
 Multi layers printing may result in poor adhesion. When performing such operations, please allow the lower layers to set to touch dry for 10 minutes at 100°C, and hard-dry only after all layers are applied.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

500N Series

The 500N series is a family of screen printing inks for printing on reflective sheets, and melamine and acrylic-coated plates that are commonly used to make traffic and road signs and outdoor signboards requiring weathering resistance and flexibility as well as gloss finish. These inks may be dried naturally or by thermal curing.

Specifications

Ink type	Low odor, oxidation-drying inks that harden at room temperature. Better results are obtained after curing at 80°C for 30 minutes.
Usage	Ideal for printing on outdoor signboards, road signs, made of melamine, acrylic, and other resin coating requiring resistance against weathering. They are also ideal for use on reflective sheets because of their transparency.
Finish	High-gloss finish with good leveling and resistance against weathering. They are cost-saving inks as they produce a transparent print surface without cover coating.
Coverage	Approximately 25m ² per kilogram using a 250-mesh tetron screen.
Drying time	Curing for 20 minutes at 100°C is ideal for printing on metals and metallic coating. Curing at a higher temperature (120°C) is recommended for printing over acrylic or epoxy coating. Printing on reflective sheets and the like by air-drying at room temperature (25°C) requires 30 minutes of drying (set to touch) and 2 hours for hard-dry. The drying time can be reduced by thermal curing.
Adhesion	Strong adhesion by curing when printed on coated surfaces and by air-drying at room temperature when printed over reflective sheets.
Screen	Use 250-mesh of finer nylon or tetron screen for better results.
Diluent	Use standard solvent (T-900) or slow-dry solvent (T-910) as needed by the work environment. Use of retarder (T-950) is recommended in summer or for extremely fine printing.
Wash-up	Use specified solvent (T-907) for economical wash-up.
Notes	Add 0.5~1% of CARE 20 to prevent bubbles during printing; use CARE 21 to prevent cratering.

500N Ink Film Test Results (Cured after Printing on Coated Surface)

Item	Condition	Result
Hardness	Pencil hardness 45° x 1kg	F
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Soaked in water for 1 month	Not affected
Flex test	3mm diameter at 180°	Acceptable
Impact resistance	300g weight dropped from 1m height	Acceptable
Circle drawing test	Peeling test using cellophane tape	Acceptable
Erichsen test	7mm diameter	Acceptable
Weathering resistance	600 hours of Sunshine Weather-o-Meter (WEL-SUN-DC)	Acceptable

Test conditions

Ink : 500N-120 WHITE, 710 Black
 Mixing ratios: Ink 100 : T-900 10
 Material : Printed tin plate
 Drying : 100°C x 20 minutes

*500 Hardener

Dried by curing after addition 500 Hardener to 500N ink improves adhesion performance and alcohol resistance.

Mixing Ratio: Ink (100) : Hardener (8)	Drying time : 120°C x 20 minute
The ink will be not available for printing at room temperature within 1 month after mixing with 500-Hardener.	Methanol resistance: Not affected by rubbing 100 times with methanol at 500g load.

CARE LABEL

312-771 YZ152 FSX ABRASION BLACK

Care Label ink series having good adhesion on different kind of label material such as polyester, cotton, taffeta Long lasting adherence with the fabrics

Specifications

Ink type	Solvent type
Usage	For printing on textile labels made of polyester, cotton, taffeta
Diluent	No diluent is required
Set-to-touch	5-10 sec at 120°C
Main drying condition	2 hour at 120°C (while rolled up)
Note	ECO passport & GOT certification are in the process
Text condition	Passes Washing fastness, dry & wet crocking test at 40°C for 40 minutes.

*Since absorption differs depending on the material, please dry further if performance is not achieved.

MIRROR EFFECT INK

Mirror Effect Ink Series

Mirror effect inks are metalizing inks designed to be printed on the back of clear substrates, so as to create a mirror appearance from the front.

Specifications

Usage	Printing on the back of clear substrates with a smooth surface (such as adhesion-enhanced treaded PET, polycarbonate, hard PVC, acrylic, and glass). Special aluminum powders and resin create a mirror-like metallic tone without the need for procedures such as vacuum coating.
Screen Mesh	Tetron or nylon 250-300 mesh recommended
Coverage	Each kg can print 30~70m ² using a tetron 270 mesh
Diluant	T-1000, T-477, or T-980 based on different inks
Wash-up	T-31

Mirror effect inks are classified based on application (300, 700 etc.). Representative inks from each of the series are listed below:

Mirror effect ink Silver No.2	Used on acrylic, PC, adhesion-enhanced PET
Mirror effect ink Z No.3	Used on acrylic, PC, adhesion-enhanced PET, various metallic colours available by color matching
Mirror effect ink 300MR Silver	Halogen free, used on glass, N hardener 5%, good mirror appearance
Mirror effect ink 500VS-P Silver	Used on adhesion-enhanced PET, good mirror appearance
Mirror effect ink 600MR Silver	Halogen free, used on hard-coat acrylic, T hardener 3%, excellent mirror appearance
Mirror effect ink 600TR Y1039 Silver 2	Halogen free, used on hard-coat acrylic, T hardener 3%, good printability
Mirror effect ink 700BU Silver	Used on acrylic, PC,
Mirror effect ink 700CX Silver	Halogen free, used on PC, good mirror appearance
Mirror effect ink N 700EX Silver	Halogen free, used on PC, acrylic, adhesion-enhanced PE, good mirror appearance and good printability
Mirror effect ink 800MX Silver	excellent mirror appearance, Used on acrylic, PC
Half-mirror Z Silver R1	acrylic, PC, adhesion-enhanced PET, clear (half) mirror effect
Half-mirror Z Silver R3 Slow-dry	For adhesion-enhanced PET, clear (half) mirror effect, slow-dry variant

Other Poor mirror effects might result from substrates with poor surface smoothness and solvent resistance (common in injection-molded products). Always conduct tests to ensure ink performance, including adhesion and post processing (cutting, etc). Mirror effect inks may gel in low-temperature conditions (20°C or below). Fluidity required for printing can be restored by stirring with bladed mixers or manually with spatulas.

Mirror Effect Backing Ink

This ink is designed to be printed over mirror effect inks to provide protection (backing), since mirror effect ink layers are very thin. Besides the protection of mirror effect inks, this ink also improves the resistance of the printed mirror effect layer against friction and chemicals.

Backing this ink on mirror effect inks will not have significant effects on the mirror effect, even on substrates with poor resistance.

Type	Hardener Type and Ratio	Curing	Standard Solvent	Slow-dry Solvent	Retarder
OSH: 1-part evaporation type/ 2-part hardening type	N hardener 10% (2-part hardening)	30 min at 60°C	T-900	T-910	T-950
OSR: 2-part hardening type	N hardener 10%	30 min at 60°C	T-900	T-910	T-950
OSP 1-part evaporation type/ 2-part hardening type	N hardener 10% (2-part hardening)	30 min at 60°C	T-900	T-910	T-950

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

MIRROR EFFECT INK

Beside the Mirror Effect Backing Ink series, some standard products can also be used as backing inks. Combinations of mirror effect inks and backing inks are listed below, based on substrate.

Recommended Usage based on Substrate

Substrate	Mirror Effect Ink	Type	Diluant	Mirror Curing Condition	Applicable Backing Ink
Polycarbonate	Silver No. 2 Z No. 3 700CX Silver N700EX Silver Half-mirror Z R1 800MX	1-part evaporation type*1	T-1000 or T-477	30 minutes at 60-80°C after surface dries*2	OSP OSH OSR SG4298 500N (Half-mirror Only: OP22)
Acrylic	Silver No.2 Z No.3 N700EX Silver Hall-mirror Z R1 800MX, 700BU				All except VIC(Z)
Adhesion-enhanced PET	500VS-P N700EX Half-mirror Z R3				All except HAC BMR, and GAP New
Hard-coat Acrylic	600MR Silver 600TR Silver	2-part reaction type	T-980	120-150°C 30 minutes	HF GV2, HF GV3, SG460 Super Slow-dry
Glass	300MR Silver				

*1 Hardeners can also be used. If necessary, add 3-5% D Hardener (by weight). Mirror effect might be lowered by adding hardener.

Other hardeners may also be used to account for different applications (such as injection molding).

*2 For substrates easily affected by solvents, a better mirror effect can be achieved by curing the surface in low temperatures before thermal curing.

The above are demonstrative examples. Results may vary based on maker and product numbers. Please inquire directly for detailed information and instructions.

Mirror Effect ink High Brightness PC/PET

Specifications

Ink type	Special resin / 2 part-reaction air drying system/ halogen free
Usage	Reverse printing on PC and PET to get mirror effect appearance.
Feature	Excellent mirror finish by using high brightness special aluminum flake.
Hardener	CARE 183
Mixing ratio	Ink : CARE 183 = 100:1.5
Diluent	No need
Screen mesh	Polyester/nylon 250~300 mesh/inch fabric and squeeze hardness 80 durometer is recommended.
Drying	Initial drying under 50°C x 10-30min. before forced drying 80°C x 30min.is recommended. (A small logo should take about 50°C x 10 minutes.)
Wash-up	T-31
Others	- Printing conditions such as emulsion thickness, screen mesh size, drying condition, etc are important factors to get the original performance. It influences the brightness and printing finish. - For PC material, OSP RX25 Series or OHM are suitable for BACK UP inks - Check the adhesion and printing finish on the substrate before printing due to variation with time.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

MIRROR EFFECT INK

MIC Mirror Silver / MICN Series

The MICN series is a family of clear inks designed for the coloring of highly reflective 2-layered mirror surfaces. Highly reflective metallic mirror surfaces in various colors can be created through layering with MIC Mirror Silver.



MICN Series

Specifications

Ink type	1-part evaporation type
Usage	Applicable to transparent processed PET, PC, and PMMA substrates. Highly reflective colored mirror effects can be achieved by layering with MIC Mirror Silver.
Diluent	Standard Solvent T-900 Slow-dry Solvent T-910 *Standard dilution is 20-40%. Adjust for colors as necessary.
Screen Mesh	T-300-350 Mesh
Wash-up	T-15/T-31
Curing	At least 30 minutes at 80°C *In addition to high curing temperatures, longer curing times can cause better mirror effects. Therefore, it is recommended for the ink to be cured in as high temperature for as long as possible.

MIC Mirror Series

Print MICN first, and layer on top after MICN has cured completely.

Specifications

Diluent	Normally unnecessary. Adjust with T-477 if the ink is too viscous.
Screen Mesh	Tetron or Nylon 250-300 mesh recommended
Squeegee	Use materials with high hardness (80 degrees recommended)
Wash-up	T-15/T-31
Curing	Cure mirror and backing inks at 50°C or below". After the mirror ink surface dries, cure for 30 minutes at 50°C for a thorough cure. *Please note that curing at over 50°C may lead to a drop in mirror effect.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

MIRROR EFFECT INK

Holographic Ink

The Mirror Effect Ink Z Prism Series is a metallic ink that gives a hologram-like finish by screen printing.

Specifications

Ink type	Evaporation drying type ink made by blending special aluminum powder and resin.
Usage	This ink is developed for printing on the flat materials (Treated PET, PC, Acrylic, Hardened Glass, etc) to get hologram effect. Basically, it is printed on the back side, but it can be also obtained a soft holographic feeling with front side printing
Kind of Ink	• Mirror effect ink Z prism Y3122 prism silver AN • Mirror effect ink Z prism Y3123 prism AN • Mirror effect ink Z prism Y3124 super prism AN
Diluent	Usually there is no need to dilute. Use as a solvent to restore hardened ink. Standard solvent T-1000
Wash-up	T-31 or T-15
Screen mesh	Polyester or nylon screens 270~300 mesh/fabric inch is recommended.
Drying condition	May be air drying at room temperature (under 50°C) for set-to-touch, but forced drying at 60°C~80°C x 30 min. is recommended for better performance.
Others	• Brightness may differ due to differences in printing conditions such as screen mesh, emulsion thickness, and drying temperature. Please note the management of printing conditions. • Depending on the type of material, the hologram gone may not be obtained, or the adhesion may not be obtained. please use after checking. • Ink for back-up printing should be used after checking the usage, adhesion and design in advance.

Back up ink combination example

	Material	Back up ink
Y3122 PRISM SILVER AN	Treated PET	PPT(N)
	Glass	HF GV3
Y3123 PRISM AN	Treated PET	OSH, VIC(Z), ABS, PPT(N)
	Glass	HF GV3
	Acrylic	OSH
	PC	OSH, ABS,PPT(N)
Y3124 SUPER PRISM AN	Treated PET	OSH, VIC(Z)
	Glass	HF GV3
	Acrylic	ABS,PPT(N)

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Toughened Glass

HF GLV Series

The HF GLV series is a ink developed for tempered glass, glass and metal-coated plates. This is an environmentally friendly product, the percentage of Chlorine and Bromine is 900ppm and total Halogen is below 1,500 ppm.

Specifications

Ink type	One pack thermal curing ink, hardener contained in inks requires thermal curing at high temperature.
Usage	Applicable for printing on tempered glass, stainless steel, aluminum, metal-coated plates
Features	Gloss finish with excellent levelness
Diluent	Standard solvent T-980 or T-965
Mixing Ratio	HF GLV ink (100): CARE 73 (3-5)
Wash-up	T-31
Drying	40 minutes at 150°C

HF GLV Series Ink Film Test Result

Item	Condition	Result
Hardness	Pencil hardness 45° x 750g load	4H
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape	100/100
Methanol resistance	Rubbed 100 times with methanol dampened cloth and wiped with 500g load	Not affected
Heat and moisture resistance	60±2°C * 95±2%RH * 200 hours	Not affected
Boiling Resistance	Peeling test at 1mm pitch crosscut test using cellophane tape after soaked in boiling water for 60 minutes	100/100
Optical Density	Use in 420 mesh polyester and OD test	Over 5.0
Insulation Resistance	Surface resistance tester	>10 ⁹ Ω
Blocking Resistance	Use in 420 mesh polyester	4-6μm

Ink performance figures are experimental value, and not guaranteed.

Note :

When performing multi-layered printing, please allow previous layer to set to touch dry and hard-dry only after all layers are applied.

Test conditions

Ink	: HF GLV-710 black
Material	: Tempered glass
Screen	: polyester 420 mesh
Squeegee	: 80
Mixing Ratio	: HF GLV-710: CARE 73 = 100:3
Dilution	: T-965 15-20%
Drying	: 40 minutes at 150°C

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Toughened Glass

HF SG460SSD NS Series

The HF SG460SSD NS series is a family of screen inks for use on reinforced glass, designed to not be affected by UV adhesives. It possesses better chemical and moisture resistance than common glass-targeted inks.

With a Chlorine content of under 700ppm, a Bromine content of under 700ppm, and a total Halogen content under 1100ppm, this ink is designed with environmental concerns in mind.

Specifications

Ink type	3-part urethane baking type
Usage	Various reinforced glass
Features	Strong adhesion and resistance to boiling and alcohol on reinforced glass
Diluent	Standard Solvent T-482
Hardener	FA Hardener
Additive	Standard Coupling agent: CARE99
Mixing Ratio	Ink: Hardener: Coupling agent=70:30:3~5 Mixed inks may gel and lose physical properties if left in room temperature for 2-3 hours. Adhesion may vary based on glass textures. Try CARE 83 or CARE 183 in such conditions.
Curing	150°C for 30 minutes
Screen Mesh	Tetron/ Nylon 200-420 screen mesh recommended
Other	CARE99 is sensitive to moisture. Please use as soon as possible after opening.

HF GLV Series Ink Film Test Result

Item	Condition	Remark	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	No peeling	Pass
Pencil Hardness	Pencil Hardness Test 45° x 750g	No obvious marks	4H
Alcohol resistance	50 rubs with alcohol-doused gauze under 500g load	No peeling from rubbing	Pass
Friction resistance	50 rubs with gauze under 500g load	No peeling from rubbing	Pass
Boiling resistance	Immersed in boiling water for 1 hour, left in room temperature for 30 minutes, followed by peeling test at 1mm pitch crosscut using cellophane tape	No change in appearance, no peeling	Pass

Ink performance figures are experimental values, and not guaranteed.

Test conditions

Ink	: HF SG460SSD NS 710 Black
Hardener	: FA Hardener
Additive	: CARE99
Mixing Ratio	: 70:30:5
Solvent	: T-482
Material	: Reinforced Glass
Screen Mesh	: Tetron 420 Mesh
Curing	: 150°C for 30 minutes, followed by 1 day in room temperature.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Toughened Glass

HF GV3/GV2 Series

HF GV2 RX01 series is two part reaction ink developed for tempered glass. This series is an environmentally-friendly product, the percentage of Chlorine and Bromine is 900ppm and total Halogen is below 1,500ppm. In addition, HF GV3 RX01 series conduct scarcely. It is a three part ink developed for tempered glass.

Specifications

Ink type	Three part reaction acrylic ink
Features	Gloss finish and excellent in leveling HF GV3 RX01 Series can adhere to glass at low temperature and keep up with the physicality test of every kind. HF GV2 RX01 Series can adhere to glass at low temperature and keep up with the physicality test of every kind.
Diluent	T-980
Washup	T-31
Screen Mesh	T-250-420/inch fabric are recommended
Mixing ratio	HF GV3 RX01 710, Other colors: A Hardener: CARE 183 = 100:15:2 HF GV3 RX01 120: A Hardener: CARE 183 = 100: 10:2 HF GV2 RX01 710, Other colors: CARE 182 = 100:2 HF GV2 RX01 120: A Hardener: CARE 182 = 100:2
Drying	120°C x 30min is recommended
Notes	• Drying more than 40min at 120°C may help to improve the alcohol resistance. • Please follow the ratio of additive and adjust viscosity with diluents. Once ink is mixed HF GV3 RX01 and additives, the ink will get thicker about three hours at room temperature, so please dilute. • Addition (1%) of CARE 111 to the ink may help to improve the foaming printing problems. • When HF GV3 RX01 Series lose its performance because of the influence of environment and time, please add 1% of CARE 183. • Pot life is approximately 7 hours, so please do not use after 7 hours. • Please check the performance under long storage.

HF GV3 RX01-Series Ink Film Test Result

Item	Condition	Result
Hardness	Pencil hardness 45° x 750g load	4H
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape	100/100
IPA friction resistance	Rubbed 20 times with methanol at 1kg load	Not affected
Heat and moisture resistance	60 ±2°C * 95±2%RH * 240 hours	Not affected
Boiling Resistance	Peeling test at 1mm pitch crosscut test using cellophane tape after soaked in boiling water for 30 minutes	100/100
Optical Density	Use in Tetron 420 mesh and OD test	Over 4.0
Insulation Resistance	Industrial technology center (surface test)	1x 10 ¹³ Ω ☒ 1
Weather Resistance	Exposed to Xenon weather-O-meter for 500 hrs	Not affected

Test conditions

Ink	: HF GV3 RX01 710 Black
Material	: Tempered Glass
Screen Mesh	: T-420/ inch
Squeegee	: Urethane medium-hard
Printing	: Hand Printing
Mixing Ratio	: HF GV3 RX01 710: A Hardener: CARE183=100:15:2
Diluents	: T-980 10%

Drying Condition : 120°C x 30min

*1: Slight difference may be shown in resistance value according to the surrounding environment (e.g. humidity, temperature) when the value reaches 10¹³Ω.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

Inks for IMD (In Mold Decoration)

PID Series

PID series is two part reaction ink developed for insert/in-mold forming on Polycarbonate, PET, etc. The ink can produces good adhesion, flexibility and heat resistance applicable for making a key pad film of mobile phone parts, home appliances, etc.

Specifications

Ink type	Two part reaction polyester ink (available for air-drying)
Finish	
Gloss	
Usage	Mainly Polycarbonate and PET for insert/in-mold forming Good adhesion, flexibility and heat resistance suitable for forming process
Solvent	T-926 (standard solvent)
Mixing ratio	PID hardener: by weight Ink: PID Hardener = 100 : 20 *Pot life is about 6~8 hours after mixing with hardener
Wash-up	T-905 or T-31
Screen mesh	Tetron or Nylon 250~350 are recommended
Drying	80°C x 30min is recommended

PID Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	H
Adhesion	Peeling test at 1 mm pitch crosscut using cellophane tape	100/100
Impact Resistance	300g steel ball dropped from 50cm	Pass
Bending Resistance	2mm diameter x 180° bending	Pass
Solution resistance 1	50 rubs with methanol-doused gauze under 1kg load	NG (3 rubs)
Solution resistance 2	50 rubs with gasoline-doused gauze under 1kg load	Pass
Acid resistance	Soaked in 1/10N H ₂ SO ₄ for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Alkali resistance	Soaked in 1/10N NaOH for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Water resistance	Soaked in tap water for 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Heat resistance	80°Cx 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Moisture resistance	60°C x 95%RH x 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Thermal shock resistance	(2 hours in 80°C→30 minutes in room temperature →2 hours in -20°C →30 minutes in room temperature) for 10 cycles, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected

*Ink performance figures are experimental values, and not guaranteed.

Test conditions

Material : Polycarbonate plate
Ink : PID120, 710
Curing : 30 minutes in 60°C, followed by 1 day in room temperature.

PCI Series

PCI series is two part reaction ink developed for insert/in-mold forming on Polycarbonate, PET, etc. The ink can produces good adhesion, flexibility and heat resistance applicable for making a key pad film of mobile phone parts, home appliances, etc.

Specifications

Ink type	Two part reaction polyester ink (available for air-drying)
Finish	
Gloss	
Usage	Mainly Polycarbonate and PET for insert/in-mold forming Good adhesion, flexibility and heat resistance suitable for forming process
Solvent	T-926 (standard solvent)
Mixing ratio	PID hardener: by weight Ink: PID Hardener = 100 : 20 *Pot life is about 6~8 hours after mixing with hardener
Wash-up	T-905 or T-31
Screen mesh	Tetron or Nylon 250~350 are recommended
Drying	80°C x 30min is recommended

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

PCI RX01 SERIES

PCI RX01series is two part reaction ink developed for insert forming on Polycarbonate.The ink can produces good adhesion, flexibility and heat resistance suitable for forming process.

Specifications

Ink type	Two part reaction polyester ink
Usage	Mainly Polycarbonate for insert forming Good adhesion, flexibility and heat resistance suitable for forming process
Solvent	T-900 (standard solvent) T-910 (slow drying solvent)
Mixing ratio	PCI RX01 ink : SI-hardener = 100 : 5
Wash-up	T-31, T-40
Screen mesh	Tetron or Nylon 200~300 are recommended
Drying time	80°C x 30min is recommended
Others	VF-hardener should be used as soon as possible as after mixing with PCI RX01 ink since it very sensitive to moisture.

PCI RX01 ink Film Test Results

Adhesion (SHEET)	Peeling test by crosscut using cellophane tape	100/100
Adhesion (Molded product)	Peeling test at 1cm pitch by crosscut	Not Affectede
Moisture resistance	80°×90%RH×200 hours	Not Affectede
Thermal shock resistance	-20°×1hr → 80°×1hr ×10 cycle cycle	Not Affectede
Heat resistance	100°×500 hours	Not Affectede

※Ink performance figure are experimental values, and not guaranteed.

PID SERIES

PID series is two part reaction ink developed for insert/in-mold forming on Polycarbonate, PET, etc. The ink can produces good adhesion, flexibility and heat resistance applicable for making a key pad film of mobile phone parts, home appliances, etc.

Specifications

Ink type	Two part reaction polyester ink (available for air-drying)
Finish	Gloss
Usage	Mainly Polycarbonate and PET for insert/in-mold forming Good adhesion, flexibility and heat resistance suitable for forming process
Solvent	T-900 (standard solvent) T-910 (slow drying solvent)
Mixing ratio	PID hardener: by weight Ink: PID Hardener = 100 : 20 *Pot life is about 6~8 hours after mixing with hardener
Wash-up	T-905 or T-31
Screen mesh	Tetron or Nylon 250~350 are recommended
Drying time	80°C x 30min is recommended

HF SKY Series

Specifications

Usage	PMMA, PC, ABS, etc
Diluent	T-980 (standard solvent)
Drying	80°C x 5min (Temporary drying) 80°C x 1-2 Hour (Final drying after print binder)

Example of drying for each layer

1 st	HF SKY 710 (80° x 5min)
2 nd	HF SKY 710 (80° x 5min)
3 rd	HF SKY 710 (80° x 5min)
4 th	HF SKY 710 (80° x 5min)

In order to prevent from Lifting issue, drying time including rest time have to be within 2 hour from 1st layer to the layer just before Binder layer.

	5 th	JT50 Binder (80° x 2h)	Longer drying time give higher heat and wash out resistance
Mixing ratio		HF SKY 710 : A HARDENER = 100 : 3-10 HF SKY 120 : A HARDENER = 100 : 3	

※If high stretchability is required, less ratio of hardener is better. If there is no requirement of stretchability, high ratio of hardener is better.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

Inks for IMD (In Mold Decoration)

HF PCL Series

HF PCL Series is single pack reaction ink developed for insert forming on Polycarbonate. The ink can produced good adhesion, flexibility and heat resistance suitable for forming process

Specifications

Ink type single pack polyester ink

Finish

Gloss

Usage PMMA, PC, ABS, etc

Pattern A

1st layer

HF PCL 710 black : T922 = 100 : 20

(60° x 10-30min)

2nd layer

HF PCL 125 Pure White : Y3411 = 100 : 20

(60° x 10-30min)

3rd layer

HF PCL 800 Medium Clear : Y3411 = 100 : 20

(60° x 3min)

Pattern B

1st layer

HF PCL 710 black : T922 = 100 : 20

(60° x 10-30min)

2nd layer

HF PCL 710 black : Y3411 = 100 : 20

(60° x 30min)

Solvent T-922 (standard solvent)

Wash-up T-31 or T-40

Screen mesh Tetron or Nylon 200~300 are recommended

Drying 80°C x 30min is recommended

HF PCL ink Film Test Results

Adhesion (SHEET)	Peeling test by crosscut using cellophane tape	100/100
Adhesion (Molded product)	Peeling test at 1cm pitch by crosscut	Not affected
Moisture resistance	80°CX90%RHx200 hours	Not affected
Thermal shock resistance	-20°CX1HR → 20°CX1hrX10 cycle	Not affected
Heat resistance	100°CX500 hours	Not affected

*Ink performance figures are experimental values, and not guaranteed.

Test conditions

Material : Polycarbonate plate

Ink : HF PCL 120, 710

Curing : 30 minutes in 60°C, followed by 1 day in room temperature.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

VIC (Z) Series

The VIC series is a family of two-part reaction urethane inks that dry more quickly than other two-part reaction inks. They feature outstanding adhesion, good moisture and solvent resistance, and may be printed over treated PP and PE as well as coated surface. ABS, acrylic, PVC, and other materials.

Specifications

Ink type	Quick-drying, two-part reaction inks using an isocyanate hardener.
Usage	Treated PP and PE coats (especially urethane coats), ABS, acrylic, PVC, nylon cloths, etc.
Finish	Generally semi-gloss finish plus solvent-resistant film, although the quality varies slightly with the color.
Drying time	Air or thermal curing. Sets to touch in 30 minutes at room temperature (25°C); 5 minutes by thermal curing at 60°C. Hard dry in 1 week at room temperature; 20 minutes by thermal curing at 80°C + 2 days air drying.
Mixing ratios	Add hardener (transparent) to the main agent (colored) at the ratio of 1:10, and agitate them well before use. Use within the pot life of 6-8 hours, after which the mixture will turn to gel or lose its designed physical properties. Pot life may vary based on environmental sectors.
Diluent	Use the following types of solvents (10-15% weight) to adjust viscosity: standard solvent (T-926), slow-dry solvent (T-927), retarder (T-980).
Wash-up	Use T-15 for economical wash-up.
Notes	VIC series hardeners are very sensitive to humidity, so VIC inks should be used as soon as possible after opening. After the addition of gold metallic powder, a reaction will occur that causes the ink to gel rapidly. The inks should not be used in cases of such reaction.

MS8 Series

MS8-series are designed for printing on treated olefin, painted surfaces, etc. They features outstanding weather resistance.

Specifications

Ink type	Two-part reaction inks using an isocyanate hardener.
Usage	Acrylic, ABS, treated olefins and printed surfaces. Excellent weather resistance makes this series very suitable for outdoor display.
Finish	High gloss with good leveling.
Drying time	Natural or thermal curing. Sets to touch in 40 minutes at room temperature (25°C); 20 minutes by thermal curing at 70°C. Hard dry in 4 days at room temperature (25°C); 60 minutes by thermal curing at 70°C.
Mixing ratios	Standard colors.....Main agent (colored inks): Hardener = 10:1 800, 850 and transparent color..... Main agent: Hardener = 10:2 Use within the pot life of 6-8 hours, after which mixture will turn to gel or lose its designed physical properties.
Diluent	Standard solvent (T-926), slow-dry solvent (T-980)
Wash-up	T-15
Notes	MS8 series hardeners are very sensitive to humidity, so MSB inks should be used as soon as possible after opening.

MS8 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 1kg	3H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Moisture resistance	40°C x 90% RH x 120 hours	Not affected
Acid resistance	Soaked in 10% HCL for 10 hours	Not affected
Acid resistance	Soaked in 10% H ₂ SO ₄ for 10 hours	Not affected
Alkali resistance	Soaked in 10% NaOH for 10 hours	Not affected
Alcohol resistance	Rubbed at least 50 times with methanol at 500g load	Not affected
Gasoline resistance	Rubbed at least 50 times with gasoline at 500g load	Not affected

Test conditions

Ink : MS8-120 White
Material : Acrylic plate
Drying : 75°C x 60 minutes + 2 days at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

HF SKY Series

HF SKY-series is a family of two-part reaction inks that is compatible with IMD/IML Application.

Specifications

Type	Two part thermal curing ink.
Usage	PMMA PC ABS etc.
Feature	Gloss finish
Diluent	Standard T-980
Mixing ratios	HF SKY 120 White a hardner : A Hardener = 100 : 3 HF SKY 710 : A HARDENER = 100 : 3-10

*if high stretchability is required, less ratio of hardener is better. If there is no requirement of stretchability, high ratio of hardener is better.

Washing solvent T-15

Drying time	: 80° x 5min (Temporary drying)
	80° x 1-2hours (Final drying after print binder)

Example of drying for each layer

1st	HF SKY 710 (80° x 5min)
2nd	HF SKY 710 (80° x 5min)
3rd	HF SKY 710 (80° x 5min)
4th	HF SKY 710 (80° x 5min)
5th	JT50 Binder (80° x 2hours) Longer drying time give higher heat and wash out resistance

HF Sky Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	H
Adhesion	Peeling test at 1 mm pitch crosscut using cellophane tape	100/100
Impact Resistance	300g steel ball dropped from 50cm	Pass
Bending Resistance	2mm diameter x 180° bending	Pass
Solution resistance 1	50 rubs with methanol-doused gauze under 1kg load	NG (3 rubs)
Solution resistance 2	50 rubs with gasoline-doused gauze under 1kg load	Pass
Acid resistance	Soaked in 1/10N H ₂ SO ₄ for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Alkali resistance	Soaked in 1/10N NaOH for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Water resistance	Soaked in tap water for 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Heat resistance	80°C x 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Moisture resistance	60°C x 95%RH x 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Thermal shock resistance	(2 hours in 80°C→30 minutes in room temperature →2 hours in -20°C →30 minutes in room temperature) for 10 cycles, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected

*Ink performance figures are experimental values, and not guaranteed.

Test conditions

Material	: Polycarbonate plate
Ink	: HF SKY 120, 710
Curing	: 30 minutes in 60°C, followed by 1 day in room temperature.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

IMD IML Series

HF HSD Series

The HF HSD series is a family of two-part reaction type inks. They can be widely applied to various materials, and offer excellent printability. Having a flexible ink layer, they can also be applied in in-mold decoration. This series of inks is halogen-free and environment-friendly.

Specifications

Ink type	Polyacrylate-based two-part isocyanate hardener-type.
Usage	Excellent adhesion on various materials, suitable for materials such as processed PP, coated surfaces, ABS, PMMA, hard-coated PMMA, PC, processed PET, and aluminium.
Features	• Gloss Finish • Widely applicable, demonstrates excellent adhesion to most substrates. • Excellent moisture and solvent resistance. • Halogen-free
Diluent	• Standard solvent: T-926 • Slow-dry solvent: T-927 • Retarder: T-980
Mixing ratio	• Ink: D-Hardener = 100:10) • Gel phenomena may occur after 6-8 hours of usage at room temperature after mixing, leading to reduced physical performance.
Washup	T-15/T-31
Screen	200-300 mesh/inch polyester or nylon screens recommended.
Drying time	• Sets to touch-dry in 40 minutes at 25°C. • Hard-dries in 1 week (air-drying) or 30 minutes at 80°C+2 days air-drying. • When applied to metal substrates, thermal curing for 20 minutes at 120-150°C is required for optimal results.
Notes	• When used on electroplated film, dilute with solutions T-900 or T-910 to prevent solvent attacks to the substrate. (Verification is advised based on substrate differences) • D-Hardener is extremely sensitive to moisture. Use as soon as possible after opening. • Bubbles and/ or pin-holes may form based on printing conditions. Add 1-2% (by weight) of CARE 13 as needed. • Add 3-5% of CARE 73 to enhance adhesion to glass and resistance to boiling and alcohol.

HF HSD Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 500g	H
Adhesion	Peeling test at 1 mm pitch crosscut using cellophane tape	100/100
Impact Resistance	300g steel ball dropped from 50cm	Pass
Bending Resistance	2mm diameter x 180° bending	Pass
Solution resistance 1	50 rubs with methanol-doused gauze under 1kg load	NG (3 rubs)
Solution resistance 2	50 rubs with gasoline-doused gauze under 1kg load	Pass
Acid resistance	Soaked in 1/10N H ₂ SO ₄ for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Alkali resistance	Soaked in 1/10N NaOH for 7 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Water resistance	Soaked in tap water for 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Heat resistance	80°Cx 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Moisture resistance	60°C x 95%RH x 168 hours, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected
Thermal shock resistance	(2 hours in 80°C→30 minutes in room temperature →2 hours in -20°C →30 minutes in room temperature) for 10 cycles, followed by peeling test at 1mm pitch crosscut using cellophane tape	Not affected

*Ink performance figures are experimental values, and not guaranteed.

Test conditions

Material : Polycarbonate plate
 Ink : HF HSD 120, 710
 Curing : 30 minutes in 60°C, followed by 1 day in room temperature.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

HF BMR-S Series

The HF BMR-S series is a family of inks designed for usage on hard-coated materials, and offer outstanding levelness and adhesion to such materials.

Developed with the environment in mind, this series boasts low levels of Cl (under 900ppm), Br (under 900ppm), with total halogen content under 1500ppm.

HF BMR : Does not contain silicone

HF BMA-S: Contained silicone for enhanced abrasion-resistance

Specifications

Ink type	Urethane based two-part isocyanate hardening inks.
Usage	Applicable on hard-coated acrylic surfaces (Such as MR200 manufactured by Mitsubishi RAYON).
Features	Excellent leveling properties, semi-gloss finish, outstanding rub-resistance.
Diluent	Diluent Standard Solvent T-926, T-945 Slow-dry Solvent T-927 Retarder T-980
Hardener	N-Hardener: Standard hardener, used in regular circumstances D-Hardener: Use to improve rub-resistance
Mixing Ratio	Ink: hardener = 100:10 Gel phenomena may occur after 6-8 hours of usage at room temperature after mixing, leading to reduced physical performance.
Wash-up	T-15/T-31
Screen	200-300 mesh/inch polyester or nylon screens recommended
Drying Time	Air-drying: Sets to touch in 40 minutes at 20°C thermal curing: 30 minutes at 80°C + 1 day air-drying
Notes	• N-Hardener is extremely sensitive to moisture. Use as soon as possible after opening. • Rate of evaporation has been reduced to improve printability, thermal curing is recommended. • During multi-layer printing, it is recommended for previous layers to be set to touch-dry, and hard-dried after all procedures are completed to prevent peeling.

Colour Code for HF BMR-S Series

120 White	200 Primrose Yellow	265 Ultra Orange	400 Ultra Blue
440 Blue	495 Violet	500 Fire Red	510 American Red
550 Ruby Red	580 Magenta	710 Black	800 Medium
850 Half Tone Medium			
208 Process Yellow	209 Yellow	456 Process Blue	498 Process Violet
513 Permanent Red	538 Process Red	586 Perm Magenta	765 Process Black

HF BMR-S Ink Film Test Results

Item	Condition	Result
Adhesion	Cellophane tape peeling test at 1mm pitch cross-cut	100/100
Hardness	Pencil hardness 45° x 200G	3H
Water resistance	Adhesion test after soaking in water for 1 week	100/100
Humidity resistance	Placed in 60°C 90% RH environment for 200 hours	Not affected
Alcohol resistance	Rubbed 50 times with methanol-dampened cloth and wiped with 500g load	Not affected
Gasoline resistance	Rubbed 50 times with gasoline-dampened cloth and wiped with 500g load	Not affected
Acid resistance	Soaked in 10% H ₂ SO ₄ solution for 10 hours	Not affected
Akali resistance	Soaked in 10% NaOH solution for 10 hours	Not affected
Heat resistance	Adhesion test after 100°C x 48 hours exposure	100/100
Low temperature resistance	Adhesion test after -20°C x 48 hours exposure.	100/100

Test conditions

Ink : HF BMR-S 120 white, 710 black

Material : MR200

Drying : 30 minutes at 60°C and air-drying for 1 day

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

BINDER

JT27 Base Clear

JT27 Base Clear is an adhesive (Binder) which gives good adhesion between injected resin and printed ink surface.

Specifications

Ink type	Special Vinyl resin base Air drying single component ink
Usage	JT27 Base Clear creates the flexible printed film with heat resistance, it bonds the ink printing surface and injection resin(ABS) well. JT27 Base Clear is improved type of JT25 Base Clear. It has outstanding humidity resistance.
Feature	Good heat resistance with flexibility
Diluent	Standard solvent T-912 Slow drying solvent T-920 Retarder T-980
Wash-up	T-31
Screen Mesh	Tetron or Nylon 200/inch fabric or lower mesh is recommended
Drying time	Forced drying : 80° x 60min.
Other	This is a trial product, we may change the formulation without prior notification.

JT50 Y1972 Binder

JT 50 Y1972 binder is used for automobile interior parts. Adhesion between the decorative ink surface and the injection resin of insert or in-mold molding that injects resin. It is a binder that makes it unify.

Specifications

Ink type	1-Liquid evaporative drying type. 2-Liquid reaction curing type
Usage	Automotive interior parts inserts, binders for in-mold molding.
Feature	It forms a heat-resistant and flexible film and adheres the PC injection resin and the decorative ink surface. The ink does not intentionally contain halogen substances.
Diluent	Standard solvent – T-910 Use a viscosity that is easy to print with a dilution of 10 to 20% as a guideline.
Cleaning solvent	T-15 or T-31
Printing	We recommend around 200 mesh of screen mesh Tetron or nylon.
Drying Con.	Dry at 80°C for 60 minutes The standard drying time is 80°C for 90 minutes in total, including the drying time for the decorative ink.
Other	Environmental test results (heat resistance, etc.) can be improved by adding 10% D curing agent. In that case, we recommend using T-1000 as the diluent.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

BINDER

JT70 Y3045 PP IML SA BINDER

JT70 Y3045 PP IML SA BINDER is an adhesive that improves the adhesion between the ink surface and the injected resin.

Specifications

Ink type	Polyolefin-based resin
	One-component drying type
Feature	Adheres to the injected polyolefin-based resin and the surface of the decorative ink. It is an ink would not harden when the temperature is low, such as in winter.
Solvent	Standard solvent T-900
	Slow dry solvent T-910
	Super slow dry solvent T-950
Wash-up	T-907, T-31, T-15
Screen Mesh	Tetron / Nylon – 200 mesh or lower is recommended
Drying time	Forced drying = 80° x 60min

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

PHONE BATTERY

HF MOL Series

MOL series is two-part reaction ink developed for insert/in-mold forming application using Polycarbonate, treated PET and Urethane sheet. MOL can produces good adhesion, flexibility and heat resistance ink film applicable for making a mobile phone key pad parts,etc.

Specifications

Ink type	Two part reaction polyester ink
Finish	Smooth flat surface with gloss finish
Usage	Polycarbonate, treated PET and Urethane sheet
Gloss	Polycarbonate, treated PET and Urethane sheet
Solvent	T-926 (standard solvent) T-980 (slow drying solvent)
Mixing ratio	MOL ink : D-hardener = 100 : 10 by weight *Pot life is about 6~8 hours after mixing with hardener
Wash-up	T-31
Screen mesh	Tetron or Nylon 200~300 are recommended
Drying	80°C x 40~50min is recommended
Others	D-hardener should be used as soon as possible as after mixing with MOL ink since it very sensitive to moisture.

Note : This ink is very good for printing on mobile battery

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

PAD INK

HF S-PAD Series

The HFS-PAD series is a family of inks designed specifically for pad printing. It offers excellent performance in transfer-printing with outstanding rub resistance, while preventing drawing phenomena common in pad printing.

Specifications

Ink type	Polyester-based two-part reaction type or one-pack thermal curing inks.
Usage	Viable for printing on plastic (ABS, PMMA, PC, PET, etc.), coated metals, UV-coated and acid-resistant aluminium substrates.
Features	• Semi-gloss finish • Excellent rub resistance • Manufactured according to major corporate standards (Cl no more than 700ppm, Br no more than 700ppm, total halogen contents no more than 1100ppm)
Diluent	Standard solvent: T-640 Slow-dry solvent: T-952
Mixing ratio	Mix in 10~15% D-Hardener
Drying time	While air-drying is possible, curing at 80°C x 30min is recommended to ensure optimal performance.
Wash-up	T-15/T-31
Notes	• Adhesion and abrasion may vary due to substrate differences. Caution is advised. • Use CARE 39 (no more than 10%) if adjustments to printability are required.

Reference Data (Results below are from tests performed by Seiko Advance, and not to be taken as performance guarantees)

Series	Hardener	Coated Metals				UV Coated Metals			
		Adhesion	Eraser	RCA	Alcohol Resistance	Adhesion	Eraser	RCA	Alcohol Resistance
S-PAD 120	0.1	OK	120	120	OK	OK	100	100	OK
	0.2		180	180			Over 200	Over 200	
S-PAD 710	0.1	OK	160	150	OK	OK	160	Over 200	OK
	0.2		Over 200	Over 200			Over 200	Over 200	
SG740 120	0.1	OK	80	80	OK	OK	100	90	OK
	0.2		100	100			80	120	
SG740 710	0.1	OK	100	90	OK	OK	100	100	OK
	0.2		130	150			120	Over 200	
VIC 120	0.1	OK	100	100	OK	OK	90	60	OK
	0.2		Over 200	150			Over 200	Over 200	
VIC 710	0.1	OK	150	100	OK	OK	80	100	OK
	0.2		Over 200	Over 200			Over 200	Over 200	

Note:

- * **Adhesion:** NICHIBAN tape test. Peeling test performed using specified tape after a cross cut on printed surface. No peeling was found.
- * **Alcohol test:** Printed surface was rubbed on 30 times with a cotton cloth soaked in 99% alcohol with a load of 500g. No fading was found.
- * **RCA paper tape test:** Rubbed on printed surface with a load of 175g
- * **Eraser test:** SONY specialized Eraser rubbed on printed surface with a load of 500g
- * **Printing method:** Pad Printing

SG740 Series

The SG740 series is a family of two-part reaction inks that dry more quickly than other two-part reaction inks for higher work efficiency. Their outstanding adhesion power and superb moisture and solvent resistance make them ideal for printing over treated POM (polyacetal), treated PE, treated PP, ABS, acrylic, PVC and other materials. SG740 is a sister series to the VIC series.

Specifications

Ink type	Quick-drying, two-part reaction ink using an isocyanate hardener.
Usage	Outstanding adhesion power makes them ideal for printing over treated PP and PE, treated POM (polyacetal) coats (especially urethane coats), ABS acrylic, PVC, nylon cloth, and other materials.
Finish	Generally semi-gloss finish and outstanding resistance with solvents although the quality varies with the color.
Drying time	Natural or thermal curing. Sets to touch in 40 minutes at room temperature (25°C), hard dry in 1 week at room temperature or 30 minutes by thermal curing (80°C) + 2 days air drying. Heat treatment at 120°C for 20 minutes is recommended for best results on metals.
Mixing ratios	Add hardener (transparent) to the main agent (colored) at the ratio of 1:10, and agitate them well before use. Use within the pot life of 6-8 hours after which the mixture will turn to gel or lose its designed physical properties.
Diluent	Use the following three types of solvents (10-15% weight) to adjust viscosity: standard solvent (T-926), slow-dry solvent (T-927), retarder (T-980).
Wash-up	Use T-15 for economical washing of the plate and other tools.
Performance	Performance is identical to that of the VIC series.
Caution	- The hardener for the SG740 series is extremely sensitive to moisture and should be used as soon as it is unpacked. Foaming and blisters may result under some printing conditions. Add CARE 20 or CARE 50 (1-2%) to the ink to prevent foaming or blisters. - The printed film is somewhat thinner compared to that of the VIC series. - Use of gold metallic powder is not recommended as it will cause a chemical reaction leading to gelation. There is no problem with silver metallic powders.

VIC(Z) and SG740 Ink Film Test Results

Item	Condition	Result
Hardness	Pencil hardness 45° x 200g	H
Adhesion	Treated PP	100/100
	Treated PE	
	Melamin coating	
	Urethane coating	
	ABS	
	Acrylic	
	PVC	
	Tin	
	Nylon cloth	Peeling test by rubbing in hands
Water resistance	Soaked in tap water for 1 week	Not affected
Moisture resistance	60°C x 90% RH x 200 hours	Not affected
Alcohol resistance	Rubbed 100 times with methanol x 500g	Not affected
Gasoline resistance	Rubbed 100 times with gasoline x 500g	Not affected
Xylene resistance	Rubbed 50 times with xylene x 500g	Not affected
MEK resistance	Rubbed 20 times with MEK (methyl ethyl ketone) x 500g	Not affected
Weathering resistance	600 hours of Sunshine Weather-o-Meter (WEL-SUN-DC)	Not affected

Test conditions

Material : Treated PP

Ink : VIC-120, 710, SG740-120, 710

Samples measured 1 week after printing

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Water Slide Decal

1300 HK

The 1300HK series is a family of one-pack, screen printing for water slide decal

Specifications

Ink type	One-pack thermosetting ink.
Usage	Water Transfer Paper
Characteristics	Flat and glossy finish Excellent secondary process-ability
Diluent	T-1000
Wash-up	T-31
Printing	Use of Tetoron or nylon screens of 200-300 mesh number is recommended.
Drying time	Drying at Room Temperature for 20 - 25 mins.

WST

WST Cover coat soft peeling Plastic resin base ink for water slide transfer screen inks for Helmet Decals.

Specifications

Ink type	Plastic resin base water sliding
Usage	Water Slide Transfer Paper
Characteristics	Sami Gloss
Wash-up	T-31
Printing	Use of Tetron or mylon screens of 50~60 mesh number is reoomended
Drying time	Drying at 40°C ~ 50 Hot Air for 10min

Transfer of ink layer:

- 1) First put the printed decal in water/slightly warm water.
- 2) Then remove the print layer with your finger.
- 3) Apply the print layer on the helmet and squeeze all the water/air by pressing with a rubber squeegee.
Please note that if there is water/air remaining the adhesion will be affected.
- 4) Dry it for 30min at 50 to 60degree for complete water/air removal.
- 5) Remove the cover coat.
- 6) Final curing done at 150degree for 30 minutes to make it adhere with surface strongly.

Note:It is advisable to use the printed sheet within one month to avoid strong bonding between film and ink.

Solvent OC Clear

8600-Over Coat Clear NA

Specifications

Usage	Three-part reaction type urethane overcoat clear designed to protect ink printed on PVC stickers and plates, acrylic plates, polycarbonate plates, and polyester film. The hardener causes bridging to produce gloss as well as resistance against weather and solvent.		
Mixing ratio	8600-O.C.Clear NA	100.0	
	8600-Hardener	35.0	
	Care-19	2.0	
		137.0 (weight)	
Pot life	Approximate 6 hours after the mix with 8600-hardener and Care-19		
Drying time	Drying by set to touch		
	*Air-drying at room temperature = 25° x 30 minutes or		
	*Forced drying = 60° x 15 minutes		
	: Hard drying		
	*Air-drying at room temperature = 25° x 48 hours or		
	*Forced drying = 60° x 1 hour		
Diluent	Standard solvent	T-920	
	Retarder	T-980	
Wash-up	T-15 or T-31		

8600 Over Coat Clear ink film test result

Item	Condition								Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape								100/100
Water resistance	Soaked in water at 40± 1° for 24 hours								Not affected
Acid resistance	Soaked in 0.1N H ₂ SO ₄ (sulfuric acid) for 7 hours								Not affected
Alkali resistance	Soaked in 0.1N NaOH(sodium hydroxide) for 7 hours								Not affected
Gasoline resistance	Soaked in gasoline for 1 hours								Not affected
Moisture resistance	40° x 90%RH x 120 hours								Not affected
Oil resistance	Soaked in engine oil for 7 hours								Not affected
Heat resistance	1mm pitch crosscut test using cellophane tape after 96 hours at 80± 2°								Not affected
Weather resistance	Weather meter "SUGA/WEL-SUN-DC model sunshine"								1000 hours
Thermal shock resistance	°C	R/T°C	80°C	-20°C	R/T°C	40°C x 95% RH	R/T°C	-20°C	100/100
	Time	2	0.5	2	0.5	3	0.5	2	

Drying condition = 60°C x 60 hours + 7days at room temperature

Test conditions

Material : Treated PP

Ink : VIC-120, 710, SG740-120, 710

Samples measured 1 week after printing

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

SG425-series

SG425 Over Coat Clear is two-part reaction urethane overcoat transparent clear ink designed to protect the ink printed on PVC stickers and polycarbonate plates, etc. The hardener causes bridging to produce resistance against weathering durability and solvents.

Specifications

Ink type	Transparent gloss finish with flat surface.
Usage	Two-part reaction type urethane overcoat transparent inks designed to protect ink printed on PVC stickers and plates acrylic plates, polycarbonate plates, polyester films, and metal-coated plates.
Mixing Ration	SG425-O.C.Clear : SG425-Hardener= 100 : 10 (by weight)
Pot Life	Approximate 6 hours after the mix with SG425-Hardener
Drying	Drying by set to touch *Air-drying at room temperature = 25° x 30 minutes or *Forced drying = 60° x 10 minutes
Hard drying	*Air-drying at room temperature = 25° x 24 hours or *Forced drying = 60° x 1 hour
Diluent	Standard solvent T-920 Retarder T-980
Washing	T-15 or T-31

SG425-O.C.Clear film test result

Item	Condition	Result
Hardness	Pencil hardness 45°x 500g	H
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Heat resistance	100°x 24 hours	Not affected
Moisture resistance	40°x 90%R.H x 1 week	Not affected
Acid resistance	Soaked in 5% HCl for 24 hours	Not affected
Alkali resistance	Soaked in 5% NaOH for 24 hours	Not affected
Methanol resistance	Rubbed 60 times with methanol at 1kg load	Not affected
Die cutting endurance	Punching test	Not affected

* Result of evaluation according to the Seiko's standards provided for customer's reference

Test conditions

Ink : SG425-Over Coat Clear (Ink : Hardener = 10 : 1)
Screen : 250 mesh/inch fabric
Material : PVC transparent film
Drying Condition : 60°x 1 hour

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Solvent OC Clear

SG429B-SERIES

Specifications

Type & Finish	The hardener causes birding to produce gloss as well as resistance against weathering and solvents.		
Usage	Two-part reaction type urethane overcoat transparent inks designed to protect ink printed on PVC stickers and plates acrylic plates, polycarbonate plates, polyester films, and metal-coated plates.		
Mixing Ratio	SG429B ink:SG429B-Hardener = 100:15		
Drying time	Drying by set to touch : Air-drying at room temperature 25°C x 30 minutes : Forced drying 60°C x 10 minutes Hard drying : Air-drying at room temperature 25°C x 24 hours : Forced drying 120°C x 20 minutes : Perfect hardness requires 1 week at 25°C		
Diluent	Standard solvent : T-920 or T-945 Retarder : T-980		

Washing Solvent T-15

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

7300-Over Coat Clear

7300 SD O.C.Clear is two-part reaction acrylic base overcoat transparent O.C.Clear developed for printing on the colored vinyl printing ink surface, PVC stickers and can produce high gloss printing finish. 7300 SD O.C.Clear is outstanding in chemical resistance, heat resistance, solvent resistance and especially "weather resistance" which is much more durable than existing products.

Specifications

Ink type	Acrylic resin base
	Two part reaction type
Usage	Vinyl ink(Example : SG700-series) printing surface and PVC sticker
Finish	High gloss
Solvent	Standard solvent
	T-922
Mixing Ratio	7300 SD O.C.Clear : 7300-Hardener = 100:15
Wash-up Solvent	T-15
Screen Mesh	Tetron or Nylon 200-300/inch fabric is recommended
Drying condition	Drying by set to touch
	*Air-drying at room temperature = 25°Cx 24hr.
	Hard drying
	*Forced drying = 60°Cx 60min. + aging for 12hrs. at room temperature.
Note	*7300-Hardener is very sensitive to humidity, so it should be used as soon as possible after opening.
	Pot life is approximate 6hr. after mixing with Hardener

7300 SD -Over Coat Clear ink film test result

Item	Condition								Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape								100/100
Water resistance	Soaked in water at 40±1°C for 24 hours								Not affected
Acid resistance	Soaked in 0.1N H ₂ SO ₄ (sulfuric acid)for 7 hours								Not affected
Alkali resistance	Soaked in 0.1N NaOH(sodium hydroxide) for 7 hours								Not affected
Gasoline resistance	Soaked in gasoline for 1 hours								Not affected
Moisture resistance	40° x 90%RH x 120 hours								Not affected
Oil resistance	Soaked in engine oil for 7 hours								Not affected
Heat resistance	1mm pitch crosscut test using cellophane tape after 96 hours at 80± 2°								Not affected
Weather resistance	Weather meter "SUGA/WEL-SUN-DC model sunshine"								1500 hours
Thermal shock resistance	°C	R/T°C	80°C	-20°C	R/T°C	40°C x 95% RH	R/T°C	-20°C	100/100
	Time	2	0.5	2	0.5	3	0.5	2	

* R/T = Room temperature (25°C)

Test conditions

Material = PVC sticker

Drying condition = 60°Cx 60min. + 1days aging at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

6300-Over Coat Clear

6300 O.C.Clear is two-part reaction acrylic base overcoat transparent O.C.Clear developed for printing on the colored vinyl printing ink surface, PVC stickers and can produce high gloss printing finish.
6300 O.C.Clear is outstanding in chemical resistance, heat resistance, solvent resistance and especially "weather resistance" which is much more durable than existing products.

Specifications

Ink type	Acrylic resin base
	Two part reaction type
Usage	Vinyl ink (Example : SG700-series) printing surface and PVC sticker
Finish	High gloss
Solvent	Standard solvent
	T-922
Mixing Ratio	6300 O.C.Clear:6300-Hardener = 100:15
Wash-up Solvent	T-15
Screen Mesh	Tetron or Nylon 200-300/inch fabric is recommended
Drying condition	Drying by set to touch
	*Air-drying at room temperature = 25°Cx 24hr.
	Hard drying
	*Forced drying = 60°Cx 60min. + aging for 12hrs. at room temperature.
Note	*6300-Hardener is very sensitive to humidity, so it should be used as soon as possible after opening. Pot life is approximate 6hr. after mixing with Hardener.

6300 Over Coat Clear ink film test result

Item	Condition								Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape								100/100
Water resistance	Soaked in water at 40±1°C for 24 hours								Not affected
Acid resistance	Soaked in 0.1N H ₂ SO ₄ (sulfuric acid)for 7 hours								Not affected
Alkali resistance	Soaked in 0.1N NaOH(sodium hydroxide) for 7 hours								Not affected
Gasoline resistance	Soaked in gasoline for 1 hours								Not affected
Moisture resistance	40° x 90%RH x 120 hours								Not affected
Oil resistance	Soaked in engine oil for 7 hours								Not affected
Heat resistance	1mm pitch crosscut test using cellophane tape after 96 hours at 80± 2°								Not affected
Weather resistance	Weather meter "SUGA/WEL-SUN-DC model sunshine"								1500 hours
Thermal shock resistance	°C	R/T°C	80°C	-20°C	R/T°C	40°C x 95% RH	R/T°C	-20°C	100/100
	Time	2	0.5	2	0.5	3	0.5	2	

* R/T = Room temperature (25°C)

Test conditions

Material = PVC sticker

Drying condition = 60°Cx 60min. + 1days aging at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

KTO OC CLEAR

KTO G3 O.C.Clear is two-part reaction acrylic base overcoat transparent O.C.Clear developed for printing on the colored vinyl printing ink surface, PVC stickers and can produce high gloss printing finish. KTO G3 O.C.Clear is outstanding in chemical resistance, heat resistance, solvent resistance and especially "Excellent weather durability of upto 4000-5000 hours in Xenon weather o meter" which is much more durable than existing products.

KTO G3 OC CLEAR : T HARDENER = 100 : 14

Specifications

Thinner	T910 (15%)
Mesh	T200 OR 77T
Drying	60°C X 60 Minutes

Printing Configuration

- 1- Please use Overcoat on the top of SG700(Z) series ink.
- 2- When using metallic color printing, please print two layer of KTO G3 OC CLEAR

KTO G3 OVER COAT Clear ink film test result

Item	Condition								Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape								100/100
Water resistance	Soaked in water at 40±1°C for 24 hours								Not affected
Acid resistance	Soaked in 0.1N H ₂ SO ₄ (sulfuric acid) for 7 hours								Not affected
Alkali resistance	Soaked in 0.1N NaOH (sodium hydroxide) for 7 hours								Not affected
Gasoline resistance	Soaked in gasoline for 1 hours								Not affected
Moisture resistance	40°x 90%RH x 120 hours								Not affected
Oil resistance	Soaked in engine oil for 7 hours								Not affected
Heat resistance	1mm pitch crosscut test using cellophane tape after 96 hours at 80±2°C								Not affected
Weathering resistance	4000-5000 hours of Xenon weather o meter								Not affected
Thermal shock resistance	°C	R/T°C	80°C	-20°C	R/T°C	40°C x 95% RH	R/T°C	-20°C	100/100
	Time	2	0.5	2	0.5	3	0.5	2	

* R/T = Room temperature (25°C)

Material = PVC sticker

Drying condition = 60°C x 60min. + 1days aging at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

SG330 Y1222 Over Coat Clear

Specifications

Ink type	Acrylic resin base
	One part reaction type
Usage	PVC sticker, PVC Plate, Acrylic Plate, PC Plate
Finish	Gloss finish
Drying	Drying by set to touch
	*Air drying at room temperature = 25° x 40min
	*Forced drying at room temperature = 60° x 10min
Hard drying	*Forced drying = 60° x 60min
Screen Mesh	Tetron or Nylon 100-200/inch fabric is recommended
Solvent	Standard solvent T-920
	Slow Dry solvent T-980
Washing	T-15

SG330 Y-1222 Over Coat Clear film test result

Item	Condition								Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape								100/100
Water resistance	Soaked in water at 40±1°C for 24 hours								Not affected
Acid resistance	Soaked in 0.1N H2SO4(sulfuric acid)for 7 hours								Not affected
Alkali resistance	Soaked in 0.1N NaOH(sodium hydroxide) for 7 hours								Not affected
Gasoline resistance	Soaked in gasoline for 1 hours								Affected
Oil resistance	Soaked in engine oil for 7 hours								Not affected
Weather resistance	Weather meter "SUGA/WEL-SUN-DC model sunshine"								1000 hours
Thermal shock resistance (3 cycle)	°C	80°C	R/T°C	-20°C	R/T°C	40°C x 95% RH	R/T°C	-20°C	PASS
	Time	2	0.5	2	0.5	3	0.5	2	

R/T = Room temperature (25°)

Material = PVC sticker

Drying condition = 60° x 60min. + 3 days aging at room temperature

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

SOLVENT OC CLEAR

STS Over Coat Clear

STS O.C.Clear is urethane base overcoat clear developed for printing on the colored vinyl printing surface and PVC stickers especially "Fuel Tank Sticker" application. STS-O.C.Clear is outstanding in heat resistance, solvent resistance, compatibility with lacquer, and drying property is faster than other standard O.C.Clears such as SG425, 8600, etc.

Specifications

Ink type	Urethane resin base Two part reaction heat hardening type(air-drying available)
Usage	STS O.C.Clear is designed to protect colored ink printed on PVC stickers especially used for motorcycles.
Finish	Gloss finish of outstanding leveling
Solvent	Standard solvent T-976 Slow Dry solvent T-980
Mixing ratio	STS-O.C.Clear:STS hardener = 100:8-10 (depending on printing condition)
Wash-up solvent	T-15
Screen mesh	Tetron or Nylon 200-300/inch fabric is recommended
Drying condition	*Air-drying at room temperature = 25°C x 24hr. *Forced drying = 60°C x 30min
Note	*Drying at room temperature for approximate 1 week is recommended for cross-linking. *STS hardener is very sensitive to humidity, so STS-Hardener should be used as soon as possible after opening and the pot life is approximate 6hr. after mixing with Hardener

UV OC CLEAR

UV 32N

Over coating clear, UV 32N, develop for vinyl pressure sensitives, good screen printability and flexible. Non-yellowing urethane acrylate formulation leading to high gloss, excellent weather durability and chemical resistance. Over coating on SG700 ink will get a high quality vinyl sticker product.

Specifications

Ink type	UV Curable screen printing clear. High gloss finished.
Curing Con	Single metalhalide lamp of 80W/cm Conveyor speed of 5m/min UV exposed dosage over 280mj/cm ²
Washing	T-15 or T-31

UV 32N film test result

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape	100/100
Water resistance	Immersion in Water 40°C x 24hrs, after that Adhesion test	100/100
Acid resistance	Immersion in 10% Sulfuric acid for 7hrs	Not affected
Alkaline resistance	Immersion in 10% Sodium hydroxide for 7hrs	Not affected
Gasoline resistance	Immersion in Gasoline for 1hr	Not affected
Engine oil resistance	Immersion in Engine oil for 7hrs	Not affected
Heat resistance	Keep in oven 80°C x 96hrs, after that Adhesion test	Not affected
Weather resistance	1,000hrs of Xenon Weather-O-Meter	Not affected

Not effected: No blisters, peeling, cracks and excessive change of gloss and color

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV OC CLEAR

UV-406M (Over Coat Clear)

Specifications

Ink type	UV-406M has been designed to protect ink printed on PVC stickers, etc.
Usage	Outstanding weather durability, printability, flexibility, chemical resistance, high gloss.
Diluent	Use UV-8071 within 5% if required.
Wash-up	T-31 or T-15
Curing Con	Metalhalide lamp: 120w/cm (single lump) Conveyor speed: 5m/min. (Integrating UV light 350 mj/cm2) *Curable condition will be different according to the sort and color of substrates.
Washing	T-15 or T-31

INK FILM TEST

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut test using cellophane tape	100/100
Water resistance	Adhesion test after soaking in water at 40°C for 24 hours	100/100
Acid resistance	Soaked in 10% HCL for 7 hours	Not affected
Alcohol resistance	Rubbed 100times with methanol 1kg load	Not affected
Alkali resistance	Soaked in 5% NaOH for 7 hours	Not affected
Gasoline resistance	Soaked in gasoline for 1 hours	Not affected
Engine oil resistance	Soaked in engine oil for 7 hours	Not affected
Heat resistance	Adhesion test after drying at 80°C for 96hr.	Not affected
Weather resistance	1000hr. by Xenon Weather-O-Meter	

* Printing condition

Substrate: PVC stickers printed with SG700-series.

* Results of evaluation according to the company's standards provided for customer's reference

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV OC CLEAR

UV407 OVERCOAT CLEAR

High quality over coating clear, UV 407 OVERCOAT CLEAR, developed for vinyl pressure sensitives, good screen printability and flexible. Non-yellowing urethane acrylate formulation leading to high gloss, excellent weather durability and chemical resistance. Over coating on SG700 ink series will get a high quality vinyl sticker product.

Specifications

Ink type	UV Curable screen printing clear. High gloss finished.
Curing Con	Single metal halide lamp of 120W/cm Conveyor speed of 5m/min UV exposed dosage over 340mj/cm2
Washing	T-15 or T-31

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Immersion in Water 40°C x 24hrs, after that Adhesion test	100/100
Acid resistance	Immersion in 10% Sulfuric acid for 7hrs	Not affected
Alkali resistance	Immersion in 10% Sodium hydroxide for 7hrs	Not affected
Gasoline resistance	Immersion in Gasoline for 1hr	Not affected
Engine oil resistance	Immersion in Engine oil for 7hrs	Not affected
Heat resistance	Keep in oven 80OC x 96hrs, after that Adhesion test	Not affected
Weather resistance	2,000hrs of Xenon Weather-O-Meter	Not affected

Not effected: No blisters, peeling, cracks and excessive change of gloss and color

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV OC CLEAR

UV500A

Specifications

Ink type	UV curable and LED curable ink
Screen Mesh	T-200 T-300
Curing Con	Metal halide lamp : 120W/cm (single lamp) Conveyor speed 5m/min Integrating UV light : 400-500mJ/cm2 Peak intensity : 500-600mW/cm2
Washing	T-15 or T-31

INK FILM TEST RESULT

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Adhesion test after soaking in water at 40°C±1°C for 24 hours	100/100
Heat resistance	Adhesion test after drying at 80°C±2°C for 96 hours	100/100
Acid resistance	Soaked in 1/10N H2SO4 for 7 hours	Not affected
Alkali resistance	Soaked in 1/10N NaOH for 7 hours	Not affected
Gasoline resistance	Soaked in gasoline for 1 hours	Not affected
Engine oil resistance	Soaked in engine oil for 7 hours	Not affected

* Results of evaluation according to the company's standards provided for customer's reference

Weathering Durability Test

	Gloss value
0 hour	89.0
300 hour	90.1
600 hour	91.1
900 hour	88.9
1200 hour	88.2
1500 hour	85.8
1800 hour	86.9

* Gloss value is measured at an angle of 60 degree.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV OC CLEAR

UV-NS OVERCOAT CLEAR

High quality over coating clear without silicone contain, UV-NS OVERCOAT CLEAR, developed for vinyl pressure sensitives, good screen printability and flexible. Non-yellowing urethane acrylate formulation leading to high gloss, excellent weather durability and chemical resistance.

Over coating on SG700 ink series will get a high quality vinyl sticker product.

Specifications

Ink type	UV Non-silicon curable screen printing clear. High gloss finished.
Curing Con	Single metal halide lamp of 120W/cm Conveyor speed of 5m/min UV exposed dosage over 340mj/cm ²
Washing	T-15 or T-31

Item	Condition	Result
Adhesion	Peeling test at 1mm pitch crosscut using cellophane tape	100/100
Water resistance	Immersion in Water 40OC x 24hrs, after that Adhesion test	100/100
Acid resistance	Immersion in 10% Sulfuric acid for 7hrs	Not affected
Alkali resistance	Immersion in 10% Sodium hydroxide for 7hrs	Not affected
Gasoline resistance	Immersion in Gasoline for 1hr	Not affected
Engine oil resistance	Immersion in Engine oil for 7hrs	Not affected
Heat resistance	Keep in oven 80OC x 96hrs, after that Adhesion test	Not affected
Weather resistance	Passed 1000hrs of Xenon Weather-O-Meter.	Not affected

Not effected: No blisters, peeling, cracks and excessive change of gloss and color

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV SERIES

UV Ink for Plastic Bottle, Tube and Packaging

US125(Z) Series

The US125(Z) series is a family of UV curing inks designed for hardened PP. It adheres strongly to processed (frame processing or corona treatment) PP. Cures quicker than US100.

Specifications

Ink type	UV curing using special resin.
Usage	PP bottles for cosmetics and medicine
Finish	Glossy finish
Agent for adhesion improvement	Adhesion and chemical resistance (durable alcohol resistance) can be improved by adding CARE 78.
Wash-up	Mixing with CARE 78 limits pot life to 4-5hours.
Screen mesh	T-31 or T-15
Curing condition	Tetron or Nylon 300-460 screen mesh is recommended.
	Metalhalide lamp: 80w/cm, single lamp
	Conveyor speed: 15m/min
	Light intensity: 150mJ/cm ²
	Adjustments can be made to account for actual conditions
Others	Adhesion may be low depending on the printed surface. Please confirm before use

US180NS Series

The US180NS series is a family of UV curing inks designed for soft PP. It adheres strongly to processed (frame processing or corona treatment) PP, and boasts excellent malleability, making it suitable for containers prone to bending.

Specifications

Ink type	UV curing using special resin
Usage	PP bottles for cosmetics and medicine
Finish	Glossy finish
Diluant	US180NS Reducer
Wash-up	T-31 or T-15
Screen mesh	Tetron or nylon 300-350 screen mesh recommended
Curing condition	Metalhalide lamp: 80w/cm, single lamp
	Conveyor speed: 5m/min
	Light intensity: 500mJ/cm ²
	Adjustments can be made to account for actual conditions

UVK100 Series

The UVK 100 series is a family of UV curing inks with excellent water resistance and strong adhesion to processed PP and PET.

Specifications

Ink type	UV curing using special resin
Usage	PP/PET bottles for cosmetics and medicine, and PP/PET plates
Finish	Glossy finish
Diluant	UV8073
Water resistance enhancement	Add 3% (by weight) CARE 125 for improved water resistance.
Wash-up	Note that mixed inks will gel after 1 day.
Screen mesh	T-31 or T-15
Curing condition	Tetron or nylon 300-350 screen mesh recommended
	Metalhalide lamp: 80w/cm, single lamp
	Metalhalide lamp: 80w/cm, single lamp
	Conveyor speed: 5m/min
	Light intensity: 300mJ/cm ²
	Adjustments can be made to account for actual conditions

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV CURABLE

SOLEX Series

The SOLEX series consist of the UVA, HUG, RIG and PZU families of ordinary color inks. SOX family of color-concentrated pastes, UV 8400s family of screen printing varnishes, UV 600s family of accelerators, and UV 8010-8090s family of reactive diluents.

UVA, HUG and PZU color inks are available in following either systems.

1. Pre-mixed standard color ink (One-part system, ready to use straight from the container)
2. Two part system, extender base and SOX color concentrate paste. (Mix them by yourself to get color ink)

RIG series are provided with pre-mixed standard color ink. (One-part system)

UVA Series

Features	Outstanding flexibility and resistance against weathering for printing on a wide variety of vinyl products.
Ink type	Weathering-resistant and non-yellowing urethane acrylate ink.
Usage	Soft or hard PVC sheets and films, and other soft plastics.
Finish	High gloss finish
Curing	350-500mJ/cm ² at 300 or finer mesh
Diluent	UV 8070
Wash-up	T-31

HUG Series

Features	Outstanding adhesion and hardness, multi-layer printability, normal curing with UV, augment with heat for extra adhesion.
Ink type	Epoxy acrylate ink.
Usage	ABS, AS, acrylic plates, PVC surface, sized aluminium, molded plastics, and other heat-rersisting plastics in general.
Finish	Gloss to semi-gloss finish
Curing	350-500mJ/cm ² at 300 or finer mesh
Diluent	UV 8070
Wash-up	T-31

RIG Series

Features	Outstanding adhesion to metals and glass, flexibility, and normal curing with UV, augment with heat for extra adhesion(hardness).
Ink type	Urethane acrylate ink
Finish	Gloss to semi-gloss finish
Curing	500-800mJ/cm ² at 300 or finer mesh
Diluent	UV 8085
Wash-up	T-31

PZU Series (Low Price UV Products)

Features	Outstanding flexibility and weathering. Low odor type.
Ink type	Urethane acrylate ink
Usage	Soft vinyls, PVC sticker, Polycarbonate
Finish	High gloss finish
Curing	350mJ/cm ² at 300 or finer mesh
Diluent	UV 8071
Wash-up	T-15 or T-31

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV CURABLE

UPG, UPG (Matt) Series

Features	Excellent flexibility, quick-drying
Ink type	Non-yellowing urethane acrylate ink
Usage	Soft tarpaulin
Curing	350mJ/cm ² at 300 or finer mesh
Diluent	UPG reducer
Wash-up	T-31

UVM Series

Features	UV pad-printing
Ink type	Urethane acrylate ink
Usage	Metals, coated metals, processed PP, PE
Finish	Gloss to semi-gloss
Curing	750mJ/cm ²
Diluent	UV8085
Wash-up	T-31

UAD Series

Features	Excellent adhesion to Acrylic and other plastics, with outstanding compatibility with heat-forming.
Ink type	Special Acrylate ink
Usage	Acrylic, PVC, PC, Processed PET
Finish	Gloss
Curing	350-500mJ/cm ² at 300 or finer mesh
Diluent	UMA reducer
Wash-up	T-31

SPU Series

Features	Adhesion to various materials, with excellent flexibility, suitable for folding, punching, etc.
Ink type	Special Acrylate ink
Usage	Acrylic, Anodized Aluminium, Coated Metals, Processed PP
Finish	Gloss
Curing	350mJ/cm ² at 300 or finer mesh
Diluent	UV 8078
Wash-up	T-15 or T-31

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UVG Series

UVG Series

UVG-series is very high gloss UV curing ink developed for Glass materials. For best performance we recommend the use of SEIKO coupling agent which further enhance the performance of ink.

Specifications

Ink type UV curing using specialresin
Usage Glass bottles after surface treatment(LPG frame treatment)



Too low



Suitable Flame Color



Too high

Finish • High Gloss finish, good opaque and overlap-printed is available
Agent for adhesion improvement: Adhesion and chemical resistance (alcohol resistance) can be improved by adding Care-78.
Mixing ratio UVG ink : Care-78 = 100 : 3
***Use the ink within the pot life (4-5 hours) after mixing with Care-78.**
Wash-up T-31, T-15
Screen Mesh : Tetron or Nylon 350~460 screen mesh is recommended
Curing Conditions :
 Metal halide lamp : 80w/ cm, single lump
 Conveyor speed 5m/ min
 Light intensity 400mj/ cm2
Post Curing Time : Approx 10~15min.
Others : It may not adhere very well depending on the surface of materials. Please check before use.
Material : Results of evaluation according to the company's standard provided for customer's reference.

Item	Test Condition	Result
Adhesion	Adhesion test should be done after 1 hour of post curing.(1mm,corss-cut tape adhesion test)	100/ 100
Alcohol resistance	Soaked in 50% NaOH (methanol) for 24hrs and cross-cut tape test 20min. after soaking.	100/ 100
Boiling resistance	Soaked in boiling water for 5min.	5min.
	Soaked in boiling water for 10hrs. when Care-78(3%) is added to UVG ink.	8hrs.
Heat resistance	80 x 1hrs.	Not affected
Cold resistance	After one hour of post curing, cold-test performed at around 4degree for 1hour by putting inside deep freezer.	
Alcohol friction resistance	Rubbed 100~120 times with 100% methanol at 500g load	Not affected

Test conditions

Ink : UVG-120 White, UVG-710 Black, UVG-CMYK
Material : LPG flame treated Glass
Screen : Nylon 350/ inch mesh
Squeezee : Semi-hard urethane
Curing condition : Metalhalide lamp 80w/ cm, single lump
Conveyor speed : 5m/ min

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warrenty.

UV CURABLE

Extender Base

Series	Type	Feature
UVA series HUG series	UVA(HUG)9119	Low viscosity, Fluidity, Yellowing type
	UVA(HUG)9117	Low viscosity, Fluidity, Non-yellowing type
	UVA(HUG)9030	Medium viscosity, Printing for fine lines, drop-out letters, etc. Yellowing type
	UVA(HUG)9031	Medium viscosity, Printing for fine lines, drop-out letters, etc. Non-Yellowing type
	UVA(HUG)9050	High viscosity, For halftone printing. Yellowing type
	UVA(HUG)9051	High viscosity. For halftone printing. Non-yellowing type
	UVA(HUG)9127	Matte finish. Yellowing type
	UVA(HUG)9126	Matte finish. Non-yellowing type
RIG series	RIG9119(FP clear)	Yellowing type, Low viscosity
	RIG9050(FP1A clear)	Yellowing type, High viscosity
	RIG9032(FP9 clear)	Low yellowing type, Medium viscosity
	RIG Y0233 Transparent clear	Low yellowing type, High transparency
SPU series	SPU9119	Low viscosity, Fluidity, yellowing type
	SPU9117	Low viscosity, Fluidity. Non-yellowing type
	SPU9050	High viscosity, for Halftone printing, Yellowing type
	SPU9051	High viscosity, for Halftone printing, Non-yellowing type

Above extender bases are prepared for each series. Same series inks can be mixed.

- **Yellowing type** : Printing for standard colors. Superior to curing in case of mixing color paste.
- **Non-yellowing type** : Preferred for non-yellowing properties with white or light colors where even the slightest yellow is not acceptable.

SOX Series

The SOX series is a family of concentrated color pastes for exclusive use with the UV curing system. The pastes themselves are not cured by the ultraviolet rays. They may be used to slightly improve the coloring power of the standard colors in the UVA, HUG, or PZU groups, or add colors to their extender bases. Use only a minimum amount as excessive use will prevent curing.

Standard SOX mixing ratios of 100 parts of extender base 9119 (In wt.)

SOX 120C	40 parts	SOX 265C	30 parts	SOX 495C	35 parts	SOX 550C	35 parts
SOX 200C	30 parts	SOX 320C	35 parts	SOX 500C	40 parts	SOX 580C	35 parts
SOX 208C	30 parts	SOX 350C	30 parts	SOX 510C	35 parts	SOX 586C	30 parts
SOX 210C	30 parts	SOX 400C	60 parts	SOX 513C	30 parts	SOX 710C	14 parts
SOX 220C	30 parts	SOX 440C	16 parts	SOX 538C	30 parts	(SOX 760C renamed SOX 710C)	

Using 300-mesh screen and exposure to two 120W/cm Hg-lamps at 10m/min for UV curing.

Reduce the ratio of SOX paste when used with 9117 and other non-yellowing extender bases.

Additives

Sensitizers : The following sensitizers may be used (1-3%) to increase the curing speed or print colors of high capacity:

- UV634 → A White, light colors
- UV666 → Transparent varnish
- UV688A → All non-white colors
- UV636 → All colors

Flow agent : Add 1% or less of CARE 4 (Non-silicon type). CARE 50 or CARE 55 (Silicon type) to improve fluidity, eliminate bubbles or prevent repelling surface.

Hints for Safe Use of UV Curing Inks

The UV curing inks are not necessarily more hazardous than conventional inks, but they do not dry until exposed to ultraviolet radiation. When left on the hand over a long period of time, they may affect the skin. Wear gloves, hand creams, or work clothes with long sleeves for added safety.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV CURABLE MEDIUM

UV Medium List

Product	Application	Characteristics	Silicon	Curing	Diluent	Washup
UV5410	PVC	Glossy finish, high transparency good weathering resistance	No	Over 350mJ/cm²	UV8071	T-15 or T-31
UV5410-7	PVC	High viscosity, high deposit, excellent transparency	No	Over 350mJ/cm²		
UV5413D	PVC, PVT Stickers	Glossy finish, high elasticity	Yes	Over 280mJ/cm²	UV8073	
UV5414	PVC, PVT Stickers	Glossy finish, high solvent resistance	Yes	Over 350mJ/cm²	UV8071	
UV5416A	Paper, PVC	Non-glare, low cost	Yes	Over 280mJ/cm²		
UV5417C	Paper, PVC, Polycarbonate	Non-glare, excellent transparency	No	Over 280mJ/cm²		
UV5431	Paper, Offset surfaces	Glossy finish, low scent	Yes	Over 280mJ/cm²		
UV8411A	PVC, Polycarbonate	Glossy finish, better hardness than UVS412	Yes	Over 350mJ/cm²	UV8077	
UV8415-3A	PVC. Polycarbonate	Matte finish, high hardness	No	Over 350mJ/cm²		
UV8416	PVC. Polycarbonate	Semi-gloss finish, high deposit	Yes	Over 350mJ/cm²		
UV8419	PVC. Polycarbonate	Matte finish (Lexan tones!)	Yes	Over 350mJ/cm²		
UV8421	PVC. Polycarbonate	Non-glare, excellent transparency	Yes	Over 350mJ/cm²		
UV Y1419 8421-3DA KAI	PVC. Polycarbonate	High-toughness variant of UVB421	Yes	Over 350mJ/cm²		
UV8422-6	PVC. Polycarbonate	Non-glare, opaque	Yes	Over 350mJ/cm²	UV8422-8	
UV8430G4	Paper, Offset surfaces	Glossy to semi-gloss finish, high-hardness variant of UV8430G	Yes	Over 200mJ/cm²	UV8070	
UV8430GB	Paper, Offset surfaces	Glossy finish, low-scent variant of UV8430G	Yes	Over 350mJ/cm²	UV8073	
UV8491B	PET	Matte finish	No	Over 450mJ/cm²	-	
UV8493D	PET	Glossy finish	No	Over 450mJ/cm²	-	
UV8495	Treated PET	Non-glare finish	Yes	Over 350mJ/cm²	UV8072	

UV Overcoat Clear List

Product	Application	Characteristics	Silicone Content	Curing	Diluent	Washup
UV5412	PVC, PVC stickers	Glossy finish, good weather resistance	Yes	Over 280mJ/cm ²	UV8071	T-15 or T-31
UC410	PVC, PVC stickers	Glossy finish, good weather resistance	Yes	Over 280mJ/cm ²		
UC406M	PVC, PVC stickers	Glossy finish, good weather resistance	Yes	Over 280mJ/cm ²		

UV Overcoat Clear List

Product	Application	Characteristics	Silicone Content	Curing	Diluent	Washup
UV8606A KAI	Treated PP. Treated PET	• Weak adhesive	No	Over 420mJ/cm ²	UV8073	T-15 or T-31
UV BOND	Various plastics	• Hardness • Adhesion • Transparency	No	Over 1000mJ/cm	-	

UV High Deposit, Gloss Medium List

Product	Application	Characteristics	Curing	Diluent	Washup
UVY0131 High Deposit Medium Y	PVC, PC, Adhesion-enhanced PET	• High Deposit • Slightly cloudy	Over 350mJ/cm ²	UVS410 or UV8071	T-15 or T-31
UV YO165 High Deposit Medium NC	PVC, PC, Adhesion-enhanced PET	• Excellent transparency	Over 350mJ/cm ²	UVS410 or UV8071	
HUG Y0177 High Deposit Medium YH	Hard PVC, ABS, Acrylic	• High Deposit • Slightly cloudy	Over 280mJ/cm ²	UV8070	
HUG YO164 High Deposit Medium A	Hard PVC, ABS, Acrylic	• Clear type	Over 280mJ/cm ²	UV8070	
RIG Y0205 High Deposit Medium S	Metals, Coated plates	• Excellent transparency	Over 550mJ/cm ²	UV8085	
UV 5432	Hard PVC, Acrylic. Adhesion-enhanced PET	• Excellent transparency	Over 350mJ/cm ²	UV8073	
UV5430E	Offset printed surfaces, Paper, Matte PP Stickers	• High malleability • Good adhesion • High Deposit OC Clear	Over 450mJ/cm ²	UVB075	
UV 9200 Y1422 High Deposit Medium KAI 3	Offset printed surfaces, Paper Matte PP Stickers	• High malleability • Good adhesion • Blocking resistant	Over 200mJ/cm ²	Not required	
UV Z0189 TOUCH PRINT S5	Offset printed surfaces, Paper	• Braille use • Clear type	Over 280mJ/cm ²	UV8086	
UV Z0262 TOUCH PRINT S5.5	Offset printed surfaces, Paper	• Braille use • High viscosity type	Over 280mJ/cm ²	UV8086	

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

UV CURABLE MEDIUM

TJN Series

The TJN series is a family of shrunk pattern UV inks. Unique shrunk patterns can be easily achieved by attaching the shrunk pattern apparatus to existing UV systems.

Specifications

Usage	Applicable on substrates such as paper, PVC, PVC stickers and polycarbonate.
Type	TJN medium A: Standard TJN medium L: Low viscosity (High transparency, for dilution) TJN medium H: High viscosity TJN medium T: High transparency (Medium viscosity) TJN medium G: High elasticity
Printing	Screen Mesh-90 count (Standard) Shrunk pattern apparatus + UV curing device - Conveyor speed 5m/ minute (Standard), UV strength>210 mJ/cm ²
Diluent	TJN is formulated to be used straight from the container. Dilute with UV8071 or TJN Medium L if necessary.
Wash-up	T-31 or T-15
Shrinking adjustments	Shrunk patterns can be adjusted by factors including ink layer thickness, conveyor speed, ink viscosity, and raying distance. Shrinking may not occur if the ink layer is too thin, or if the shrunk pattern apparatus is positioned too far away.
Others	When printing on substrates with poor adhesion, undercoat with inks such as SG740, ACT, or PAL Tomei. For the minor coloring of TJN inks, add roughly 1% SOX.
Mileage	15m ³ /kg with 90-count mesh
Patent	Patent Number: 3004897 Patent Name: "METHOD FOR FORMING MATTE SURFACE"

TJN Medium-A Ink Film Performance

Item	Conditions	Results
Adhesion	Crosscut peeling test using cellophane tape	100/100
Hardness	Pencil hardness test 45°angle, 1kg load	H
Alcohol resistance	50 rubs with under 500g load	Pass
Water resistance	Soaked in tap water for 24 hours	Pass
Acid resistance	Soaked in 10% HCl acid solution for 24 hours	Pass
Alkali resistance	Soaked in 5% NaOH solution for 4 hours	Pass
Boling resistance	Soaked in boiling water for 7 hours, followed by adhesion test	Pass
Heat resistance	24 hours at 80°C	Pass
Weather resistance	Xenon Weather-o-Meter	▲

Test conditions

Substrate : Polycarbonate board,
weather-resistant PVC sticker
Screen mesh : Tetron 90 mesh
Curing : Shrunk pattern apparatus x 2
UV curing device (80w/cm²)
x 1
Conveyor speed : 3m/min, 1 pass

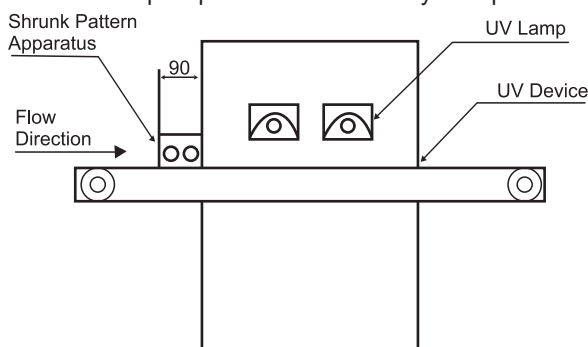
Ink membrane performance figures are experimental results, and not guaranteed
Patent Patent Number: 3004897 Patent Name: "METHOD FOR FORMING MATTE SURFACE"

▲ TJN Medium-A
400 hours - Pass
800 hours - Slightly loss in gloss
600 hours - Slightly loss in gloss
1000 hours - loss in gloss
▲ TJN Medium-T
1500 hours - Pass

Shrunk Pattern Device

Shrunk patterns can be achieved by adding a Shrunk Pattern Apparatus to existing UV curing devices, and curing shrunk pattern inks (TJN series) in 2 stages. The device is simply placed on the conveyor belt, and has a compact power source for easy transportation.

- Shrunk Pattern Apparatus** : Set up before the UV projector. The number of lamps and effective length of each lamp (300, 500, 800, or 1020mm) can be customized.
- Shrunk Pattern Ink** : Please use the TJN series
- Shrunk Pattern** : The size of shrunk patterns will vary based on the thickness of the ink layer



Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

APPAREL

List of Apparel Related Products

Clarification	Product Name	Description	Application
Plastisol ink (WILFLEX)	(OP)MX series	• Pantone system-compliant ink with 15 base colors(5 fluorescent colors)	Cotton, cotton blends, synthetic fibers, polyester, etc... prime with bleed-preventive inks before use.
	PC EXPRESS AMAZING(MP)	• Good opacity • Soft texture	Cotton, cotton blends, synthetic fibers, polyester, etc. prime with bleed-preventive inks before use.
	PC EXPRESS GENESIS	• Excellent wet-on-wet capability • Soft texture	Cotton, cotton blends, synthetic fibers, polyester, etc. prime with bleed-preventive inks before use.
	PC EXPRESS SSV	• Rubber type ink • Elastic • High friction resistance:	Cotton, cotton blends, synthetic fibers, polyester, etc... prime with bleed-preventive inks before use.
	PC EXPRESS MCV-FF	• Highly transparent ink • Suitable for glitter and silver powder	Light colored cotton, cotton-polyester blends, and other heat-sensitive fabrics
	PC EXPRESS SSV-FF	• Elastic • Durable • Cures at low temperatures (30s at 135°C)	Cotton, cotton blends, synthetic fibers, acrylic, and other heat-sensitive fabrics.
	PC EXPRESS NUPUFF	• Durable • Excellent printability • High mass-productivity • Foaming type ink	Cotton, cotton blends, synthetic fibers, polyester, etc... prime with bleed-preventive inks before use.
	WIL-W White series	White with various characteristics, including bleed resistance and good printability. See separate manual for details.	
Special Plastisol Ink Series	WIL-A 10545 Epic Underbase Gray	• Bleed resistant • Great opacity	Cotton, cotton blends, synthetic fibers, polyester
	WIL-A 10018 Super HD Clear	• High performance in special effects such as glass, gel, liquid and gloss	Cotton, cotton blends, synthetic fibers, polyester
	WIL-A 10340 Fashion Soft Base	• Soak fabrics in water-soluble inks for a soft texture	Cotton, cotton blends, synthetic fibers,
	WIL-A 10480 Neutral Base	• Durable • Excellent printability • High mass-productivity • Foaming type ink	For paper use Adhesion can be enhanced by anchor printing with ACT 800 medium.
Transfer Paper Series	TRANS 75	Suitable for the cold peel transfer of plastisol inks (such as SSV), the transfer of solvent type inks such as JET-V1, SG410, RUX, and offset printing.	
	Color Copy Transfer Paper AD TRANS	Specialized heat-transfer paper for color copying. See separate manual for details.	
Equipment	Thermal Probe	A 4.5m heat resistant cord between the donut-shaped measuring component and the digital display allows easy measurements of printed surfaces in any environment.	
Spray Adhesive	HOT-TAK	White can: retains excellent adhesion after IR instant curing.	

Plastisol ink precautions

- Plastisol inks are sensitive to heat. Reactions might occur within the ink if stored for prolonged periods above 40°C. Please store in low temperatures where possible.
- Please maintain a tight seal to maintain viscosity. Moreover, separation might occur in the course of storage. Please stir well before use.
- Temperature conditions might vary based on differences in curing devices. Please test before use. Please be particularly mindful of phenomena such as bleeding.
- Adhesion and resistance to bleeding and washing might vary based on substrate differences. Some fabric may shrink under heat. Please test before use.

*A separate catalog is available for apparel-related products

* Detailed catalogues are also available.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

APPAREL



Screen Printing-related Devices

Product	Application	Characteristic	Remark
AD-MIX(100V, 200V)	- Mixing of high-viscosity inks and paints - Mixing of high-viscosity liquids and powders	- Mixing in a sealed container prevents the scattering of ink and powders. - Sealed mixing limits evaporation and odor issues. - Vibration mixing reduces heat generation. - Digital inverters allow for gear-free speed changing - Safety mechanisms shuts down the device if the container is opened in the mixing process.	Applicable containers: 0.5kg cans, 1kg cans, 4kg cans 5kg cans, 1-quart cans, and 1-gallon cans
AD FILTER (1L, 5L type)	Filtering of impurities on inks, emulsions and paints	- Automatic filtering mechanism allows easy operation - Tank and piston designed to minimize loss - Cleaning and filter changing is simple - Application can be widened by air pressure and filter adjustments	Opening size: ADF-005(5μ) ADF-070(70μ) ADF-010(10μ) ADF-100(100μ) ADF-020(20μ) ADF-120(120μ) ADF-040(40μ)
AD-RISA 2000	Recycling of used solvents	- Recycle solvents to a clear, odorless, same-as-new state - Reduce cost with >80% recycling rate - Low risk oil heater - Only requires setup; does not require additional labor	Recycling capacity: 15L of solvent can be recycled in 3-5 hours
AD-SEPA 2000	Separates solvents from used cleaning cloths, reclaiming solvents	- Only requires setup; does not require additional labor - Separate used cloths from solvents, reducing production waste - Separated solvents can be recycled via AD-RISA, reducing cost	Basket capacity: 14L Process time: 5-10 minutes/cycle

*See separate manual for details.

Various demonstration units are available for testing.

Aside from the above, other screen printing devices are available. Contact Seiko Advance for details

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

CARE Series

Some types of ink generate foam or poor wetting depending on the viscosity, environmental conditions, working methods, etc. In such a case, use the following CARE series.

Additives - List of Surface Adjustants (Defoaming, Leveling and Dispersing)

Products(care)	Effective	Type	Quantity(%)	Applied Ink
3	Defoaming Agent	N	1-3	LOV, ACT, SG720
4	Defoaming & Levelling Agent	N	1-2	LOV, CAV, SG700, PAL
6	Defoaming & Levelling Agent	N	1-3	ABS, VIC, SG429
8	Defoaming & Levelling Agent	N	1-2	RAM, 1000, 1690N, SG240, 1400N
8A	Defoaming & Levelling Agent	N	2-4	As Above
13	Defoaming & Levelling Agent	N	1-2	1300, 1300HK, ACT, LOV, SG425
13A	Defoaming & Levelling Agent	N	2-4	As Above
20	Defoaming Agent	S	1-2	500, 2500, RUX SG410, SG740, TSN
28	Defoaming Agent	SN	0.5-1.0	STR, SG429R
31	Leveling and Anti-Repelling Agent	SN	1-2	1690N, 1000
34	Levelling Agent	N	2-3	Most Inks
36	Anti-Floating & Dispersing Agent	N	0.5-1.0	Most inks excluding CAV
39	Thixotropic Agent	N	2-10	Most Solvent-type Inks
47	Defoaming Agent	S	0.5-1.0	UV Inks
50	Defoaming Agent	S	0.2-0.5	GAPMS8, SG740, 500N, SG75, 70B
50	Anti-Repelling Agent	S	1	As Above
55	Defoaming Agent	S	0.5-1.0	SG460
55A	Defoaming Agent	S	1-2	As Above
63	Anti-Floating Agent	N	2-3	CAV
95	Leveling Agent	N	0.5-2	Most Inks
109	Defoaming Agent	N	1-2	HF SG460SSD NS
110	Defoaming Agent	N	1-2	SAM-NE
111	Defoaming Agent	N	1-2	HF GV3
122	Defoaming Agent	N	0.5-1	Most Inks
154	Leveling Agent	N	0.5-1	Most Inks

N : None-Silicon S : Silicon SN : Silicon Derivative

Remarks:

1. Quantity is the percentage of the weight.
2. Overdosage of some additives will cause harmful effect on drying, adhesion and brightness, Use as least as possible.
3. Please note that incompatibility may occur when using silicon series for overlap printing.

List of other Additives

Products(care)	Effect	Quantity(%)	Application
82	Adhesion Promotion	1-2	LOV, SG700, PAL, ACT, PP
83	Adhesion Promotion	1-2	General Use (Glass, PP Materials)
99	Adhesion Promotion	1-5	General Use (Glass, PP Materials)
101	Catalyst for Urethane Hardening	1-2	VIC, SG425, 8G740, Other Urethane Inks and OC Clear
189	Adhesion Promotion	1-2	General Use (Glass, PP Materials)

Remarks:

Quantity refers to percentage by weight.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Solutions to Common Ink Problems

Ink Series	Problem			
	Bubbles (Add 0.5-1%)	Fish-eye (Add 1-2%)	Drawing (Add 5-10%)	Bleeding (Add 3-10%)
LOV	CARE4	CARE4	CARE39	CARE39
	CARE13	CARE13	LOV-850	LOV-850
VIT	CARE4	CARE4	CARE39	CARE39
	CARE13	CARE13	VIT-850	CIT-850
ACT	CARE3	CARE3	CARE39	CARE39
			ACT-850	ACT-850
THA	CARE4	CARE4	CARE39	CARE39
			THA-850	THA-850
SG700	CARE4	CARE39	SG700-850	SG700-850
		CARE6 (0.5%)		
PAL MATT	CARE4	CARE4	CARE39	CARE39
			PAL MATTE-850	PAL MATTE-850
PAL TOMEI	CARE8	CARE8	CARE39	CARE39
			PAL TOMEI-850	PAL TOMEI-850
GAP NEW	CARE20	CARE50	CARE39	CARE39
	CARE50		GAP NEW-850	GAP NEW-850
RAM	CARE8A	CARE8	CARE39	CARE39
		(CARE20)	RAM-850	RAM-850
RAM MATT	CARE8	CARE8	CARE39	CARE39
			RAM MATTE-850	RAM MATTE-850
2500	CARE20	CARE20	CARE39	2500-850
		CARE50		
CAV MEIBAN	CARE4	CARE63	CARE39	CAV MEIBAN-850
CAV TOMEI	CARE13	CARE63	CARE39	CAV MEIBAN-850
SG240	CARE8	CARE8	CARE39	SG240-850
	CARE6	CARE6	ABS-850	ABS-850
ABS		(CARE20)		
STR	CARE28	CARE28	STR-850	STR-850
SG740	CARE20#1	CARE20#1	CARE39	CARE39
	CARE50		SG740-850	SG740-850
VIC	CARE6	CARE6	CARE39	CARE39
			VIC-850	VIC-850
MS8	CARE20	CARE50	CARE39	CARE39
	CARE50		MS8-850	MS8-850
HAC	CARE47	CARE50	CARE39	CARE39
			HAC-850	HAC-850
SG410	CARE20	CARE20	CARE39	CARE39
			SG410-850	SG410-850
RUX	CARE20	CARE20	CARE39	CARE39
			RUX-850	RUX-850
SG460	CARE55	CARE55	CARE39	CARE39
SG460NS	CARE13	CARE13	CARE39	CARE39
HDK	CARE111	CARE111	CARE39	CARE39
OP22	CARE3	OP22-850	OP22-850	OP22-850
	CARE6			
60A	T1000	T1000	T1000	
70 B	T1000	CARE50	T1000	
70 B-AM	T1000	CARE50	T1000	
PP	CARE6	PP-850	PP-850	PP-850
	T472			
PP-TAISAN	CARE6	PP TAI SAN-850	PP TAI SAN-850	PP TAI SAN-850
	T472			
PPT	CARE20	CARE20		
1000	CARE8A	CARE8	CARE39	CARE39
		(CARE50)		
1300	CARE13	CARE13	CARE39	CARE39
1300HK	CARE13	CARE13	CARE39	CARE39
1400N	CARE8A	CARE8	CARE39	CARE39
			1400N-850	1400N-850
1690N	CARE8	CARE31	CARE39	CARE39
500N	CARE20	CARE20	CARE39	CARE39
			500N-850	500N-850
8600	CARE19	CARE19		
SG425	CARE13	CARE13		
SG429B	CARE6	CARE6		
SG429R	CARE28	CARE28		
HF BMR	CARE50	CARE50	CARE39	CARE39
				HF BMR-850
HGI	CARE110	CARE110	CARE39	CARE39
			HGI-850	HGI-850
MOL	CARE111	CARE111	CARE39	CARE39
		CARE850		MOL-850

Note : 1. Apply metal-specialized 800 as regular 800 only for silicone-free SG740-800 or Care 6.

2. Shaded areas indicate silicone additives, handle with care.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

Weather Resistance List

COLOR \ INK	1000	1300	1300HK	1400N	1690N	VIC	SG740	MS8	400F	500N	PP INK	SG460
120	3-4	3-4	3	5	3	5	5	5	4-5	5	4	5
NC200	3-4	3	4	5	3	5	5	5	3-4	5	3-4	5
NC210	4	3-4	4	5	3-4	4-5	4-5	5	4-5	5	3-4	5
NC220	3-4	3-4	3-4	3-4	3-4	3-4	3-4	4	4	4	3-4	5
NC265	4	3-4	4	4	3-4	4	4-5	5	4-5	5	4	5
320	3-4	3-4	5	5	3-4	4	5	5	5	5	4	5
350	3-4	3-4	5	5	3-4	5	5	5	5	5	4	5
400	2	2	2	3-4	2	3-4	3-4	3-4	3-4	3-4	3-4	3-4
440	4	3-4	4	5	3-4	5	5	5	4-5	5	4	5
460	3-4	3	4	5	3	5	5	5	2-3	4	3-4	5
495	4	3-4	4	5	3-4	5	5	5	4-5	5	4	5
NC500	3-4	3	4	4-5	3	4	4	5	3	5	3-4	5
NC510	3-4	3	4	4-5	3	4-5	4-5	5	3	5	3-4	5
NC550	2	2-3	3	4	2-3	4-5	4-5	4	3	4-5	3	4
580	3	3-4	4	5	3-4	5	5	5	4	5	4	5
710	4	3-4	4	5	3-4	5	5	5	4-5	5	4	5
208	3	3-4	4	3-4	3-4	4	4	3	3-4	3	3	3
304	3-4	3-4	3-4	5	4	5	5	5	4-5	5	4	5
456	4	3-4	5	5	4	5	5	5	4-5	5	4	5
498	3-4	3-4	4	5	4	5	5	5	4-5	5	4	5
513	3-4	3-4	4	5	4	5	5	5	4-5	5	4	5
538	3-4	3-4	4	5	4	5	5	5	4-5	5	4	5
586	3-4	3-4	5	5	4	5	5	5	4-5	5	4	5
765	4	3-4	4	5	4	5	5	5	4-5	5	4	5

Please note that chalking is often associated with expoy ink, such as 1000, 1300, 1300HK, 1400N and 1690N series when they are exposed outdoors.

COLOR \ INK	ACT	LOV	SG700	JET V1	PAL MATTE 8	GAP ;NEW	ABS	CAV MEIBAN	STR	SG410	HF HSD	HF GV3
120	5	5	5	5	5	5	5	5	5	4-5	5	5
NC200	5	5	5	5	5	5	3-4	4	4	3-4	5	5
NC210	4-5	4-5	5	5	4	4	4	4-5	4-5	4	-	-
NC220	3-4	3-4	4	4	3-4	3-4	3-4	3-4	3-4	3-4	-	-
NC265	4	4	5	5	4	4-5	4	4	4	4	5	5
320	5	5	5	5	4	5	5	5	5	4-5	-	-
350	5	5	5	5	4	5	5	5	5	4-5	-	-
400	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	-
440	5	5	5	5	5	5	5	5	5	4-5	5	5
460	2-3	2-3	5	5	4-5	4-5	2-3	2-3	2-3	2-3	-	-
495	4-5	4-5	5	5	5	5	5	5	5	4-5	5	5
NC500	4	4	5	5	4	4	4	4	4	4	5	5
NC510	2-3	4	5	5	4	4	4	4	4	4	5	5
NC550	3-4	3-4	5	5	3-4	3-4	3	3-4	3-4	3-4	5	5
580	5	5	5	5	5	5	4	5	5	4	4	5
710	5	5	5	5	5	5	5	5	5	4-5	4-5	5
208	4	4	4	4	4	4	4	4	4	4	4	4
304	5	5	5	5	5	5	5	5	5	4-5	-	-
456	5	5	5	5	5	5	5	5	5	4-5	5	5
498	5	5	5	5	5	5	5	5	5	4-5	5	5
513	5	5	5	5	5	5	5	5	5	4-5	5	5
538	5	5	5	5	5	5	5	5	5	4-5	5	5
586	5	5	5	5	5	5	5	5	5	4-5	5	5
765	5	5	5	5	5	5	5	5	5	4-5	5	5

- Please refer to above data when the ink is applied.
- Above data is originated in the classification as under:

Classification	2	3	4	5
Exposure time by weather-o-meter	100 hours passed	200 hours passed	400 hours passed	600 hours passed

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

List of Specialized Inks

Ink name	Ink Type and Mixing Rate	Curing	Finish	Silicon Content	Standard Solvent	Slow-dry Solvent	Retarder	Remark
RUX	2-part Urethane. 100:10	(set to touch) 40 minutes (set to cured) 5 days (Thermal Curing) 60 minutes at 70°C	Gloss	Yes	T-954	T-953	-	- Soft type ink suitable for synthetic leathers and fibers, and laser etchings - Excellent Chemical Resistance
HF S-PAD	2-part Urethane. 100:10	(set to cured) 4 Days (Thermal Curing) 30 minutes at 80°C	Gloss	Yes	T-640	T-952	-	- Designed for pad-printing - Excellent transferability - Minimal drawing risk - Outstanding friction resistance
KKS/KKS Super Slow-dry	2-part Urethane. 100:10	(Thermal Curing) 30 minutes at 80°C	Gloss	Yes	T-980	-	-	- Designed for inject-molded PC and PET films - Outstanding adhesion, malleability and heat resistance.
SG75	Evaporating	(set to touch) 40 minutes (Thermal Curing) 30-40 minutes at 70°C-80°C	Semi-gloss	Yes	T-1000	T-980	-	Ink for Noryl resins
70B	Evaporating	(set to touch) 40 minutes	Semi-gloss	Yes	T-900	T-910	T-950	- Improved version of the 60 series with improved scratch resistance - Outstanding performance on EVA substrates
SR508	Evaporating	(Thermal Curing) 15 minutes at 100°C 30 minutes at 80°C 60 minutes at 60°C	-	No	T-472	T-971	-	- 1-part solution type pressure adhesive - Excellent weather resistance

Individual manuals for all inks listed above are available for request

Heat Press, Insert Forming Binders (JT Series)

Ink name	Ink Type and Mixing Rate	Curing	Silicon Content	Standard Solvent	Slow-dry Solvent	Usage
JT94 Base Clear	Evaporating	Room Temperature (20°C) for 60 minutes (to touch) (Curing) 40-60 minutes at 60°C	No	T-912	-	For fabrics such as cotton and synthetic fiber, transfer with medium. pressure (2-3kg) for 10-20 seconds at 110-150°C. Use Trans 75 for transferring. Use the SG410 and SG700 series for color printing.
JT27 Base Clear	Evaporating	60 minutes at 80°C	No	T-912	T-920	Binder for insert and in mold forming. Adheres injected resin (PC, acrylic, ABS) to decorative layers (KKS Super slow-dry, MOL, etc.).

Organic Tin-free Ink Series (YS Series)

We offer the following series of organic tin-free inks: CAV MEIBAN(Z)YS, CAV Tomei (Z)YS, SG700(Z)YS, 2500YS, LOV(Z)YS, STR(Z)YS, and SG410 YS.

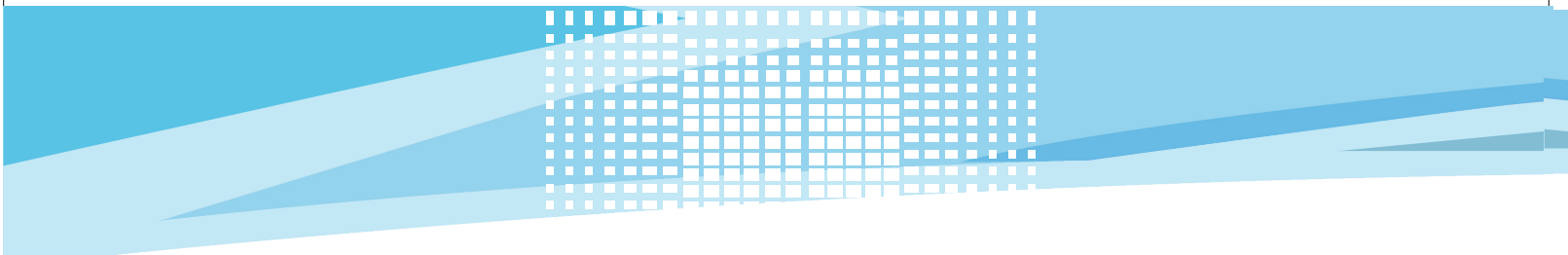
Halogen-free Ink Series (HF Series)

We offer the following series of halogen-free inks: HF 1400N(1-part thermal cured), HF S-PAD (for pad printing), HF MOL(2-part), HF GAP NEW(1-part or 2-part), HF BMR (1-part), HF KKS Super Slow-dry(2-part), HF MS8(2-part), HF SG460 Super Slow-dry(2-part), HF HSD(1-part, 2-part), HF GV2(2-part), and HF GV3(3-part).

List of Water Base Inks

Ink name	Ink Type and Mixing Rate	Curing	Finish	Silicon Content	Standard Solvent	Slow-dry Solvent	Application
WS-10	Evaporating	(set to touch) 10 minutes	-	Yes	Water	T-634	Paper products, posters
WS-30	Evaporating	(set to touch) 60 minutes	Gloss	Yes	Water	T-634	PVC, ABS, PC boards, treated PET films

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.



New Color Requesting Forms

Use the separate new color requesting forms when custom colors are desired. Provide screen mesh numbers, the material on which the ink is being printed, and all other details to ensure best results.

1. We may ask you to supply your screen plates, etc, when your original data does not satisfy our color matching conditions.
2. We need at least 50g of raw ink as a color sample. If the desired color is a product of mixing our inks, please indicate the original colors whenever possible.
3. Fluorescent colors inks or colors that are thinned by a large amount of medium will have less resistance against weathering. We may not be able to fill all color requests due to technical limitation.
4. Use of gold metallic powders may cause discoloration, gelation, and other problems. For this reason, color bases and gold metallic powders will be shipped separately as a rule.
5. We will do everything possible to match the colors, but you are always advised to test the custom colors before use. Please indicate the matched color numbers (C.L.No.) for repeat orders.
6. Seiko Advance will maintain matched color samples for two years only, after which we will need an updated color request form for such colors.

Important Notes

1. The color guides and color numbers are common to all series.
2. The standard shipping quantities are 1X18, 4X (for inks), 1X15, 3X6, or 5-gallon cans (for thinners). Orders for smaller quantities can be shipped for a separate freight cost.

Notes

A) The ink film performance mentioned in the catalogue is based on our lab test. Therefore, it is strongly recommended to confirm the colors, substrate and necessary performance before production run at your side.

B) Precautions for safe handling

As inhalation and skin contact may cause irritation and poisoning.

Following are precautions for safe handling:

1. Working area must be properly ventilated and keep away from ignition sources.
2. Ventilate printing and drying area thoroughly to avoid breathing vapors.
3. Put organic vapor respirator, caps, safety goggles, impervious clothing and gloves to avoid skin contact.
4. In case of spills from the container, wipe the spillage with cloth and keep it in the water.
5. Contaminated cloth with the ink and ink dregs are soaked in the water until it is dumped.
6. After handling the materials, wash your hand and gargle with water.
7. In case of clothing contact, remove contaminated clothing and launcher.
8. In case of skin contact, wash affected area with soap and water. If symptoms persist or are severe, get medical attention.
9. In case of eye contact, flush with plenty of water, then get medical attention as soon as possible.
10. In case of inhalation, remove to fresh air and rest. Get medical attention in accordance with the symptoms.
11. In case of ingestion, get medical attention as soon as possible.
12. Use carbon dioxide, foam or dry chemicals extinguisher at the time of the fire.
13. Tighten the cap of container and store the material at temperature under 40°C (Keep away from sun rays). Avoid from children contact.
14. Abolish the material after the contents are completely finished to use.
15. All our products are manufactured for the industrial printing purpose. Do not use for a detergent substitution or sniffing pleasure.

C) Precaution to be taken in storage

Working efficiency and ink performance on our products may be affected by storage conditions and environment, such as sun rays, temperature and humidity, as it is an organic, components. Therefore, the products are tightly sealed in the container and stored at normal temperature in a dark place. Our ink is effective for 12 months and hardener is for 6 months after the date of manufacture.

D) Our general catalogue, SCREEN PRINTING INK

The catalogue has been compiled by our own experimental data at our lab. Therefore, our products may behave differently from the data and explanation in SCREEN PRINTING INK depending on the printing surroundings and the freshness of an ink. As our inks are formulated by organic component, the ink stocked long may cause a trouble in the performance on printability. An extremely severe printing surroundings may also cause the same troubles.

E) Toy safety standard certificates

In accordance with changes to toy safety standards, testing of raw materials of toys has been replaced by tests performed on the completed toy. Seiko Advance therefore no longer issue applicability certificates for inks used on toy.

F) Japanese Food Hygiene Act Standards

Changes have been made to Japanese Food Hygiene Act Standards. Contact our sales department for inquiries.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

MATERIAL SAFETY DATA SHEET (MIXTURE)

1. Product and Company Identification

Product Name:

Manufacturer: Seiko Advance Ltd.

Address: 1575 Negane Hasuda-shi, Saitama-ken 349-0131, Japan

Section Concerned: Technical Department

Person In Charge:

Phone No.: 048-766-4516

Fax No.: 048-766-5104

Emergency Contact: Technical Department

Emergency Phone No.: 048-766-4516

2. Composition/Information on Chemical Ingredients:

Classification:

Single/Mixture: Mixture

Product Name: Screen Printing Ink

Components

Weight%

Chemical Formula

CAS No

3. Hazardous Identification:

Toxic Substance: Risk of organic solvent poisoning

Comment on Danger and Hazard: Inflammable liquid. Remaining gas causes explosion in contact with air. It may ignite if static electricity generates by flowing or stirring.

Classification Standards: Inflammable Liquid. Acute toxic substances.

4. First Aid Measures:

Inhalation:

Wrap the victim in a blanket, keep in quite and move to fresh air. If breathing has stopped, administer artificial respiration and arrange the medical treatment by a physician as soon as possible.

Skin:

Wash off with soap and plenty of water. Arrange the medical treatment by a physician on injured skin and painful parts.

Eyes:

Wash off with soap and plenty of water for at least 15 minutes. Arrange the medical treatment by a physician.

Ingestion:

Arrange medical inspection by physician immediately. Prevent to swallow the vomiting.

5. Fire Fighting Measures:

Extinguishing Media:

Powder, Foam, Carbon Dioxide, Dry Sand, Enforced liquid spray.

NOT TO USE for Extinguish Media: Water

Fire Fighting Procedure:

- Remove the container near fire immediately.
- Cool down the area with watering.
- Use the specific extinguishing media.
- Fire fighters should wear proper protective equipments.

6. Accidental Release Measure:

Personal Precaution:

Evacuate people near fire. Seal the area off. Shut off all source of ignition, heat and inflammable materials immediately. Wear proper protective equipments. Ventilate the area.

Environmental Precautions:

Should not be released into the environment. The product should not be allowed to enter drains, water courses or the soil.

Methods for Cleaning Up:

Absorb spill with dry sand and place in a chemical waste container. And then wash off with plenty of water using natural detergent.

7. Handling and Storage: Precautions Handling:

- Equipment should be grounded and properly.
- Wear proper protective clothes and shoes.
- Use explosion proof electrical equipment and educed-sparking hand-tools.
- Keep away from fire, spark and heat in using area and use only in the well-ventilated area.
- Wear proper protective equipments. (Gloves, protective mask and goggles).
- Keep container tight and close.

Storage:

- Keep container tight and close and store in a cool and well-ventilate area.
- Keep away from fire, spark and heat.
- Do not store together with other chemical, such as acids and organic acids.
- Keep in proper warehouse based on the standard of Fire-fighting Law.

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

8. Exposure Control and**Equipment Requirement:**

- Use adequate ventilator.

Protective Tools:

- Wear protective mask for organic gas, protective goggles, oil-proof Gloves, protective clothes and protective boots.
- Change the mask regularly for hygienically.

Exposure Limit:

Chemical Name	Exposure Limit	ACGIH
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9. Physical and

Physical Form:	Color:	Odor:
PH:	Boiling Point:	Flash Point('C):
Density:	Soluble in Water:	
Explosion Limit (%):	Lower:	Upper:

10. Reactivity and Stability

Stability:
Condition to avoid:
Incompatible Materials:
Hazardous Decomposition:
Products

11. Toxicological Information:

"No information on toxicity and effects available except being specified as above.

12. Ecological Information:

"No information available except being specified as above.

13. Disposal Considerations:

- Place it in a drum and avoid overturning and falling.
- The wastes producing from process of water refining and of incineration should be disposed of in accordance with government laws and environmental control regulations or asked to dispose with licensed special company.

14. Transportation Information:

- Close the container lid tight.
- The product should be grounded and bonded in case of transport in order to avoid overturning falling and damages.
- Not pile up the container so high.
- Not put it in together with dangerous substances (Class 1, Class 6 and High-pressure gas).
- Transport in compliance with the regulation.
- Unpacking Group: U.N. Number:

15. Regulatory Information:

- Fire-fighting Law: Dangerous substance Annex Class 4-2 (Non-soluble)
- Regulations: Transport of dangerous goods. Storage of dangerous goods. (Inflammable Liquid. Flash point- Over 23.0°C)
- Occupational Health & Safety regulation (Ordinance on the Prevention of Organic Solvent, Poisoning, Secondary Organic Solvent. Notification of object substance)
- Road Traffic Act (Regulation on Long & Massive Tunnel, Underwater Tunnel, Express Highway)
- Law on Waste Disposal and Cleaning

16. Other Information:

Background Information:
1) National Environmental Laboratory DATA BASE: <http://w-chemdb.nies.co.jp/>
2) Japan Industrial Safety and Health Association DATA BASE: <http://www.jaish.gr.jp/>
3) MSDS for Raw Material
4) ICSC CARD <http://www.nihs.go.jp/csc/>
5) Japan Printing Ink Maker's Association: Guide Book (Ver.2)Material Safety Data Sheet

Inquiries:

Section Concerned: Technical Department
Phone No.: 048-766-4516 Fax No.: 048-766-5104

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the data of its publication The information given is designed only as guidance for safe handling, use, processing storage, transportation, disposal and release and is not be considered a warranty or quality specification.*

Note : Please do the required testing at your end before actual application. Above information doesn't provide any guarantee/ warranty.

COMPANY OUTLINE

Firm Name : Seiko Advance Ltd

Offices and Plant

Head Office	2-27-5, Minami-ikebukuro, Toshima-ku, Tokyo 171-0022, Japan Tel:81-3-3987-5111(Rep.) Fax: 81-3-3987-5149	Seiko Advance (Tianjin) Ltd	No. 5 Hua Shan Road, Hangu Modern Ind. Park, Teda Tianjin, China Postal Code. 300480 Tel: 86-22-5991-5988 Fax: 86-22-5991-5900 E-mail: info-sat@seikoadvance.com.cn
Control Center/ Saitama Factory	1575 Negane, Hasuda City. Saitama Prefecture 349-0131, Japan Tel : 81-48-766-4511 (Rep.) Fax : 81-48-766-4523 E-mail: screenink@seikoadvance.co.jp http://www.seikoadvance.co.jp/	Shenzhen Office (Service center)	2/F., Block 3, Hua Jin Feng Ke Ji Yuan, Shang Heng Lang Cun, Da Lang Jie Dao, Shen Zhen, Guang Dong, China Postal Code. 518109 Tel : 86-755-8171-1906/8171-1907 Fax: 86-755-2818-6993 E-mail: info-sz@seikoadvance.com.cn
Iida Branch	670-1, Kamisato-beppu, Iida City, Nagano Prefecture 395-0003, Japan Tel: 81-265-245588 (Rep.) Fax: 81-265-523335	Dongguan Office (Service center)	8-1, Jinrong Lu, Jinsha Henan Gongye Qu, Changan Zhen, Dongguan Shi, Guangdong, China Postal Code. 523850 Tel: 86-769-8539-1906/8537-1907 Fax: 86-769-8537-8993 E-mail: info@seikoadvance.com.cn
Seiko Advance (Thailand) Ltd	147, 147/1 Lat Krabang Industrial Estate, Soi Chalong Krung 31, Lumphatiew, Lat Krabang. Bangkok 10520 Thailand Tel: 66-2739-4747, 66-2326-0170 Fax: 66-2326-0246 E-mail: screenink@seikoadvance.co.th http://www.seikoadvance.co.th	Suzhou Office (Service center)	Unit 6, No. 498, Jinling West Road, Weiting Town, Su Zhou Industrial Park, China Postal Code. 215121 Tel: 86-512-6295-1698 Fax: 86-512-6295-1598 E-mail: info_sz@seikoadvance.com.cn
Seiko Advance (Hong Kong) Ltd	Room 601, 6/F., Summit Insurance Bldg... 789 Nathan Road, Kowloon, Hong Kong Tel: 852-2393-2037 Fax: 852-2393-2035 E-mail: info@seikoadvance.com.hk	Seiko Advance (India) Private Ltd	Plot No. 108-110, Ecotech-VI, Kasna, Greater Noida U.P. (India) Tel: 91-8800090671 E-mail: info@seikoadvance.co.in http://www.seikoadvance.co.in
Seiko Advance (Sihui) Ltd	Chengzhongbaishatou, Sihui City, Guangdong, China Postal Code. 526200 Tel: 86-758-330-5111, 330-5206 Fax: 86-758-330-5000 E-mail: info@seikoadvance.com.cn http://www.seikoadvance.com.cn	Seiko Advance Korean Office c/o Sein T&T Ltd	#208 Ilsan Techno Town. 1141-1 Baekseok-Dong. Ilsandong-Gu, Goyang-Si Gyeonggi-Do, Korea 410-722 Tel: 82-31-904-2456 Fax: 82-31-904-2221
Seiko Advance (Hangzhou) Ltd	Yongxi Village, Qiaosi Town, Yuhang District, Hangzhou. Zhejiang Province, China Postal Code. 311101 Tel: 86-571-8919-0088 Fax: 86-571-8919-0080 E-mail: info hz@seikoadvance.com.cn		

COMPANY OUTLINE

Firm Name Seiko Advance Ltd

Capital ¥96 million

Representatives Tetsuo Hiraguri, President

Established August 1950

Banks The Tokyo Tomin Bank Limited,
Ikebukuro Branch
The Bank of Tokyo Mitsubishi UFJ Limited,
Ikebukuro Higashiguchi Branch
The Bank of Tokyo Mitsubishi UFJ Limited,
Ikebukuro Branch
The Mitsuissumitomo Bank Limited, Ikebukuro Higashiguchi Branch
The Mizuho Bank Limited, Ikebukuro Branch
The Resona Bank Limited,
Ikebukuro Branch
The Hachijuni Bank Limited,
Tenmachi Branch
The Iida Shinkin Bank

Affiliates Seiko Paint Industry Co., Ltd.
Shibaura Industries Ltd.
Fuji Real Estate Co., Ltd.

Member of Screen Printing & Graphic Imaging Association International (SGIA)
Japan Association of Screen Printing Suppliers (JASPS)
Japanese Screen Printers Association (JSPA)
Asia Screen Printing & Graphic Imaging Association (ASGA)
Screen Printing Association International (JSPA)
Kanto Paint Manufacturers Association
Japan Printing Ink Makers Association
Popai-Japan

Products Lines Screen printing ink, coatings and other chemicals.
Functional ink, UV ink, Water based ink,
Plastisol ink and over print clears.
Screen printing-allied materials:
Paints, Chemicals, Adhesives, Plastics,
Coating Apparatus
Resin Forming and Cutting.