

## 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	Two-part reaction inks in which unique epoxy resin is blended.
Usage	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	Gloss finish of outstanding wear resistance and leveling.
Drying time	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

Item \ 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
Adhesion	○	◎	◎	◎	◎	◎
Hardness	△	△	○	○	◎	◎
Acid resistance	△	△	△	○	○	○
Alkali resistance	△	△	△	○	○	○
Solvent resistance	△	△	△	○	○	○

◎ Excellent  
○ Good  
△ Fair  
△ Acceptable  
× Poor

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

**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, of variation in ink film performance due to the special nature of the materials (shown below).

### Variation In Ink Film Performance Among Different Materials

Item \ Material	Aluminum	Steel	Tin	Glass
Water resistance	◎	◎	◎	△
Warm water resistance	○	○	△	×
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 ratio 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 : Hardener)	(Main Agent : Hardener)	(Main Agent : Hardener)
	8:2	7:3	6:4
Hardness	3H	3H	2H
Methanol resistance	◎	○	△
Alkali resistance	○	○	×
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)

