

H1013UV Series — High-Adhesion UV Screen & Pad Printing Ink



TECHNICAL DATA SHEET

1. Product Description

H1013UV is a single-component UV-curing pad printing ink specially developed for plastic substrates requiring enhanced adhesion and durability.

It provides strong adhesion, excellent abrasion and scratch resistance, and good alcohol resistance after complete UV curing, making it suitable for selected difficult-to-adhere plastic substrates.

2. Recommended Substrates & Applications

Recommended for ABS, PC, PVC, PMMA, selected PET substrates, UV-coated surfaces, and other compatible plastic materials. Especially suitable for selected difficult-to-adhere plastic parts, including modified or compounded plastic materials where conventional inks may provide insufficient adhesion.

Typical applications include electronic components, appliance parts, buttons, control components, plastic housings, and other molded plastic parts requiring fine pad-printed graphics and enhanced durability.

Note: Surface compatibility should be confirmed before production, especially for glass and coated surfaces, as surface treatments and coating formulations may significantly affect adhesion.

3. Key Features

- High adhesion on selected difficult-to-adhere plastic substrates
- Designed for UV pad printing applications
- Excellent abrasion and scratch resistance
- Good alcohol and chemical resistance after complete curing
- Excellent reproduction of fine text, lines, symbols, and detailed graphics
- Rapid UV curing for efficient production

4. Printing Instructions

1. Remove dust, oil, mold-release residue, and other contaminants from the substrate before printing.
2. Stir the ink thoroughly before use. If viscosity adjustment is required, add the recommended UV reducer in a controlled amount according to printing conditions.
3. Avoid excessive reducer addition, as it may affect opacity, ink transfer, curing speed, adhesion, and final resistance.
4. Recommended screen mesh: 100–150T. Select the final mesh count according to artwork, required ink deposit, substrate, and curing conditions.
5. Pad Printing: Select a suitable printing plate, etching depth, silicone pad, and printing speed according to artwork, substrate geometry, and required ink deposit.
5. Cure with a suitable UV mercury lamp curing system immediately after printing. Ensure complete curing before adhesion and resistance testing. Refer to Section 4A. UV Curing Reference for recommended curing conditions.
6. For difficult-to-adhere or modified plastic substrates, conduct an adhesion test before mass production. Surface cleaning or suitable pretreatment may be required depending on resin grade, additives, fillers, and surface condition.

4A. UV Curing Reference

1. Use a suitable UV mercury lamp curing system with sufficient UV energy output to achieve complete curing.
2. Recommended UV energy:
Approximately 600–1,200 mJ/cm², depending on color, ink film thickness, UV equipment, and production conditions.

Color and curing reference:

Light colors and clear coatings: approximately 600 mJ/cm² may be sufficient.

Dark colors (such as black and blue): approximately 800–1,200 mJ/cm² may be required due to stronger UV absorption.

3. Curing adjustment recommendations:

For thick ink films or heat-sensitive substrates, reduce UV power and extend curing time to prevent substrate deformation or overheating.

4. If complete curing is not achieved:

- Increase UV energy output;
- Reduce conveyor speed;
- Increase UV exposure time;
- Apply multiple UV curing passes.

equipment conditions:

Final curing parameters should be validated according to lamp type, UV intensity, conveyor speed, color, opacity, and ink film thickness.

5. UV lamp maintenance:

UV lamp intensity gradually decreases during operation. Replace lamps or verify UV output when curing performance decreases.

6. Adhesion and curing verification:

- If poor adhesion occurs after UV curing, check:
 - UV energy and curing completeness;
 - Substrate cleanliness;
 - Surface treatment or coating compatibility;
 - Ink-film thickness.

5. Precautions & Storage

1. Always conduct a production trial before mass printing. Adhesion and curing may vary with substrate type, glass surface condition, coating formulation, surface treatment, UV intensity, line speed, color, and ink-film thickness.

2. This UV ink does not air dry. Protect uncured ink and printed parts from daylight, sunlight, and unintended UV exposure.

3. Store tightly sealed in a cool, dry, dark place away from strong light and heat sources.

4. Use UV-blocking eye protection, suitable gloves, protective clothing, and adequate ventilation. Avoid skin and eye contact with uncured ink.

5. If the product enters the eyes, rinse immediately with plenty of water and seek medical attention.

6. Shelf life is 12 months from the date of manufacture in unopened original packaging. Re-test curing and performance before using expired material.

6. Technical Reference Data

Test Item	Result	Test Method / Condition
Ink Fineness	$\leq 15 \mu\text{m}$	Grind gauge
Dry-Film Gloss	$\geq 80 \text{ GU}$	60° gloss meter
Air Drying	Does not surface dry	UV-curing system; protect from ambient UV light
Full Cure	After UV exposure	Reference dose: 800–1,200 mJ/cm ²
Alcohol Resistance	No visible change	500 g load; 2000 double rubs with an alcohol-saturated cotton pad; internal reference test
Adhesion	100/100 squares retained	1 mm × 1 mm, 100-grid cross-cut; 3M tape peel
Acid Resistance	No visible change	5% HCl immersion for 24 h
Alkali Resistance	No visible change	5% NaOH immersion for 24 h
Salt-Water Resistance	No visible change	5% NaCl immersion for 24 h
Water Resistance	No visible change	Tap-water immersion at 20°C for 96 h
Abrasion Resistance	No substrate exposure	500 g load; 3,000 double rubs with an
RCA Abrasion	No substrate exposure	20 cycles on RCA paper-tape abrasion
Gasoline Resistance	No visible change	500 g load; 500 double rubs with a gasoline-saturated cotton pad; internal reference test

Note: Performance data is based on internal laboratory testing under reference UV-curing conditions. Actual results may vary depending on substrate type, resin grade, additives, fillers, surface condition, ink color, ink deposit, UV energy, and curing conditions. Substrate compatibility and performance should be verified before mass production.

7. Compliance Information

Standard colors in this series can be supplied to meet applicable RoHS, REACH, PAHs, and EN 71-3 requirements. Halogen-related and other regulatory claims must be confirmed against the current test report for the selected color and target market.

8. Important Notice

The information in this document is based on internal reference testing and is provided as technical guidance only. Because substrate grades, surface treatments, lamp type, UV intensity, ink-film thickness, printing conditions, and end-use requirements vary, users must verify suitability and curing through their own production trials.