WPG-D20000 Series Water-Based Inks for Plastics & Films
Technology Data Sheet

1. Product Overview

WPG-D20000 Series is an eco-friendly water-based gravure ink system engineered by HCOLOR for modern plastic packaging films and decorative interior laminates. It covers beverage bottle shrink-film reverse printing, PVC calendered film surface printing, and furniture decorative PVC heat-lamination. Delivering robust adhesion onto PVC/PE shrink films, calendered vinyl, and PVC woodgrain foils, it provides high color strength, crack-free shrinkage, and delamination-free heat pressing, eliminating solvent VOCs at the source.

2. Product Features

- **High Tinting Strength & Opacity:** Saturated shades deliver sharp dot reproduction and vivid woodgrain textures.
- **Tenacious Plastic Film Adhesion:** Robust bond strength onto PVC/PE shrink films, calendered vinyl, and PVC foils.
- **Crack-Free Thermal Shrinkage:** Deforms synchronously in shrink tunnels without flaking, cracking, or wrinkling.
- **Heat-Press Lamination Durability:** Endures vacuum membrane forming and flat pressing without delamination.
- **Weather & Lightfast Resistance:** Formulated with exterior-grade pigments for fade resistance and anti-scratch durability.
- **Pure Aqueous Low-VOC Chemistry:** Eco-friendly formulation, low odor, fully compliant with GB 38507-2020.

3. Suitable Substrates

Suitable for PVC heat-shrink films, PE heat-shrink films, PVC calendered films, soft and rigid PVC sheets, and furniture decorative PVC woodgrain/solid foil substrates.

4. Technical Specifications

Property	Unit	Typical Value	Test Method / Notes
Appearance & Color	-	Viscous liquid in various colors (base inks & PMS blends)	Visual inspection
Viscosity	s	35–65 (press 17–25)	Zahn #2 cup, 25±0.5°C
pH Value	-	8.0–9.5	Precision pH meter, 25°C
Solid Content	%	30–45	Oven method, 120–130°C × 2h
Gloss (60°)	GU		

5. Application Guidelines

Ink Preparation	Stir 5–10 min until homogeneous; filter through 200-mesh. 1-pack water-based system.
Plate / Cylinder Specs	Gravure cylinder 150–250 LPI; for shrink reverse print, adjust cell depth per white backing.
Dilution Ratio	Dilute with food-grade ethanol:water = 9:1 or dedicated diluent, addition 30%–50%.
Press Viscosity	Operating press viscosity: 17–25 s (shrink reverse print: 18–22 s, Zahn #2 cup, 25°C).
Press Speed	50–200 m/min (shrink sleeve: 50–100 m/min; PVC film & woodgrain surface: 80–200 m/min).
Drying Method	Hot air drying, air temp 40–90°C (shrink film strictly 40–55°C; PVC surface 60–90°C).
Equipment Cleaning	Flush gravure cylinders and ink lines immediately after printing with clean water.
Application Note	Prior to production, verify dyne level, ink adhesion, and heat resistance in shrink/press trials.

6. Regulatory & Safety

Regulatory Compliance	Complies with EU RoHS 2.0, REACH (SVHC) directives, and plastic product environmental regulations.
Food Contact Statement	
Usage Note	
Safety Data Sheet (SDS)	Full Safety Data Sheets (SDS) are available upon request from HCOLOR technical support.
User Responsibility	Users must independently confirm process compatibility and compliance with performance specifications under actual conditions.

7. Packaging & Storage

Standard Packaging	Standard packaging: 20 kg plastic drum; custom volumes: 1 kg, 5 kg, 200 kg drum, or custom volumes available upon request.
Storage Conditions	Store tightly sealed in original containers. Keep in a dry, cool warehouse at 5–35°C, away from sunlight; protect from freezing.
Shelf Life	12 months from production date in unopened original containers.
Post-Opening Care	Reseal inner and outer lids immediately and tightly after each dispense; consume within 6 months to prevent surface skinning.

8. Typical Product Grades

Product Code	Key Features	Suitable Substrates	Target Applications
WPG-D20000-Shrink	Gravure shrink-film water-based ink / High-density reverse print / Crack-free thermal shrinkage	PVC, PE plastic heat-shrink films	Beverage bottle shrink sleeve labels, condiment tamper-evident bands, daily chemical outer shrink wraps
WPG-D20000-PVC Surface	Gravure PVC film surface printing ink / High tinting strength / Scratch & lightfast durability	PVC calendered film, flexible soft vinyl	PVC tablecloths, vinyl shower curtains, rainwear, inflatable toys, soft calendered PVC products
WPG-D20000-Furniture Lamination	Furniture decorative PVC heat-lamination ink / Crisp woodgrain textures / Delamination-free heat pressing	Decorative PVC foil, furniture overlay films	Furniture desktops, cabinet doors, wall panels, interior doors, and commercial fixture surface laminates

1. Baseline Platforms & Customization: The products listed above are core baseline platforms of the WPG-D20000 Series proven through extensive commercial mass production. To meet specific line speeds, substrate surface tension (dyne level) variations, or demanding thermal shrinkage ratios and lamination temperature resistance, HCOLOR provides tailored viscosity adjustments, custom PMS color matching, and bespoke functional performance development.

2. Specialty Process Integration: If integration with functional barrier base primers, specialty overprint varnishes, or heat-activated adhesive tie-layers is required, please contact HCOLOR technical support for a comprehensive turnkey formulation solution.

9. Disclaimer

1. The data are typical values intended for product selection and technical reference only. Unless otherwise agreed in writing, they do not constitute guaranteed specifications.

2. The information contained herein is based on our current knowledge and experience and is provided in good faith for general application guidance only. It does not constitute a legal warranty, guarantee, or binding technical specification. Users are strictly responsible for evaluating and confirming product suitability, process compatibility, and commercial usability under their actual operating conditions and production equipment prior to commercial use.