WOF2000 Series Water-Based Matte Overprint Varnishes Technology Data Sheet

1. Product Overview

WOF2000 Series is a premium water-based matte overprint varnish system developed for high-end paper packaging, encompassing two mature application processes: gravure surface coating and sheetfed offset inline coating. It includes both general commercial packaging and low-VOC cigarette packaging compliant formulations. Upon drying, it forms a refined, silky, glare-free matte finish with outstanding anti-scratch and scuff resistance, providing uniform matting that fully satisfies high-speed automated printing and finishing requirements.

2. Product Features

- **Uniform & Delicate Matte Finish:** Forms a soft, glare-free matte surface with silky hand-feel and transparent color clarity.
- **Outstanding Scuff & Scratch Resistance:** Exceptional abrasion durability, preventing surface burnishing and scuffing during rewinding or pallet stacking.
- **Broad Press Speed Matching:** Gravure speeds up to 80–250 m/min, sheetfed offset inline coating speeds up to 7,000–14,000 sheets/hour.
- **Tenacious Substrate Adhesion:** Superior anchorage on white cardboard, coated art paper, metallized transfer paper, and aluminum foil laminated substrates.
- **Excellent Post-Press Converting:** Flexible and anti-cracking, withstanding die-cutting, folding, and high-speed cigarette packer converting.
- **Low-Odor & Eco-Friendly:** Pure aqueous formulation; dedicated grades strictly comply with tobacco industry standard YC/T 207 VOC limits.

3. Suitable Substrates

Suitable for white cardboard, coated art paper, woodfree paper, matte coated paper, kraft paper, corrugated board, metallized transfer paper, holographic transfer paper, and aluminum foil laminated paperboards.

4. Technical Specifications

Property	Unit	Typical Value	Test Method / Notes
Appearance & Color	-	Milky white to translucent viscous liquid	Visual inspection
Viscosity	s	30–65 (supplied) / 18–60 (press)	Zahn #2 cup, 25±0.5°C
pH Value	-	8.0–9.5	Precision pH meter, 25°C
Solid Content	%	35–42	Oven drying, 105–130°C × 2 h
Gloss (60°)	GU	5–25	60° incident angle, GB/T 13217.2-2024 (deep matte to semi-matte)

5. Application Guidelines

Ink Preparation	Stir thoroughly for 5–10 minutes prior to use; filtration through 200 mesh screen is recommended. 1-pack system; reseal tightly after use.
Plate / Cylinder Specs	Gravure: anilox cylinder 100–120 L/cm; inline offset: select 100–120 L/cm anilox roll (6–10 BCM) based on target film thickness.
Dilution Ratio	Gravure: dilute with food-grade ethanol: deionized water = 1:1, addition ratio 30%–50%; inline offset: add 5%–10% deionized water (adjust based on press speed).
Press Viscosity	Gravure operating viscosity: 18–22 s; inline offset operating viscosity: 50–60 s (Zahn #2 cup, 25°C).
Press Speed	Gravure speed: 80–250 m/min; inline offset speed: 7,000–14,000 sheets/hour (fine-tune according to drying oven heating and airflow).
Drying Method	Hot air drying with infrared (IR) assistance, air temperature 60–90°C; ensure complete through-cure before rewinding or stacking.
Equipment Cleaning	Clean cylinders, doctor blades, and ink pans immediately after shutdown with water or dedicated mild alkaline aqueous cleaner to prevent film formation.
Application Note	Prior to initial commercial production, thorough trials must be conducted under actual operating conditions to verify intercoat adhesion between base ink and matte varnish, as well as anti-blocking performance.

6. Regulatory & Safety

Regulatory Compliance	Complies with EU RoHS 2.0, REACH (SVHC) standards, and China Environmental Labelling (Ten-Ring) certification.
Food Contact Statement	Formulated for external non-food-contact secondary packaging. If specialized food contact migration compliance is required, technical project evaluation and confirmation by HCOLOR are required.
Usage Note	
Safety Data Sheet (SDS)	Safety Data Sheets (SDS) are available upon request.
User Responsibility	Users must independently verify product suitability, regulatory compliance, and processing performance under actual commercial production conditions prior to full-scale adoption.

7. Packaging & Storage

Standard Packaging	Standard packaging: 20 kg plastic pail; custom packaging: 5 kg/pail or custom volumes available upon request.
Storage Conditions	Store tightly sealed in original containers. Keep in a dry, cool, and well-ventilated warehouse at 5–35°C, away from heat sources; strictly protect from direct sun exposure and freezing.
Shelf Life	12 months from production date in unopened original containers.
Post-Opening Care	Reseal inner and outer lids immediately and tightly after dispensing to prevent surface skinning from moisture evaporation and dry caking of matting powders.

8. Typical Product Grades

Product Code	Key Features	Suitable Substrates	Target Applications
WOF2001	Inline offset matte varnish / Uniform delicate matte / Superior anti-scratch	Woodfree paper, coated art paper, white cardboard, kraft paper, metallized transfer paper	Food & pharmaceutical cartons, cosmetic packaging, premium gift boxes, daily chemical packaging
WOF2004	General gravure matte varnish / Silky matte finish / Superb paper adhesion	White cardboard, kraft paper, corrugated board, non-aluminum transparent transfer paper	Cigarette inner frame liners, food paper canisters/bags, premium liquor packaging, cartons
WOF2151	Cigarette gravure matte varnish / VOC strictly compliant with YC/T 207 / Stable matte anti-blocking	Holographic transfer paper, metallized transfer paper, aluminum foil laminated paper, white cardboard	Cigarette outer cartons, cigarette frame paper, inner liners, premium tipping paper matting
WOF2195C	Cigarette inline offset matte varnish / Ultra-low VOC / Superior crease-crack resistance & runnability	Coated art paper, white cardboard, gold/silver transfer card, metallized composite paper	Cigarette hard/soft pack outer cartons, high-speed inline coating & die-cutting, prestige luxury boxes

1. Baseline Platforms & Customization: The products listed above are core baseline platforms of the WOF2000 Series proven through extensive commercial mass production. To meet specific matte levels (dead matte / semi-matte / deep matte), specialty paper absorbency variations, or demanding ultra-high-speed inline coating durability, HCOLOR provides tailored viscosity adjustments, gloss level regulation, and bespoke functional performance development.

2. Specialty Process Integration: If specialized finishes such as gloss-matte contrast, drip-off textured effects, or other specialty surface contrast embellishments are required, please contact HCOLOR technical support for a comprehensive turnkey printing formulation.

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.