WOF1000 Series Water-Based High Gloss Overprint Varnishes Technology Data Sheet

1. Product Overview

WOF1000 Series is a high-performance water-based high-gloss overprint varnish system developed for modern eco-friendly packaging printing. This series encompasses two mainstream application processes—gravure unit coating and sheetfed offset inline coating—and includes both general commercial packaging and low-VOC cigarette packaging compliant formulations. It forms a high-gloss, mirror-smooth protective film over white cardboard, coated art paper, woodfree paper, metallized transfer paper, and gold/silver cards, delivering superior leveling, fast drying, and outstanding rub and anti-blocking durability for high-speed automated packaging lines.

2. Product Features

- **High Specular Gloss:** Rich, brilliant clarity with rapid leveling, rendering an ultra-smooth, mirror-like specular gloss finish.
- **Broad Press Speed Compatibility:** Rapid film formation and through-cure; gravure speeds up to 80–250 m/min, sheetfed offset inline speeds up to 7,000–14,000 sheets/hour.
- **Rub Resistance & Anti-Blocking:** Flexible, scratch-resistant film with outstanding friction durability, preventing set-off or blocking in high-delivery rewinds or pallet stacks.
- **Excellent Converting Suitability:** High film flexibility resisting die-cutting scoring and folding cracks, ensuring smooth runnability on high-speed cigarette packaging lines.
- **Eco-Friendly, Safe & Low-Odor:** Pure water-based acrylic resin chemistry with ultra-low VOC emissions; dedicated grades strictly comply with tobacco standard YC/T 207.

3. Suitable Substrates

Suitable for white cardboard, greyback duplex board, coated art paper, woodfree paper, matte coated paper, kraft paper, pressure-sensitive label stock, 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	%	38–43	Oven drying, 105–130°C × 2 h
Gloss (60°)	GU	55–75	60° incident angle, GB/T 13217.2-2024

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, moderate cell depth; inline offset: select 100–120 L/cm anilox roll (6–10 BCM) based on target film thickness.
Dilution Ratio	Gravure: dilute with 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 tunnel airflow and temperature).
Drying Method	Hot air drying with infrared (IR) assistance, air temperature 60–90°C; ensure complete surface and through-cure before rewinding or stacking.
Equipment Cleaning	Clean anilox 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 varnish, drying speed, and 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 dust contamination.

8. Typical Product Grades

Product Code	Key Features	Suitable Substrates	Target Applications
WOF1001	General gravure gloss varnish / Mirror-like leveling / High scuff resistance	Woodfree paper, coated art paper, white cardboard, metallized transfer paper	Outer packaging folding cartons, shopping bags, food & pharma cartons, boutique gift boxes
WOF1002	Inline offset gloss varnish / Fast drying anti-blocking / High-speed press runnability	Coated art paper, woodfree paper, white cardboard, metallized transfer paper	Cigarette outer packaging, beverage cartons, high-end cosmetic boxes, bespoke luxury gift packaging
WOF1017	Cigarette gravure gloss varnish / Strict VOC compliance with YC/T 207 / Superior abrasion resistance	Holographic transfer paper, metallized transfer paper, aluminum foil laminated board, white cardboard	Cigarette outer cartons, cigarette packets, inner frame liners, tipping paper
WOF1308	Cigarette inline offset gloss varnish / Ultra-low VOC / Exceptional crease & crack resistance	Gold/silver transfer card, high-gloss aluminum foil paper, white cardboard, coated art paper	Premium cigarette hard/soft packs, high-speed cigarette packer outers, boutique luxury cartons

1. Baseline Platforms & Customization: The products listed above are core baseline platforms of the WOF1000 Series proven through extensive commercial mass production. To meet specific press speeds (e.g., ultra-high-speed inline coating), substrate absorbency variations, or demanding rub/crease-crack resistance requirements, HCOLOR provides tailored viscosity adjustments, customized additive packages, and bespoke functional performance development.

2. Specialty Process Integration: If specialized finishes such as drip-off / drip-relief combination effects or tactile contrast finishes are required, please contact HCOLOR technical support for a comprehensive turnkey 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.