

ZnoNova Technical & Commercial Dossier

Technical Dossier: OdorZero™ & PLATARI™ 100-Wash Durable Functional Deodorant Textiles

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Technology Origin: Top Nano Technology Co., Ltd. (Taiwan, founded 2003, Dr. Wen-Li Zhang)

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1. Executive Summary & Core Technological Architecture

Conventional antibacterial and deodorizing textiles rely overwhelmingly on **topical post-treatment coatings** (such as pad-dry-cure silane quats or surface silver salts). These topical finishes suffer from two fundamental commercial failures: 1. **Poor Laundering Fastness:** Functionality diminishes dramatically after 15–20 domestic wash cycles as surface chemicals leach away; 2. **Environmental & Skin Toxicity:** Leached biocide chemicals cause wastewater pollution and potential skin sensitization.

OdorZero™ and PLATARI™ employ a proprietary **pre-treatment melt-spinning nanotechnology**. Functional sub-micron noble metal and metal oxide composite crystallites (Platinum, Silver, Zinc Oxide) are compounded directly into the polymer matrix (Nylon 6, Nylon 66, Polyester, or Polypropylene) prior to fiber extrusion.

Because the active deodorizing particles are permanently anchored inside the core-sheath structure of the synthetic filament, the textile retains **>96% deodorization and >99.9% antibacterial reduction after 100 industrial wash cycles**.

2. Quantitative Performance & Testing Standards (SGS & Intertek Certified)

Performance Dimension	Testing Standard / Method	Measured Performance	Commercial Durability Standard
Isovaleric Acid (Body/Foot Odor)	Gas Chromatography / Detector Tube	≥ 96.0% Elimination	Retains > 90% after 100 Washes
Acetic Acid (Sweat / Sour Odor)	Gas Chromatography / Detector Tube	≥ 96.0% Elimination	Retains > 90% after 100 Washes
Ammonia (NH ₃) Odor	Spectrophotometric Detection	≥ 60.0% Baseline (Up to 85% in 7% masterbatch)	Commercial Pet & Underwear Grade
Staphylococcus aureus (ATCC 6538)	AATCC 100 (Quantitative)	> 99.9% Reduction	Bactericidal after 100 Washes
Klebsiella pneumoniae (ATCC 4352)	AATCC 100 (Quantitative)	> 99.9% Reduction	Bactericidal after 100 Washes
Far-Infrared Emissivity (8–14 μm)	FTIR Spectrometry	82.0% Emissivity	Thermal regulation & microcirculation
Skin Irritation / Sensitization	ISO 10993-10 Cytotoxicity	Zero Irritation (Score 0)	Oeko-Tex Standard 100 Compliant

3. Product Supply Formats & Manufacturing Tiers

ZnoNova supports the entire textile manufacturing supply chain from polymer extrusion to finished garment OEM:

Tier 1: Functional Polymer Masterbatch Pellets

- Carriers: Polypropylene (PP), Polyamide 6 (PA6), Polyamide 66 (PA66), Polyethylene Terephthalate (PET).
- Active Particle Loading: 5.0% to 10.0% active nano-composite concentrate.

- Recommended Let-Down Ratio (LDR): **3.0% – 5.0%** in virgin polymer during melt spinning.
- Extrusion Compatibility: Suitable for POY, FDY, and DTY spinning lines with standard spinneret pack filters.

Tier 2: Functional Filament Yarns

- Nylon 6 & Nylon 66 DTY: 70D/68F, 40D/34F, 20D/24F (Semi-dull and Full-dull).
- Polyester DTY: 75D/72F, 50D/48F.
- Available in raw white (for piece dyeing) and dope-dyed black.

Tier 3: Finished Circular Knit & Warp Knit Fabrics

- Single Jersey, Interlock, Mesh, Rib, and French Terry constructions.
- Composition: OdorZero Nylon / Spandex blends (85/15, 80/20) for activewear, underwear, and sock toe/heel reinforcement.

4. The OdorZero™ Ingredient-Brand Hangtag Licensing Program

To empower consumer brands with verified technical storytelling: * Qualified brands utilizing genuine OdorZero yarns or fabrics receive licensed **OdorZero™ anti-odor hangtags**; * Each batch is backed by official SGS / Intertek inspection report cross-references; * Provides direct consumer trust for premium activewear, athleisure, travel underwear, and pet bedding brands.

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