Paint Mist Filter Cotton

Paint mist filter cotton, also known as paint stop filter, floor filter, or glass fiber paint mist mat, is a specialized dry paint mist filtration material for painting booths and baking rooms. Made from gradient-density ultra-fine glass fibers or specialized synthetic fibers, it achieves efficient interception and adsorption of paint mist particles through a multi-layer three-dimensional structure. As a core component for spray exhaust pretreatment, downstream purification equipment protection, and workshop cleanliness assurance, it is widely compatible with various dry spray systems and conventional coating production lines.

I. Working Process

Paint mist filter cotton uses gradient-density deep filtration technology with an overall fluffy three-dimensional fiber mesh structure. Fiber density gradually increases from the inlet side to the outlet side, forming a layered interception and step-by-step adsorption working mode with no secondary pollution throughout the process, suitable for dry spray booth negative pressure exhaust systems. The specific process flow is as follows:

1. Coarse Pre-interception: The inlet side (usually green) has larger fiber gaps to prioritize capturing large particles of overspray paint, paint residue, and viscous paint clumps generated during spraying, preventing large particles from quickly clogging the inner filter material and extending overall service life while reducing direct paint mist adhesion to fan blades and pipe walls.

2. Fine Mid-layer Adsorption: The middle layer has moderate fiber density, strongly adsorbing fine paint mist particles of 2.5-10 μm through three-dimensional pores formed by interlaced fibers. This is the core particle range most prone to escaping during spraying operations and affecting paint finish quality and environmental emissions, significantly reducing paint mist escape rate.

3. Terminal Flow Stabilization Filtration: The outlet side (usually white) has dense fibers to further intercept residual fine paint mist while stabilizing exhaust airflow, avoiding surface defects like orange peel and particle imperfections caused by airflow

turbulence, ensuring the spray work piece surface smoothness, and reducing load on downstream medium and high-efficiency filters, activated carbon adsorption devices, and RTO combustion equipment.

4. Overall Operation Logic: Driven by workshop exhaust negative pressure, air containing paint mist passes through the filter material. The entire process uses physical filtration without water or chemical agents, suitable for solvent-based paint, water-based paint, UV paint and other coating spray scenarios. The filter material structure remains stable during filtration, not prone to collapsing or fiber shedding, ensuring consistent filtration efficiency.

II. Core Parameters

The following are industry standard parameters, with non-standard customization available based on spray booth airflow, paint mist concentration, and installation space. Core indicators are as follows:

Parameter Category	Standard Specifications/Values	Remarks
Material	Ultra-fine glass fiber (mainstream) / High-temperature resistant synthetic fiber	Adhesive-free eco-friendly process, no fiber shedding, no powdering
Standard Sizes	Roll: 1m × 20m, 1.2m × 20m; Sheet: 1m × 1m, 2m × 2m	Can be cut as needed, suitable for various filter boxes, spray booth floor and ceiling installation
Thickness	30mm, 50mm, 60mm, 80mm, 100mm	Choose thicker versions for high paint mist concentration, thinner versions for low concentration for better cost-effectiveness
Grammage	220-350g/m²	Higher grammage means greater dirt-holding capacity and longer service life
Filtration Efficiency	≥95% for paint mist particles above 5μm, G3-G4 filtration grade	Conforms to GB/T 6165-2021 Air Filtration Test Standard
Dirt-holding Capacity	Standard: 8-15 kg/m², High-capacity versions can reach above 25 kg/m²	Determines replacement cycle; high-capacity versions can significantly reduce replacement frequency

Initial Resistance	≤20 Pa	Low air resistance, does not affect workshop exhaust efficiency, reduces fan energy consumption
Temperature Resistance	Standard ≤120℃, High-temperature resistant ≤170℃	Suitable for baking booth drying section and high-temperature spraying scenarios
Applicable Air Velocity	0.2-0.8m/s	Too high air velocity may cause paint mist penetration, too low affects exhaust efficiency

III. Usage Instructions

1. Installation Specifications

Installation Direction: Strictly distinguish between inlet and outlet sides; normally the green side faces the paint mist source (inlet side), the white side faces the exhaust/fan side. Reversing the direction will significantly reduce filtration efficiency and cause rapid filter material clogging.

Installation Position: Can be laid flat on spray booth floor (floor filter), installed in dry filter boxes, ceiling-mounted spray booth top filter layer, or water curtain cabinet downstream pretreatment section. During installation, ensure flat laying without wrinkles or gaps, edges fitting tightly against the installation frame to prevent paint mist escaping through gaps.

Protective Requirements: When installing glass fiber filter material, wearing gloves and mask is recommended to avoid skin discomfort from fiber contact. Clean up scattered fibers at the site after installation to prevent them from entering the spray area and affecting paint finish quality.

2. Replacement Judgment and Cycle

Replacement Indicators: Filter material surface visibly covered by paint mist with darkened color, thickness compressed and thinned, exhaust resistance noticeably increased (slower workshop exhaust, increased fan noise), and paint finish showing particle defects. Immediate replacement is required when these signs appear.

Standard Cycle: Small spray booths - replace every 7-15 days; Medium-sized vehicle and furniture coating lines - replace every 10-30 days; High-load continuous

spray workshops – inspect every 3–7 days and replace as needed to avoid excessive use causing filtration failure.

3. Maintenance and Storage

Daily Maintenance: No cleaning required, not reusable; dispose of used filters according to hazardous waste regulations after replacement. Regularly inspect installation frames and clean residual paint residue inside frames to ensure new filter material fits properly.

Storage Requirements: Store in a dry, ventilated, cool place, avoid direct sunlight, rain, and heavy pressure to prevent filter material from moisture-induced hardening and fiber aging. Unopened products have a shelf life of 12 months.

IV. Product Advantages

Outstanding Filtration Effect, Ensuring Both Paint Finish and Environmental Compliance: Gradient density structure precisely intercepts paint mist particles of all sizes, reducing paint surface orange peel and particle defects, improving spray pass rate. After efficient paint mist interception, exhaust VOC and paint mist content can be reduced, helping workshop environmental emissions meet standards and reducing environmental penalty risks.

High Dirt-holding Capacity with Low Air Resistance, Long Service Life, and Low Energy Consumption: Three-dimensional fluffy structure has dirt-holding capacity far exceeding ordinary filter cotton, reducing replacement frequency by 30%–50% under the same working conditions. Minimal initial air resistance does not increase fan load, reducing workshop exhaust energy consumption and providing better long-term cost-effectiveness.

Stable Material with Strong Adaptability: Uses adhesive-free eco-friendly fiber material with high temperature and moisture resistance, suitable for solvent-based paint, water-based paint, UV paint, electrostatic spraying and other processes. Does not chemically react with coatings, and does not collapse, shed fibers, or powder in humid environments.

Easy Installation and Replacement, Reducing Labor Costs: Roll/sheet design can be freely cut to fit various installation spaces. No professional tools required; one person can complete replacement, significantly saving workshop maintenance labor costs.

Protecting Downstream Equipment and Extending Equipment Life: As the first line of defense for exhaust pretreatment, it effectively intercepts paint mist impurities, preventing paint mist adhesion to fan blades, pipes, downstream activated carbon and purification equipment. This reduces equipment cleaning and maintenance frequency, extending the service life of core equipment.

V. Applicable Industries

Paint mist filter cotton is suitable for various production scenarios involving surface spraying and baking. Core applicable industries are as follows:**Automotive manufacturing and repair, furniture and wood products, metal products and hardware, plastic and fiberglass, engineering machinery and rail transit, home appliance manufacturing, musical instrument coating, craft spraying, advertising sign spray painting, environmental exhaust pretreatment systems,** and other various scenarios requiring paint mist filtration and purification.

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