



## Nordson Filter Efficiency Information

### 500 Series Powder Coating Systems

The two-stage filtration of the Nordson 500 Series Powder Coating Systems has been specifically designed to ensure that the air returned to the plant from the powder coating booth is as clean as possible.

- The primary filters knock down a majority of the over-sprayed powder for easy collection and reuse.
- The secondary filters eliminate any particles that get through the primary filters before the booth air is exhausted back to the plant.

### Primary Filters

The first stage of filtration in Nordson 500 Series Powder Coating Booths is a set of double-stacked, 26-inch long cartridge filters (Nordson PowderGrid, parts 146417 and 146419) made of 100% spun-bonded polyester.

Two alternative types of 26-inch long cartridge filters may also be used in some systems:

- Nordson Heavy Duty, tri-bolt part 180776, is made 100% spun-bonded polyester for use with frit and other abrasive powders.
- Nordson High-Efficiency, parts 147160 and 147161, is made of a high-efficiency blend of cellulose and polyester.

Since there is not a standardized test for determining the efficiency of cartridge filters subject to pulse cleaning, a procedure similar to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) paper RP531 was followed to determine the efficiency by weight of all three types of cartridge filter.

These tests were conducted with 26-inch filters at 500 cfm using Valspar Flat Black Epoxy 1000B3 Powder Paint with a particle size distribution and specific gravity typical of most powder paints. Most of the powder that gets through the cartridge filters is 1–5 microns or less.

	Primary Filter		
	PowderGrid	Heavy-Duty	High-Efficiency
<b>Nordson Part Numbers</b>	146417 and 146419	180776 (tri-bolt only)	147160 and 147161
<b>Nominal Length</b>	26 inches	26 inches	26 inches
<b>Diameter</b>	12.75 inches	12.75 inches	12.75 inches
<b>Filter Media Material</b>	100% spun-bonded polyester	cellulose and polyester blend	cellulose and polyester blend
<b>Design Airflow</b>	500 cfm per cartridge	500 cfm per cartridge	500 cfm per cartridge
<b>Efficiency by Weight**</b>	99.999979%	99.999841%	99.999699%
<b>** The Efficiency by Weight value listed can be used to determine the amount of powder by weight which will be captured by the cartridge filters during normal operation. For example, the efficiency by weight of the PowderGrid filter is 99.999979%, meaning that for every 100 pounds of powder fed to the cartridge, it should capture 99.999979 pounds and allow 0.000021 pounds to go to the secondary filters.</b>			

### Secondary Filters

The second stage of filtration in Nordson 500 Series Powder Coating Booths is a set of panel-type filters (Nordson parts 101431 or 101432) made from glass micro-fiber media.

These filters are rated as 90–95% ASHRAE filters. This means that the media used in the filters has been tested using ASHRAE Standard 52–76 test procedures. The ASHRAE Standard 52–76 test is a standardized test common to the filtration industry, which measures the filtration efficiency of the filter media using a standard test dust at a specific airflow.

Testing has shown these panel filters to be 100% efficient with particle sizes over 5.0 microns.

By weight, these filters will capture 99.99% of the powder fed to them. This was determined using ASHRAE Standard 52–76 test procedure using ASHRAE Standard Test Dust.

These filters capture the particles 1–5 microns or less that are not captured by the primary filters.

Percent Removal Efficiency by Particle Size	
0.3 micron	60%
0.7 micron	94%
1.0 micron	98%
3.0 microns	99.99%
5.0 microns and greater	100.00%

	Secondary Filter
<b>Nordson Part Number</b>	101431 or 101432
<b>Filter Material</b>	90–95% ASHRAE glass micro-fiber media
<b>Rated Airflow</b>	1700 cfm per filter
<b>Test Procedure Used</b>	ASHRAE 52–76
<b>Test Dust Used</b>	ASHRAE Standard Test Dust
<b>Average Synthetic Dust Spot Efficiency</b>	90.2%
<b>Average Synthetic Dust Weight Arrestance</b>	99.99%
<b>Initial Pressure Drop</b>	1.0 inch w.c.

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