



Nordson Filter Efficiency Information

Excel 2000[®] Series Powder Coating Systems

NOTE: The information listed below also applies to 500 Series Systems that have had the Cartridge and Final Filter Enhancement Packages installed.

The two-stage filtration of the Nordson Excel 2000 Series Powder Coating System 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 the Nordson Excel 2000 Series Powder Coating Booth is a set of 36-inch long cartridge filters (Nordson PowderGrid, part 156996) made of 100% spun-bonded polyester.

Two alternative types of 36-inch long cartridge filters may also be used in some systems:

- Nordson Heavy-Duty, part 286872, is made of a heavy-duty blend of cellulose and polyester for use with frit and other abrasive powders.
- Nordson High-Efficiency, part 156998, 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. Efficiency should improve using 36-inch long filters at 600 cfm or 500 cfm. Most of the powder that gets through the cartridge filters is 1–5 microns or less.

	Primary Filter		
	PowderGrid	Heavy-Duty	High-Efficiency
Nordson Part Number	156996	286872	156998
Nominal Length	36 inches	36 inches	36 inches
Diameter	12.75 inches	12.75 inches	12.75 inches
Filter Media Material	100% spun-bonded polyester	cellulose and polyester blend	cellulose and polyester blend
Design Airflow*	600 cfm	600 cfm	600 cfm
Efficiency by Weight**	99.999979%	99.999841%	99.999699%

** 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.

* The Design Airflow of a 500 Series booth with the enhancement packages installed is 500 cfm per cartridge.

Secondary Filters

The second stage of filtration in the Nordson Excel 2000 Series Powder Coating Booth is a set of box-type filters (Nordson part 156995) made from ultra-fine fiberglass. These filters are classified as UL Class 2 and were tested according to UL Standard 900.

These filters are rated as 95% D.O.P. filters. The D.O.P. test is a standardized test that measures the filtration efficiency of the filter media using a cloud of dioctylphthalate (D.O.P.) aerosol droplets. These droplets have a uniform size of 0.3 microns. Therefore, the D.O.P. test shows the efficiency of the filter against 0.3-micron particles.

The secondary filters are one step below HEPA filters, which are rated at 99.97% efficiency. Testing has shown the Excel 2000 Series final filters to be 100% efficient with particle sizes over 2.0 microns.

By weight, these filters will capture 100% of the powder fed to them. This was determined using ASHRAE Standard 52-76 test procedures using AC Fine Test Dust.

The AC Fine Test Dust consists of

- 39% of 0–5 micron particles,
- 18% of 5–10 micron particles,
- 16 %of 10–20 micron particles,
- 18% of 20–40 micron particles, and
- 9% of 40–80 micron particles.

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

	Secondary Filter
Nordson Part Number	156995
Dimensions	Overall: 19.38 x 23.38 x 11.5 in. Filter Face Dimensions: 17.88 x 21.88 in.
Filter Material	Ultra-fine fiberglass
Design Airflow	1700 cfm per filter
Efficiency	95% D.O.P. (95% vs. 0.3-micron particles, 100% vs. 2.0-micron and larger particles)
Efficiency by Weight	100% using ASHRAE 52-76 test with AC Fine Test Dust