



## Nordson Filter Efficiency Information

### Cyclo-Kinetic® Powder Coating Systems

The two-stage filtration of the Nordson Cyclo-Kinetic 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 Cyclo-Kinetic Powder Coating Booth is a set of double-stacked, 36-inch long cartridge filters (Nordson PowderGrid® Plus, parts 151085 and 151086) made of 100% spun-bonded polyester.

An alternative type of 36-inch long cartridge filters (Nordson Heavy-Duty filters, parts 180770 and 180771) is made of a heavy-duty blend of cellulose and polyester.

**NOTE:** Heavy-Duty filters may be used, but PowderGrid Plus filters are recommended for Cyclo-Kinetic systems because of their higher efficiency and longer life.

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 500 or 700 cfm. Most of the powder that gets through the cartridge filters is 1–5 microns or less.

	Primary Filter	
	PowderGrid Plus	Heavy-Duty
<b>Nordson Part Number</b>	151085 and 151086	180770 and 180771
<b>Nominal Length</b>	36 inches	36 inches
<b>Diameter</b>	12.75 inches	12.75 inches
<b>Filter Media Material</b>	100% spun-bonded polyester	cellulose and polyester blend
<b>Design Airflow</b>	500–700 cfm per cartridge	500–700 cfm per cartridge
<b>Efficiency by Weight**</b>	99.999979%	99.999841%

\*\* 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 Plus 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.

### Secondary Filters

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