



Nordson Filter Efficiency Information

Lean Cell Powder Coating Systems

The two-stage filtration of the Nordson Lean Cell 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 Powder Coating Booth is a set of Nordson PowderGrid® cartridge filters made of 100% spun-bonded polyester.

Since there is not a standardized test for determining the efficiency of cartridge filters subject to pulse cleaning, a procedure similar to the America 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 larger 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 Specifications

Filter Media Material: 100% spun-bonded polyester
Design Airflow: 800-920 cfm
Efficiency by weight*: 99.999979%

* The Efficiency by Weight value can be used to determine the amount of powder by weight that 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 filter, it should capture 99.999979 pounds and allow 0.000021 pounds to go to the secondary filters.

Filter Part Number	146418 Flow-Thru	158661 Center Mount
Nominal Length	26 inches	26 inches
Diameter	12.75 inches	12.75 inches

Secondary Filters

The second stage of filtration in the Nordson Lean Cell Powder Coating System is a set of box-type filters 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 Vantage 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 of 1–5 microns or less that are not captured by the primary filters.

Secondary Filter Specifications

Filter Material: Ultra-fine fiberglass

Design Airflow: 2000/2750 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.

Final Filter Part Number	1066540
Dimensions (inches)	24 S x 36 L x 12 D (23.5 x 35.5 x 11.5 actual)

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