

pe:etron

Discover Bulkmatology®  
The Nature of Bulk Material Handling

# DeDusting tests for all bulk solid materials



# What is the purpose of a dust analysis?

Dry bulk materials are manufactured and used in many industries including plastics, food, minerals, pharmaceuticals and others. Clean bulk materials are required to produce high quality manufactured final products. However, many of these materials contain unwanted dust, streamers and other contaminants which need to be removed before packaging or processing. Customers investing in dedusting technology want to know the dust and streamer content before and after cleaning, and in many cases, require a performance guarantee. To provide this information, Pelletron developed procedures and analysis equipment to analyze the dust and streamer content of dry, granular material both before and after dedusting. Pelletron offers a free-of-charge dry and wet dust analysis for dry bulk materials in accordance with ASTM and European FEM standards. The tests are done in an on-site test lab and the results are presented in an electronic report.

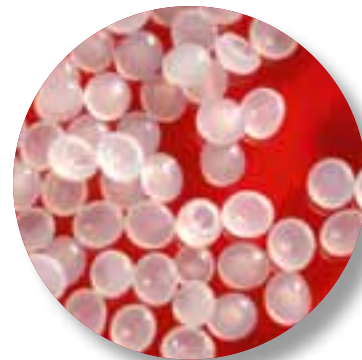
## Analysis Procedure

Granular and bulk solid samples sent to the Pelletron lab for testing are analyzed to define and quantify the contaminants present in the sample before and after it is cleaned using a Pelletron DeDuster®. When a sample is received, a dry sieve analysis is performed on the sample to quantify the amount of dust particles present that are above a 500 micron particle size. For virgin plastic pellets, a wet analysis using a Pelletron FineAnalyzer® is also performed to quantify the amount of dust particles present in the sample below a 500 micron particle size. Once the dust content is defined, the sample is cleaned using a Pelletron DeDuster®, and the dry and wet tests are performed on the cleaned sample so the results can be

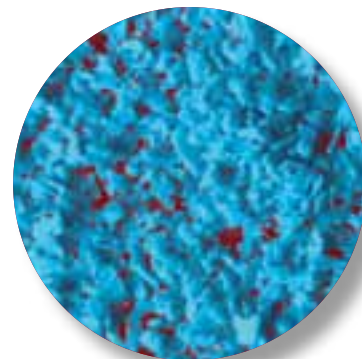
compared. This process is repeated as needed to evaluate results using different DeDuster® settings. Photos are taken throughout the process to document the findings.



Pelletron DeDuster® in test lab



Plastics pellets



Regrind



Minerals



Granular food

**Get Your Free DeDuster® Test Today**  
 To request a free-of-charge dedusting and dust analysis test of your material, visit our website: [www.pelletroncorp.com](http://www.pelletroncorp.com) >Services >Online Forms to download the form and instructions.

## Test Process



### The Dry Test

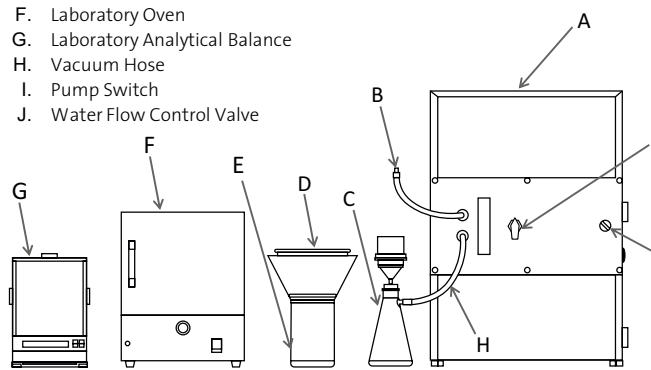
The dry sieve analysis (“Dry Test”) is adapted from ASTM Standard D1921-96, Test Method B. A series of sieves is used to separate and stratify a sample of material (product or removed materials) to create a particle distribution report for the sample. Initial sieve sizes are selected based on our standard of 2000, 1000, and 500 microns, however, the sizes can be changed to meet specific requirements. A material sample of about 100 to 200 grams is placed on a sieve shaker and processed from 1 to 5 minutes depending upon the friability of the material. The weight of the dust left on each sieve is measured and recorded to document the particle distribution that was present in the sample.



### The Wet Test

The wet analysis (“Wet Test”) procedure for virgin plastic pellets is based on ASTM Standard D7486-08. A wet analysis according to the European standard FEM 2482 Type A, B, or C can be done upon request. The fundamental principle of the Wet Test is based on the condition that unwanted dust and fines normally adhere to larger pellets and can be removed by rinsing the material sample with pure water. The water with the dust is collected in the beaker below the sieve and then filtered through a pre-weighed 1.6 micron filter disc. The filter disc is then dried and weighed again to quantify the level of dust above a 1.6 micron particle size that was present in the sample as a percentage of the total sample weight (often referred to as PPM). Pelletron has developed a device called the FineAlyzer® to perform the Wet Test in the laboratory.

- A. Table Top FineAlyzer®
- B. Rinse Tube with Spray Nozzle
- C. Filter Collection Unit
- D. 600 Micron Sieve and Funnel
- E. 1500 ml Beaker
- F. Laboratory Oven
- G. Laboratory Analytical Balance
- H. Vacuum Hose
- I. Pump Switch
- J. Water Flow Control Valve



### How the FineAlyzer® Works

The purpose of the FineAlyzer® is to make it easy to perform the Wet Test. Contained in one table top device, the FineAlyzer® has a self-contained demineralized water reservoir, water spray nozzle, vacuum connection for the filter collection unit and pump for the vacuum connection and spray nozzle. Built-in storage shelves are included for the filter collection unit, filters, sieves, beakers and miscellaneous laboratory equipment. A switch on the front of the FineAlyzer® turns the pump on and off and the flow control valve meters the flow of water to the spray nozzle. The spray nozzle hose assembly and vacuum hose can be quickly disconnected from the front panel to be cleaned and stored inside the unit.



The FineAlyzer® is available for purchase from Pelletron as a complete unit in accordance with CE regulations.

For more information, contact us at 717-293-4008 or [www.pelletroncorp.com](http://www.pelletroncorp.com)

Reserve sample of cleaned material

Perform dry sieve analysis on as-received and cleaned samples

Evaluate and record analysis results

Repeat process with different DeDuster® settings if needed

Perform wet analysis for virgin plastic pellet material

Photograph all material samples

Analyze and compare results

Prepare test report

# Sample Test Report

(confidential when completed)

## CONFIDENTIAL Summary Sheet

### Test Summary

The material sample was cleaned in the DeDuster® Model P10. Samples of the before, after and removed materials were analyzed for particle size distribution to determine the quality of cleaning. Test data is recorded in this report along with sample pictures. All material samples have been packaged for your analysis.

The fine dust from the pellet sample was evaluated using wet testing. Pellets were separated from the removed streamers and dust to show carryover, while the remainder was used to calculate the PPM level of the removed streamers and dust.

### Result of Test



After inspecting the entire cleaned sample, there was evidence of streamers. The picture to the left shows that some pellets still have attached tails. These tails may break off during further conveyance or moving. We estimate approximately 0.01 percent of the pellets had attached tails.

Washing the pellets for fine dust revealed the sample contained less than 10 PPM dust in the 63 to <500 micron range. Good product carryover was kept to less than 0.02 percent.

### Engineering Suggestions

A rotary valve should be used to feed the materials into the DeDuster® and a cyclone should be used for the collection of dust.

#### DeDuster® Settings:

**DeDuster® Type:** P10  
**Filter Type:** PTFE  
**RPM:** 2900  
**Product Flow Rate (kg/hr):** 454  
**Feeder Type:** Hopper  
**Wash Air Fan Setting:** N/A  
**Variable Frequency Drive:** Yes

**Wash Deck Style:** Standard  
**Inlet Deflector Position:** Left  
**Venturi Deflector Position:** 7 mm Left  
**By-Pass Damper Position:** Closed  
**Bleed Air Valve:** 9 mm Open  
**Carryover Deflector:** Standard  
**Product Outlet:** Open



# Sample Test Report

(confidential when completed)

## CONFIDENTIAL DeDuster® Analysis Data

### As Received Analysis

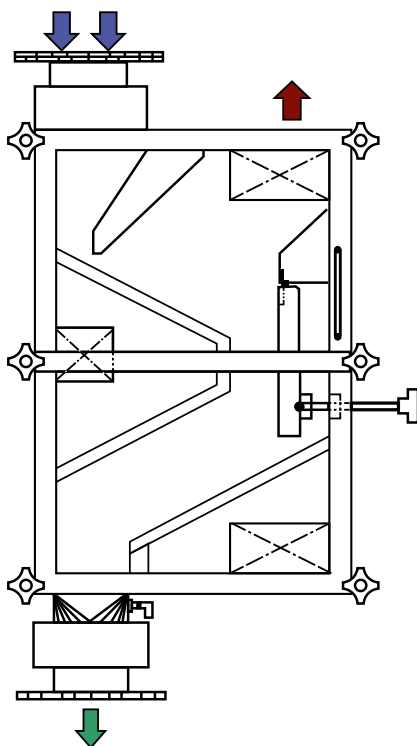
Total Quantity Cleaned (g)	16932.6
Wet Parts Per Million 63 to <500 µm	3308
Wet Parts Per Million 1.6 to <63 µm	103

### Removed Material Analysis

	Percent	~Wt (g)
Quantity Removed:	0.882735	149.47

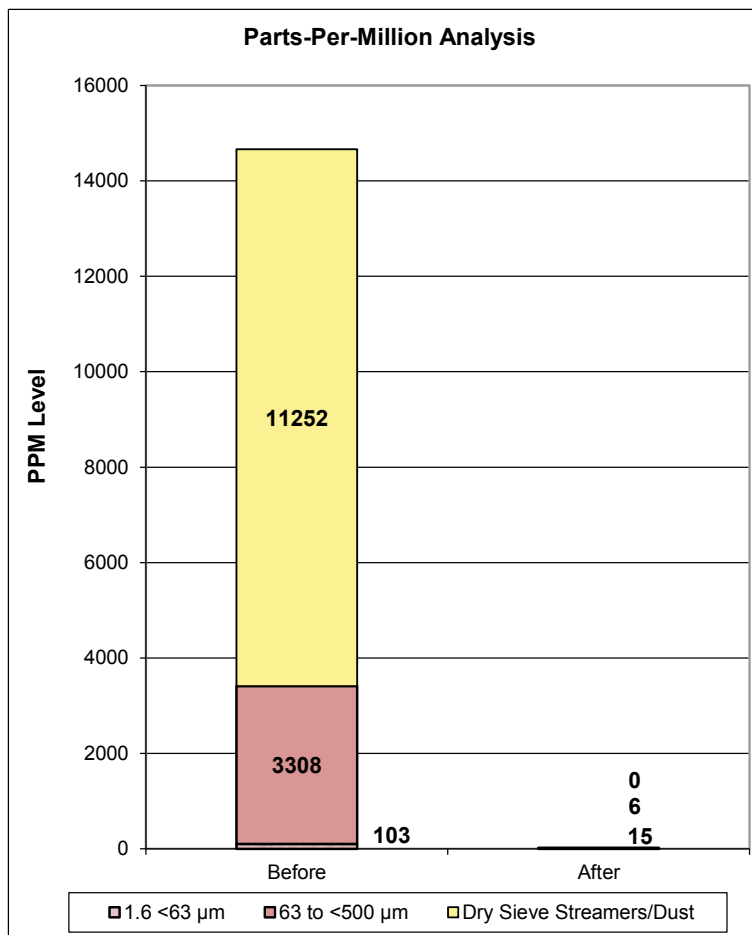
### Dry Sieve Analysis:

Carryover:	2.2576	3.3744
Streamers.Dust:	97.7424	146.0956



### Cleaned Analysis

Quantity Cleaned (g):	16783.13
Wet PPM 63 to <500 µm:	6
Wet PPM 1.6 to <63 µm:	15



# Material Samples

	Before Cleaning	After Cleaning	Removed Contaminants
PE			
PP			
PET			
PMMA Regrind			
Bottle Regrind			







## Global Sales and Service Network

With an international network of bulk material handling experts, Pelletron is committed to providing the highest level of quality, service and expertise to our valued Bulkmatology® customers all around the world.

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