# ISO 5011 Test Report for 75-5045

**May 2, 2011**

## Test Summary

| Filter Tested | Improvement in Airflow vs Stock | | Efficiency Rate |
|---|---|---|---|
| | Resistance to Flow @ 643 CFM | Resistance to Flow During Dust Loading @ Approx 145 grams | Conducted at Vehicle's Max Rated Flow (643 CFM) |
| 75-5045 (w/ Cleanable Filter) | 42.7% | 33.7% | 99.48% |
| 75-5045D (w/ Dry Disposable Filter) | 42.7% | 31.5% | 99.70% |
| OE - Stock System | - | - | 99.81% |

**Airflow Analysis**

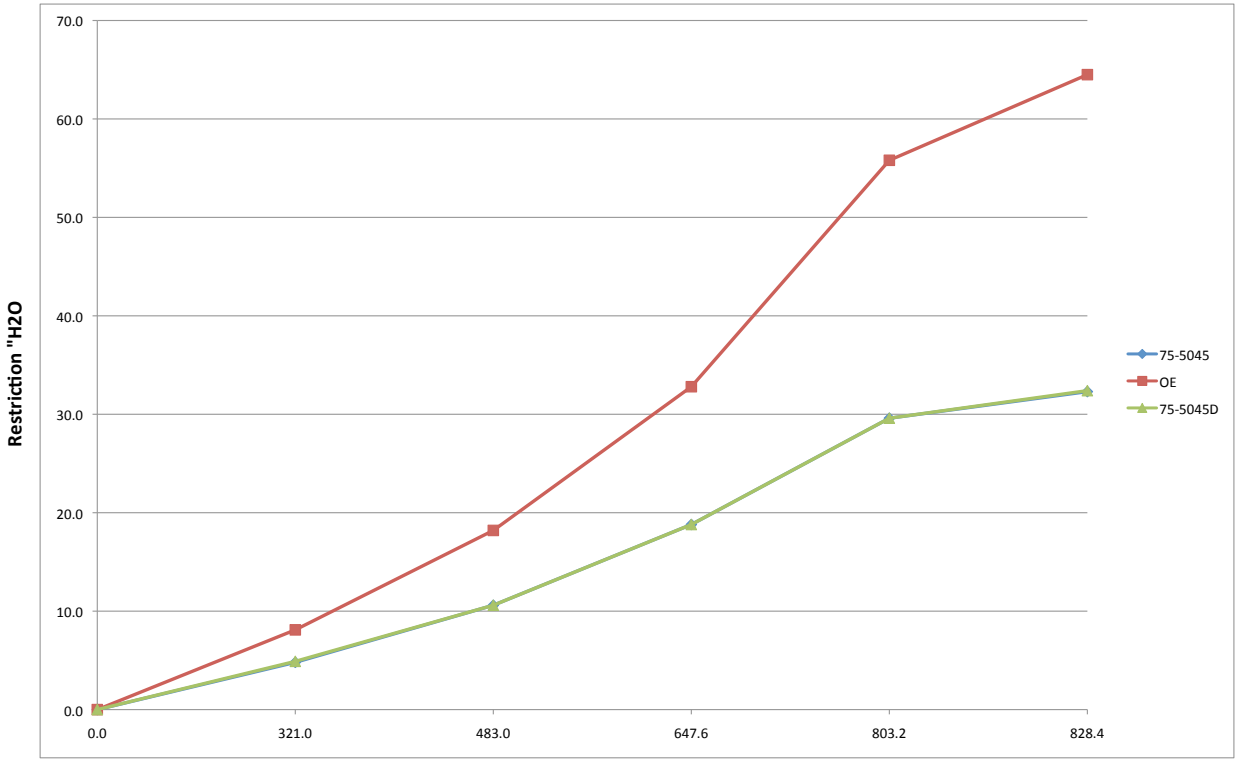
| Filter Mfg. & Part No. | Air Flow scfm | Net Restriction (Inches of H2O) | % Less Restrictive than OE |
|---|---|---|---|
| Filter #1 | 0.0 | 0.0 | 0.0% |
| S&B (Cleanable) | 319.7 | 4.8 | 40.7% |
| 75-5045 | 482.3 | 10.6 | 41.8% |
| | 643.7 | 18.8 | 42.7% |
| | 803.4 | 29.6 | 47.0% |
| | 831.3 | 32.3 | 49.9% |
| Filter #2 | 0.0 | 0.0 | |
| OE | 323.0 | 8.1 | |
| Stock System | 480.6 | 18.2 | |
| | 643.8 | 32.8 | |
| | 804.5 | 55.8 | |
| | 838.7 | 64.5 | |
| Filter #3 | 0.0 | 0.000 | 0.0% |
| S&B (Dry) | 321.0 | 4.900 | 39.5% |
| 75-5045D | 483.0 | 10.600 | 41.8% |
| | 647.6 | 18.800 | 42.7% |
| | 803.2 | 29.600 | 47.0% |
| | 828.4 | 32.400 | 49.8% |

**Average Environmental Conditions & Test Specifications**

| | | |
|---|---|---|
| Temperature | 71.28 | deg F |
| Relative Humidity | 51.78 | % |
| Baro Pressure | 28.97 | mmHg |
| Test Stand | #1 | |
| Inlet Size | | inches |
| Housing | Intake | |
| Contaminant | Course | |
| Contam. Lot # | 10569C | |
| Dust Feed Rate | 18 | grams/minute |
| Rated Flow | 643 | cfm |

This report represents results of airflow, efficiency and capacity testing conducted at S&B Filters' climate controled laboratory. Testing was in accordance with the internationally accepted ISO 5011 Filtration Test Standard.

## Resistance to Flow

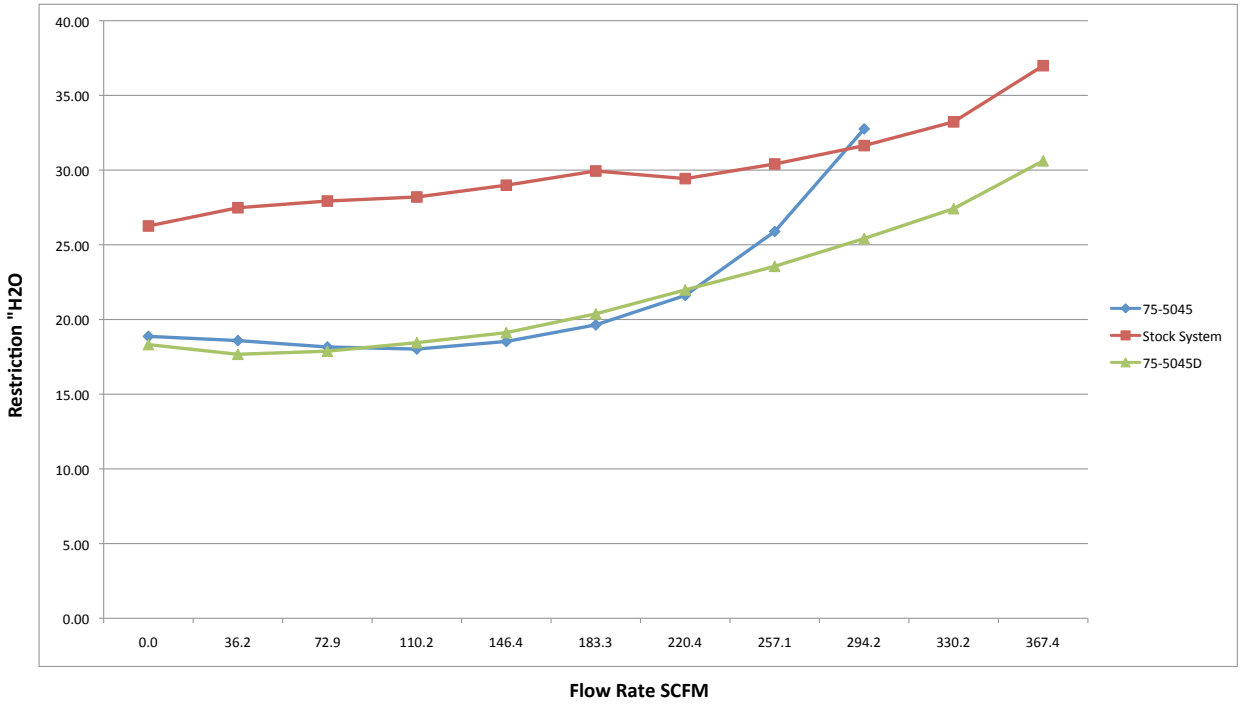



**Comments:**

# Air Filter Capacity & Effeciency Test Report

| Filter Mfg. & Part No. | Initial Restriction ("H2O) | Capacity (grams) | Efficiency (%) | Restriction (H2O) | Dust Fed (grams) | Time (minutes) |
|---|---|---|---|---|---|---|
| Filter #1 S&B (Cleanable) 75-5045 | 18.87 | 286.8 | 99.48 | 18.87 | 0.0 | 0 |
| | | | | 18.59 | 35.6 | 2 |
| | | | | 18.16 | 72.6 | 4 |
| | | | | 18.02 | 108.3 | 6 |
| | | | | 18.53 | 144.4 | 8 |
| | | | | 19.64 | 180.7 | 10 |
| | | | | 21.61 | 217.2 | 12 |
| | | | | 25.89 | 252.9 | 14 |
| | | | | 32.76 | 288.3 | 16 |
| Filter #2 OE Stock System | 26.26 | 723.9 | 99.81 | 26.26 | 0.0 | 0 |
| | | | | 27.48 | 73.0 | 4 |
| | | | | 27.93 | 145.8 | 8 |
| | | | | 28.20 | 218.0 | 12 |
| | | | | 28.99 | 291.0 | 16 |
| | | | | 29.94 | 362.5 | 20 |
| | | | | 29.43 | 435.1 | 24 |
| | | | | 30.41 | 508.5 | 28 |
| | | | | 31.64 | 580.7 | 32 |
| | | | | 33.23 | 653.3 | 36 |
| | | | | 36.99 | 725.3 | 40 |
| Filter #3 S&B (Dry) 75-5045D | 18.32 | 366.3 | 99.70 | 18.32 | 0.0 | 0 |
| | | | | 17.67 | 36.2 | 2 |
| | | | | 17.88 | 72.9 | 4 |
| | | | | 18.45 | 110.2 | 6 |
| | | | | 19.12 | 146.4 | 8 |
| | | | | 20.38 | 183.3 | 10 |
| | | | | 21.98 | 220.4 | 12 |
| | | | | 23.56 | 257.1 | 14 |
| | | | | 25.42 | 294.2 | 16 |
| | | | | 27.42 | 330.2 | 18 |
| | | | | 30.62 | 367.4 | 20 |

## Resistance to Flow During Dust Loading




**Comments:**

# Supporting Documentation

# Determination of Gasoline and Diesel Engine Air Consumption

**CFM Calculator: Enter Data in Blue Shaded Areas**

| | |
|---|---|
| Engine Displacement (cubic inches) | **396.6** |
| RPM at maximum horse power | **3,200** |
| Cycle Factor: | **2** |
| Enter "2" for 4 Cycle Diesel and Gasoline | |
| Enter "1" for 2 Cycle Diesel and Gasoline | |
| Volumetric Efficiency: | **1.75** |
| Naturally Aspirated Gasoline & Diesel Engines Enter "0.8" | |
| Super Charged Engines Enter "1.30" | |
| Turbocharged Engines Enter "1.75" | |

**Liters to CID Converter**

| | |
|---|---|
| Liters: | 6.5 |
| Cubic Inches: | 396.6 |

**Vehicle Information**

| | |
|---|---|
| Model Year | 92'-96' |
| Make | GM |
| Model | C&K 2500, 3500 |
| Engine Specs | 6.5L Turbo Diesel |

| | |
|---|---|
| **Based on the information entered above, the estimated CFM of the vehicle at maximum Horse Power is:** | **643** |

---

**CYCLE FACTOR**

| | Cycle Factor |
|---|---|
| 4 Cycle Gasoline and Diesel Engine | 2 |
| 2 Cycle Gasoline and Diesel Engine | 1 |

**VOLUMETRIC EFFICIENCY**

| | Volumetric Efficiency (Approximate) |
|---|---|
| Naturally Aspirated Gasoline & Diesel Engines | 0.8 |
| Supercharged Engines | 1.30 |
| Turbocharged Engines | 1.75 |

*Note: The 1.75 volumetric efficiency is applicable only at top governed engine speed under full load conditions.*

**EQUATION**

The following is a method of determining approximated gasoline and diesel engine air flow requirement:

$$\text{Air Flow (CFM)} = \frac{\text{Displacement (cubic inches)}}{1728} \times \frac{\text{RPM}}{\text{Cycle Factor}} \times \text{Volumetric Efficiency}$$

**EXAMPLE**

Information necessary to calculate air consumption:

Ford F250 7.3L V8 Diesel Truck

4 cycle, 2800 RPM@Maximum HP, 445.4 (cubic inches) displacement, turbocharged

$$\text{Air Flow (CFM)} : \frac{445.4}{1728} \times \frac{2800}{2} \times 1.75 = 631 \text{ CFM}$$

www.sbfilters.com

# Air Flow Test Report

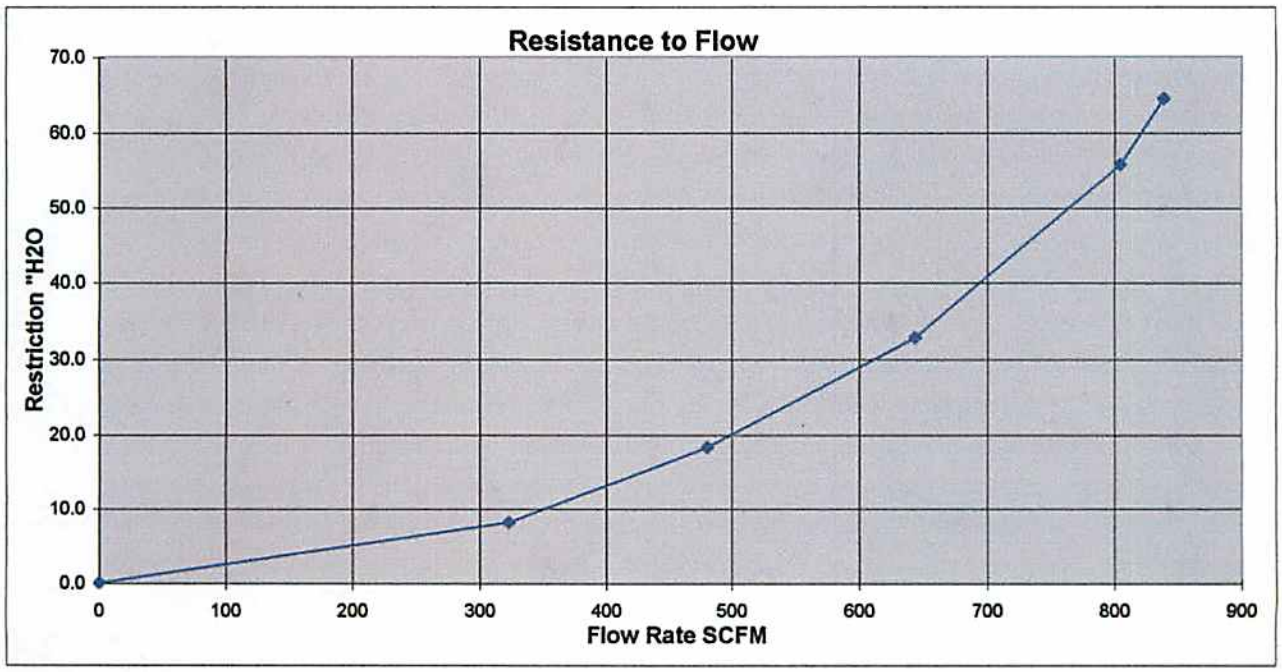
**Test Number:** 317
**Report Date:** 5/21/2009
**Sample Number:** 3
**Tech:** Bert
**Filter Description:** OE
**Test Description:**
92'-96' GM 6.5L Diesel: 3.275 flange, HP trans. settings

## Test Conditions

| | | | |
|---|---|---|---|
| **Flow:** | 643 SCFM | **Temperature:** | 70.9 DEG. F |
| **Barometric Pressure:** | 28.87 IN. Hg | **Humidity:** | 50.4 % |

## Test Results

| Flow | Restriction IN. H2O | | |
|---|---|---|---|
| SCFM | Gross | Tare | Net |
| 0 | 0 | 0 | 0.0 |
| 323.013 | 8.098 | 0 | 8.1 |
| 480.624 | 18.241 | 0 | 18.2 |
| 643.775 | 32.762 | 0 | 32.8 |
| 804.487 | 55.778 | 0 | 55.8 |
| 838.654 | 64.457 | 0 | 64.5 |



S&B FILTERS
www.sbfilters.com

# Air Flow Test Report

**Test Number:** 317
**Sample Number:** 14
**Filter Description:** KF-1047
**Test Description:**
S&B Intake 75-5045, w/box plug, 3.275"

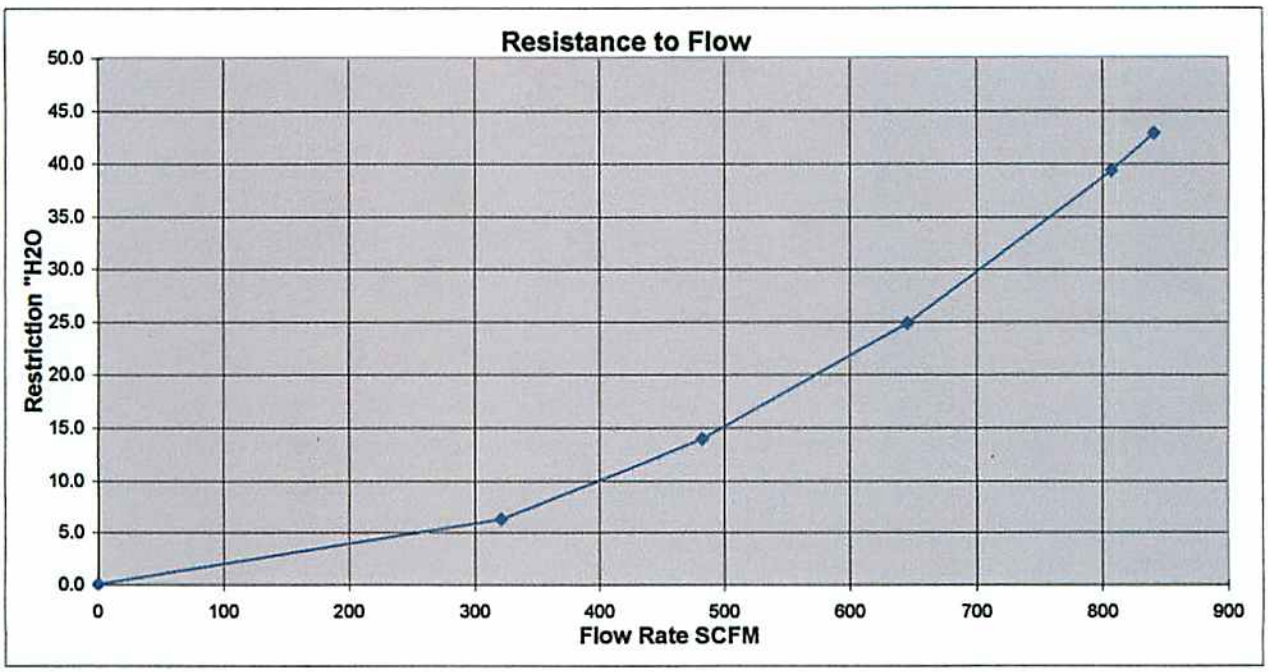
**Report Date:** 3/8/2011
**Tech:** Craig

## Test Conditions

| | | | |
|---|---|---|---|
| **Flow:** | 643 SCFM | **Temperature:** | 70.76 DEG. F |
| **Barometric Pressure:** | 29.08 IN. Hg | **Humidity:** | 50.2 % |

## Test Results

| Flow | Restriction IN. H2O | | |
|---|---|---|---|
| SCFM | Gross | Tare | Net |
| 0 | 0 | 0 | 0.0 |
| 321.128 | 6.232 | 0 | 6.2 |
| 482.423 | 13.887 | 0 | 13.9 |
| 645.577 | 24.815 | 0 | 24.8 |
| 806.761 | 39.361 | 0 | 39.4 |
| 840.777 | 42.868 | 0 | 42.9 |



www.sbfilters.com

# Air Flow Test Report

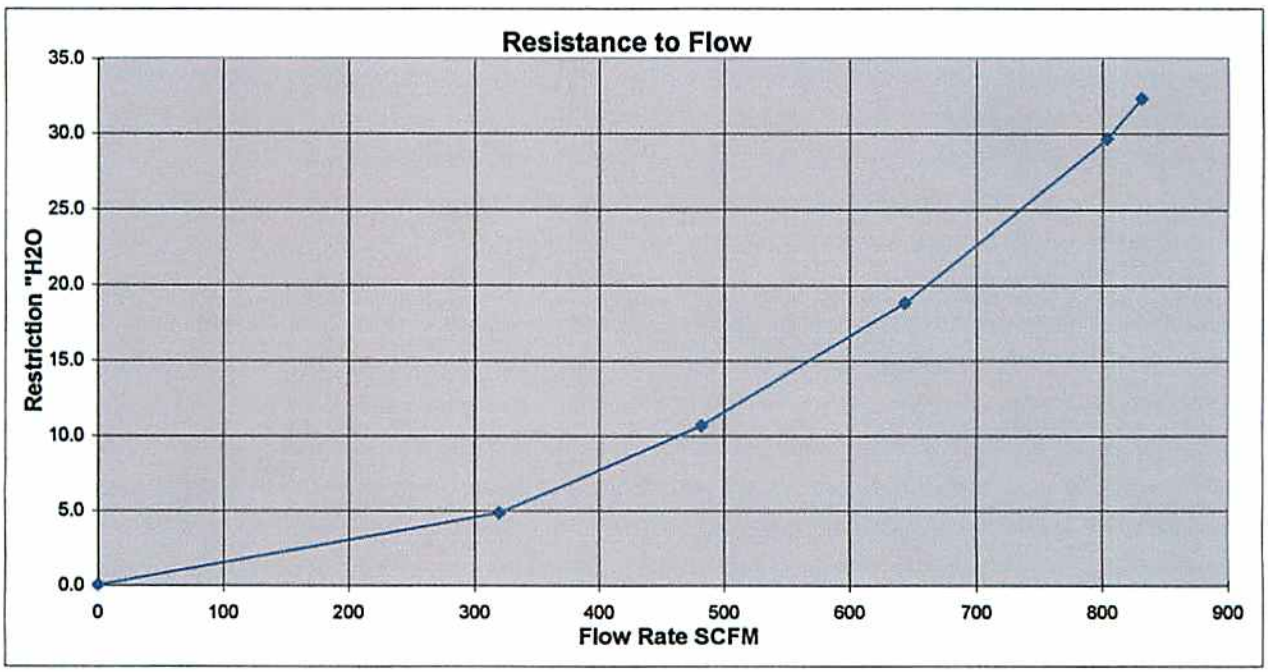
**Test Number:** 317
**Report Date:** 3/8/2011
**Sample Number:** 15
**Tech:** Craig
**Filter Description:** KF-1047
**Test Description:**
S&B Intake 75-5045, no plug, 3.275"

## Test Conditions

| | | | |
|---|---|---|---|
| **Flow:** | 643 SCFM | **Temperature:** | 70.85 DEG. F |
| **Barometric Pressure:** | 29.08 IN. Hg | **Humidity:** | 50.8 % |

## Test Results

| Flow | Restriction IN. H2O | | |
|---|---|---|---|
| SCFM | Gross | Tare | Net |
| 0 | 0 | 0 | 0.0 |
| 319.664 | 4.824 | 0 | 4.8 |
| 482.286 | 10.615 | 0 | 10.6 |
| 643.745 | 18.783 | 0 | 18.8 |
| 803.421 | 29.629 | 0 | 29.6 |
| 831.344 | 32.296 | 0 | 32.3 |



www.sbfilters.com

# Air Flow Test Report

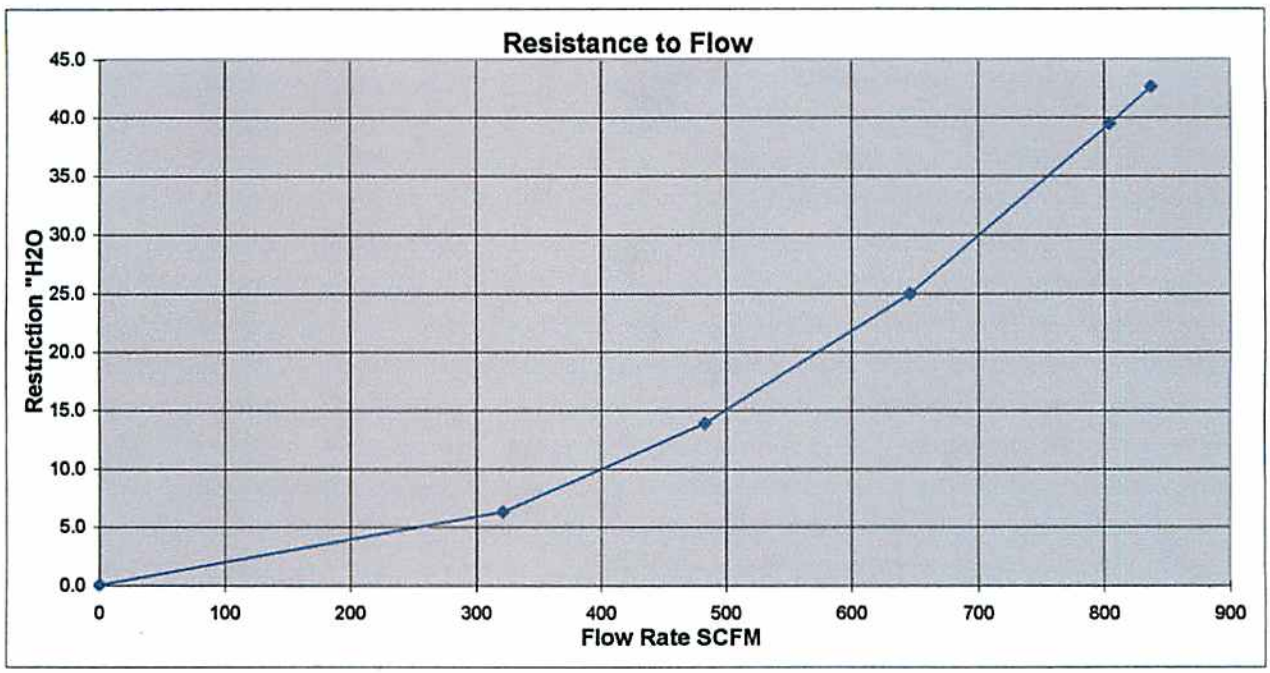
**Test Number:** 317 **Report Date:** 3/8/2011
**Sample Number:** 16 **Tech:** Craig
**Filter Description:** KF-1047D
**Test Description:**
S&B Intake 75-5045D, w/Box Plug, 3.275"

## Test Conditions

| | | | |
|---|---|---|---|
| **Flow:** | 643 SCFM | **Temperature:** | 70.58 DEG. F |
| **Barometric Pressure:** | 28.96 IN. Hg | **Humidity:** | 49.6 % |

## Test Results

| Flow | Restriction IN. H2O | | |
|---|---|---|---|
| SCFM | Gross | Tare | Net |
| 0 | 0 | 0 | 0.0 |
| 321.048 | 6.255 | 0 | 6.3 |
| 483.23 | 13.89 | 0 | 13.9 |
| 645.978 | 24.897 | 0 | 24.9 |
| 804.011 | 39.402 | 0 | 39.4 |
| 837.534 | 42.624 | 0 | 42.6 |



www.sbfilters.com

# Air Flow Test Report

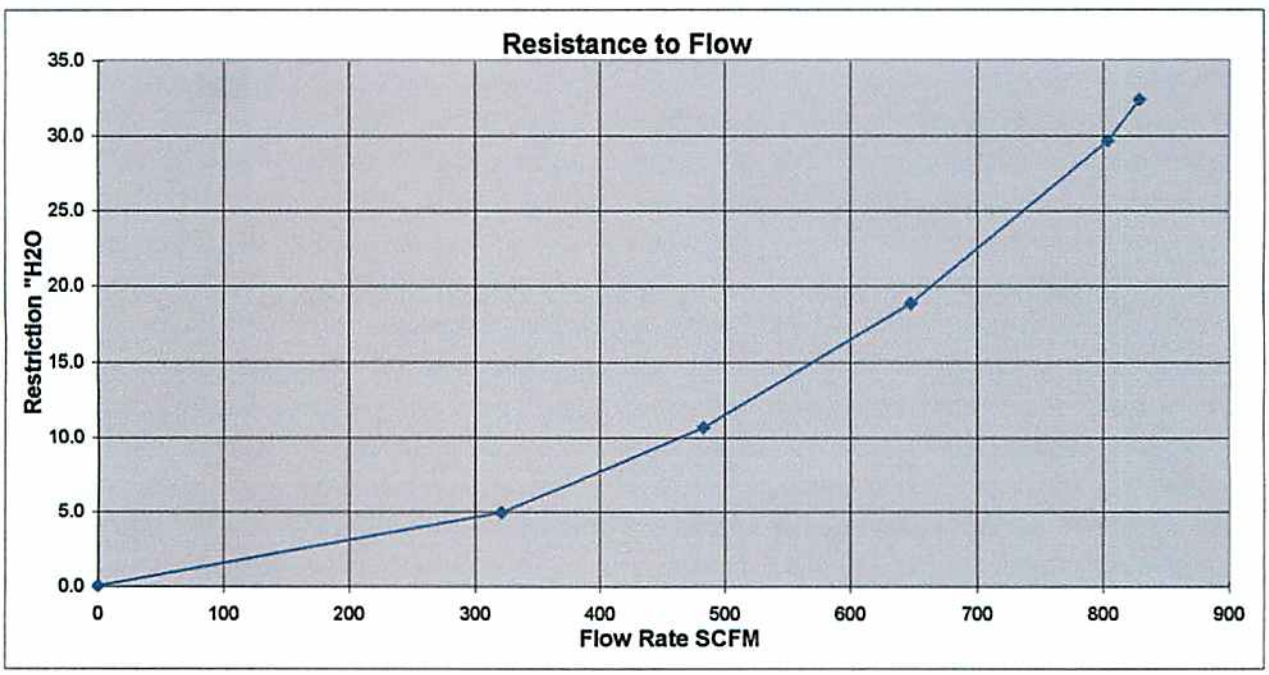
**Test Number:** 317 **Report Date:** 3/8/2011
**Sample Number:** 17 **Tech:** Craig
**Filter Description:** KF-1047D
**Test Description:**
S&B Intake 75-5045D, no box plug, 3.275"

## Test Conditions

**Flow:** 643 SCFM **Temperature:** 70.77 DEG. F
**Barometric Pressure:** 29.06 IN. Hg **Humidity:** 50.4 %

## Test Results

| Flow | Restriction IN. H2O | | |
|---|---|---|---|
| SCFM | Gross | Tare | Net |
| 0 | 0 | 0 | 0.0 |
| 321.003 | 4.922 | 0 | 4.9 |
| 482.996 | 10.603 | 0 | 10.6 |
| 647.597 | 18.838 | 0 | 18.8 |
| 803.222 | 29.634 | 0 | 29.6 |
| 828.403 | 32.372 | 0 | 32.4 |



# Air Filter Capacity & Efficiency Test Report

**Test Number:** 317
**Sample Number:** 26
**Filter Description:** A1236C

**Tech:** Craig
**Report Date:** 4/27/2011

**Test Description:** AC Delco part #: A1236C, Chevy 6.5L Diesel

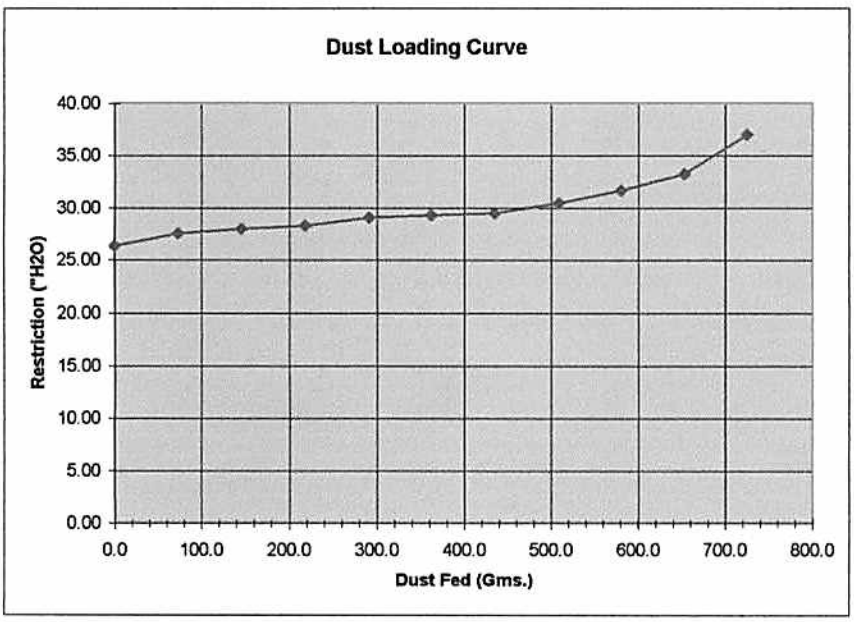
## Test Conditions

| | | | |
|---|---|---|---|
| **Barometric Pressure:** | 28.81 **IN. Hg** | **Relative Humidity:** | 50.1 **%** |
| **Air Flow Setpoint:** | 643 **SCFM** | **Type Of Dust:** | Coarse |
| **Test Procedure:** | ISO 5011 | **Batch #:** | 10569C |
| **Air Flow Type:** | Steady | **Temperature:** | 70.99 **DEG. F** |
| **Test Endpoint:** | 36.26 **IN. H2O** | **Dust Feed Rate:** | 18 **Gms/Min** |

## Test Results

**Initial Restriction:** 26.26 **IN. H2O** **Accumulative Capacity:** 723.948 **Grams**

| | Accumulative | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Assembly** | **Blanket** | | | | | | |
| **Start** | **3017.5** | **162.500** | | | | | | |
| **End** | **3739.8** | **163.900** | | | | | | |
| **Gain** | **722.3** | **1.400** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Efficiency** | **99.81** | | | | | | | |




| Restriction IN. H2O | Time | Dust Fed Gms. |
|---|---|---|
| 26.26 | 0 | 0.0 |
| 27.48 | 4 | 73.0 |
| 27.93 | 8 | 145.8 |
| 28.20 | 12 | 218.4 |
| 28.99 | 16 | 291.0 |
| 29.24 | 20 | 362.5 |
| 29.43 | 24 | 435.1 |
| 30.41 | 28 | 508.5 |
| 31.64 | 32 | 580.7 |
| 33.23 | 36 | 653.3 |
| 36.99 | 40 | 725.3 |

# Air Filter Capacity & Efficiency Test Report

**Test Number:** 317
**Sample Number:** 27
**Filter Description:** KF-1047

**Tech:** Craig
**Report Date:** 5/2/2011

**Test Description:** KF-1047 Tested in 75-5045

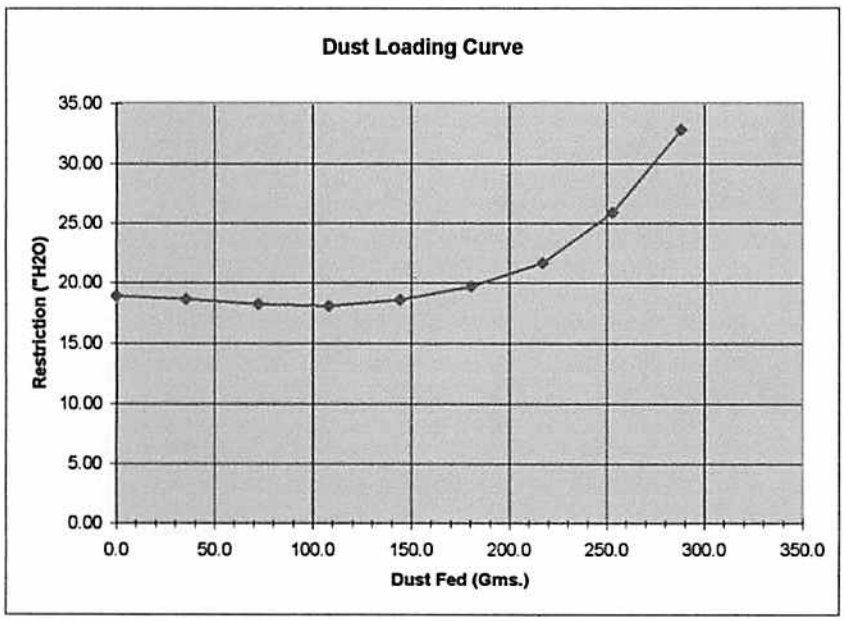
## Test Conditions

| | | | |
|---|---|---|---|
| **Barometric Pressure:** | 29.25 **IN. Hg** | **Relative Humidity:** | 50.4 **%** |
| **Air Flow Setpoint:** | 643 **SCFM** | **Type Of Dust:** | Coarse |
| **Test Procedure:** | ISO 5011 | **Batch #:** | 10569C |
| **Air Flow Type:** | Steady | **Temperature:** | 71.69 **DEG. F** |
| **Test Endpoint:** | 28.87 **IN. H2O** | **Dust Feed Rate:** | 18 **Gms/Min** |

## Test Results

**Initial Restriction:** 18.87 **IN. H2O** **Accumulative Capacity:** 286.791 **Grams**

| | Accumulative | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Assembly** | **Blanket** | | | | | | |
| **Start** | **3998.1** | **156.200** | | | | | | |
| **End** | **4284.4** | **157.700** | | | | | | |
| **Gain** | **286.3** | **1.500** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Efficiency** | **99.48** | | | | | | | |




| Restriction IN. H2O | Time | Dust Fed Gms. |
|---|---|---|
| 18.87 | 0 | 0.0 |
| 18.59 | 2 | 35.6 |
| 18.16 | 4 | 72.4 |
| 18.02 | 6 | 108.3 |
| 18.53 | 8 | 144.4 |
| 19.64 | 10 | 180.7 |
| 21.61 | 12 | 217.2 |
| 25.89 | 14 | 252.9 |
| 32.76 | 16 | 288.3 |

# Air Filter Capacity & Efficiency Test Report

**Test Number:** 317
**Sample Number:** 28
**Filter Description:** KF-1047D

**Tech:** Craig
**Report Date:** 5/4/2011

**Test Description:** S&B Intake 75-5045 w/ KF-1047D

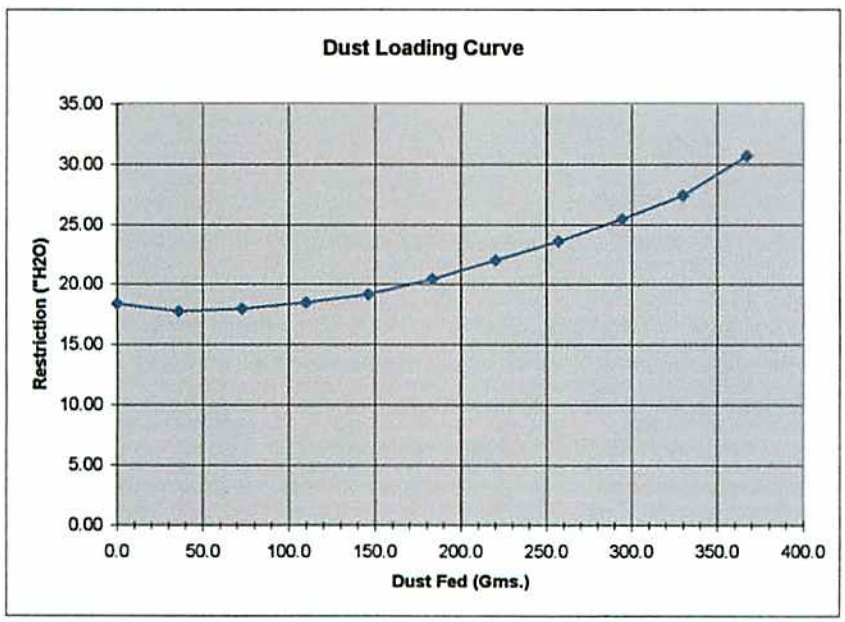
## Test Conditions

| | | | |
|---|---|---|---|
| **Barometric Pressure:** | 28.73 IN. Hg | **Relative Humidity:** | 51.2 % |
| **Air Flow Setpoint:** | 643 SCFM | **Type Of Dust:** | Coarse |
| **Test Procedure:** | ISO 5011 | **Batch #:** | 10569C |
| **Air Flow Type:** | Steady | **Temperature:** | 72.48 DEG. F |
| **Test Endpoint:** | 28.32 IN. H2O | **Dust Feed Rate:** | 18 Gms/Min |

## Test Results

**Initial Restriction:** 18.32 IN. H2O **Accumulative Capacity:** 366.303 Grams

| | Accumulative | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Assembly | Blanket | | | | | | |
| Start | 3759.3 | 159.840 | | | | | | |
| End | 4125.3 | 160.930 | | | | | | |
| Gain | 366.0 | 1.090 | 0 | 0 | 0 | 0 | 0 | 0 |
| Efficiency | 99.70 | | | | | | | |

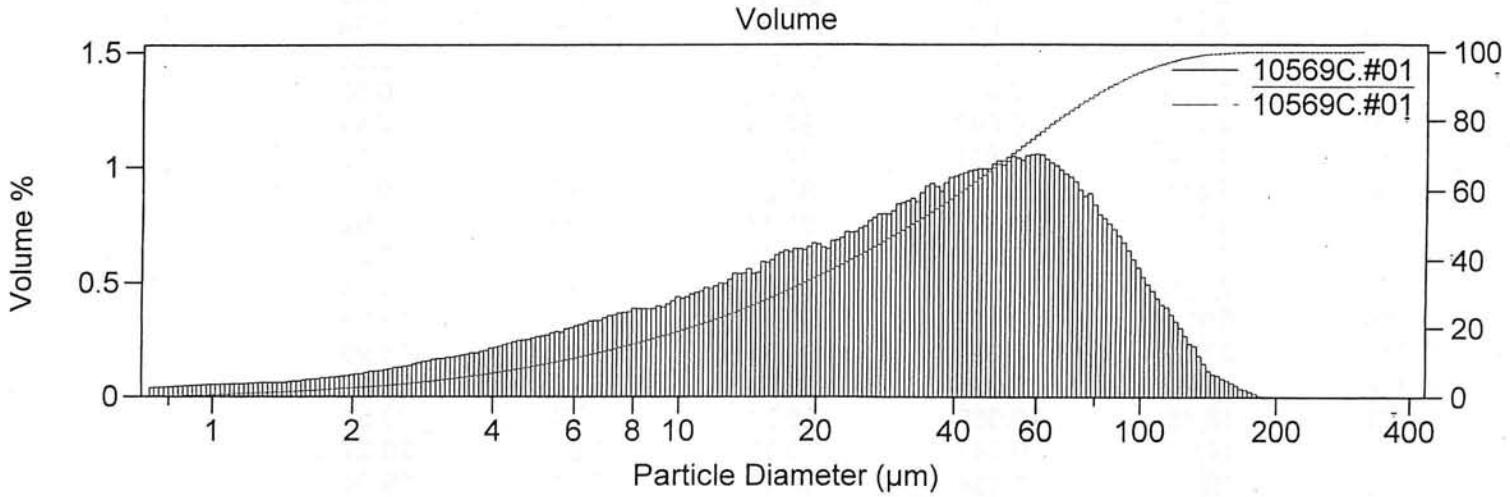



| Restriction IN. H2O | Time | Dust Fed Gms. |
|---|---|---|
| 18.32 | 0 | 0.0 |
| 17.67 | 2 | 36.2 |
| 17.88 | 4 | 72.9 |
| 18.45 | 6 | 110.2 |
| 19.12 | 8 | 146.4 |
| 20.38 | 10 | 183.3 |
| 21.98 | 12 | 220.4 |
| 23.56 | 14 | 257.1 |
| 25.42 | 16 | 294.2 |
| 27.42 | 18 | 330.2 |
| 30.62 | 20 | 367.4 |

POWDER TECHNOLOGY, INC.

PTI
POWDER TECHNOLOGY INC.
14331 Ewing Avenue South Burnsville, Minnesota 55306
Phone: 952-894-8737

| | | | |
|---|---|---|---|
| Filename: | 10569C.#01 | Sample Number: | 200 |
| Group ID: | 10569C | | |
| Sample ID: | ISO 12103-1, A4 COARSE TEST DUST | | |
| Comment: | SAE COARSE TEST DUST, NIST TRACEABLE | | |
| Operator: | LHA | | |
| Electrolyte: | ISOTON II | | |
| Dispersant: | TYPE IC | | |
| Aperture Size: | 400 µm | 10569b.#01 | |
| | 200 µm | 10569b.#02 | |
| | 100 µm | 10569b.#03 | |
| | 30 µm | 10569b.#04 | |
| Acquired: | 21:59 9 Mar 2010 | | |
| Serial Number: | 123 | | |
| Edited size data | | | |




Volume Statistics (Geometric) 10569C.#01

Calculations from 0.729 µm to 310.7 µm

| | | | |
|---|---|---|---|
| Volume | 6.257e9 µm$^3$ | | |
| Mean: | 25.44 µm | S.D.: | 49.3 µm |
| Median: | 31.67 µm | Variance: | 2430 µm$^2$ |
| Mean/Median Ratio: | 0.803 | | |
| Mode: | 60.03 µm | | |
| Spec. surf. area: | 0.486 m$^2$/ml | | |

| % > | 10 | 25 | 50 | 75 | 90 |
|---|---|---|---|---|---|
| Size µm | 84.86 | 58.29 | 31.67 | 13.29 | 5.371 |

| Micron Size | Cumulative Volume % less than |
|---|---|
| 1 | 0.6 |
| 2 | 2.6 |
| 3 | 4.7 |
| 4 | 6.9 |
| 5 | 9.2 |
| 7 | 13.5 |
| 10 | 19.3 |
| 20 | 35.5 |
| 40 | 59.0 |
| 80 | 88.0 |
| 120 | 97.9 |
| 180 | 99.9 |
| 200 | 100.0 |

POWDER TECHNOLOGY, INC.

10569c.#01

| Channel Number | Particle Diameter µm | Diff Number % | Cum < Number % | Diff Volume % | Cum < Volume % |
|---|---|---|---|---|---|
| 1 | 0.729 | 21.82 | 0 | 0.200 | 0 |
| 6 | 0.820 | 17.51 | 21.82 | 0.229 | 0.200 |
| 11 | 0.923 | 13.72 | 39.33 | 0.255 | 0.429 |
| 16 | 1.039 | 10.17 | 53.04 | 0.270 | 0.684 |
| 21 | 1.169 | 7.73 | 63.21 | 0.292 | 0.953 |
| 26 | 1.316 | 5.66 | 70.94 | 0.305 | 1.25 |
| 31 | 1.481 | 4.59 | 76.60 | 0.354 | 1.55 |
| 36 | 1.667 | 3.72 | 81.19 | 0.408 | 1.91 |
| 41 | 1.877 | 3.02 | 84.90 | 0.474 | 2.31 |
| 46 | 2.112 | 2.48 | 87.93 | 0.553 | 2.79 |
| 51 | 2.377 | 2.02 | 90.40 | 0.642 | 3.34 |
| 56 | 2.676 | 1.67 | 92.42 | 0.758 | 3.98 |
| 61 | 3.012 | 1.31 | 94.08 | 0.850 | 4.74 |
| 66 | 3.390 | 1.02 | 95.40 | 0.943 | 5.59 |
| 71 | 3.816 | 0.817 | 96.42 | 1.08 | 6.53 |
| 76 | 4.295 | 0.647 | 97.24 | 1.21 | 7.61 |
| 81 | 4.834 | 0.498 | 97.88 | 1.33 | 8.82 |
| 86 | 5.441 | 0.386 | 98.38 | 1.47 | 10.15 |
| 91 | 6.124 | 0.300 | 98.77 | 1.63 | 11.62 |
| 96 | 6.893 | 0.231 | 99.07 | 1.79 | 13.25 |
| 101 | 7.758 | 0.173 | 99.30 | 1.91 | 15.05 |
| 106 | 8.732 | 0.127 | 99.47 | 2.00 | 16.96 |
| 111 | 9.828 | 0.099 | 99.60 | 2.21 | 18.96 |
| 116 | 11.06 | 0.075 | 99.70 | 2.40 | 21.17 |
| 121 | 12.45 | 0.058 | 99.77 | 2.64 | 23.57 |
| 126 | 14.01 | 0.043 | 99.83 | 2.83 | 26.21 |
| 131 | 15.77 | 0.034 | 99.87 | 3.14 | 29.04 |
| 136 | 17.75 | 0.025 | 99.91 | 3.27 | 32.17 |
| 141 | 19.98 | 0.018 | 99.93 | 3.35 | 35.45 |
| 146 | 22.49 | 0.013 | 99.95 | 3.61 | 38.79 |
| 151 | 25.32 | 0.010 | 99.96 | 3.90 | 42.40 |
| 156 | 28.49 | 0.008 | 99.97 | 4.16 | 46.30 |
| 161 | 32.07 | 0.006 | 99.98 | 4.46 | 50.46 |
| 166 | 36.10 | 0.004 | 99.99 | 4.67 | 54.93 |
| 171 | 40.63 | 0.003 | 99.99 | 4.91 | 59.60 |
| 176 | 45.73 | 0.002 | 99.99 | 5.04 | 64.51 |
| 181 | 51.47 | 0.002 | 100.00 | 5.19 | 69.55 |
| 186 | 57.94 | 0.001 | 100.00 | 5.21 | 74.73 |
| 191 | 65.21 | 0.001 | 100.00 | 4.86 | 79.95 |
| 196 | 73.40 | 0.0046 | 100.00 | 4.31 | 84.81 |
| 201 | 82.61 | 0.0028 | 100.00 | 3.66 | 89.12 |
| 206 | 92.99 | 0.0015 | 100.00 | 2.83 | 92.78 |
| 211 | 104.7 | 7.6E-5 | 100.00 | 2.05 | 95.61 |
| 216 | 117.8 | 3.5E-5 | 100.00 | 1.35 | 97.66 |
| 221 | 132.6 | 1.2E-5 | 100.00 | 0.626 | 99.01 |
| 226 | 149.2 | 3.8E-6 | 100.00 | 0.293 | 99.63 |
| 231 | 168.0 | 7.2E-7 | 100.00 | 0.074 | 99.93 |
| 236 | 189.1 | 0 | 100.00 | 0 | 100.00 |
| 241 | 212.8 | 0 | 100.00 | 0 | 100.00 |

# MATERIAL SAFETY DATA SHEET

## Section 1: Product/Company Information

**Identity:** Arizona sand including Arizona Test Dust, Arizona Road Dust, Arizona Silica, AC Fine and AC Coarse Test Dusts, SAE Fine and Coarse Test Dusts, J726 Test Dusts, ISO 12103-1, A1 Ultrafine Test Dust, ISO 12103-1, A2 Fine Test Dust, ISO 12103-1, A3 Medium Test Dust and ISO 12103-1, A4 Coarse Test Dust, MIL STD 810 Blowing Dust.

**Mfg. Name:** Powder Technology Inc.
14331 Ewing Avenue S.
Burnsville, MN 55306

Emergency Number: (952) 894-8737
Number for Info: (952) 894-8737
Date Updated: 9 January 2008

## Section 2: Emergency and First Aid

**Eyes:** Immediately flush eye thoroughly with water. Get medical attention if irritation persists.

**Skin:** N/A

**Inhalation:** Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside.

**Ingestion:** Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician if discomfort is experienced.

## Section 3: Composition Information

**Typical chemical composition:**

| Chemical | CAS Number | Percent of Weight |
|---|---|---|
| $SiO_2$ | 14808-60-7 | 68-76% |
| $Al_2O_3$ | 1344-28-1 | 10-15% |
| $Fe_2O_3$ | 1309-37-1 | 2-5% |
| $Na_2O$ | 1313-59-3 | 2-4% |
| CaO | 1305-78-8 | 2-5% |
| MgO | 1309-48-4 | 1-2% |
| $TiO_2$ | 13463-67-7 | 0.5-1.0% |
| $K_2O$ | 12136-45-7 | 2-5% |

Loss on Ignition 2 - 5 %

All components of this material are included on the TSCA Inventory.

## Section 4: Hazardous Ingredients/Identity Information

This product contains free silica. Inhalation of dust may be harmful to your health. NIOSH has recommended a PEL of 0.05 mg/m$^3$ as determined by a full shift sample up to 10 hours working day, 40 hours per week.

**H.M.I.S. ratings:** Health – * Flammability – 0 Reactivity - 0
* see Section 5 of this MSDS for further information on health effects

## Section 5: Hazard Identification

**Potential Health Effects:** Potential health effects may vary depending upon the duration and degree of exposure. To reduce or eliminate health hazards associated with this product, use exposure controls or personal protection methods as described in Section 12.

**Eye Contact:** (Acute/Chronic) Exposure to airborne dust may cause immediate or delayed irritation or inflammation of the cornea.

**Inhalation:** (Chronic) Inhalation exposure to free silica may cause delayed lung injury, including silicosis, a disabling and potentially fatal lung disease, and/or cause or aggravate other lung diseases or conditions.

**Carcinogenic Potential:** This product contains free silica, which IARC classifies as a known human carcinogen. The NTP, in its Ninth Annual Report on Carcinogens, classified "silica, crystalline (respirable)" as a known carcinogen.

## Section 6: Accidental Release Measures

Use clean-up methods that do not disperse dust into the air. Avoid inhalation of dust and contact with eyes. Use exposure control and personal protection methods as described in Section 12.

## Section 7: Physical/Chemical Data

| | |
|---|---|
| **Boiling Point:** | $4040^0$ F |
| **Specific Gravity ($H_20$ = 1.0):** | 2.65 |
| **Vapor Pressure:** | Not applicable |
| **Solubility in Water:** | Insoluble |
| **Appearance:** | Tan, Brown, Light Brown, Reddish Brown. |
| **Odor:** | No Odor |
| **Physical State:** | Solid |
| **Vapor Density:** | Not applicable |

## Section 8: Fire and Explosion Hazard Data

**Flash Point:** None

**Auto ignition Temperature:** Not combustible

**Flammable Limits:** N/A

**Extinguishing Media:** Not Combustible

**Hazardous Combustion Products:** None

**Lower Explosive Limit:** None

**Upper Explosive Limit:** None

**Special Fire Fighting Procedures:** None

**Unusual Fire and Explosion Hazards:** None

## Section 9: Stability and Reactivity Data

| | |
|---|---|
| **Stability:** | Product is stable |
| **Incompatibility (Materials to Avoid):** | Strong Acids |
| **Hazardous Decomposition:** | Will not occur |
| **Hazardous Polymerization:** | Will not occur |

## Section 10: Handling and Storage

Handle and store in a manner so that airborne dust does not exceed applicable exposure limits. Use adequate ventilation and dust collection. Use exposure control and personal protection methods as described in Section 12.

## Section 11: Toxicological Information

Conditions aggravated by exposure: Eye disease, Skin disorders and Chronic Respiratory conditions.

## Section 12: Exposure Control/Personal Protection

**Respiratory Protection:** Use local exhaust or general dilution ventilation to control dust levels below applicable exposure limits. Minimize dispersal of dust into the air. Use appropriate NIOSH approved respiratory protection for respirable crystalline silica.

**Eye Protection:** Wear safety glasses with side shields or goggles to avoid contact with the eyes. In extremely dusty environments and unpredictable environments, wear tight-fitting unvented or indirectly vented goggles to avoid eye irritation or injury.

## Section 13: Disposal Considerations

All disposal methods must be in accordance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterization and compliance with applicable laws are the responsibility solely of the waste generator.

## Section 14: Transportation Data

Arizona Test Dust is not hazardous under U.S. DOT or TDG regulations.

## Section 15: Other Regulatory Information

| | |
|---|---|
| **Status under US OSHA Hazard Communications Rule 29 CFR 1910.1200:** | Silica sand is considered a hazardous chemical under this regulation and should be included in the employer's hazard communication program. |
| **Status under CERCLA/Superfund, 40 CFR 117 and 302:** | Not listed |
| **Hazard Category under SARA (Title III), Sections 311 and 312:** | Silica sand qualifies as a hazardous substance with delayed health effects. |
| **Status under SARA (Title III), Section 313:** | Not subject to reporting requirements under Section 313 |
| **Status under Canadian Environmental Protection Act:** | Not listed. |

## Section 16: Other Information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. It is the user's obligation to determine the conditions of safe use of this product.