Mikro-Pleat™ Pleated Filters and Cartridges

Menardi ● One Maxwell Drive, Trenton SC 29847 ● Tel: 800-321-3218 Fax: 803-663-4029

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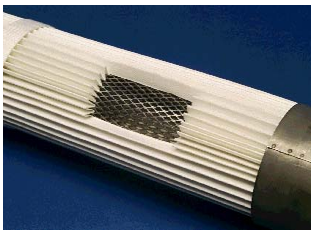
MENARDI

_____ *High Efficiency, Low Maintenance*

Space and Cost Efficient Mikro-Pleat™ Pleated Filters

The **Mikro-Pleat** pleated filters combine the advantages of both traditional pulse-jet filter bags and cartridge filters. The **Mikro-Pleat** pleated filters can improve the performance of your existing baghouse by increasing the effective cloth area.

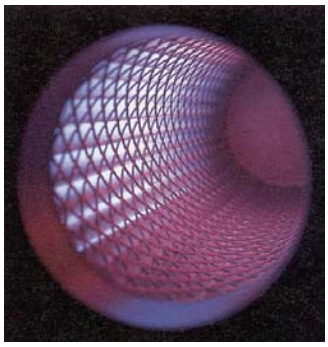


Cut-away of a Mikro-Pleat pleated filter shows its exceptional durability.

By installing this media in your existing housing, you can significantly increase baghouse performance without altering the size of the baghouse. In many instances, a **Mikro-Pleat** pleated filter can provide two or more times the cloth area of a conventional filter bag. The unique design of our **Mikro-Pleat** pleated filters assures increased capacity and better operating efficiencies.

Durable Construction

What makes the **Mikro-Pleat** pleated filter versatile is its special filter media and pleat construction. Unlike the felt of a pulse jet bag or the paper media of a cartridge, **Mikro-Pleat** pleated filters are constructed of a special spunbond nonwoven filter media. This media is very strong and its density promotes surface filtration of dust and easy release of the collected particulate. Because of its strength and durability, this media can be formed into wide pleats, which operate at higher air to cloth ratios without plugging. Pressure drops are drastically lowered and users are experiencing extended filter life and reduced compressed air usage.



Strong inner cores are available in either metal or polypropylene

Reduced Maintenance Time

With the **Mikro-Pleat** pleated filter, the need for separate support cages is eliminated. This one-piece pleated filter dramatically reduces change-out costs. These pleated filters are easy and quick to install and remove. **Mikro-Pleat** pleated filters have a wide variety of tubesheet attachment styles, permitting both clean and product side installations. In addition to a number of standard variations, you can choose the **Mikro-Pleat Pop-Top®** pleated filter which is Menardi's patented collar and venturi design that does not require any special tools or clamps for installation and can be made to fit 5.0", 5.0625", 5.25", 6.0", and 6.25" diameter tubesheet holes.

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Mikro-Pleat™ Pleated Filters and Cartridges

Cartridges and Pleated Filters Designed To Meet Your Application Needs

Menardi offers a full range of cartridges for virtually all sizes and makes of cartridge collectors. We can supply top removal, horizontal, cam-lock and traditional bottom load filter cartridges. We provide various pleat spacing and pleat depths with or without outer mesh. We supply cartridges that have added high temperature capability with moisture-resistant or fire retardant finishes. We also supply cartridges with **Mikrotex®** PTFE membrane and conductive and high efficiency filter medias.

Cartridges and Pleated Filters to fit all OEM Equipment.

Food grade and drug pharmaceutical style cartridges are available with stainless steel construction and washable filter media. Menardi's filter cartridges are available in standard cellulose, cellulose/man-made blends, filter felts and the latest spunbond medias.

Optional Features

- Metalized Finish
- Oil and Water Repellent Finish
- Mikrotex® PTFE Laminate Finish
- Stainless Steel/Copper Ground Wires
- Polypropylene/Metal inner cores

If you wish that your old dust collector was as easy to operate as a cartridge collector, Menardi can also help. Our service team can convert your physically sound old collector to an efficient, easy to use cartridge or pleated filter style unit. Pulse-jet, shaker style, reverse-air, tubular and envelope bag collectors are often converted by our experienced service teams. Just contact your Menardi sales consultant for more information about your specific application.

Application Versatility

The **Mikro-Pleat** pleated filters are more resistant to temperature, moisture and abrasion that other filter cartridges. In fact, they are even washable, allowing complete cleaning of the filters to avoid collected product contamination.

Typical applications where the **Mikro-Pleat** pleated filters are used include:

- Foundries
- Paint and Pigments
- Chemicals
- Pharmaceuticals
- Cement
- Toners
- Food
- Metals
- Alumina

Mikro-Pleat™ Pop-Top®

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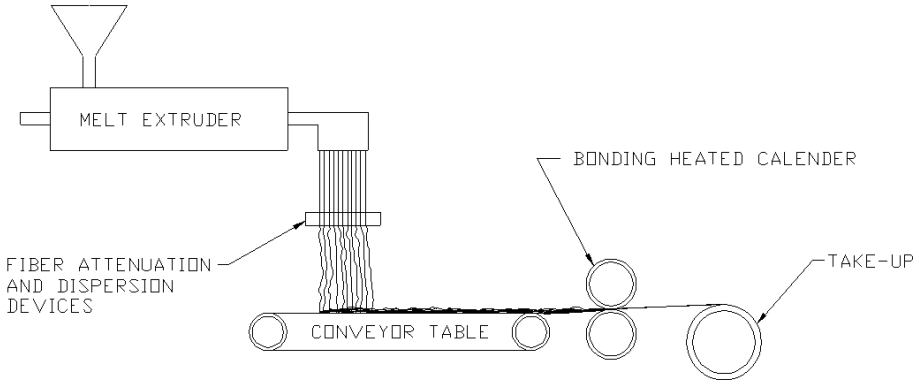
The Spunbond Story

The spunbond polyester that is used in the construction of **Mikro-Pleat™** pleated filters offers many unique advantages over typical filtration needled felts. The spunbond media has a tight pore structure and rigid physical properties. This media is very strong and its density promotes surface filtration of dust and easy release of the collected particulate. Because of its strength and durability, this media can be formed into wide pleats which can operate at higher air to cloth ratios without plugging. Pressure drops are drastically lowered and users are experiencing extended filter life and reduced compressed air consumption.

The spunbond process is a nonwoven manufacturing system involving the direct conversion of a polymer into continuous filaments, integrated with the conversion of the filaments into a random-laid, bonded nonwoven fabric. The spun bond process is one of the newer nonwoven technologies, having first been commercialized in the mid-1960's. Spunbond technology has received considerable attention since its initial introduction, as the resulting product has met some important market needs.

The Spunbond Process



The typical spunbond nonwoven process consists of several integrated steps in the conversion of polymer / resin pellets into a finished nonwoven fabric. The major elements of the process are:

Polymer Feed. Polymer feedstock in pellet or powder form is conveyed from storage bins or silos to the feeder section of an extruder.

Extruder. Polymer feedstock is mixed with stabilizers, additives, color master-batch, resin modifiers, or other additives. This blend of raw materials is melted within the extruder barrel.

Fiber Spinning. The molten polymer mix is pumped through a heated conduit to a resin filter system and then to a distributor section that leads to the spinnerette units. The spinnerette usually consists of a perforated plate arranged across the width of the line. The resin is forced through the many small holes in the spinnerette plate to form continuous filaments.

Quenching / Attenuation Zone. As the filaments emerge through the spinnerette holes, they are directed downward into quench chambers or chimneys. As the filaments travel through these chambers, cool air is directed across the filament bundle to cool the molten filaments sufficiently to cause solidification. The filaments are then led further downward into a tapered conduit by an airsteam. A second stream of high velocity air is directed parallel to the direction of the filaments, causing an acceleration and accompanying attenuation or stretching of the individual filaments. This mechanical stretching results in increased orientation of the polymer chains making up the continuous filament. Such orientation leads to increased filament strength, along with modification of other filament properties, including the filament denier or thickness.

Web Forming. The filaments are deposited in a random manner on a moving, porous forming belt. A vacuum under the belt assists in forming the filament web on the forming belt and in removing the air used in the extrusion / orientation operation. In some processes, an electrostatic charge is placed on the filament bundle to ensure spreading and separation of individual filaments. In other processes, deflector plates are used to lay down the filament sheet in a random manner on the forming belt.

Bonding. The continuous filament web is delivered to a bonding section, where one of several bonding methods can be used to bond the loose filaments into a strong, integrated fabric.

Slitting / Winding. The bonded fabric encounters a slitting section where the two edges are trimmed to eliminate the non-uniform, rough edge created during the manufacturing step. In some operations, the fabric may also be further slit into precise, smaller widths to provide finished rolls of precise dimension. Following slitting, the fabric is wound onto a larger roll, either a full width roll or a series of narrow slit rolls. From this point, the fabric rolls are ready for wrapping and shipping.

The description of the spunbond process was taken from a special report from NONWOVENS WORLD magazine entitled: “Spunbond Technology Today: An Overview of Raw Materials, Processes, Products, Markets and Emerging End Users.”

Mikro-Pleat™ Pleated Filters - Overview

Menardi's Mikro-Pleat Pleated Filters can vastly improve the performance of your pulse jet baghouse with no baghouse alterations. **Mikro-Pleat™** pleated filters provide a simple retrofit for upgrading existing dust collection systems and improving problem systems.

Filter area

The **Mikro-Pleat** pleated filter is a one-piece element of spun bond polyester media. Because spun bond material is pleatable, we can get 200 – 300% more filter media into a pleated filter that is the same size, or usually smaller than the conventional filter bag it replaces. This dramatically reduces your air-to-cloth ratio, providing for a much more efficient operation of the collector. You will also see increased CFM, lower differential pressure, lower energy cost and higher filtration efficiencies.

Efficiencies

The non-woven, spun bond filter media in the **Mikro-Pleat** pleated filter has a smooth calandered finish that maximizes dust cake release. **Mikro-Pleat** pleated filters resist surface penetration by the collected particulate, resulting in much higher cleaning efficiency and faster regeneration of operating airflows. The felt fabrics used in conventional filter bags have millions of rough surface fibers that can attach to the dustcake causing poor cake release. Actually, the felt fabric requires a considerable depth of dustcake to reach an acceptable level of efficiency. The smooth finish of the spun bond media allows for easy release of particulate. This material, offering 99.99+% efficiency, rivals membrane materials at a much lower cost.

Applications

The applications for **Mikro-Pleat** pleated filters are any current systems using polyester felt or woven materials. Menardi has successfully placed **Mikro-Pleat** pleated filters in the following fields:

- ✓ Chemicals
- ✓ Metals and Alumina
- ✓ Paints and Pigments
- ✓ Food / Pharmaceuticals
- ✓ Cement

Mikro-Pleat pleated filters are used successfully in the following applications:

- Current dust collector systems using polyester material.
- Current collectors that are undersized, requiring additional cloth area.
- Current collector systems using materials other than polyester operating at 250° F or below.
- Current dust collector systems requiring more efficient media.
- Hydrolysis or moisture problems with current standard felts.

Options

Mikro-Pleat pleated filters are available in a variety of sizes and configurations to suit any requirement. The following are just a few examples of what we can do:

- Bottom-load pleated filters to fit MikroPul® (5”), Flex-Kleen® (6”) and MAC® (6”) style collectors.
- Pop-Top® top-load pleated filters to fit 5.0”, 5.0625”, 5.25”, 6.0”, and 6.25” cell plate holes.
- Mikrotex® PTFE laminate finish.
- Oil and water repellent finish.
- Metalized finish for static dissipation.
- Stainless steel / copper ground wires.
- Polypropylene and metal inner core.

Additional Benefits

Mikro-Pleat spun bond media is sturdy and self-supporting. That means we don’t have to rely on closely spaced, dust clogging pleats necessary with paper…or the cage support system required with conventional felt bags.

- Eliminate cage costs.
- Reduce change-out costs and process downtime through 50% faster installation.
- Cut pressure drops, dramatically reduce compressed air consumption.
- Avoid collected product contamination, and increase filter life through soap and water cleanup.

Mikro-Pleat™ Product Line

Pleated filters designed as direct replacements for standard pulse-jet filter bags and cages

Top Removal

- Pop-Top®
- Fits 5.0”, 5-1/16”, 5-1/4”, 6.0”, and 6-1/4” tubesheets

- Snapband Style
- Fits most standard tubesheets

- Twist Lock™
- Designed to fit MikroPul® 3-tab tubesheets

Bottom Removal

- 5” nominal
- Designed to fit MikroPul® venturi 122500, 121552, and similar styles

- 6” nominal
- Designed to fit Flex-Kleen®, MAC®, and similar style filter cups

Standard Lengths

- ½ meter (19.685”)
- 1 meter (39.37”)
- 1-1/2 meters (59.06”)
- 2 meters (78.74”)

Pleat Depth

- 0.625” for 4 ½” – 5 ½” diameter filters
- 1.0” for 5 ¾” – 6 ¼” diameter filter
- The variance allowed for each +/- 1/8”

Inner Cores

- Polypropylene inner core standard for all pleated filters (polypropylene inner cores are limited to 180º F)
- Galvanized expanded metal inner core and spiral welded metal inner core available for all pleated filters.

Mikro-Pleat™ Filter Media Selection Guide

22-920 Plain Spunbond Polyester	▪ Excellent media for standard application. ▪ Gives good performance on many different dusts. ▪ High strength – gives long life and will support an open pleat. ▪ High abrasion resistance. ▪ Good dust release properties. ▪ Generally, all types of dust with medium to large particle size which are not sticky.
22-921 Aluminized	▪ Aluminized coating applied to plain spunbond polyester. ▪ Antistatic properties allow any static charge to be earthed giving improved dust release and reducing the risk of explosion. ▪ Coating improves filtration efficiency slightly and gives better cake release. ▪ Generally all types of dust with a small to medium particle size.
22-922 Hydro / Oleophobic	▪ 2% Teflon applied to plain spunbond polyester. ▪ Provides improved resistance to moisture and oil. ▪ Improves cake release. ▪ Generally all type of dust with a medium to large particulate size.

22-923	PTFE Membrane	▪ Expanded PTFE membrane applied to one side of plain spunbond polyester ▪ Provides slick filtration surface so that the release of sticky dusts is greatly enhanced. ▪ Reduces the pore size of the filtration surface, giving higher efficiency. ▪ Generally used with dusts where particle size is uniform and very small.
23-920	Polypropylene	▪ For use in low temperature applications where a chemical environment is present. ▪ 175ºF continuous / 200º maximum
22-926	Homopolymer Acrylic	▪ For use in similar applications as polypropylene, but with higher temperature requirements. ▪ 250ºF continuous / 275ºF maximum
	Aramid	▪ For use under high temperature conditions where conventional Aramid felt media is normally used. ▪ 375ºF continuous / 425ºF maximum
	PPS (Polyphenylene Sulfide)	▪ For use under high temperature conditions. PPS media has excellent chemical resistance in a wide range of chemical environments. ▪ 375ºF continuous / 425ºF maximum

Mikro-Pleat™ Pleated Filters

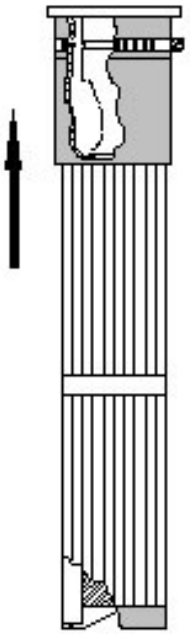
Pleated Filters for Bottom Access Collectors

The **Mikro-Pleat Molded Top** pleated filter is a one-piece element. It can be secured with a clamp onto any nominal 4.625" or 5.75" diameter venturi or bag cup.

Mikro-Pleat filters can increase the performance of most collector designs by providing an expanded collection surface area without making the collector bigger. In many instances a **Mikro-Pleat** filter can provide twice the cloth area of a conventional filter bag and create dramatic increases in flow capacity! Also, due to the shallow pleat depth the **Mikro-Pleat** filter cleans more efficiently than an ordinary cartridge filter.

Standard Construction Features:

Tough Spun Bonded Polyester Filter Media
180° F Operating Temperature
Flexible "Push Up" Installation
Polypropylene Inner Core
High Collection Efficiency, BIA Rated
Shallow Pleat Depth (0.625" / 1.0")
Variety of Pleat Packs (30 – 60 pleats)



Optional Features:

Higher Temperature Option (up to 275° F)
Metalized Finish
Oil & Water Repellent Finish
MikroTex® PTFE Membrane Finish
Stainless Steel/Copper Ground Wires
Expanded Metal Inner Core
Spiral Welded Perforated Metal Core

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Mikro-Pleat™ Pleated Filters

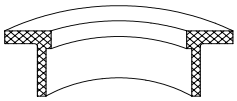
Pop-Top® Pleated Filter for Top Access Collectors

The **Mikro-Pleat Pop-Top®** pleated filter is a patented design for fast and secure installation in punched hole style tubesheets. The exclusive **Pop-Top** collar design requires no special tools or clamps for installation and is available to fit 5.0”, 5-1/16”, 5-1/4”, 6.0” and 6-1/4” diameter punched tubesheet holes.

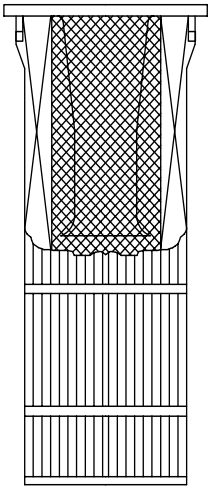
Mikro-Pleat filters can improve the performance of most collector designs by providing an expanded collection surface area without making the collector bigger. In many instances a **Mikro-Pleat** filter can provide twice the cloth area of a conventional filter bag and create dramatic increases in flow capacity! Also, due to the shallow pleat depth the **Mikro-Pleat** filter cleans more efficiently than an ordinary cartridge filter.

Standard Construction Features:
Tough Spun Bonded Polyester Filter Media
180° F Operating Temperature
Secure “Pop In” Installation
Polypropylene Inner Core
High Collection Efficiency, BIA Rated
Shallow Pleat Depth (0.625” / 1.0”)
Variety of Pleat Packs (30 – 60 pleats)

Optional Features:
Higher Temperature Option (up to 275° F)
Metalized Finish
Oil & Water Repellent Finish
MikroTex® PTFE Membrane Finish
Stainless Steel/Copper Ground Wires
Spiral Welded Perforated Metal Core
Expanded Metal Inner Core



Pop-Top® Collar



Pop-Top® Filter

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Mikro-Pleat™ Pleated Filters

Twist Lock™ Pleated Filter for Top Access Collectors

The **Mikro-Pleat** pleated filter with **Twist Lock™** top is a one-piece design for installation in tabbed tubesheet holes. The exclusive **Twist Lock** design securely fastens the filter element without clamps or expander rings and forms a dust tight seal in the tubesheet.

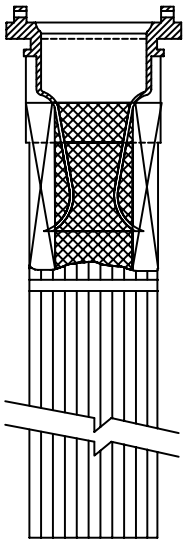
Mikro-Pleat filters can improve the performance of most collector designs by providing an expanded collection surface area without making the collector bigger. In many instances a **Mikro-Pleat** filter can provide twice the cloth area of a conventional filter bag and create dramatic increases in flow capacity! Also, due to the shallow pleat depth the **Mikro-Pleat** filter cleans more efficiently than an ordinary cartridge filter.

Standard Construction Features:

Tough Spun Bonded Polyester Filter Media
180° F Operating Temperature
Secure "Twist Lock" Installation
Polypropylene Inner Core
High Collection Efficiency, BIA Rated
Shallow Pleat Depth (0.625" / 1.0")
Variety of Pleat Packs (30 – 60 pleats)

Optional Features:

Higher Temperature Option (up to 275° F)
Metalized Finish
Oil & Water Repellent Finish
MikroTex® PTFE Membrane Finish
Stainless Steel/Copper Ground Wires
Spiral Welded Perforated Metal Core
Expanded Metal Inner Core



Twist Lock™ Filter

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Mikro-Pleat™ Pleated Filters

Snap Band Pleated Filter for Top Access Collectors

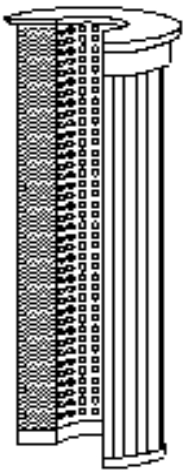
The **Mikro-Pleat Snap Band** pleated filter is designed exclusively for installation in punched hole style tubesheets. The snapband cuff and collar design securely fastens the pleated filter element in place and forms a dust tight seal.

Mikro-Pleat filters can improve the performance of most collector designs by providing an expanded collection surface area without making the collector bigger. In many instances a **Mikro-Pleat** filter can provide twice the cloth area of a conventional filter bag and create dramatic increases in flow capacity! Also, due to the shallow pleat depth the **Mikro-Pleat** filter cleans more efficiently than an ordinary cartridge filter.

Standard Construction Features:
Tough Spun Bonded Polyester Filter Media
180° F Operating Temperature
Secure "Pop In" Installation
Polypropylene Inner Core
High Collection Efficiency, BIA Rated
Shallow Pleat Depth (0.625" / 1.0")
Variety of Pleat Packs (30 – 60 pleats)

Snap Band Cuff

Optional Features:
Higher Temperature Option (up to 275° F)
Metalized Finish
Oil & Water Repellent Finish
MikroTex® PTFE Membrane Finish
Stainless Steel/Copper Ground Wires
Spiral Welded Perforated Metal Core
Expanded Metal Inner Core



Snap Band Filter

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Pop-Top® Installation Instructions
For Mikro-Pleat™ Pleated Filters

The Pop-Top pleated filter can either be installed in your existing dust collector or designed into your new baghouse. No more hassles during filter change-outs. Menardi understands the importance of a solid seal and an exact fit to optimize filter life. Our precision manufacturing assures the right fit and optimum filtration performance from the Pop-Top pleated filter element.

Proper installation is done as follows:

- The throat of the cellplate hole should be clean. Any significant amounts of rust or dirt should be wiped or brushed off prior to dropping in the Pop-Top pleated filter. ***Do not use a grinder.***
- The collars may be packaged in a separate box from the filters. Remove the collars from the box and insert a collar into the cellplate hole.
- Insert the Pop-Top pleated filter through the cellplate hole until the metal collar rests against the cellplate.
- Step on the Pop-Top filter top until it "pops" into the collar.



- Removal of the Pop-Top pleated filter from the collector is simple using our easy removal tool that is enclosed with your shipment.

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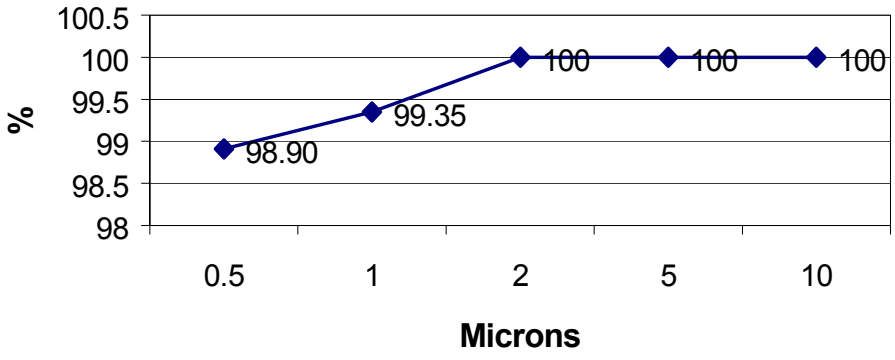
Mikro-Pleat™ Efficiency Specifications

Mikro-Pleat™ spun bond pleated media provides more efficient fine-particulate filtration than conventional felted filter media. Superior efficiency results in lower emissions and improves environmental quality indoors and outdoors.

Mikro-Pleat™ media delivers excellent filtration efficiency. The charts below summarize relative efficiencies for various media, as determined under standardized laboratory conditions. The challenge dust contained by count 90% of particle sizes between 0.2 and 2.0 micron equivalent diameter – the size range most difficult to collect. Every industrial application is unique; actual emissions will vary for specific installations.

Filter Style	Efficiency % (by weight)
Conventional Needled Felt	95.00 – 99.00
Standard Paper Cartridge Media	99.50
Mikro-Pleat™ Spun Bond Polyester	99.99

Efficiency Chart



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Filter Rate Guide For Mikro-Pleat™ Pleated Filters

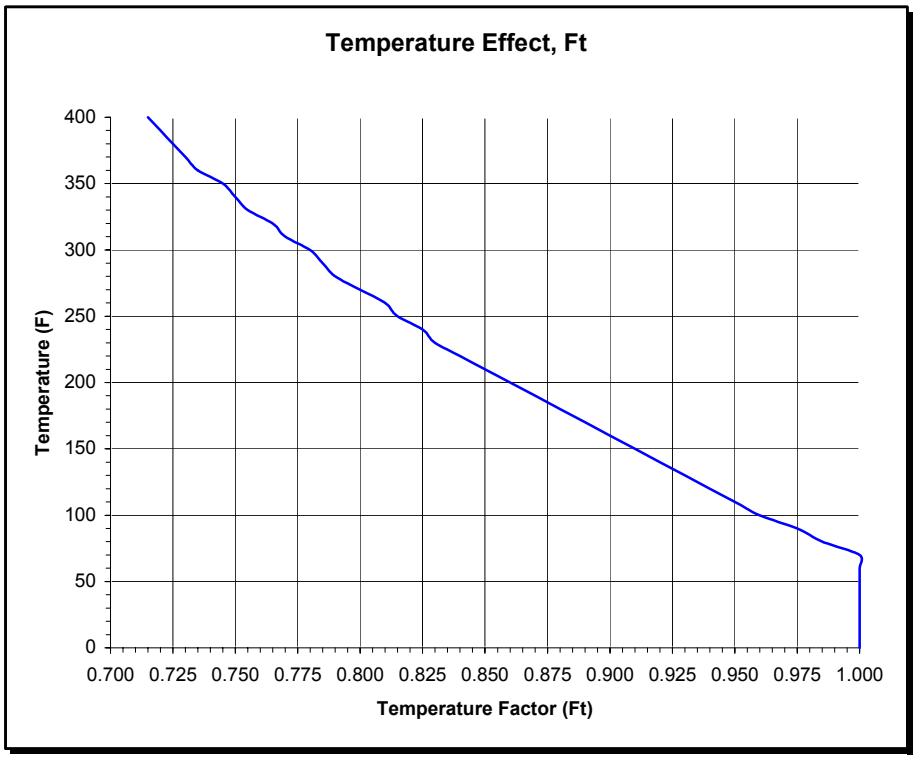
Filter Rate (Air-to-Cloth Ratio) = F_p x F_a x F_i x F_t x F_m

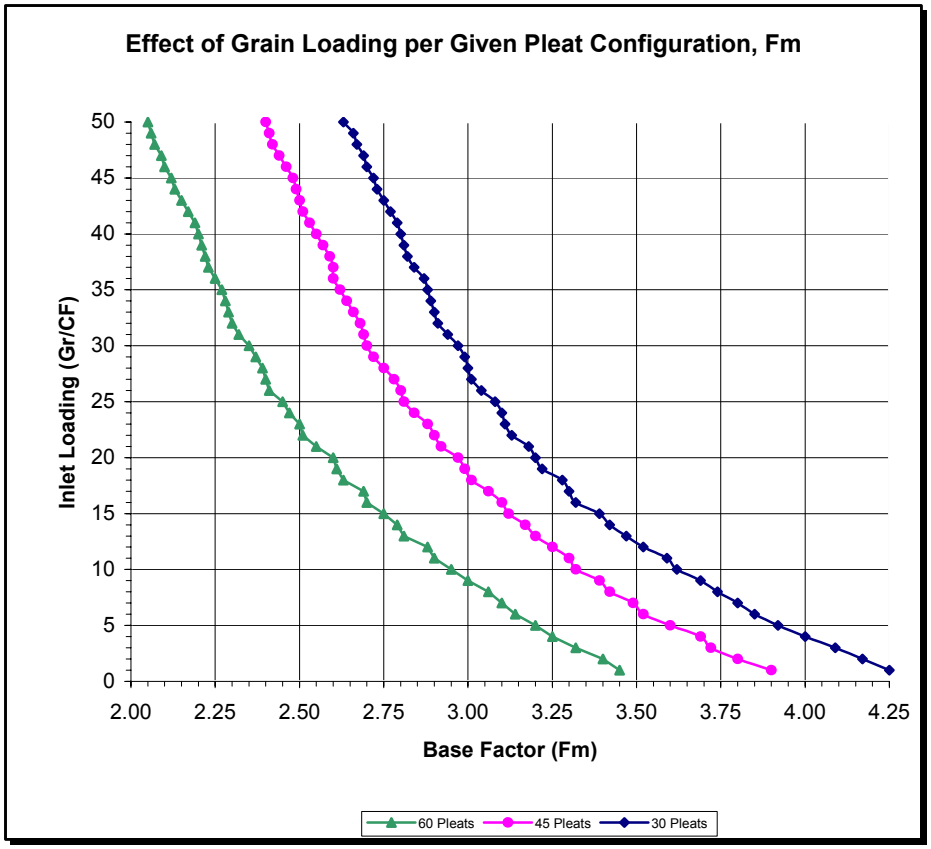
Interstitial (Can) Velocity must not exceed 400 ft/min.
If Interstitial Velocity exceeds 400 ft/min, lower the Fm factor and recalculate the Filter Rate value.

Powder (Dust) Factor, F_p

1.2	1.1	1	0.9
Cereal Dust Chocolate / Cocoa Corn Meal Feeds Flour Grain Paper Board Tobacco	Ceramic Sand Dust Perlite Sand Sand Blast Soda Ash	Alumina Aspirin Cake Mix Carbon Black Cement Clay Flourspar Fuller's Earth Gypsum Kaolin Lime (Hydrated) Ore Dust Rock Dust Rubber Chemicals Salt Silica (Not Colloid) Talc	Diatomaceous Earth Dyes Fly Ash Grinding, Hard Steel Metal Oxides Metal Powder Phosphorous / Fertilizers Pigments Plastics Silicates Starch Tannic Acid
0.8	**0.7**	**0.6**	
Buffing Silica (Colloidial > 6 PCF) Coal Sorbic Acid Sugar	Activated Carbon Silica (Colloidial < 6 PCF) Resins	Ceramic Pigments Detergents (Dry) Grinding, Mild Steel Milk Powder Soap (Dry)	

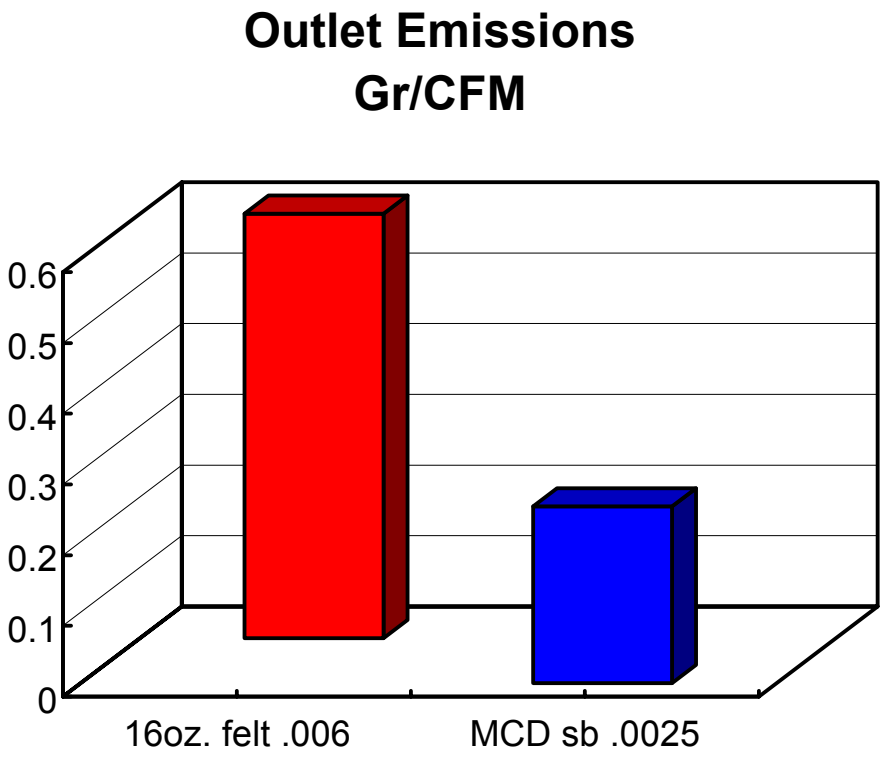
Note: Avoid applications with sticky, moist and excessively fibrous dusts. Keep temperature above dew point.


Temperature Effect, Ft
Temperature (F)
400
350
300
250
200
150
100
50
0
0.700 0.725 0.750 0.775 0.800 0.825 0.850 0.875 0.900 0.925 0.950 0.975 1.000
Temperature Factor (Ft)


Effect of Grain Loading per Given Pleat Configuration, Fm
Inlet Loading (Gr/CF)
50
45
40
35
30
25
20
15
10
5
0
2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00 4.25
Base Factor (Fm)
60 Pleats
45 Pleats
30 Pleats

Mikro-Pleat™ Pleated Filters

Menardi's new nonwoven Spunbond Polyester filter media was subjected to various performance tests vs. traditional 16 oz. polyester needled felt. This provided comparative data on particulate leakage, media efficiency and differential pressure under simulated operating conditions.



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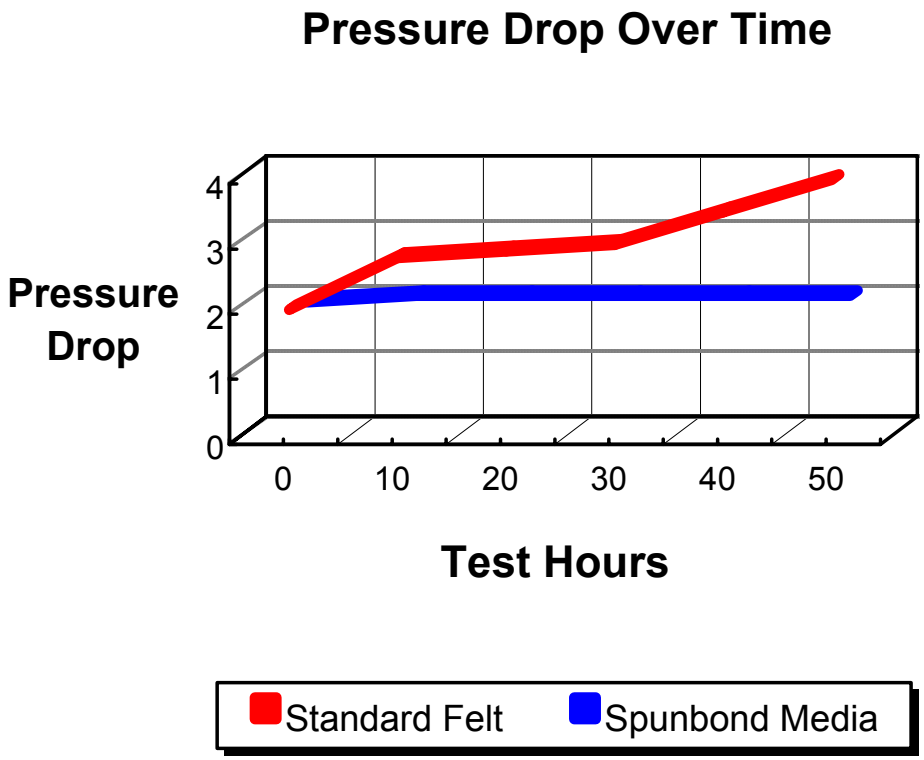
Mikro-Pleat™ Pleated Filters

Both fabric candidates were challenged with silica test particulate having a median size of 0.5 microns. The study was conducted for a total of 50 hours cleaning with 80 psig on 15 minute intervals for each fabric.



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Mikro-Pleat™ Air-To-Cloth Ratio Recommendations

DUST TYPE	NOMINAL AIR-TO-CLOTH	
	Plain Spunbond	PTFE Membrane
Alumina	2.6 TR	
Aluminum Flouride	3.9 TR	
Aluminum Hydrate	3.0 TR	
Aluminum Oxide	3.9 TR	
Ammonium Chloride	2.6 TR	
Ammonium Nitrate	2.6 TR	
Antimony Trioxide	3.0	
Ash (Cement Mills)	2.3 TR	2.6
Barite	3.6	
Barium Carbonate	3.9	
Barium Oxide	3.3	
Barium Stearate	3.0 ME	
Barium Sulfate	3.6	
Bauxite (crushed - 76.2 mm)	3.3	
Bauxite (dry ground)	3.9	
Bentonite	3.6	
Black Ash (ground)	2.6 TR	3.3
Borax (fine)	2.6 TR	3
Boric Acid	3.0 TR	
Bread (crumbs)	4.9	
Cocao (powder)	3.0 TR	3.3
Calcium Carbonate	3.9	
Calcium Chloride	3.3 TR (dry)	
Calcium Stearate	3.0 ME	
Carbon Black (powder)		2.6
Carbon (powder)	2.3 TR	2.6
Carboxylmethylcellulose	2.0 TR	2.3
Cement Mortar	3.9 TR	
Cement Portland (aerated)	3.3 TR	
Cement (clinker)	3.9 TR	
Cereals (mix)	3.9	
Chamotte	3.0	
Chocolate (drink, mix)		2.6
Citric Acid	3.3 TR	
Clay (brick, dry, fines)	3.9 TR	
Clay (ceramic, dry, fines)	3.3 TR + ME	3.3

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Clay (micronized)	2.6 TR + ME	2.6
Coal	3.9	
Coffee (dry, ground)	3.9	
Coffee (ground, wet)	3.0 TR	
Coffee (roasted bean)	4.3	
Coke	3.9	
Coke (powder)	3.3 ME	
Copper Oxide	2.6 TR	
Corn (grit)	3.3 TR	
Corn (meal)	3.3 ME	
Corn (mix)	3.6 ME	
Cryolite (dust)	3.9 TR	
Dextrose	2.6 TR + ME	
Diatomaceous Earth	4.3	
Diatomaceous Earth (supercel)	3.3	
Dolomite (crushed)	4.3 TR	
Dolomite (lumps)	3.3 TR	
Feldspar (powder)	3.0	
Ferrous Sulfate	3.6 TR	
Fertilizers	4.9	
Filler	3.3	
Fish (meal)	2.6 TR	
Flourspar (fine)	3.3	
Fly Ash	2.3 TR	2.6
Foundry Sand	2.6 TR	
Foundry Sand (dry)	3.6	
Gluten (meal)	2.3 TR	2.3
Grain	3.3	
Graphite (powder)	3.3 TR + ME	
Gypsum	4.6	
Gypsum (calcined powdered)	3.9	
Iron Oxide (pigment)	2.3 TR	2.6
Lactose	2.6 TR + ME	
Lasercutting	2.0 precoating	2.3 precoating
Lead Oxide	3.9	
Lime Hydrated	4.3	
Magnetite (calcined, superfine)	2.3	2.6
Magnesium Carbonate	3.6	
Magnesium Oxide	3.3	
Magnesium Stearate	3.0 ME	

Marble (grit)	3.9 TR	
Marble (powder)	3.3 TR	
Metallization (wire spraying)		2.3 precoating
Milk (powdered)	2.0 TR	
Mineral Black	2.3	2.3
Molding Inhibitor	3.3	
Nepheline + Sienite	2.5 ME	
Olive (nusk)	2.6 TR	
Orange (peel, dry)	3.3	
Paint pigments (dry)	3.6	
Peanuts (meal)	2.6 TR	
Peas (dried)	3.6	
Perlite	3.9	
Pharmaceutical dusts	3.0	3.3
Plasma (cutting, welding)	2.3 precoating	2.6 precoating
Plastic (dry fiber's powder)	3.3 ME	
Polyester (flakes)	3.6 ME	
Polystyrene (expanded)	2.6 ME	
Potassium Sulfate	3.3	
Potatoes (flour)	3.0 TR	
Powder coating (automatic)	2.6	
Powder Coating (manual)	3.9	
Protein (integrators)	2.5 TR + ME	
PVC	3.3	
PVC (emulsion)	2.3 TR	
Quartz	4.3	
Rice	3.9 TR	
Rubber	3.3 TR	
Salt (cake, dry, coarse)	3.6 TR	
Salt (flour)	3.0 TR	
Sand (dry)	5.2	
Sawdust (fine)	3.9	
Shot blasting (automatic)	2.6	
Shot blasting (manual)	4.3	
Silica sand	3.6	
Silica (flour)	3.0	
Silica (gel)	2.6	
Slag, blast furnace	3.0	
Soap (powdered)	2.3 TR	
Soda (ash, light)	3.0	

Sodium Carbonate	2.6 TR	
Sodium Phosphate	2.6 TR	
Soybean (flour)	3.3 TR + ME	
Starch	2.6 TR	2.6
Stearic Acid	2.5 ME	
Sugar	2.6 TR + ME	
Sugar (refined, granulated dry)	3.3 TR + ME	
Sulphur (crushed)	3.9	
Super-phosphate	3.3	
Talcum	3.6	
Tea (powdered)	3.3	
Titanium Dioxide	2.3	3.3
Tobacco	3.6	
Toner		2.6
Vermiculite	3.6 TR	
Vitamin Additive	2.3	2.6
Welding Fume	2.6 precoating	2.6 precoating
Wood (mix)	4.9	
Wood (sawdust)	3.9	
Wood (MDF or chipboard)	3.3 ME	

ME = Anti-static surface coating recommended
TR = Oil & water repellent treatment recommended (flourocarbon-based, not silicones)
Precoating = Use of a precoat agent is recommended

THE ABOVE CHART WAS ORIGINALLY PUBLISHED BY SF AIR FILTRATION

Mikro-Pleat™ Pleated Filter / Cartridge Washing Instructions

Mikro-Pleat pleated filters / cartridges can be washed with water several times quite safely, with two different options for the methods used.

Option 1

Washing with a commercially available high-pressure cleaner, in compliance with the following conditions:

Pressure:	Maximum
Temperature:	Maximum 212° F (100° C)
Cleaning Agent:	Mild detergent with 5 – 7 pH (standard laundry or hand dishwashing detergent will do.)

Most any mild detergent will work well, as long as it is non-ionic and the pH is close to neutral.

- **Cleaning Procedures:**

  Remove as much loose material as possible by dry brushing. Avoid using an abrasive brush in order not to damage the media. The Mikro-Pleat™ pleated filter / cartridge should be cleaned in 8 to 10 segments, slowly from top to bottom, with the nozzle approximately 12” (30cm) away from it.

Option 2

Washing with a jet from a conventional water hose:

- **Cleaning Procedures:**

  Remove loose material as above. Hold the water hose at a distance of at least 2” (5cm) from the surface of the filter, and use the jet to spray out every single pleat from top to bottom.

Drying the Filters

The Mikro-Pleat pleated filter must be carefully dried in order to ensure trouble-free operation after they have been regenerated. There are two options here:

- Drying at room temperature over a period of not less that 1 week.
- Drying in an oven at a maximum temperature of 212° F (100° C) over a period of 12 hours.

This cleaning procedure enables soiled Mikro-Pleat pleated filters / cartridges to be put back into operation at low pressure differentials.

These cleaning instructions are for filters constructed of spunbond polyester only. Never attempt to wash media that is contaminated with dangerous or otherwise hazardous materials. Follow all sewage and waste control ordinances. Hydrocarbons may not be removable by washing procedures. These cleaning guidelines are intended for media in good condition, i.e., the mechanical strength properties and filtering ability have not been adversely altered or compromised.

Mikro-Pleat™ Pleated Filters

Applications

Chemicals

- Fertilizer Spray Dryers
- Calcium Hypochlorite
- Polyethylene Resins
- Coke – Briquetting Process
- Tire / Specialty Rubbers
- Catalyst Manufacturing
- Plastic Fibers
- Cellulose Fibers
- Polystyrene Fluff
- Packaging
- PVC

Mikro-Pleat™ Pleated Filters

Applications

Rock Products

- Crushing / Grinding
- Raw Mill / Finish Mill
- Packing Machines
- Kaolin Processing
- Material Loading
- Material Handling / Transport
- Coal Mill
- Clay Grinding
- Bentonite Crushing
- Silo Bin Vents

Mikro-Pleat™ Pleated Filters

Applications

Metals

- Electric Arc Furnace
- Desulphurization Furnace
- Induction Furnace
- Ladle Melt Furnace
- BOF Furnace
- Mold Cooling Lines
- Shot Blast / Grinding
- Sand Shakeout / Sand Reclaim
- Caster
- Silo Bin Vents

Mikro-Pleat™ Pleated Filters

Applications

Primary Aluminum

- **Fluid Bed Dry Scrubbers**
- **Venturi Injection Dry Scrubbers**
- **Carbon Bake Dry Scrubbers**
- **Alumina Handling / Unloading**
- **Green Mill Carbon Handling**
- **Anode Crushing Ventilation**
- **Reacted / Unreacted Ore Silos**
- **Prebake**

Mikro-Pleat™ Pleated Filters

Applications

Food / Pharmaceutical

- Food Additive Processing
- Protein Spray Drying
- Flour Milling
- Cereal Drying
- Grain
- Animal Vitamins
- Pharmaceutical Pill Coating
- Silo / Bin Vents

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Mikro-Pleat™ Pleated Filters

Applications

Paint / Pigments

- Toner Mixing / Blending
- Pneumatic Conveying
- Pigment Blending
- Micronizers
- Packaging
- Paint Mixing
- Spray Dryers
- Silo / Bin Vents

Mikro-Pleat™ Questionnaire

Company Name / Location: _____

Contact: _____

1. Are you currently using or are you contemplating the use of pleated filter technology?

a) If so, who are you presently buying pleated filters from?

2. Do you have any dust collectors that may be experiencing the following problems?

a) Undersized

b) High differential pressure

c) Inlet abrasion

d) Particulate migration (blinding or bleed through)

e) Poor dustcake release

3. Do you use polyester felt filter bags and have to change them often?

4. Who else within your organization could I speak with concerning this product?

5. May I provide you a quote for Mikro-Pleat™ pleated filters?

a) If so, I will need as much of the following information as possible:

(a)Baghouse OEM

(b)Top or bottom access

(c)If top access, tubesheet hole size

(d)Baghouse operating temperature

(e)Product being collected

(f) Air volume (CFM)

(g)Length of current filter

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Ventilation Reference Formulas

ACFM	actual ft^3 / min	**PSI**	pounds per square inch
AMP	amperage	**RPM**	revolutions per minute
D	diameter	**SP**	static pressure
FPM	feet per minute	**SPWG**	static pressure water gauge
L	length	**VP**	velocity pressure, in. of water

Total CFM = Velocity, FPM x Duct Area, ft^2

Velocity = 4005(Sq. root of VP) at Standard Conditions (70° at Sea Level)

Velocity at Elevated Temperatures and Sea Level, Using Standard Pitot Tube: Velocity, fpm = 174[Sq. root of(VP x (Air Stream Temperature, °F + 460))]

Total Cloth Area, ft^2 = [(Bag D" x 3.14 x Bag L") ÷ 144] x Total Number of Bags

Gross Air-to-Cloth Ratio = ACFM ÷ Total Cloth Area, ft^2

Net Air-to-Cloth Ratio = ACFM ÷ Total On-Line Cloth Area, ft^2

1" SPWG = .578 oz /in^2 = .0361 PSI = .0735" Hg (mercury)

1 PSI Air Pressure = 27.70" SPWG = 2.036" Hg

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Can Velocity = ACFM ÷ [Total Tubesheet Area, ft^2 – (Hole Area, ft^2 x Number of Holes)]

Grain Loading Expressed in Grains/ft^3 =

$$\frac{\text{Lbs. Of Dust Handled per Minute x 7000}}{\text{ACFM}}$$

7000 grains = 1 lb. = 16 oz. = 453.6 grams

Lbs. Of Dust/Minute = (Grains/ft^3 x ACFM) ÷ 7000

Fan Laws:

CFM Varies Directly as the RPM:
$RPM_2 = RPM_1 (CFM_2 \div CFM_1)$
$CFM_2 = CFM_1 (RPM_2 \div RPM_1)$

SP Varies as the Square of the RPM:
$SP_2 = SP_1 (RPM_2 \div RPM_1)^2$
$RPM_2 = RPM_1$ [Sq. root of $(SP_2 \div SP_1)$]

HP (AMP) Varies as the Cube of the RPM:
$AMP_2 = AMP_1 (RPM_2 \div RPM_1)^3$
$RPM_2 = RPM_1$ [Cubed root of $(AMP_2 \div AMP_1)$]

Filtration Glossary

ABRASION RESISTANCE: Ability of a fiber or fabric to withstand surface wear.

ABRASION - FLEX: Fabric weakness created by repeated fiber bending.

ABRASION - SURFACE: Fabric wear on the surface created by particulate erosion, rubbing or scuffing.

ACID GAS SCRUBBER: Process equipment where an alkaline solution is introduced into the gas stream in a finely atomized spray. It reacts with gas stream constituents to be scrubbed, creating neutralized particles that have absorbed acids and can be collected.

ACFM: Actual Cubic Feet per Minute. The volume of the gas flowing per minute at the operating temperature, pressure and composition.

ACRYLIC: Any of a group of synthetic fibers derived from a compound of hydrogen, cyanide, and acetylene, and made into fabrics.

AGGLOMERATION, PARTICLE: Multiple particles joining or clustering together by surface tension to form larger particles, usually held by moisture, static charge or particle architecture.

AIR HEATER: A heat exchanger which transfers heat otherwise wasted from the flue gases to the incoming furnace air.

AIR-TO-CLOTH RATIO: The ratio between ACFM flowing through a filter and the square feet of filter area available. This can also be thought of as the velocity of the gas passing through the filter in feet per minute (FPM). Note: In the metric system the term used is "filtration velocity" (instead of "air to cloth ratio"; defined as the relation between the m3/min. of air flowing through a filter and the m2 of filter area available.

ANEMOMETER: A device for measuring small air velocities. See hot-wire anemometer and rotating vane anemometer.

ANTI-SNEAK BAFFLES: A gas distribution device in which internal baffle elements within the precipitator prevent the gas from bypassing the active field or causing hopper re-entrainment.

BACK TACK: To sew over a previously sewn seam or stitch to prevent the thread from unraveling.

BAFFLE: A device usually consisting of a plate or series of plates which evenly distribute airflow and dust within a dust collector to protect filter bags from direct impingement of dust.

BAGHOUSE: An air filtration structure utilizing fabric filter bags for the purpose of removing solid particulate from the gas stream; dust collector.

BAG-ON-CAGE: The concept of selling both the bag and cage as one unit. Normally installed together by the plant.

BAG POCKETS: Pockets sewn into the bag for placement of cages or rods. Pockets most often associated with the Sly and Pangborn type filter bags.

BIAS MATERIAL: Material whose fill thread is not perpendicular to the warp threads; i.e., for a given plane of the fabric a given thread will be higher or lower to a line perpendicular to the edge from point to point. Caused by uneven tension and heat during weaving.

BLINDING: Fabric blockage by dust, fume, or liquid not being discharged by the cleaning mechanism, results in a reduced gas flow of increased pressure drop across the filter media.

BLEED THROUGH: Particulate migration through the interstices of the filter bag fabric.

BLINDING: Fabric blockage by dust, fume or liquid not being discharged by the cleaning mechanism, resulting in a reduced gas flow or increased pressure drop across the media.

BLOWPIPE: Pipe connected to the pulsing system; holes distribute cleaning air to bag rows in pulse-jet units.

BOBBIN: A device used to feed thread to the needle on a lockstitch machine. Has a definite amount of thread on it and must be changed periodically.

BOWED BAGS: The shape of a bag, which has excessive take-up on the seam side. Expressed in inches and measured from the highest point of the bow to a line which would represent the bowstring.

BOWED MATERIAL: Similar to bias material except the fill thread will be pulled into the shape of a bow. Caused by a pulling or drawing of the fabric in the center of the roll during weaving.

BRIDGING: Material-handling problem characterized by the particulate forming a cavity over the discharge or opening of a hopper or storage vessel.

BURSTING STRENGTH: General - A material's ability to resist rupture by pressure. Specific - Force required to rupture a fabric by distending it with the force applied at right angles to the fabric plane under specified conditions. Usually expressed in pounds per square inch.

CAN VELOCITY: In a dust collector with the filter elements suspended from the tubesheet, can velocity is the upward air stream speed calculated at the horizontal cross-sectional plane of the collector housing that passes through the bottom surface of the filters.

CALIBRATION: All the operations for the purpose of determining the values of errors of a measuring instrument and, if necessary, to determine other meteorological properties.

CANOPY: A system component that captures heat, smoke and particulate and conducts them into the exhaust ductwork hood.

CELL (IN WIDTH): A cell is an arrangement of bus sections parallel to gas flow. Note: Number of cells wide times number of fields deep equals the total number of bus sections.

CELL PLATE (TUBESHEET): A steel plate or casting to which the open end of the filter bags is connected. Separates the clean air and dirty air plenums of the baghouse.

CERTIFICATE OF COMPLIANCE: A document confirming that at the time of assessment the product or service met the stated requirements.

CERTIFICATION: The authoritative act of documenting compliance with agreed requirements.

CHAIN STITCH: A stitch in which the loops are connected in a chain-like way, as in crocheting. Used primarily in a continuous sew type of operation such as tubing. Can unravel if the chain is broken.

CHAR: A carbonaceous material in dust usually incompletely burned fuel, which has larger particles than the rest of the dust.

CLEAN AIR PLENUM: The baghouse area, through which gases are directed, located on the clean side of the bags above the tubesheet in a pulse-jet baghouse.

COLLECTION EFFICIENCY: A measure of dust collector ability to remove particulate from the inlet gas expressed in percent.

COLLECTION SURFACES: The individual elements, which make up the collecting system and provide the total surface area of the precipitator for the deposition of dust particles.

COLLECTION SURFACE AREA: The total flat projected area of collecting surface exposed to the active electrical field (effective length x effective height x 2 x number of gas passages).

COMBINATION FABRIC: A woven fabric containing both filament and spun yarn of the same or different fibers. The filament yarn is normally used length-wise for strength and spun cross-wise to provide surface area.

COMPLIANCE: An indication or judgement that the product or service meets the agreed requirement of the relevant specification; also the state of meeting the requirements.

COMPRESSION BAND: Stainless steel band sewn into the end of the bag to provide a surface to clamp against in the baghouse.

CONICAL HOPPER: A hopper shaped like an inverted pyramid.

CONICAL SPRING: A spring that is tapered from one end to the other

CONSTRUCTION: Basic design description determines the weave pattern in woven textiles or the composition and manufacturing method in felted media.

CONTROL DAMPER: A device installed in a duct to regulate the gas flow by degree of closure. Examples: butterfly or multi-louver.

CONTROL EQUIPMENT: High voltage power supply control equipment generally consists of electrical components required to protect, monitor and regulate the power supplied to the precipitator high voltage system.

CORD CUFF: A cuff with cord sewn into the top portion of the cuff at the end of the bag. Cord is normally cotton or fiberglass.

CORE YARN: Used in filtration with fiberglass yarn. Spun or texturized yarns are twisted around a filament (core) yarn, adding yarn strength and stability.

CORONIZING: A heat cleaning process for fiberglass fabric to burn off the starches (used in processing) usually at temperatures of 1,000`F. for a short duration.

CORROSION: Chemical attack on metallic surfaces, usually caused by moisture and/or acid dew point excursions.

COUNT OF CLOTH: The number of ends (length-longitudinal yarns) and picks (cross-horizontal yarns) per inch in a woven fabric.

CUFF: A turn back of fabric on itself to form the end of a bag. Normally sewn down to be permanent.

CURRENT DENSITY: The amount of secondary current per unit of ESP collecting surface.

CURING: In finishing fabrics, the process by which resins or plastics are set in or on textile materials, usually by heating.

CUT LINES: Those lines on a pattern along which a cut is made.

CUT-TAPERED BAG: A bag that is cut on a lay table so that one ends is smaller in diameter than the other.

DEGRADATION: The loss of desirable physical properties of a textile material due to some process or physical, chemical or thermal phenomenon.

DENIER: The weight-per-unit-length measure of any linear material. The sizing of yarns used in woven fabrics including scrims are designated by denier.

DEW POINT: The temperature at which condensation begins to form as a gas is cooled.

DIAPHRAGM VALVE: A compressed air valve operated by a pilot solenoid valve used to clean the filters in pulse-jet collectors.

DIFFERENTIAL PRESSURE (Delta P): The change in pressure or the pressure drop across a component or device located within the airstream; the difference between static pressure measured at the inlet and outlet of a component device.

DIMENSIONAL STABILITY: The ability of the fabric to retain finished dimensions under stress at operating conditions. This stability is imparted to a fabric by chemical treatment, mechanical means, construction or blends.

DOOR SEAL: Various types of gaskets used on door or door frames to prevent in-leakage of outside air by creating airtight connections between door and frame.

DUST (OR MIST) CONCENTRATION: The weight of dust or mist contained in a unit of gas; e.g., pounds per thousand pounds of gas, grains per actual cubic foot of gas or grains per standard dry cubic foot (the temperature and pressure of the gas must be specified if given as volume).

DUSTCAKE: Desired dust buildup on fabric to filter incoming gases and keep particulate on fabric surface.

DUST LOADING: The weight of solid particulate suspended in an air (gas) stream, usually expressed in terms of grains per cubic foot, grams per cubic meter or pounds per thousand pounds of gas.

EFFECTIVE CROSS-SECTIONAL AREA: Effective width times effective height.

EFFECTIVE HEIGHT: The total height of collecting surface measured top to bottom.

EFFECTIVE LENGTH: The total length of collecting surface measured direction of gas flow.

EFFECTIVE MIGRATION VELOCITY: This parameter, defined by the Deutsch-Anderson relationship, is related to the average speed with which dust particles in an electrostatic precipitator move towards the collecting electrode. Values are generally stated in terms of ft/min. or cm/sec.

EFFECTIVE WIDTH: Total number of gas passages multiplied by spacing dimension of the collecting surfaces.

ELONGATION: Increase in fiber length or deformation from stretching. Measured as a percentage of original length.

EMISSIONS: Particulate escape through or around baghouse into the atmosphere.

END: An individual warp yarn; runs the length of fabric.

END LOSS: The fabric lost or wasted when laid on the lay table, beyond the start or finish of given pattern.

FABRIC FINISH: Top coating on fabric to assist in the filtering operation.

FABRIC FOLDER: A metal device used to fold moving fabric to a given shape automatically. Also prepositions the fabric.

FAN: A device for moving air and dust through the system. If the fan is on the dusty side of the baghouse pushing the dusty air through the baghouse, it is called a positive system. If the fan is on the clean airside of the baghouse pulling the dusty air into the baghouse, it is called a negative system. (80% of all baghouses are negative systems.)

FELT (NEEDLED): A fabric produced by using barbed needles to interlock carded fibers and, if applicable, a woven base fabric.

FIBER: Type and/or grade of fibers used in media.

FIELD (IN DEPTH): An arrangement of bus sections perpendicular to gas flow energized by one or more high voltage power supplies.

FILL YARN: An individual yarn, which interlaces with the warp yarn at right angles in a woven fabric. Also known as a pick or filling yarn.

FILTER DRAG: The ratio of differential pressure across the filters to velocity through the filters.

FILTER MEDIA: The permeable barrier employed in the filtration process; the fabric on which the filter cake is built.

FINGER LOOP: A loop sewn into the bag to assist in the installation of the bag.

FINISH, FINISHING: Physical (mechanical) or chemical fabric treatment to impart a desired surface property.

FIRE RETARDANT: Fabrics treated with special chemical agents or finished to make them retardant or resistant to burning. Many fabrics achieve this property by using fibers that have this property built directly into the polymer.

FLAT WIDTH: The distance across a bag or slit roll measured perpendicular to long side.

FLYASH: Dust from a furnace. The term distinguishes the ash that flies from that which drops to the bottom.

GAS DISTRIBUTION DEVICES: Internal elements in the transition or ductwork to produce the desired velocity contour at the inlet and outlet face of the precipitator, such as perforated plates (see Gas Distribution).

GAS PASSAGE: Formed by two adjacent rows of collecting surfaces; measured from collecting surface centerline to collecting surface centerline.

GLASS: Woven fabric of the fiberglass family. Normally used in high heat conditions.

GLAZED FINISH: A smooth, shiny surface applied with a hot roller on felted fabrics for the purpose of enhanced dustcake release (eggshell finish).

GRAIN LOADING: The amount of particulate by weight in a given volume of air. (Grains/Cu. Ft.); 1 lb. = 7,000 grains.

GREIGE (GREY, GREIGE, GRAY) GOODS: Cloth, regardless of color, that has been woven in a loom, but has received no dry or wet finishing operations.

GROUND WIRE: The addition of a copper or steel wire mesh in or on the seam to carry away any static buildup on the fabric to prevent possible fires.

HEAT SET FINISH: Heat finishing treatment that will stabilize many man-made fibers so that there will be minimal change in shape or size.

HEAT STABILIZED: A term to describe fiber or yarn heat-treated to reduce the tendency of the fiber to shrink or elongate under load at elevated temperature.

HOOD: The component of a system that captures heated air/gases, smoke and particulate; located at pickup point (see CANOPY).

HOPPER (BAGHOUSE): Dust collector section located below tubesheet and under bags. It is utilized for accumulation of dust dropout from the incoming air stream and from the filter after cleaning.

HOPPER CAPACITY: The total capacity of a hopper measured from a point 10" below the high voltage system or plates, whichever is lower.

IMPACTION: A method of particle collection in which the particle carried by a gas stream collides with a fiber and has enough inertial force so it does not deflect along with the gas stream.

IMPINGEMENT: The physical contact of gas- laden flow against a filter media. Typically referring to an abrasive wear caused by this impact.

INCHES OF WATER: A unit of pressure equal to the pressure exerted by a column of liquid water 1" high at standard conditions (70`F. at sea level); 27.7" of water equals 1 psi; usually expressed as inches water gauge (W.G.) or inches water column (W.C.).

INCLINED MANOMETER: An instrument using a liquid column, set at an incline to increase sensitivity and pressure reading accuracy. It is normally used to measure velocity pressures in a duct.

INSIDE COLLECTION: Particles are collected on the inside surface of the bag (most reverse air and all shaker baghouses).

INSPECTION: The process of measuring, examining and testing to compare a characteristic of an item with specified requirements.

INTERSTICES: The opening between the interfacings of the warp and filling yarns; i.e. the voids in the fabric.

ISO: International Standards Organization. It is the specialized international agency for standards' making; with membership of over 90 countries.

ISOKINETIC SAMPLING: A sampling of the flue gases drawn from the mainstream of the gas into the sampling apparatus with no change of velocity.

LAP FELD SEAM: A joining of fabric, by sewing, in which the fabric is interlocked, with each other.

LAP SEAM: A joining of fabric, by sewing, in which the fabric edges are laid flat on top of each other with no turn under.

LOCKSTITCH: A sewing machine stitch in which two threads are interlocked so that if a given thread should break, the thread cannot unravel. Always use a bobbin to supply the bottom thread.

LOOP: A double back of fabric to form a hole through which a finger or hanger can be placed.

LOOPER THREAD: Term used in chain stitch applications to describe that thread which is fed into the sewing process by the looper. This is the bottom thread in the sewing process.

LOT: Unit of production or group of other units or packages taken for sampling or statistical examination.

LUBRICANT: An oil, emulsion, or the like, applied to fibers to prevent damage during textile processing, or to knitting yarns to make them more pliable.

MAGNEHELIC GAUGE: An instrument used to measure the differential pressure drop in a baghouse.

MANOMETER: A U-shaped tube filled with the specific liquid. The difference in height between the liquid in each leg of the tube gives directly the difference in pressure on each leg of the tube. Used to monitor differential pressure.

MANUAL POWER SUPPLY CONTROL: The manual regulation of high voltage power based on precipitator operating conditions observed by plant operators.

MARKERS: Those marks on a pattern to denote a specific item such as a ring cover or cuff turn back line.

MAXIMUM OPERATING TEMPERATURE: Continuous operating temperature at which fabric will perform without deteriorating prematurely.

MICRON: A unit of length, 1/1000 of one millimeter (1/24,000 of an inch) used as a measurement of the largest diameter of a particle; 74 microns are equal to a 200 mesh opening.

MIGRATION VELOCITY: A parameter in the Deutsch-Anderson equation used to determine the required size of an electrostatic precipitator to meet specified design conditions. Values are generally stated in terms of ft/min. or cm/sec. (see Effective Migration Velocity).

MONOFILAMENT: A single filament made from man-made fibers such as acetate, rayon, nylon, polyester, acrylic, etc.

MULLEN BURST TEST: A measurement of force needed to burst a given area of paper or cloth under fluid flow conditions, expressed as the pressure per square inch that will burst a 2" diameter test specimen.

MULTIFILAMENT: A yarn consisting of many continuous filaments or strands; opposite of monofilament, or single strand.

NEEDLE THREAD: Term used to describe that thread which is fed into the sewing process by the needle.

NEGATIVE PRESSURE BAGHOUSE: A system where the fan is located after the baghouse on the clean airside, pulling air through the system.

NOMEX: Felt fiber used primarily in a high heat environment. Can be singed.

NULL: The period during the cleaning sequence in which neither cleaning nor on-line filtering is occurring causing a static environment to allow dust to drop into hopper or discharge area.

OEM: Original Equipment Manufacturer.

OPACITY: The visual density of stack emissions.

OPEN SEAM: A missed seam; a gap in the seam caused by a run off or skipped stitch.

OUTSIDE COLLECTOR: Particles collected on the outside of the filter. (Pulse-jet/plenum pulse baghouses and some reverse air).

OVERLAP: In a lap seam, putting too much fabric in the top or bottom causing a large distance between the last row of stitches and the edge of the fabric.

OVERLOCK: Term used to describe a surge type seam. A wrapping of thread around the ends of two pieces of fabric in which both ends of fabric are facing in the same direction.

PARTICULATE: Any solid or liquid material in the atmosphere.

PART NUMBER: A number used to describe a unique item. Each bag, cage and accessory item has its own part number.

PATTERN: The total layout of a given bag. Shows all marks and cut lines.

PERMEABILITY: A measure of fabric porosity or openness, expressed in cubic feet of air per minute per square foot of fabric at a 0.5" w.c. Pressure differential.

PH: A value of indicating the acidity or alkalinity of a material. A pH of 7.0 is neutral, less than 7.0 is acidic, and more than 7.0 is basic.

PHOTOHELIC GAUGE: An instrument used to measure differential pressure and control it with adjustable set points for the desired operational differential pressure.

PICK: A single filling thread carried by one trip of the filling yarn insertion device (shuttle) across a loom. The picks interlace with the warp ends to form a woven fabric.

PINCH: The amount of looseness of a bag on a cage. Measured by the amount of fabric that can be grasped between the thumb and forefinger; both up and down directions of the fabric are measured.

PITOT TUBE: Device consisting of two tubes used to measure velocity pressure. One tube measures total air stream pressure, the other measures static pressure. When both tubes are connected across a differential pressure-measuring device, static pressure is compensated and velocity pressure only is measured.

PLIED YARN: A yarn formed by twisting together two or more single yarns in one operation.

PLEATING: The overlapping of a gathered fabric in a wave-like action and screw down. Caused by fabric stretch or trying to place a larger piece of fabric over a smaller one.

POLYESTER: Any of several polymeric resins formed chiefly by condensing polyhydric alcohol's with dibasic acids. Fibers formed are woven.

POLYPROPYLENE: Polymerized polypropylene thermoplastic resin used primarily as a coating.

POROSITY: The percent of open areas per unit volume of fabric.

POPPET VALVE: A valve utilized to isolate compartments and/or allow for reverse airflow through individual compartments. Typically constructed of a flat wafer plate assembled on the end of the shaft of an air cylinder, which drives the wafer (poppet) into position.

POSITIVE PRESSURE BAGHOUSE: A system with a fan located prior to the baghouse on the dirty side, pushing air through the system.

PRECOAT: Material added to the air stream on initial process start-up to aid in establishing an initial dustcake on the filter bags.

PRESSURE DROP: A measure of the resistance the gas stream encounters as it flows through the baghouse. May refer to pressure differential across the cloth, across the baghouse, or the pressure drop across the entire system.

PREVENTION COSTS: The costs of any action taken to investigate, prevent or reduce defects and failures in the future. These costs can include planning, training and setting up a system.

PROCESS: Any operation in a business.

PROCESS CAPABILITY: The limits of inherent variability within which a process operates as governed by the prevailing circumstances.

PROCESS COLLECTOR: A collector of manufacturing or processing equipment to capture product typically lost as emissions.

PSI: Pounds per Square Inch; a unit of pressure; 1 psi equals 27.7" water gauge or 2.04" mercury (Hg).

PULSE CYCLE: On a pulse-jet baghouse, the interval of time between one pulsing of a row of bags and the next pulsing of the same row.

PULSE DURATION (ON TIME): The length of time a pulse lasts, generally described as the length of time the electrical signal holds the solenoid pilot valve open. However, due to mechanical losses, the time the diaphragm is open will vary.

PULSE INTERVAL (OFF-TIME): Elapsed time between pulses in a pulse-jet collector.

PULSE-JET BAGHOUSE: A baghouse using short intermittent bursts (pulses) of compressed air to clean dust/particulate from filter bags that are supported by cages. The particulate is collected on the outside of the filter bags.

PYRAMID HOPPER: A hopper shaped like an inverted pyramid.

RADIATION COOLING: A method of reducing exhaust gas stream temperature which involves the use of long uninsulated ducts that allow the gas stream to cool as heat radiates from the duct walls.

RAVEL: When thread becomes separated into parts, to unweave; to pop back.

RE-ENTRAINMENT: The phenomenon whereby dust is collected from the air stream and is then returned to the air stream. It occurs when dust is cleaned from the bag and then caught again by an upward moving air stream, which redeposits it on a bag.

REGISTRATION: The formality in acknowledgement by a certification body accredited by the NACCB that an organization has been assessed and shown to comply with BS 5750/ISO 9000 at the time of assessment.

RESISTANCE: In airflow, caused by friction of the air against any surface or by changing the momentum of gas.

RESISTIVITY: The electrical resistance that a meter cube of a substance (usually of packed dust) has when measured between opposite faces of the cube. The units are ohmmeters (or ohm-centimeters; a resistivity of 1 cm is equivalent to a resistivity of 100).

REVERSE AIR BAGHOUSE: A collector where cleaning is accomplished by stopping the dirty gas flowing into a compartment and backwashing the compartment with a low- pressure airflow. Particulate is usually collected on the inside of filter bags and removed by allowing bag collapse.

RING COVER: A fabric cover used to overlap an anti-collapse ring to prevent the ring from wearing on the bag or adjacent bags.

RING MARKS: Those marks on a pattern or bag where a ring is to be sewn on.

ROTARY AIRLOCK VALVE: An air-sealed star wheel with material buckets designed to provide an airtight seal between the inlet and discharge sides of the valve.

ROTATING VANE ANEMOMETER: A windmill-like device, small enough to be held in the hand for measuring air speed.

RUNOFF: Failure to cut or sew along a given line. To wander from the seam or fabric edge.

S-RING COVER: A method of sewing the ring cover onto a bag in which the ring is in the top of the "T" and the two ends of the ring cover are sewn flat together against the bag.

SAFETY GROUND DEVICE: A device for physically grounding the high voltage system prior to personnel entering the precipitator. The most common type consists of a conductor, one end of which is grounded to the case, the other end attached to the high voltage system using an insulated operating lever.

SATIN WEAVE (SATEEN): The weave produces a fabric with a characteristically smooth surface by employing a greater number of yarns in the set of threads that form the face of the fabric surface.

SCFM: Standard Cubic Feet per Minute. The volume of gas flow per minute at standard temperature and pressure conditions (70`F. at sea level).

SCREW CONVEYOR: A revolving screw operating in a fixed trough for conveying material through the system from one point to another.

SCOURING: Process of removing the starches and lubricants applied to fabric to protect it during weaving. Fabrics that have been scoured are generally softer and better withstand cleaning action.

SCRIM: An open mesh, plain-weave cloth used as the base in some felted fabrics.

SCRIM SPLICE: Occurs in felt type material when the base fabric is joined at the mill. Normally hard to see if done properly.

SCRUBBER: Any device in which a contaminant, solid or gaseous, is removed from a gas stream by impacting it with liquid droplets. (Types include spray towers, packed towers, cyclone scrubbers, jet scrubbers, venturi scrubbers and impingement scrubbers.)

SEQUENTIAL CONTROLLER: An Enclosure that contains the primary timer board used for activating the baghouse cleaning system at a preset timed sequence. Many also contain a gauge to display differential pressure.

SHAKER BAGHOUSE: A baghouse where cleaning is accomplished by manually or automatically shaking the bags. The particulate is collected on the inside of the bags.

SILICONE FINISH: A treatment of filter bags to help provide a slick finish for improved dustcake release.

SINE WAVE: A wave form consisting of a positive and negative half cycle, each one lasting 8.33 milliseconds. Based on U.S. power generation at a 60-hertz cycle.

SINGING (SINGED FINISH): The process of burning off fibers protruding from fabric surface by passing it over a flame or heated copper plates. Singing gives the fabric a smoother surface, which aids in dustcake release, particularly in applications where moisture is a problem.

SKIPPED STITCHES: A missed stitch; i.e., the needle and looper or bobbin thread are not interconnected, causing the thread to simply lay on the surface of the fabric. Caused by tension, worn or cracked looper, and malfunctioning bobbin case, worn or dull needles. Could also be machine timing.

SLIDE GATE: A material discharge device consisting of a plate held in place by a flanged frame and sealed with gaskets. When the hopper above the slide gate needs to be emptied, the plate is slid open and the material discharges. Used for intermittent dumping where dust loads are light. Also used interchangeably with "blast gate," a similar device used as a damper to regulate airflow in a duct.

SLIP: The proportion of dust escaping from the precipitator outlet. Slip may be expressed as a decimal fraction, or a percentage. It is usually estimated by dividing the outlet dust burden by the inlet dust burden.

SLIT WIDTH: The flat width of a given fabric prior to tubing.

SLITTER: Mechanical machine equipped with knives, which are used to cut down larger rolls to a smaller size.

SNAPBAND: A stainless steel band with a gasket attached sewn into a cuff or extended cuff to provide a positive seal between the baghouse sections.

SNEAKAGE: The process in which dust-laden gas passes between the precipitator casing and the electrode system, either over the top or around the edges. Each percent of gas sneakage reduces the attainable precipitator collecting efficiency by almost 1%.

SOLENOID VALVE: Often times referred to as a "pilot valve," it is an electromechanical plunger energized to either a "normally closed" or "normally open" position to allow for relief of air pressure. The solenoid valve is normally used to activate a compressed air device.

SPARK: A short, self-extinguishing discharge from the high voltage system to the grounded system. Sparks effectively cause the gas stream to act as a conductor.

SPECIFIC COLLECTING AREA (SCA): A figure obtained by dividing total effective collecting surface of the precipitator by gas volume expressed in thousands of actual cubic feet per minute.

SPRAY TOWER COOLER: A tower or cylinder into which a hot gas stream enters and water is sprayed. As the water evaporates, the gas stream is cooled to the desired exit temperature.

SPECIFICATION: The document that describes in detail the requirements with which a product or service has to comply.

SPLICES: Mechanical union of fabric roll ends, most often made by a sewing machine.

SPUN YARN: A yarn consisting of fibers of a regular or irregular staple length usually bound together by twisting, providing more surface area for particulate capture.

STITCHES PER INCH: The term describes the number of stitches in a seam in a given inch. Should not be measured on machine start-up or rundown; machine should be running at full speed.

T-RING COVER: A method of sewing the ring cover onto a bag in which the ring is in the top of the "T" and the two ends of the ring cover are sewn flat together against the bag.

TAKE-UP (SEAM): The amount of fabric gathered in a seam over a given length of seam. Normally expressed as a percentage. Over a longer bag this take-up can cause bowing of the bag.

TAPERED BAG: A filter bag in which one end is smaller than the other. Done by folding the end of the bag or actually cuffing one end smaller, like a cone.

TEMPLATE: A semi-permanent pattern, which is drawn around or marked through. Normally small parts are cut with the template.

TENSILE STRENGTH: The force required to pull apart the fabric; this is designated by the measure of resistance to a testing machine (in pounds) that a fabric provides before the material breaks. The test strip width depends on the type of fabric.

TEXTURIZED (BULKED) YARN: Filament glass yarn that has been processed by high-pressure air passing through the yarn to open up the yarn bundle, providing more surface area.

THERMAL STABILITY: Refers to the maximum amount of shrinkage or elongation that could be experienced when a fabric is exposed to operating temperatures on the upper edge of its temperature range.

THREAD ROLLBACK: Thread rollback or popback is when a chain stitch is cut it will pull back several stitches before it is caught. This occurs primarily when thread tension is high and the thread is stretched.

THREAD TENSION: The amount of tension used to retard the flow of thread through a set of discs to give an even stitch so that the stitch is not too tight or too loose.

TIMER: Relative to the baghouse, the time is the electrical mechanism that activates the cleaning cycle; often referred to as the timer panel or the controller can be a modern style printed circuit board, a PLC or an old style cam timer.

TRICKLE VALVE: A device for continuous removal of collected dust where the hopper is under negative pressure. The valve's hinged flap gate is kept closed by a counterweight until collected material builds up sufficient weight to overcome the counterweight.

TUBER: A sewing machine equipped to sew fabric into a tube. Done from rolls or pieces. Most often a chain stitch machine.

TUBESHEET (CELL PLATE): The steel plate to which the open ends of bags and cages are connected; separates the clean air and dirty air sections of the baghouse.

TURN BACK (CUFF): Distance measured on tube to allow a cuff to be formed from the tube itself.

TURNING VANES: A gas distribution device in which vanes in ductwork or transition guide the gas and dust flow to minimize pressure drop and control the velocity and dust concentration contours.

TWILL WEAVE: Warp yarns floating over or under at least two consecutive picks from lower left to upper right, with the points of intersection moving one yarn outward and upward or downward on succeeding picks, causing diagonal lines in the cloth. It is one of the three basic weaves, the others being plain and satin (see SATIN). Twills are the predominant weave patterns used in filtration because of the surface area it offers.

UPPER WEATHER ENCLOSURE: A non-gas-tight enclosure on the roof of the precipitator to shelter equipment (T/R sets, rappers, purge air fans, etc.) and maintenance personnel.

U-TUBE COOLER: A system where the gas stream is cooled by drawing air through a series of tubes.

U-TUBE MANOMETER: See MANOMETER.

VENTURI: A cone-shaped device located at the top of each filter in pulse-jet dust collectors which creates a negative pressure at the top of the venturi to help pull additional volume of air down into the filter element during pulsing.

VOLTAGE: The average DC voltage between the high voltage system and grounded side of the precipitator.

WARP: The yarns that run vertically or lengthwise in woven goods.

WATER GAUGE: See INCHES OF WATER.

WEAR STRIP: Strip of fabric sewn onto the bag to allow for abrasion by another bag or a part of baghouse.

WEAVING: The process of forming a fabric on a loom by interlacing the warp (length-wise yarns) and the filling (cross-wise yarns) with each other.

WEIGHT: Normally indicated as the average weight per square yard of fabric. There is always a manufacturing tolerance on either side of this average weight which may range from 3% to 8% depending on the product. Example: A 16 oz. polyester felt has a weight tolerance of + 1 oz.

WET PROCESS DUST COLLECTOR: A dust collection system that sprays a water mist into the particulate-laden gas stream. The moisture increases particle weight and causes particulate agglomeration, allowing the dust to drop out and clean the air.

WOVEN: A fabric made on a loom by interlacing threads or yarns. Most often smooth and uniform in feel and appearance.

YARN CONSTRUCTION: Indicates the number of single yarns and the number of strands combined to form a plied yarn.

YARN SIZE (DENIER OR COUNT): A relative measure of fineness or coarseness of yarn. The smaller the number in sewn yarns, the coarser the yarn. The higher the denier of a filament yarns, the coarser (heavier) the yarn.