



Ceramic Textiles & Composites

Advanced Textiles for FB-900 and FB-700 High Temperature Filter Bags

3M has developed a line of advanced textiles for manufacturing high temperature filter bags which can be used at temperatures up to 700°F (371°C), or for those even higher temperature applications up to 900°F (482°C). These advanced fabrics have proven successful in hot gas filtration bag houses. (Typical properties of the textiles are provided on back.)

FB-700 Filter Bag Fabric

There are two variations of the textile suited for 700°F temperatures; depending upon the bag house specifications, either reverse air, or pulse jet. Each performs equally well in the rigorous environment of hot gas particulate filtration.

- For REVERSE AIR FILTRATION, the 3M™ FG7-14, a 14 oz. filter bag fabric, is recommended for use at temperatures up to 700°F (371°C).
- For PULSE JET FILTRATION, the 3M™ FG7-22, a 22 oz. filter bag fabric, is recommended for use at temperatures up to 700°F (371°C).

FB-900 Filter Bag Fabric

- The CG-22 Filter Bag Fabric is designed for pulse jet bag house applications at temperatures up to 900°F (482°C). The high temperature fibers and specialty coating used to produce the CG-22 allow for short term excursion temperatures up to 1050°F.

The filter bag fabrics are comprised of a woven glass textile that has been coated to give excellent filtration

properties in high temperature filtration. The inorganic coating is a proprietary 3M innovation that enhances the dynamic mechanical properties of the fiber. This gives the filter bags improved high temperature performance.

Each of these textiles can be sewn into a variety of lengths, using 3M™ GT-15 Sewing Thread. A typical application in a pulse jet or reverse air bag house would allow the filter to be mounted using standard industry methods. New high wire count cages and close attention to the bag-to-cage fit will enhance the life of the products. The recovery of valu-

able product or removal of unwanted dust can be achieved with a filter bag made from any of these advanced textiles.

While the filter bags produced from these textiles look and behave like typical filterbags, they can withstand higher temperatures. This reduces failures due to thermal excursions and minimizes the need to cool the gas, which lowers operating costs. For new bag house construction, higher temperature filtration offers the opportunity to reduce the size of the gas clean-up facility and the opportunity to use hot gas emission reducing technologies.



Features:

- Efficient particulate filtration
- High temperature capability
- Resistance to thermal excursions
- Abrasion resistance
- Retrofit existing baghouses

Applications:

- Cement
- Incineration
- Chemical processing
- Petrochemical
- Product collection
- Coal-fired boilers



FB-700 Filter Bag Fabric Typical Properties (FG7-14/FG7-22)

Fabric Style	FG7-14	FG7-22
Basis weight	14oz/yd ² (475 g/m ²)	22oz/yd ² (746 g/m ²)
Weave pattern	1/3 Twill	1/3 Twill
Temperature resistance	700°F (371°F) continuous operation 800°F (427°C) short excursions	
Tensile strength (warp)	>120 lb/in (21, 4 kg/cm)	>200 lb/in (35, 7 kg/cm)
Mullen Burst	>500 lbs/in ² (35, 1 kg/cm ²)	>900 lbs/in ² (63, 2 kg/cm ²)
Permeability	40-65 ft ³ /ft ² ·min @ 0.5 m H ₂ O (122-198 l/dm ² ·min @ 12,7 mm H ₂ O	20-40 ft ³ /ft ² ·min @ 0.5 m H ₂ O (61-122 l/dm ² ·min @ 12,7 mm H ₂ O

FB-900 Filter Bag Fabric Typical Properties (CG-22)

Basis weight	22oz/yd ² (746 g/m ²)
Weave pattern	1/3 Twill
Temperature resistance	900°F (482°F) continuous operation 1050°F (565°C) short excursions
Tensile strength (warp)	>250 lb/in (44, 6 kg/cm)
Mullen burst	>1100 lbs/in ² (77 kg/cm ²)
Permeability	20-45 ft ³ /ft ² ·min @ 0.5 m H ₂ O (61-137 l/dm ² ·min @ 12,7 mm H ₂ O

Typical Performance of CG-22/FB-900

Data based on filtering soil remediation ash with a number median diameter of 0.65 microns.

Inlet dust concentration	20 grains/acf (46 g/Am ³)
Filtration velocity (A/C Ratio)	4 ft/min (2 cm/sec)
Collection efficiency	>99.9%
Operating pressure drop	4-6 in H ₂ O (10-15 mbar)

GT-15 Sewing Thread Typical Properties

Style	Diameter	Approximate Yield	Coated Strength		Heat Exposed Strength @ 900°F (482°C)	
			Breaking	Knot	Breaking	Knot
	inch (mm)	yd/lb m/kg	lb (kg)	lbs (kg)	lbs (kg)	lbs (kg)
GT-15	.017 (0,43)	2100 (4230)	33 (15,0)	12 (5,5)	9 (4,1)	4.5 (2,0)



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