Mikrotex® PTFE Membrane Information

Membrane Information:

Mikrotex® expanded PTFE Membrane permits more air to pass through the filter media while trapping all the particulate on the surface. The use of PTFE Membrane filter media for baghouse filtration represents the highest technological development available today in the filter media finish marketplace.

The PTFE membrane can be thought of as a factory installed primary dust cake manufactured in a tightly controlled environment. When installed into the baghouse, the system is immediately operating at high efficiency levels even at the sub-micron level. As the PTFE membrane is acting as the primary dust cake, it is supplied with a permeability averaging 8-12 CFM. That is much lower than a new bag made from a conventional woven, knitted, or felted media with a clean CFM of 20-50 CFM for knitted material, 25-45 CFM for woven material, and 25-50 for felted material. However, this conventional media has no primary dust cake at this point and will see its permeability reduced sharply when placed into operation, and the particulate becomes lodged into the depth of the pore structure of the media. It is at this point only that a comparison can be made between the throughput of the membrane surface and the dust cake of conventional media.

As the particulate is also collected on a surface that is both hydrophobic and smooth, the cake release of **Mikrotex PTFE Membrane** products is far superior to the conventional medias.

Why use Mikrotex PTFE Membrane for filtration?

There are a number of benefits provided to the end user when they choose to use **Mikrotex PTFE Membrane** on a substrate fabric. Recognized as the BACT (best available control technology), membrane filter media meets and exceeds all of the current federal and state particulate emission regulations, and offers the following:

Superior Emission Control - Reduction in regulatory fines and the ability to meet more stringent emission codes.
Low Operating Pressure Drops - Initial filter bag drag or pressure drop in membrane filters starts off low and maintains this level better than conventional media which tends to build dust cake and pressure drop accordingly. Increased pressure drop can be equated with wasted energy to operate the baghouse.
Higher Air Flows - This goes hand in hand with low pressure drops. In existing baghouses, substitution of **Mikrotex PTFE Membrane** filter media has resulted in higher air flow capability. Alternately, new designs incorporating **Mikrotex PTFE Membrane** often select higher air-to-cloth ratio designs using fewer filter bags.
Improved Service Life of Filter Media - The non-stick PTFE surface promotes dust cake release, thereby reducing energy needed to keep the filter bags clean. Less wear and tear on filter bags and equipment means longer service life.
Ability to Recover From Upset Conditions - In plant situations it is very likely that media will be subjected to thermal, chemical, and moisture upsets. These upsets present NO MAJOR PROBLEMS to the PTFE membrane since PTFE resists attack by these agents and are ready to recover permeability once they are placed back on-line.
Cost-Effective Filter Media Selection - While the initial cost of PTFE membrane filter media may be higher than conventional filter media, the many benefits listed previously provide a strong argument favoring **Mikrotex PTFE Membrane** as the most cost effective when measured over the useful life of the product. As emissions regulations become even more stringent, these same arguments will favor PTFE membrane media even more clearly.

Retofitting and New Baghouse Installations

The PTFE membrane market in filtration started out by retrofitting existing baghouses. Typically, these baghouses were plagued by upset conditions; actual conditions within the baghouse that did not match the designed conditions, and maintenance costs that were extremely high. Often conventional medias were simply unable to meet the demands placed on them by the ever-changing baghouse environment. With the introduction of the PTFE membrane, baghouses were able to overcome many of these obstacles.

Mikrotex PTFE Membrane allowed baghouse designers the potential for reducing capital and operational costs, the ability to design the baghouse for higher airflows, and provided a degree of protection from the "unknown" changes that occur in baghouse operations. This made PTFE membrane, in many instances, the best economic choice for filter media.

How is Mikrotex PTFE Membrane Manufactured?

PTFE resin is the basic raw material of **Mikrotex PTFE Membrane**. PTFE, or polytetraflouroethylene, exhibits the best high/low temperature resistance, best acid/alkali chemistry resistance, and electrical and functional properties of any known thermoplastic. It is the perfect raw material selection to withstand the rigors of the pollution control marketplace.

Because PTFE does not flow when taken through the melt point, the resin is processed in a manner similar to powdered metals or ceramic powders. The resin in mixed with a lubricant, compressed into a preform and cold extruded through a sheet die to form a continuous roll. This extruded roll is then stretched in both the machine and transverse directions, taken through its crystalline melt point, sintered and wound into a finished roll. This is the most critical area of manufacture as thickness of the sheet, amount of stretch and temperature are varied according to the required end-use of the membrane.

Once the substrate fabric is selected, the membrane and substrate are bonded together by feeding them jointly through a series of calender rolls. A combination of temperature and pressure combine to achieve the proper bond, all without the use of adhesives.

Mikrotex® PTFE Membrane

- Expanded PTFE-Polytetrafluoroethylene
- Extremely thin and microporous
- Chemically inert
- Superior performance to any other product
- Lower operating costs because of higher throughput and lower operating differential pressure
- Lower maintenance costs because of less frequent filter bag change-out and disposal
- Less expensive than other PTFE membranes
- Reduced emissions
- Surface filtration
- Superior dust cake release
- Higher air-to-cloth ratio
- Longer filter life
- Recovery from upset conditions
- Temperature resistant to 550°F
- Moisture resistant
- Expanded PTFE fibrils restrict particle passage and allow more air flow
- Expansion of PTFE is more uniform than other finishes