

## ELECTROSPINNED NANONPOROUS PTFE FILM BASED FILTER MEDIA FOR DUST COLLECTOR BAGS IN HIGH TEMPERATURE AND CORROSIVE ENVIRONMENT

**Harishchandra A Sonawane, Naman H Barot, Charudatta R Prayag and T Gangopodhyay**

Ahmedabad Textile Industry's Research Association (ATIRA), India

**P**olytetrafluoroethylene (PTFE) membrane coated glass fabric is available as robust filter media for high temperature dust filtration. Since it is a membrane coated media, only pores left out contributes to the filtration. PTFE membrane can withstand temperatures up to 500 °F (260 °C). The process of creation of PTFE based nanofiber nanoweb using free-surface electrospinning technology on twill weave glass fabric as well as its stabilization by heat treatment has been developed with an objective of providing an effective high temperature resistant fine dust filter media which can be used with less energy consumption during operation because of high porosity. The developed nanofiber coated glass fabric retains air permeability to the extent of 50-70% and remains stable at 260 °C. The prototype of dust collector bags were fabricated and subjected to filtration, mechanical and industrial trial. Filtration efficiency study clearly shows the improvement in filtration efficiency by 90% with respect to neat fabric and 30% more as compared to marketed product. The mechanical study reveals that the coated media has better strength as compared to non-coated or bare glass fabrics. The industrial study shows that the commercial product has filtration efficiency about 65-70% while the nanonporous PTFE coated media has efficiency of 85.3 %.

harish.sonawane@hotmail.com  
harish.sonawane00@gmail.com