
TORAY High Performance Fibers for Low Sulfur Coal Applications

Chet Moon

TORAY FLUOROFIBERS (AMERICA), Inc.

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Toray offers a Broad Portfolio of Fibers

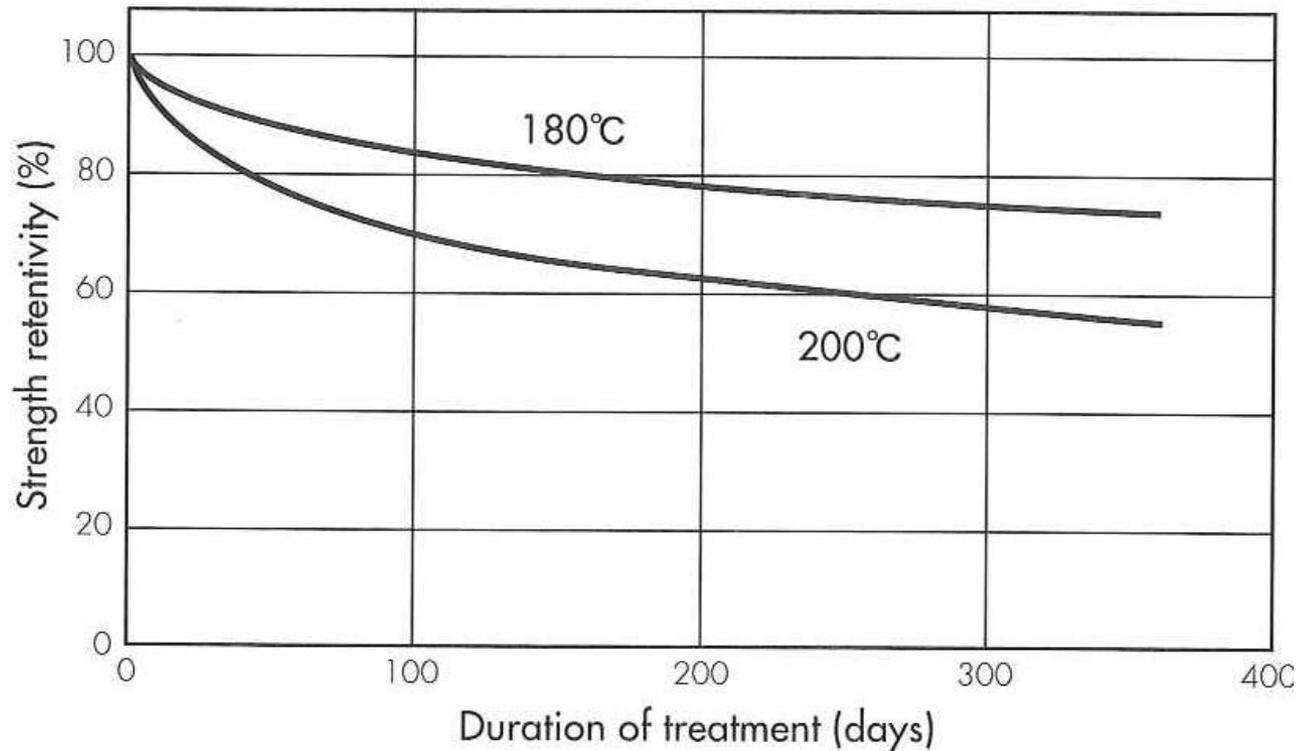
- TORCON[®] PPS
 - TEFAIRE[®] A proprietary blend of TEFLON[®] and glass fibers
 - TEFLON[®] PTFE Fibers
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TORCON[®] PPS

- PPS fibers offer:
 - Excellent Chemical Resistance for Acids, Alkalis and many Organic solvents
 - Good Temperature Resistance; 175⁰ C continuous use
 - Excellent Filtration Performance
 - Demonstrated performance at numerous installations internationally
 - Bag life of 2.5 to 4 years or more in most applications
 - **Special items:**
 - **High Tenacity Fibers**
 - **Micro Fibers**
 - However, they are subject to attack by Oxidizers like nitric acid, chromic acid
 - Optimum temperature range is 145 – 160⁰ C. Use at temperatures above 175⁰ C will shorten bag life.
 - Short temperature excursions of up to 200⁰ C can occur without loss of properties or strength
 - Very good acid resistance with 3 to 5% sulfur coal. However, 8 to 10% sulfur coal can result in loss of fiber properties.
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TORCON[®] PPS Offers Exceptional Heat Resistance

Long heat resistance of TORCON[®] fiber



Advantages of Torcon® S-371 PPS Fiber

- Staple fiber: tenacity 16% higher, 43% less elongation
 - Spun yarn: tenacity 16% higher, 20% less elongation
 - Scrim: warp strength 12% higher, weft 14% higher
 - Can make higher strength scrim with same weight of fiber
 - Yarn processing consistent to regular TORCON®S301
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TEFAIRE®

- This proprietary blend of TEFLON® and glass fibers provides:
 - 260⁰ C Continuous use Temperature capability with surges up to 288⁰ C
 - The Blend Produces a Strong Triboelectric effect which enhances Surface Filtration; thus reducing dust penetration
 - The Felt Offers Better Release
 - High Air to Cloth Ratio versus 100% PTFE felts
 - Excellent Chemical Resistance
 - The only Chemical Concern is Fluorine Emissions of 100 ppm or more with Moisture in the Gas Stream Reacting to form HF
 - This Material is Used Extensively in Incineration Plants
 - Demonstrated bag life of 5 years – up to 10 years possible
 - Demonstrated performance in Coal Fired Boilers (fly ash)
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Tefaire® Felt



- Consists of 70/30 blend of 3.5 dpf Teflon® and Micro denier glass
- 18 oz. basis weight
- Supported with PTFE scrim
- Continuous use temperature of 260°C
- Great Chemical Resistance
- 99.99% PM 2.5 efficiency
- Low Pressure drop (1.40 in. w.g.)
- Air permeability approx. 35 cfm
- Long Life in the most challenging processes
- No Hydrolysis Issues
- Great spark resistance

TORAY
Innovation by Chemistry

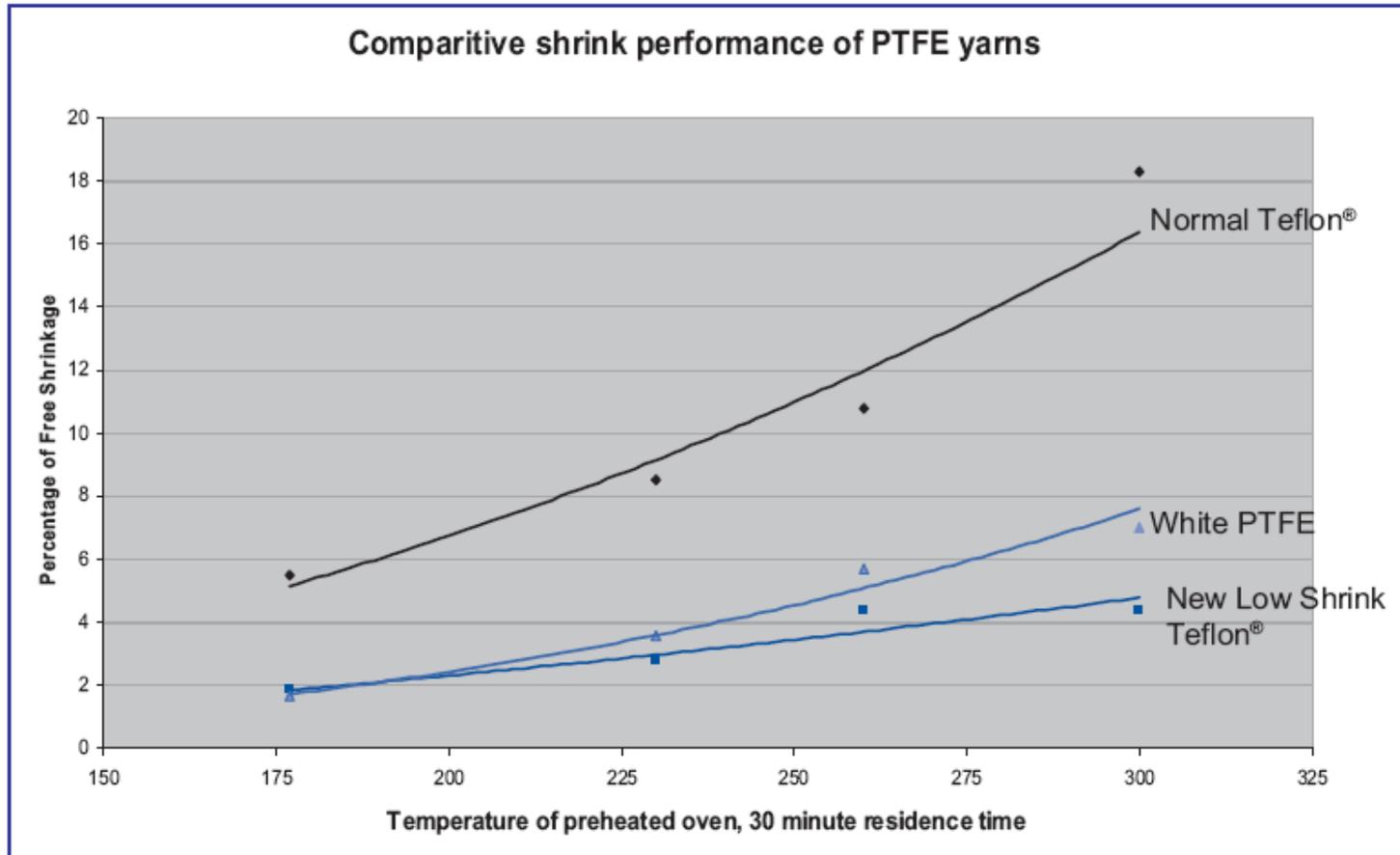
Toray Fluorofibers (America) Inc.
2032 Highway 20 • Decatur, AL 35601
www.torayfluorofibers.com



TEFLON® Brand Fibers

- TEFLON® Brand Fibers offer:
 - 260⁰ C Continuous use Temperature capability with surges up to 288⁰ C
 - Will work in the most chemically aggressive environments – no man made fiber is better
 - New developments are improving filtration performance:
 - Micro Fibers
 - Modified Cross-sections
 - More Thermally Stable fibers for better dimensional stability in use
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Low Shrink TEFLON® PTFE Fiber



100% Teflon® Felt



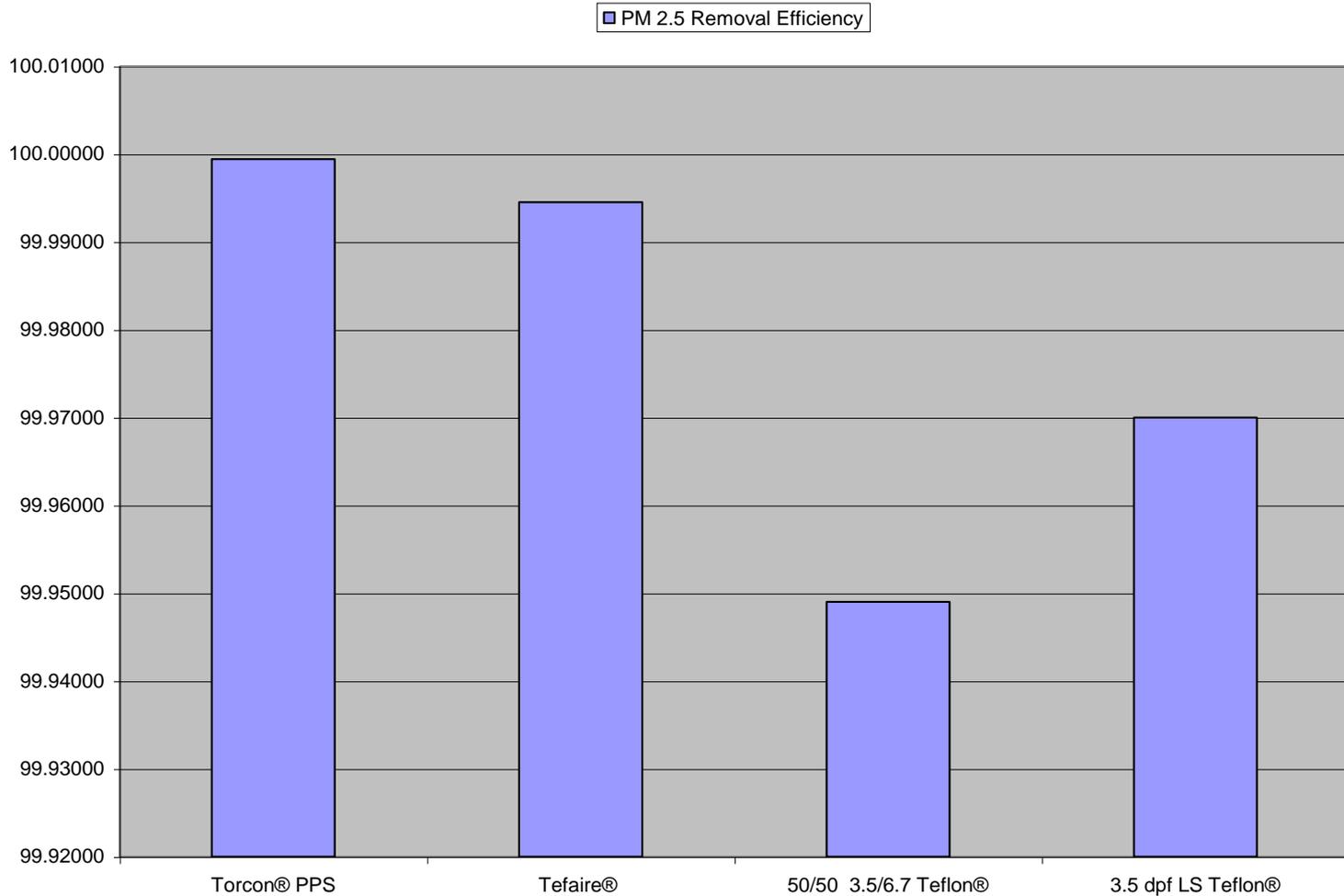
- Consists of 50/50 blend of 6.7 and 3.5 dpf
- Available in 6.7, 3.5, or 1.75 dpf
- 20 oz. basis weight
- Supported with PTFE scrim
- Continuous use temperature of 260°C
- Complete Chemical resistance
- 99.9% PM 2.5 efficiency
- Low Pressure drop (1.27 in. w.g.)
- Air permeability approx. 35 cfm
- Long life in the most challenging processes
- No Hydrolysis issues
- Great spark resistance

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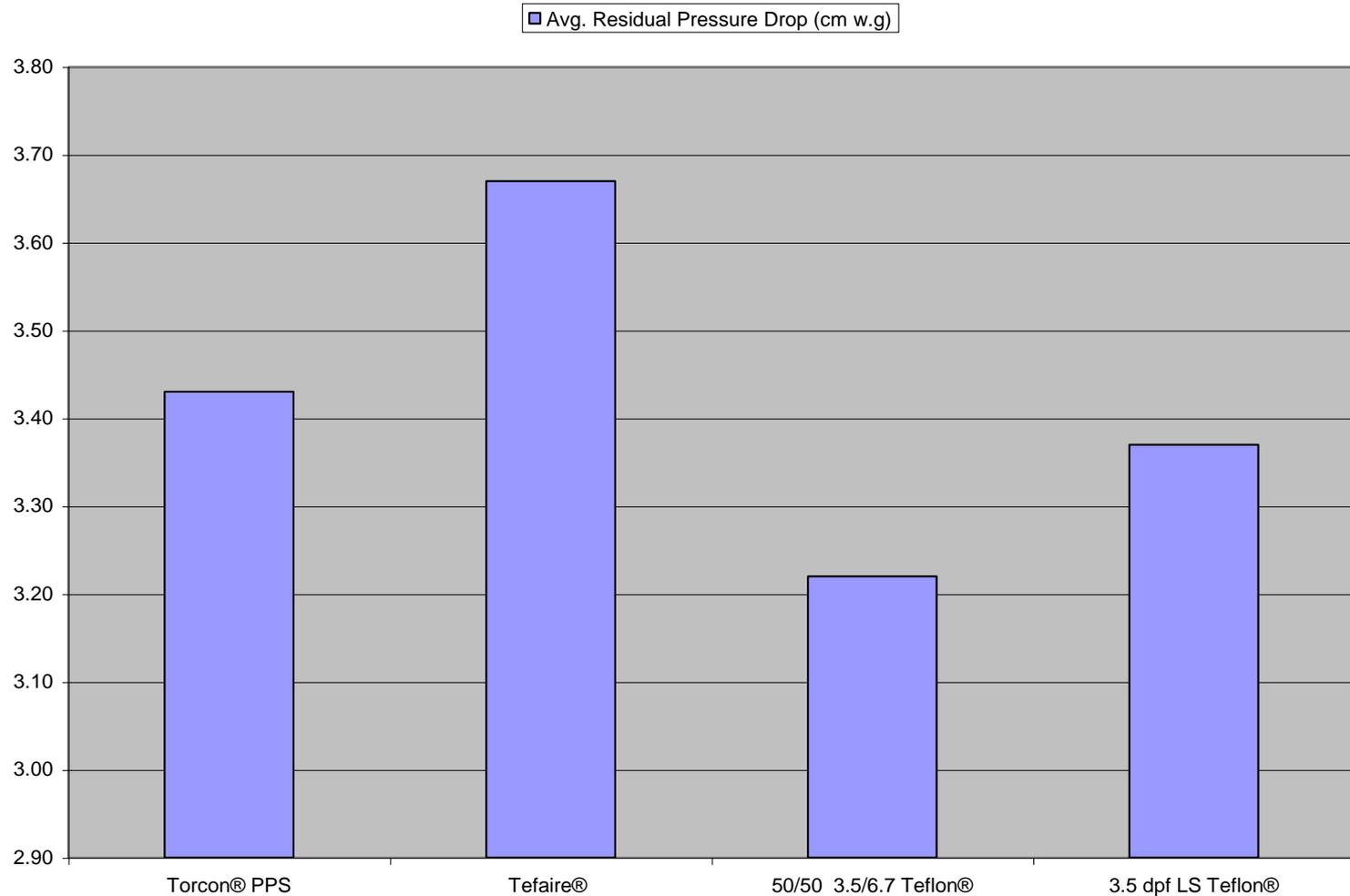
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VDI Testing for Various Felts



VDI Testing Data for Various Felts



Summary

- Currently, Toray PPS TORCON[®] is the most suitable fiber to meet most of the needs of Coal Fired Boiler Filtration Needs
 - However, new environmental requirements such as PM 2.5 and Mercury Removal may require new solutions
 - Toray is considering these problems and is offering possible solutions with TORCON[®], TEFAIRE[®] and TEFLON[®] Brand Fibers.
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