

Appendix A

SEM and ESEM/EDS Data for Test #3 Day-4 Fiberglass in Low-Flow Zone

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During ICET Test #3, work was continued for the purpose of identifying the origin and chemical composition of the products that were formed during the test. One objective of ICET tests was to identify the composition of the debris on the fiberglass and of the particulate substances in the test solution. This identification was partially done by examining fiberglass samples located in low-flow-velocity sections of the ICET tank. These samples were removed from the tank on day 4 of the test and examined via Environmental SEM (ESEM)/probe SEM/EDS. The samples were taken both from the exterior and interior locations of the fiberglass package.

Probe SEM was used to examine the fiberglass samples that had been air dried at room temperature and coated with carbon. In addition to probe SEM, ESEM was employed to analyze uncoated, wet fiberglass samples. The ESEM was performed under low vacuum conditions (i.e., 80 Pa) in order to minimize the modification of the fiberglass through the drying process. The EDS results provide a semi-quantitative elemental analysis of the debris attached to the fiberglass.

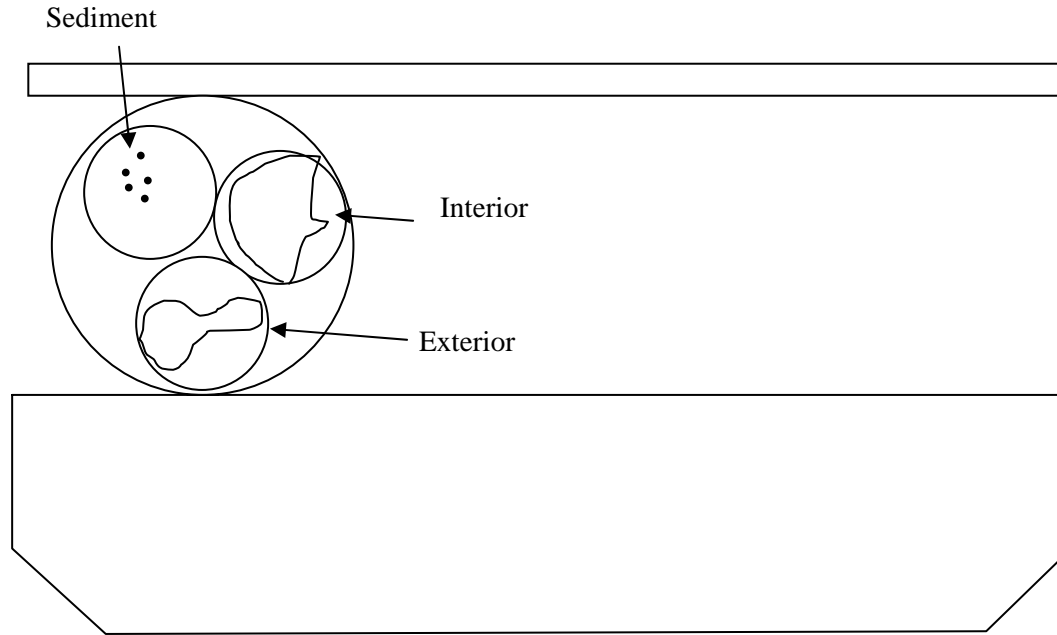
Test #3 Day-4 low-flow fiberglass samples were obtained on April 9, 2005 (4th day for Test #3), and SEM/EDS data presented here were obtained shortly thereafter. Available logbook entries for this laboratory session are included in this appendix as transcribed notes.

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Transcribed Laboratory Log

Laboratory session from April 12, 2005.

ESEM & SEM Test #3 Day-4 Fiberglass.



ESEM Exterior Low-flow Submerged Fiberglass Samples

Image:	T3D4FX1	150 ×	ESEM image	Figure A-1
	T3D4FX2	1000 ×	ESEM at higher magnification	Figure A-2
EDS:	T3D4FX3		Particles on Image FX2	Figure A-3
	T3D4FX4		FX2 particles after calibration with primed elemental analysis	Figure A-4
Image:	T3D4FX5	500 ×	ESEM image	Figure A-5

ESEM Interior Low-flow Submerged Fiberglass Samples.

Image:	T3D4FI6	150 ×	ESEM image	Figure A-6
	T3D4FI7	1000 ×	ESEM at higher magnification	Figure A-7
EDS:	T3D4FI8		EDS of particles on FI7	Figure A-8

SEM Exterior Low-flow Submerged Fiberglass Samples.

Image:	T3D4FibGlsEX001	150 ×	SEM image	Figure A-9
	T3D4FibGlsEX002	1000 ×	SEM at higher magnification	Figure A-10
	T3D4FibGlsEX003	300 ×		Figure A-11

SEM Interior Low-flow Submerged Fiberglass Samples.

Image:	T3D4FibGlsIn001	50 ×	SEM image	Figure A-12
	T3D4FibGlsIn002	150 ×	SEM image	Figure A-13
	T3D4FibGlsIn003	400 ×	SEM image	Figure A-14
	T3D4FibGlsIn004	1000 ×	SEM at higher magnification	Figure A-15

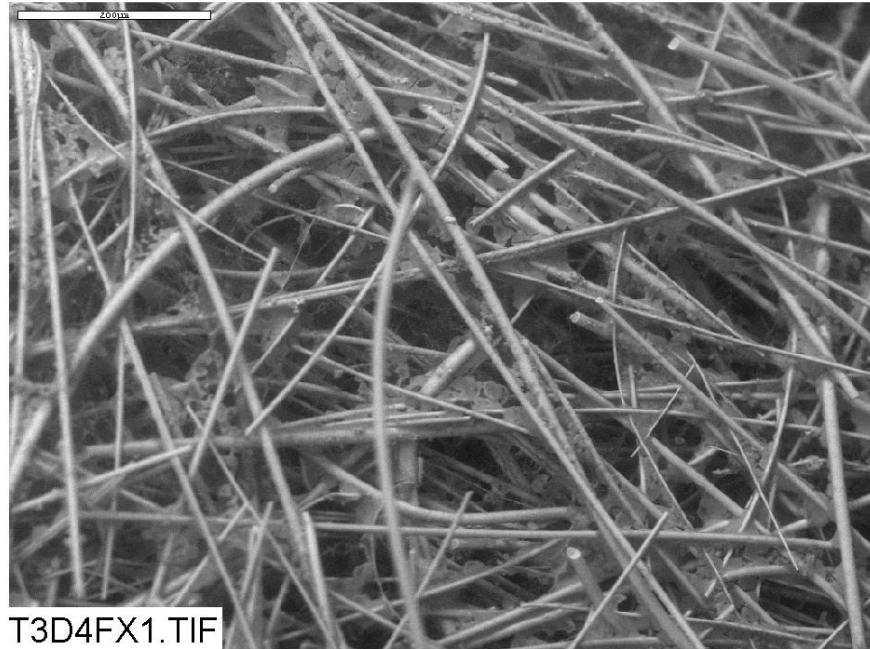


Figure A-1: Environmental SEM image magnified 150 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FX1)

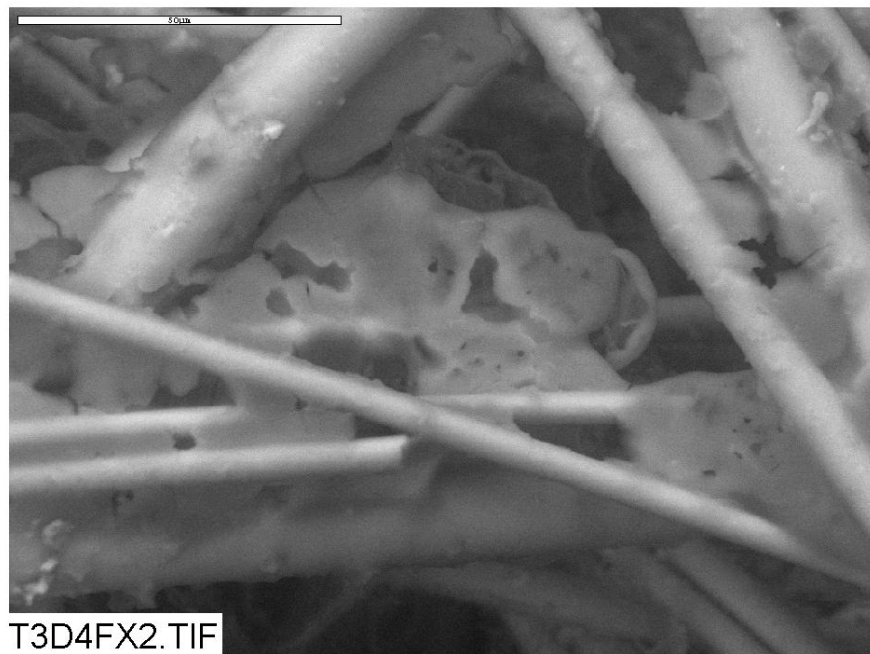


Figure A-2: Environmental SEM image magnified 1000 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FX2)

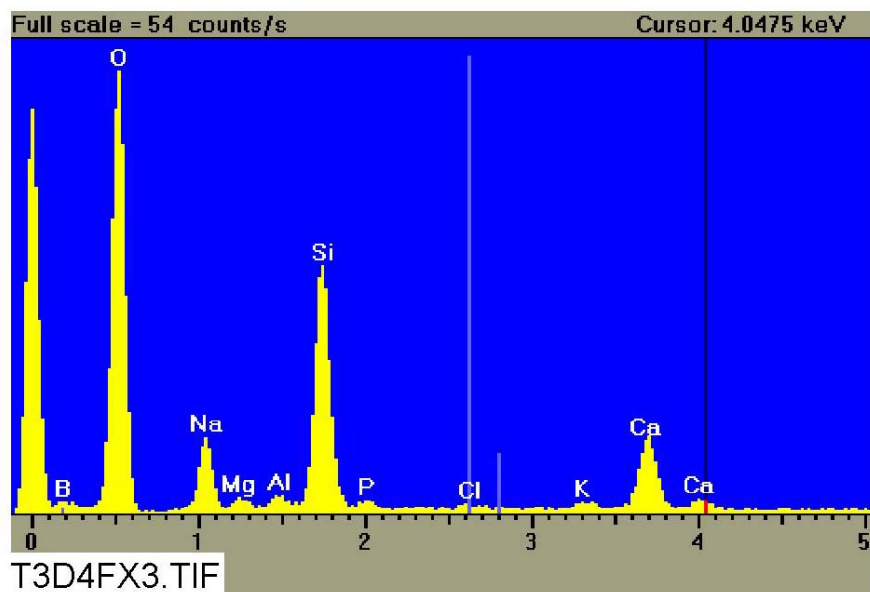


Figure A-3: EDS counting spectrum for the deposits between the fibers on ESEM image shown in Figure A-2. (T3D4FX3)

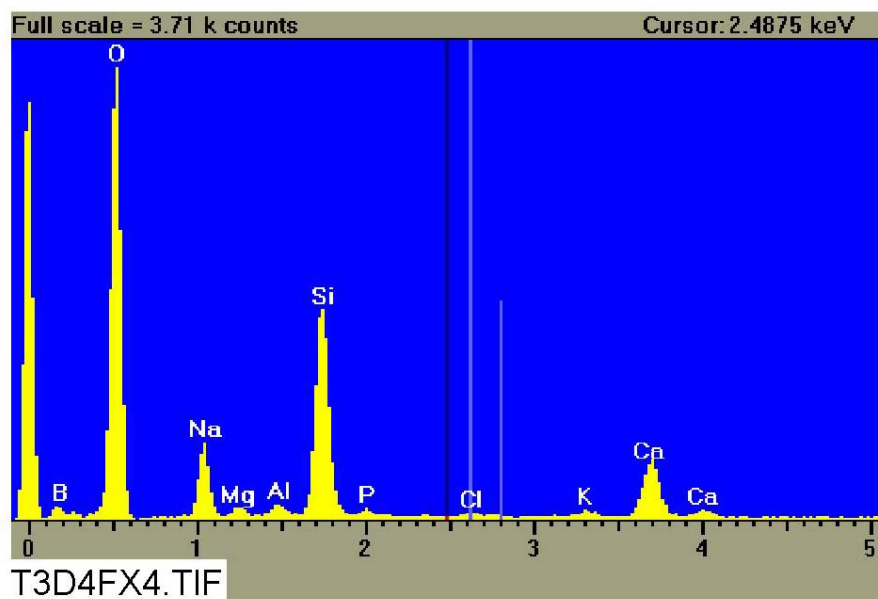


Figure A-4: EDS counting spectrum (after calibration) for the deposits between the fibers on ESEM image shown in Figure A-2. (T3D4FX4)

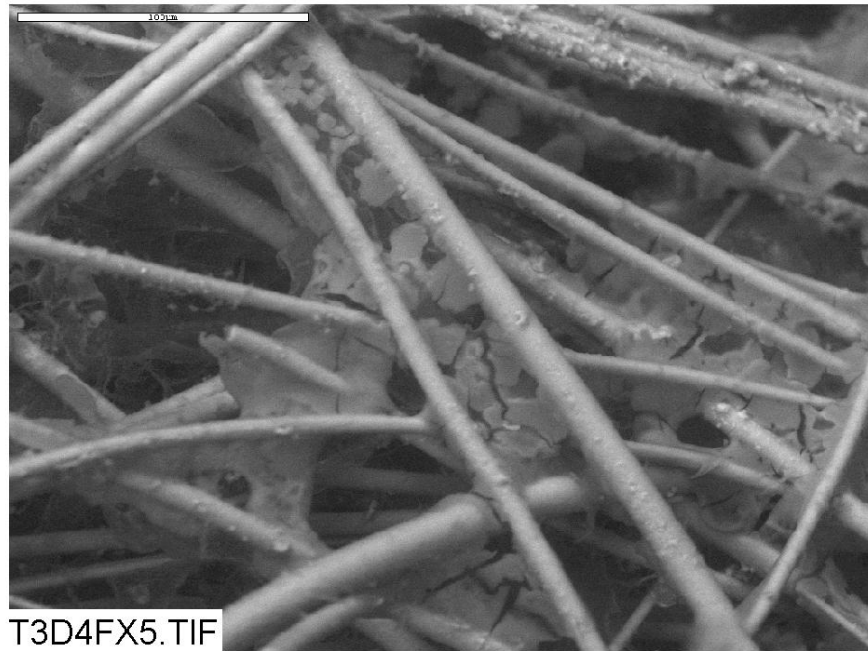


Figure A-5: Environmental SEM image magnified 500 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FX5)

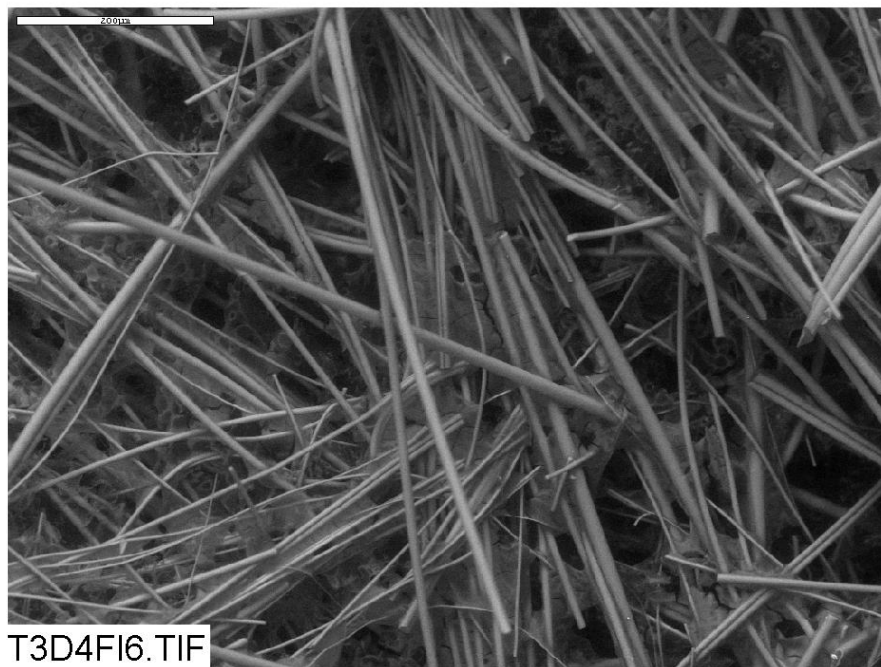


Figure A-6: Environmental SEM image magnified 150 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FI6)

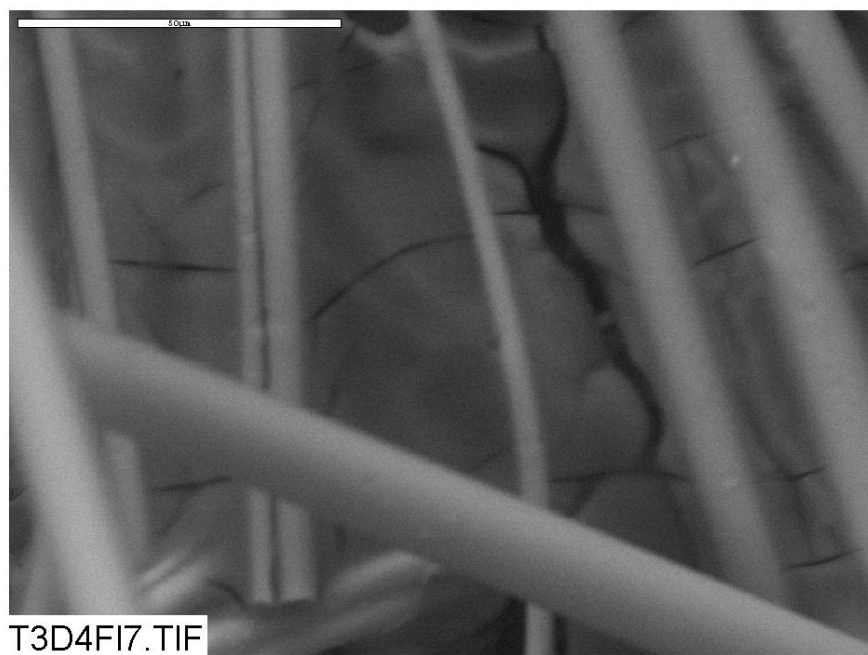


Figure A-7: Environmental SEM image magnified 1000 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FI7)

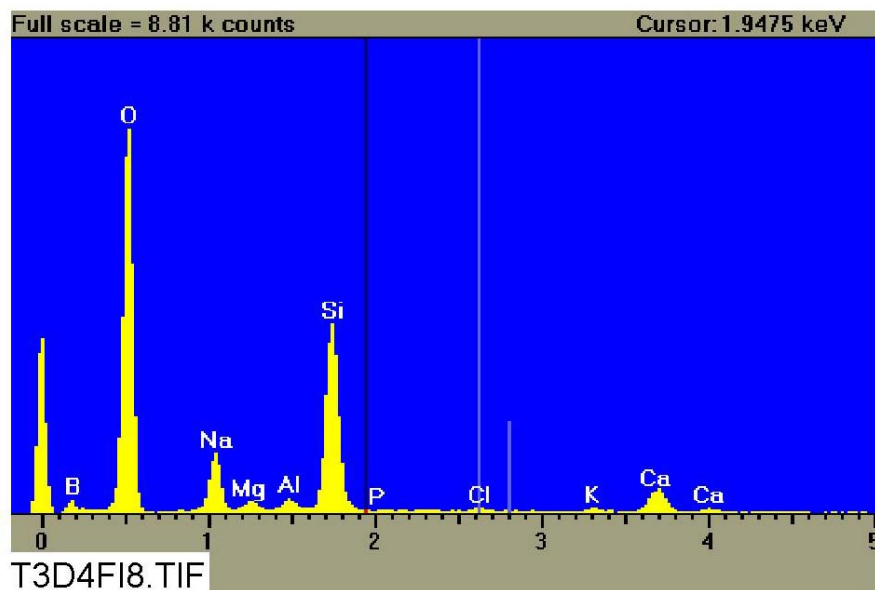


Figure A-8: EDS counting spectrum (after calibration) for the deposits between the fibers on ESEM image shown in Figure A-7. (T3D4FI8)

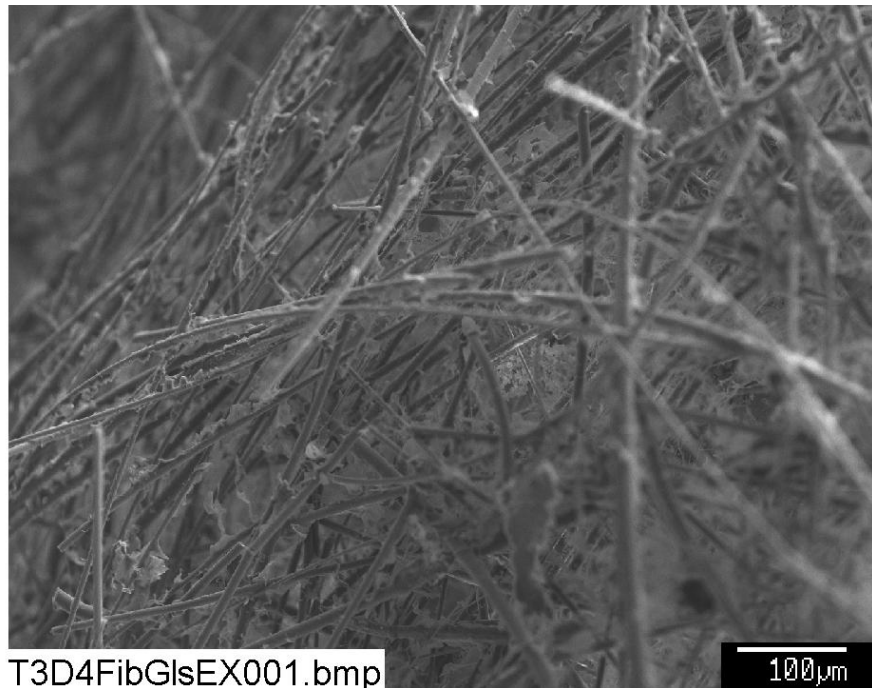


Figure A-9: SEM image magnified 150 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FibGlsEX001)

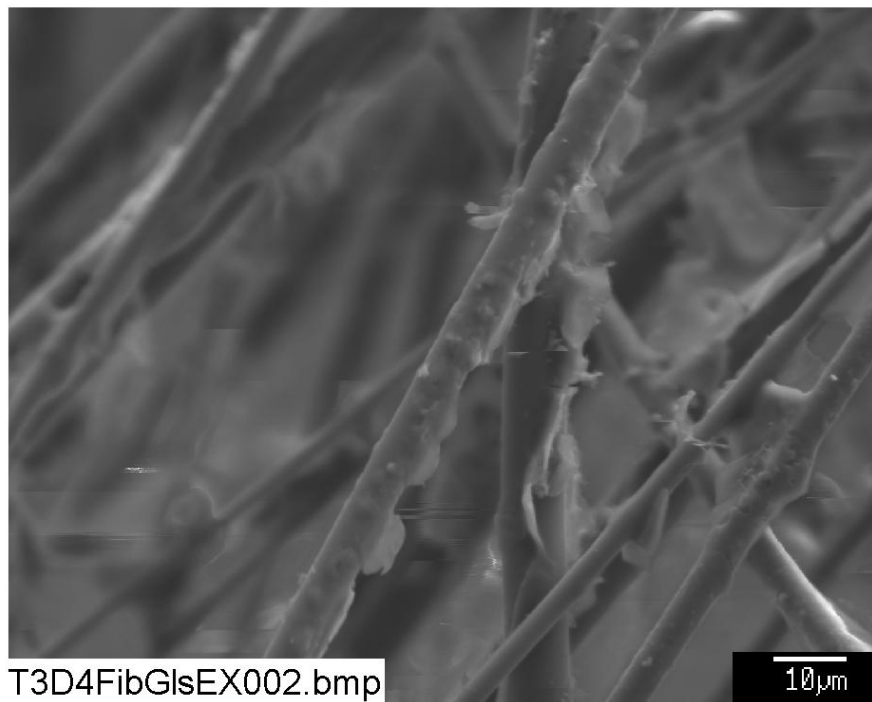


Figure A-10: SEM image magnified 1000 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FibGlsEX002)

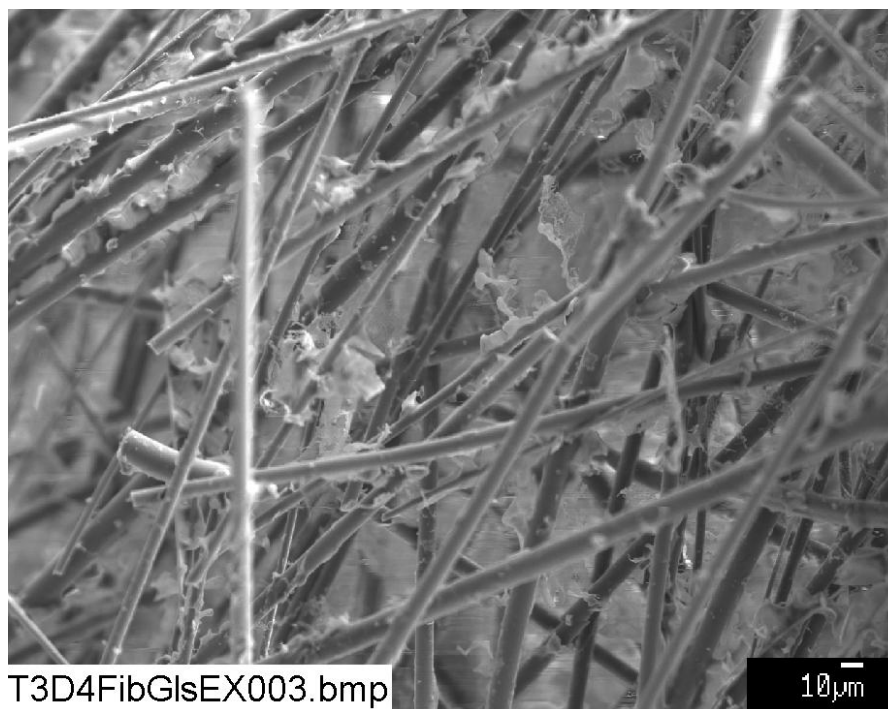


Figure A-11: SEM image magnified 300 times for a Test #3 Day-4 low-flow exterior fiberglass sample. (T3D4FibGlsEX003)

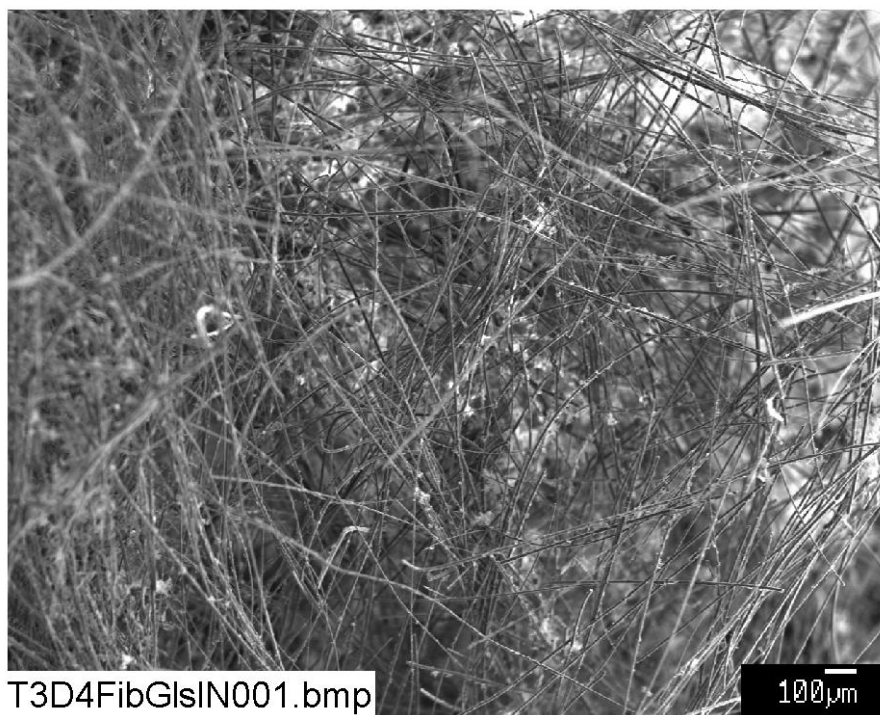


Figure A-12: SEM image magnified 50 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FibGlsIN001)

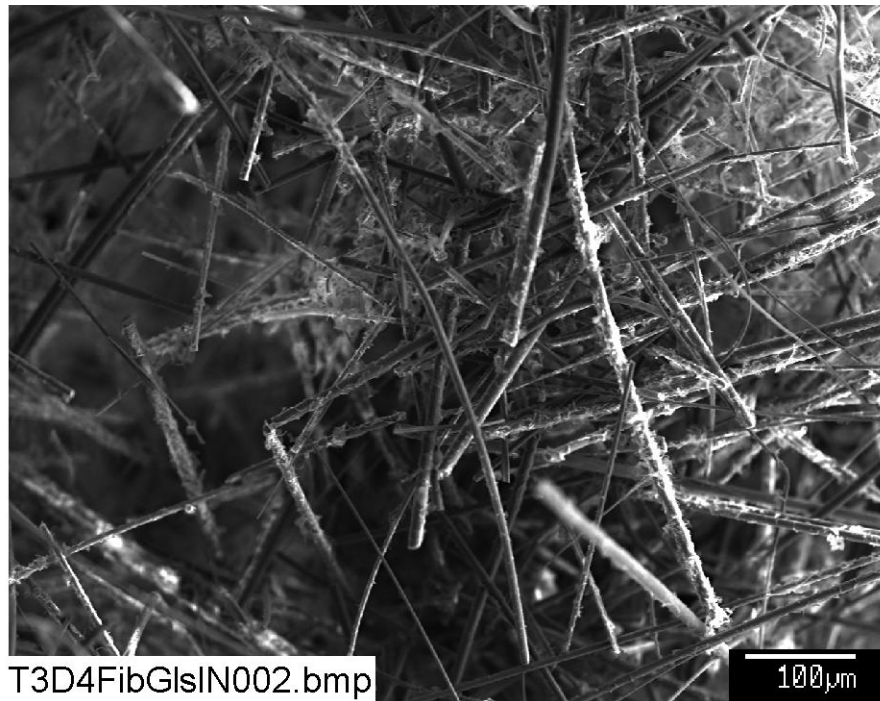


Figure A-13: SEM image magnified 150 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FibGlsIN002)

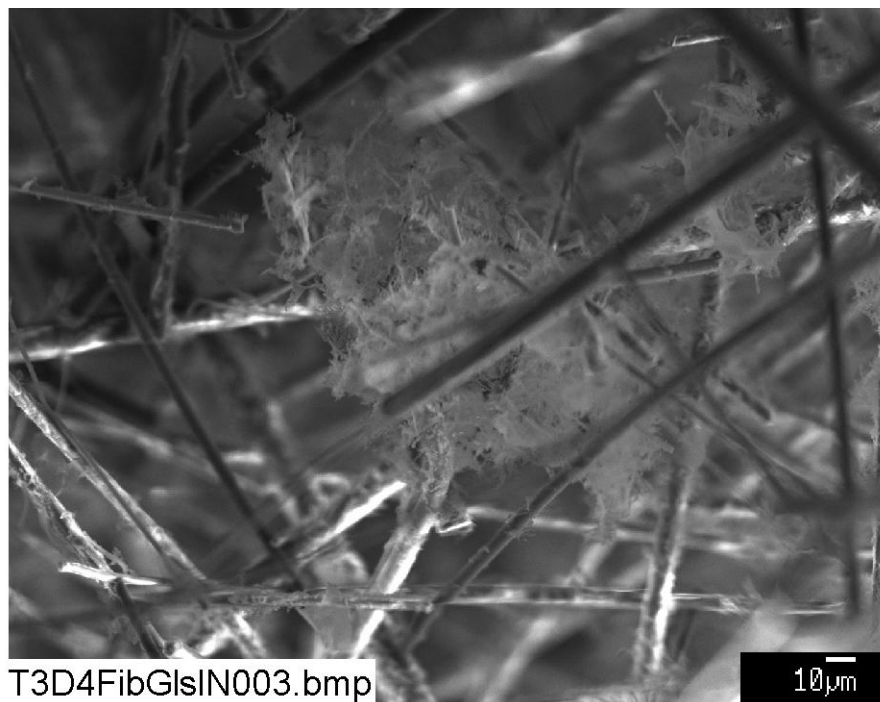


Figure A-14: SEM image magnified 400 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FibGlsIN003)

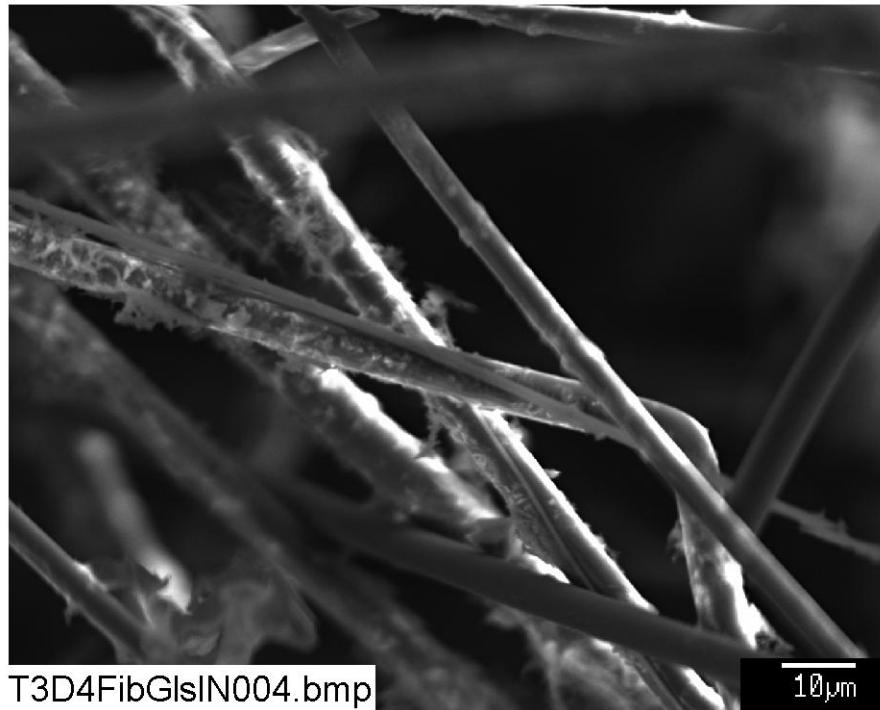


Figure A-15: SEM image magnified 1000 times for a Test #3 Day-4 low-flow interior fiberglass sample. (T3D4FibGlsIN004)