

Appendix C3

ESEM/EDS Data for Test #3 Day-30 Drain Collar Fiberglass

List of Figures

Figure C3-1: ESEM image magnified 100 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3DCSC16).....	C3-4
Figure C3-2: ESEM image magnified 1000 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3dcsc17).....	C3-4
Figure C3-3: EDS counting spectrum for the particulate deposits shown in Figure C3-2. (t3dcsc18).....	C3-5
Figure C3-4: ESEM image magnified 70 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3dcsc19).....	C3-5
Figure C3-5: ESEM image magnified 70 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcEx20).....	C3-6
Figure C3-6: ESEM image magnified 1000 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcex21).....	C3-6
Figure C3-7: EDS counting spectrum for the white particles shown in Figure C3-6. (t3dcex22)	C3-7
Figure C3-8: EDS counting spectrum for the dark particles shown in Figure C3-6. (t3dcex23)	C3-7
Figure C3-9: Comparison of EDS counting spectra between Figure C3-7 (yellow) and Figure C3-8 (red). (t3dcex24)	C3-8
Figure C3-10: ESEM image magnified 100 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcex25).....	C3-8
Figure C3-11: ESEM image magnified 80 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin26)	C3-9
Figure C3-12: ESEM image magnified 1000 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin27)	C3-9
Figure C3-13: ESEM image magnified 100 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin28)	C3-10

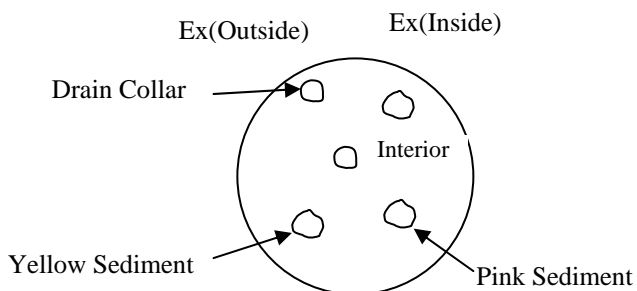
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As mentioned before, the debris accumulated on fiberglass during ICET tests is of great concern, because such debris may cause significant head loss for the recirculation of coolant during a LOCA. The ICET tank drain collar was used to simulate the sump screen used in nuclear reactor containment systems. Therefore, it is very important to perform SEM/EDS examinations of the fiberglass samples within the drain collar submerged in the tank.

In this appendix, the fiberglass samples within the drain collar were extracted on the date that Test #3 was shut down (May 5, 2005). The fiberglass samples located at the outside exterior (away from the drain screen), the inside exterior (next to the drain screen), and the interior were examined. Environmental SEM (ESEM) was employed to analyze the wet fiberglass samples. The ESEM was performed without any coating on the samples and under low-vacuum conditions (i.e., 80 Pa). This evaluation technique minimizes the modification of the fiberglass that could occur through a drying process. EDS results provide an elemental composition analysis of the debris attached on the fiberglass. Available logbook entries for this laboratory session are included in this appendix as transcribed notes.

Transcribed Laboratory Log

Laboratory session from May 6, 2005.
 Test #3 Day-30 Drain Collar Fiberglass.



Drain Collar Inside

Image:	t3DCSC16	100 ×		Figure C3-1
	t3dcsc17	1000 ×	Particles	Figure C3-2
EDS:	t3dcsc18		EDS on particles	Figure C3-3
Image:	t3dcsc19	70 ×		Figure C3-4

Drain Collar Outside

Image:	t3dcEx20	70 ×		Figure C3-5
	t3dcex21	1000 ×		Figure C3-6
EDS:	t3dcex22		EDS on white bright particles shown in 21	Figure C3-7
	t3dcex23		EDS on dark particles shown in 21	Figure C3-8
	t3dcex24		Comparing t3dcex22 & t3dcex23	Figure C3-9
Image:	t3ccex25	100 ×		Figure C3-10

Drain Collar Interior

Image:	t3dcin26	80 ×		Figure C3-11
	t3dcin27	1000 ×		Figure C3-12
	t3dcin28	100 ×		Figure C3-13



Figure C3-1: ESEM image magnified 100 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3DCSC16)

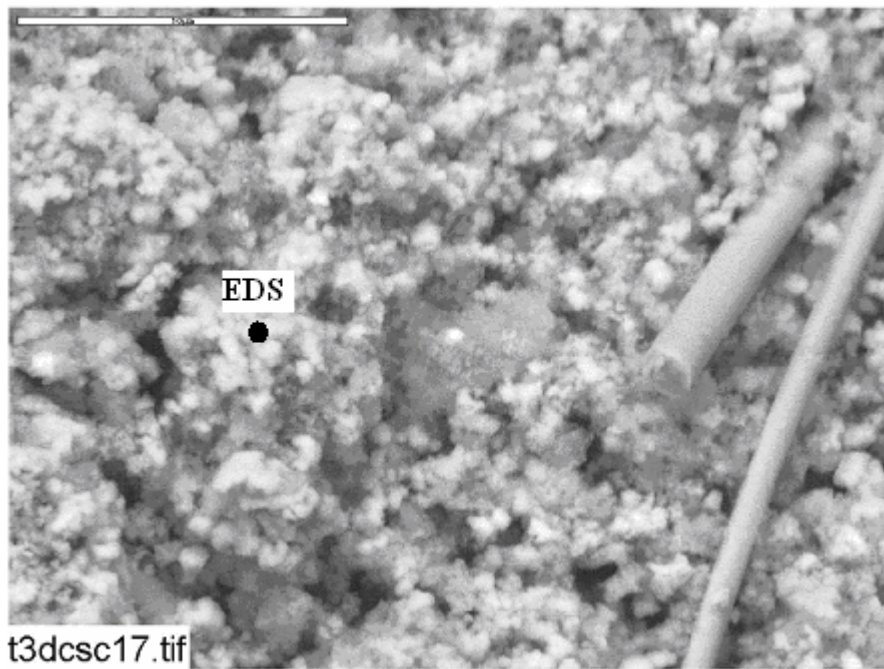


Figure C3-2: ESEM image magnified 1000 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3dcsc17)

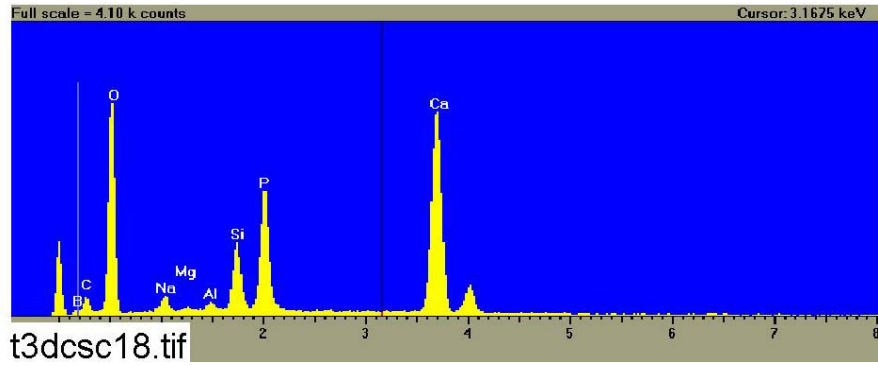


Figure C3-3: EDS counting spectrum for the particulate deposits shown in Figure C3-2. (t3dcsc18)

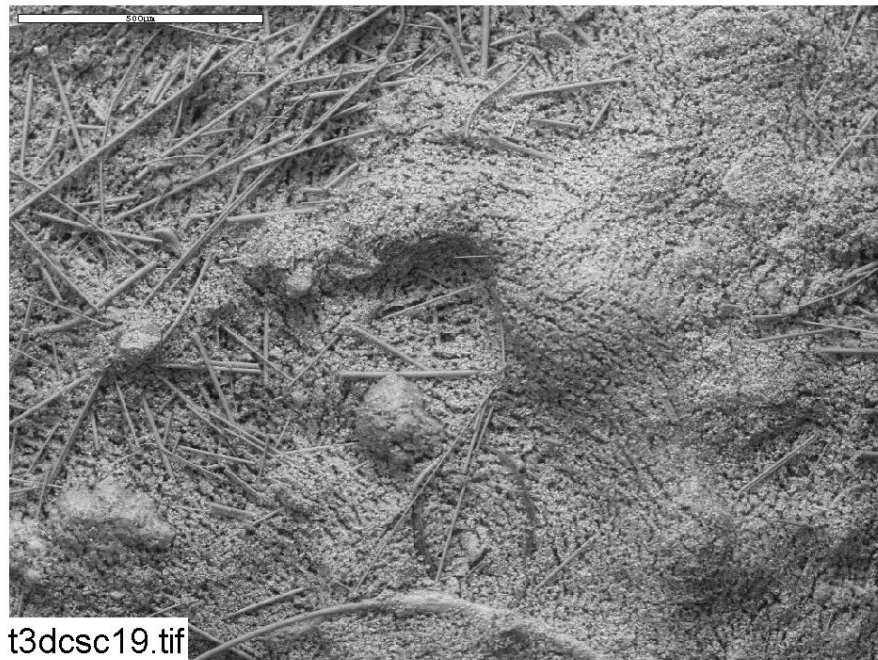


Figure C3-4: ESEM image magnified 70 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (adjacent to the drain screen). (t3dcsc19)

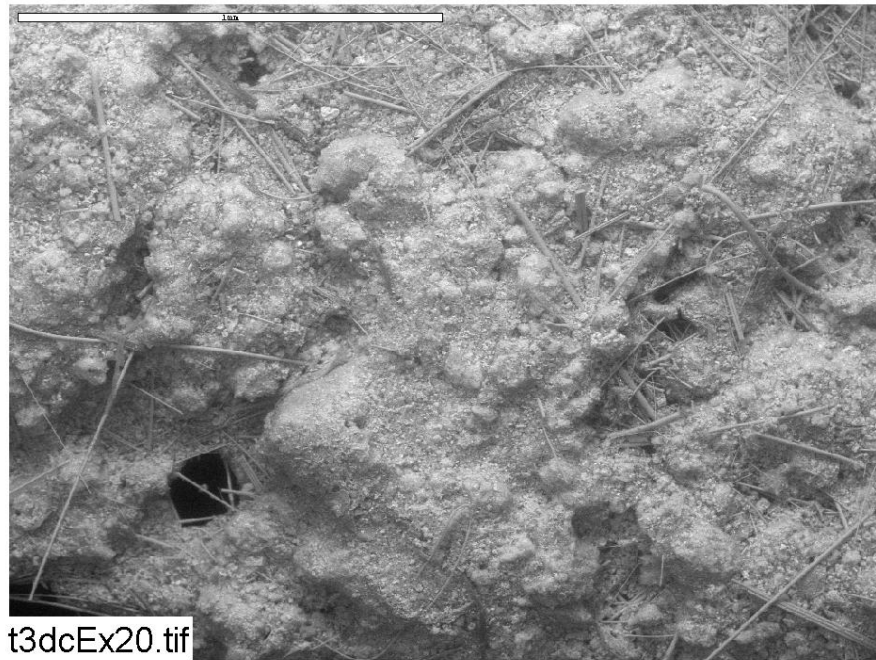


Figure C3-5: ESEM image magnified 70 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcEx20)

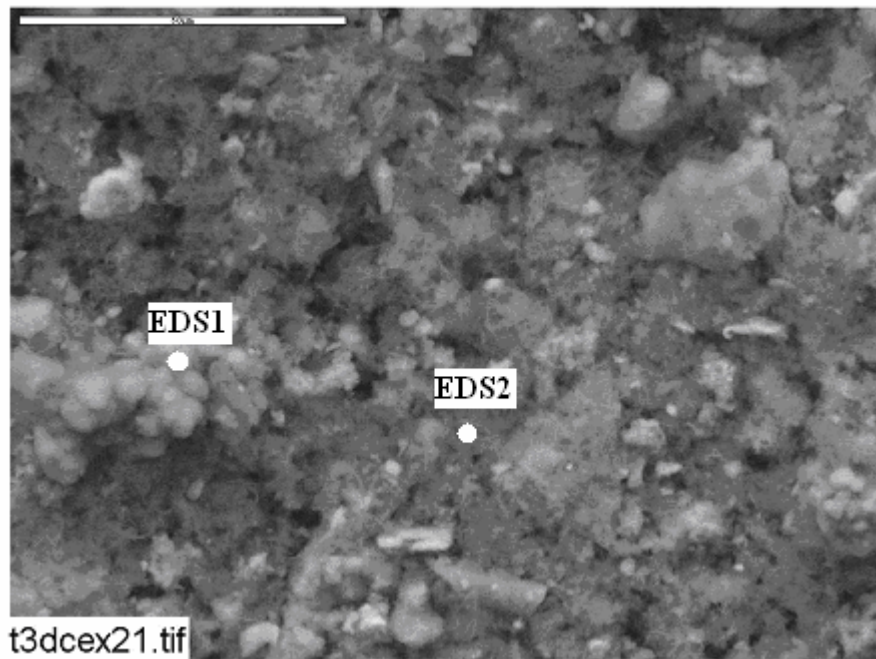


Figure C3-6: ESEM image magnified 1000 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcex21)

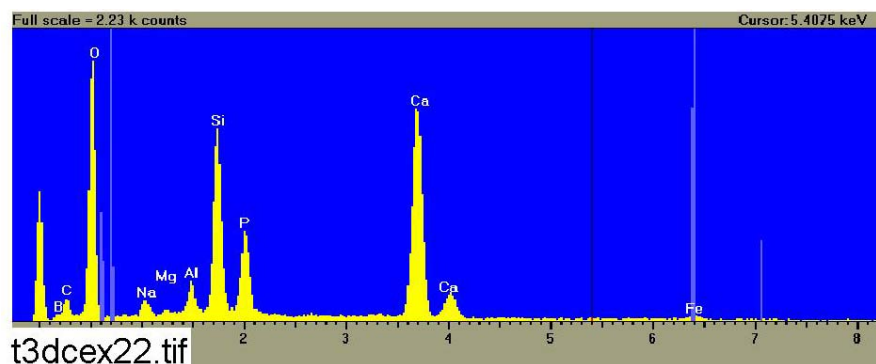


Figure C3-7: EDS counting spectrum for the light particulate deposits (EDS1) shown in Figure C3-6. (t3dcex22)

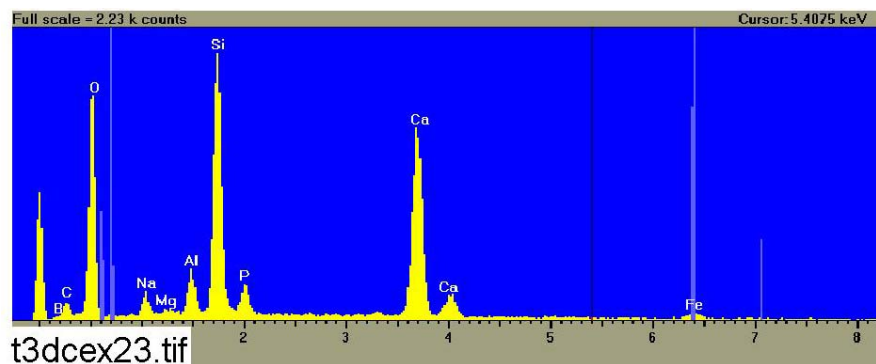


Figure C3-8: EDS counting spectrum for the dark deposits (EDS2) shown in Figure C3-6. (t3dcex23)

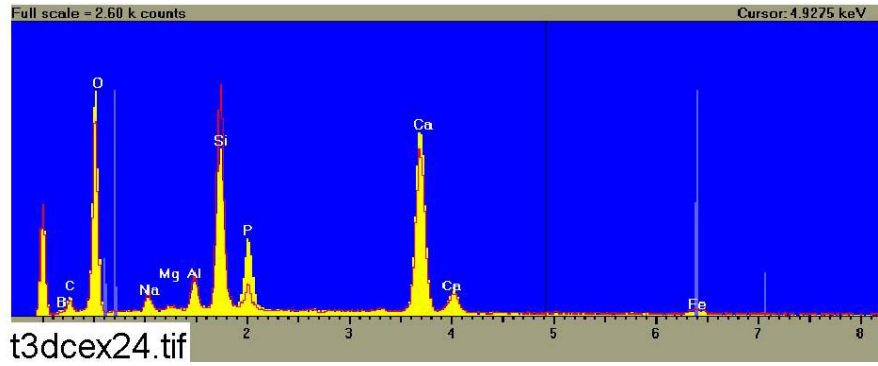


Figure C3-9: Comparison of EDS counting spectra between Figure C3-7 (yellow) and Figure C3-8 (red). (t3dcex24)

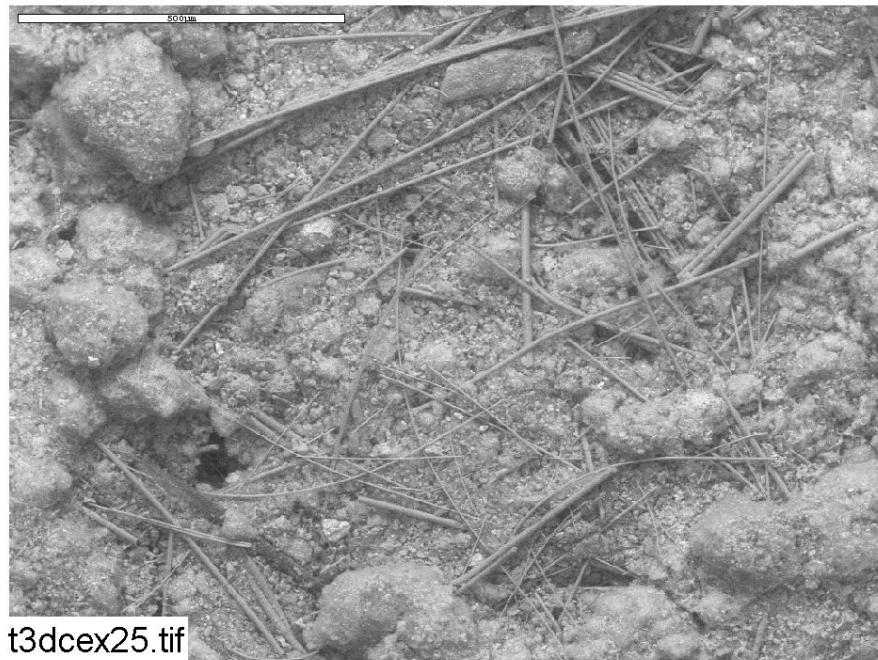


Figure C3-10: ESEM image magnified 100 times for a Test #3 Day-30 exterior fiberglass sample on the drain collar (away from the drain screen). (t3dcex25)

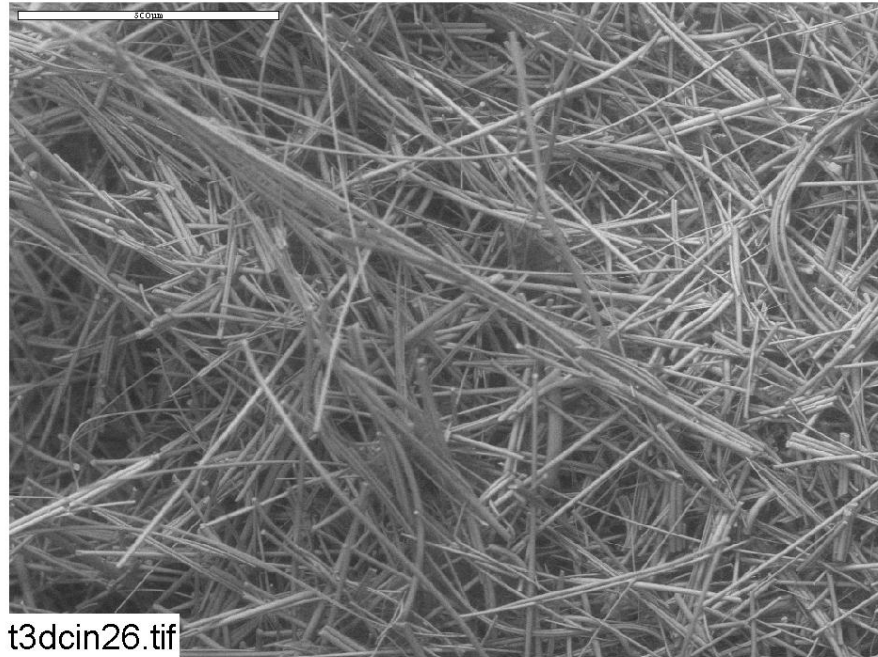


Figure C3-11: ESEM image magnified 80 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin26)

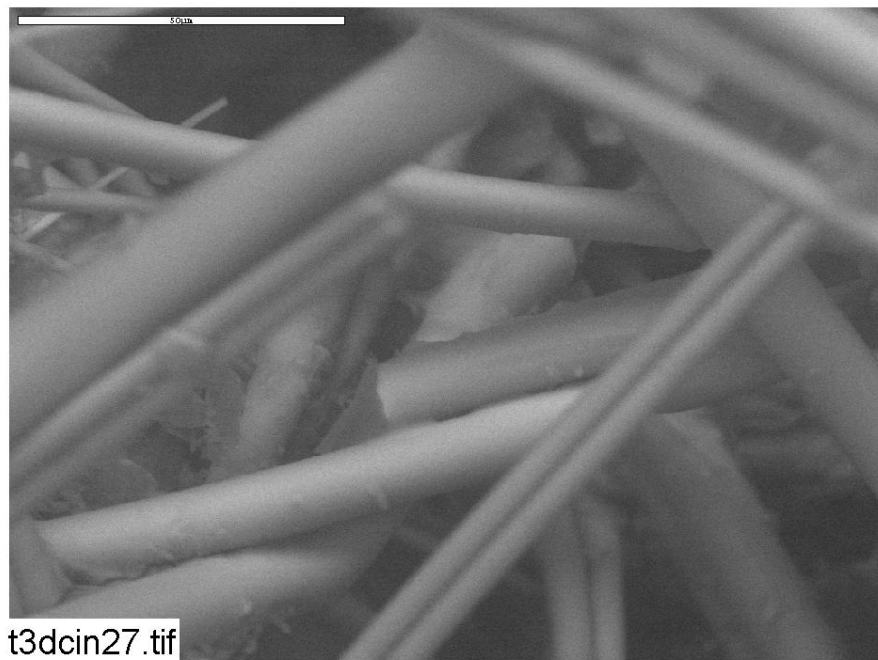


Figure C3-12: ESEM image magnified 1000 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin27)

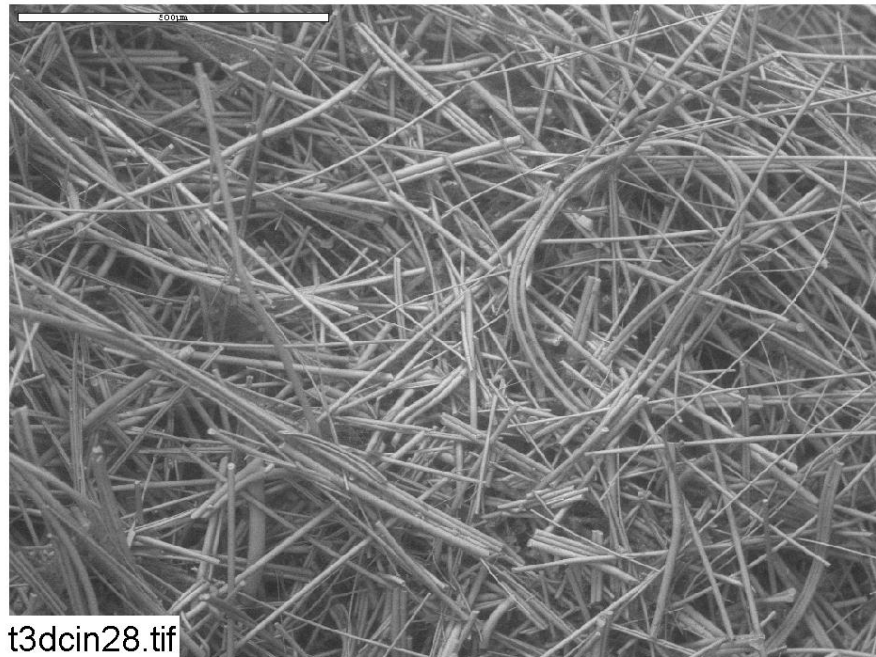


Figure C3-13: ESEM image magnified 100 times for a Test #3 Day-30 interior fiberglass sample on the drain collar. (t3dcin28)