

Scientific Notebook #239

LABORATORY NOTEBOOK

 Pitney Bowes

NOTEBOOK NO. _____
ISSUED TO Jim Winterle
ON 8-13-98 **19** _____
DEPARTMENT _____
RETURNED _____ **19** _____

CHWRA
COI 289

Entries made by: Dwayne Halbardier D.H.

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 - When starting a page, enter the title, project number, and book number.
 - Use ink for permanence -- avoid pencil.
 - Record your work as you progress, including any spur-of-the-moment ideas which may be developed later.
 - Avoid making notes on loose paper to be recopied.
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3.
 - Give a complete account of your experiments and the results, both positive and negative, including your observations.
 - Record all diagrams, layouts, plans, procedures, new ideas, or anything pertinent to your work including the details of any discussions with suppliers, or other people outside the Company.
 - Do not try to erase any incorrect entries; draw lines deleting them, note the corrections, sign and date the changes. This extra care is worthwhile because of the necessity of original data to prove priority of new discoveries.
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 - Explain your work to at least two witnesses who are not co-inventors, and have them sign and date the pages in the place provided.
- Record the names of operators and witnesses present during any demonstration and have at least two witnesses sign the page. If no witnesses are present during an experiment of importance, repeat it in the presence of two witnesses.
5. Since computer programs can be patented these instructions apply to the development of computer software. In this case a description of the structure and operation of the program should be recorded in the notebook, together with a basic flow diagram which illustrates the essential features of the program. In the course of developing the code, the number of lines of code written each day should be recorded in the notebook, together with a statement of the portion of the flow diagram to which the section of code is directed.
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TITLE

Initial Comments

Project No. _____

Book No. _____

1

From Page No. _____

This Notebook to be used to document
Laboratory Experiments conducted in support of
the USFIC KTI

Jan White 8-13-98

To Page No. _____

Witnessed & Understood by me,

Date

Invented by

Date

Recorded by

Project No. _____

Book No. _____

TITLE _____

Page No. _____

03/25/99, continued from Lab Book 271

Initial Calibration 02/23/99

Time	Aw	Temp (C)
8:35:00	0.997	24.04 H ₂ O
8:35:56	0.998	24.14 H ₂ O
8:36:52	0.998	24.24 H ₂ O
8:37:47	0.999	24.31 H ₂ O
8:38:43	0.999	24.39 H ₂ O
8:39:39	1.000	24.43 H ₂ O
8:40:34	1.001	24.49 H ₂ O
8:41:29	1.001	24.56 H ₂ O
8:42:25	1.001	24.61 H ₂ O
8:46:17	0.757	24.54 NaCl
8:47:14	0.757	24.66 NaCl
8:48:11	0.756	24.78 NaCl
8:49:08	0.757	24.86 NaCl
8:50:04	0.757	24.93 NaCl
8:51:01	0.757	25.00 NaCl
8:51:57	0.757	25.07 NaCl
8:52:54	0.757	25.11 NaCl
8:53:51	0.757	25.16 NaCl
8:59:28	0.847	25.18 KCl
9:00:24	0.847	25.32 KCl
9:01:20	0.847	25.41 KCl
9:02:15	0.846	25.50 KCl
9:03:11	0.847	25.56 KCl
9:04:06	0.846	25.64 KCl
9:05:01	0.847	25.68 KCl
9:05:57	0.846	25.74 KCl
9:06:52	0.846	25.79 KCl

D.H.
03/25/99

SC5 98 2B1 02/23/99

Time	Aw	Temp (C)
11:45:06	0.850	27.97
11:46:03	0.865	28.43
11:46:58	0.876	28.73
11:47:53	0.882	28.93
11:48:47	0.887	29.07
11:49:41	0.891	29.19
11:50:36	0.895	29.26
11:51:30	0.898	29.31
11:52:24	0.900	29.35
11:53:18	0.903	29.39
11:54:11	0.904	29.42
11:55:05	0.906	29.45
11:55:59	0.907	29.47
11:56:52	0.908	29.48
11:57:46	0.910	29.50
11:58:40	0.910	29.52
11:59:33	0.911	29.53
12:00:27	0.913	29.53
12:01:20	0.913	29.53
12:02:14	0.914	29.55
12:03:07	0.914	29.55
12:04:01	0.915	29.56
12:04:54	0.916	29.55
12:05:48	0.916	29.57
12:06:41	0.917	29.57
12:07:35	0.918	29.57
12:08:28	0.918	29.58
12:09:22	0.919	29.58
12:10:15	0.919	29.60
12:11:09	0.919	29.61
12:12:02	0.919	29.61
12:12:55	0.919	29.62
12:13:49	0.920	29.62

Mass (g) Double Contained
6.768 Initial
6.759 Final
6.745

SC5 3A1 98 02/23/99

Time	Aw	Temp (C)
9:15:15	0.757	25.61
9:16:14	0.761	25.81
9:17:11	0.767	25.94
9:18:07	0.772	26.05
9:19:03	0.777	26.13
9:19:59	0.782	26.20
9:20:55	0.785	26.27
9:21:51	0.788	26.33
9:22:46	0.790	26.39
9:23:42	0.793	26.43
9:24:37	0.795	26.48
9:25:33	0.798	26.53
9:26:28	0.800	26.57
9:27:24	0.802	26.61
9:28:19	0.804	26.65
9:29:15	0.806	26.70
9:30:10	0.807	26.74
9:31:05	0.808	26.77
9:32:00	0.810	26.80
9:32:55	0.810	26.85
9:33:50	0.812	26.88
9:34:45	0.813	26.93
9:35:40	0.814	26.94
9:36:35	0.815	26.99
9:37:30	0.816	27.02
9:38:25	0.817	27.06
9:39:20	0.818	27.09
9:40:15	0.818	27.13
9:41:10	0.819	27.15
9:42:05	0.819	27.19
9:43:00	0.820	27.22
9:43:55	0.820	27.26
9:44:49	0.821	27.28

Mass (g) Single Contained
7.450 Initial
7.445 Final
7.437

SC5 3C1 98 02/23/99

Time	Aw	Temp (C)
10:25:25	0.718	27.48
10:26:22	0.733	27.82
10:27:17	0.739	28.05
10:28:12	0.740	28.18
10:29:07	0.741	28.27
10:30:01	0.743	28.35
10:30:55	0.746	28.39
10:31:50	0.748	28.45
10:32:44	0.751	28.47
10:33:38	0.752	28.52
10:34:32	0.755	28.53
10:35:26	0.757	28.56
10:36:20	0.758	28.59
10:37:14	0.759	28.60
10:38:08	0.761	28.62
10:39:02	0.762	28.65
10:39:56	0.764	28.67
10:40:50	0.764	28.69
10:41:44	0.766	28.71
10:42:37	0.767	28.73
10:43:31	0.768	28.75
10:44:24	0.768	28.78
10:45:18	0.769	28.79
10:46:12	0.769	28.83
10:47:05	0.771	28.83
10:47:59	0.771	28.85
10:48:53	0.772	28.86
10:49:46	0.773	28.87
10:50:40	0.773	28.88
10:51:33	0.774	28.89
10:52:27	0.774	28.91
10:53:20	0.775	28.92
10:54:14	0.776	28.92

Mass (g) Single Contained
6.417 Initial
6.413 Final
6.405

SC5 4A1 98 02/23/99

Time	Aw	Temp (C)
9:50:29	0.616	26.78
9:51:25	0.629	27.00
9:52:20	0.636	27.14
9:53:15	0.639	27.26
9:54:10	0.642	27.35
9:55:04	0.644	27.42
9:55:59	0.646	27.48
9:56:53	0.647	27.53
9:57:47	0.648	27.57
9:58:41	0.648	27.63
9:59:35	0.648	27.66
10:00:29	0.649	27.70
10:01:23	0.649	27.73
10:02:17	0.648	27.77
10:03:14	0.648	27.81
10:04:05	0.647	27.85
10:04:59	0.648	27.87
10:05:53	0.647	27.91
10:06:46	0.647	27.93
10:07:40	0.647	27.95
10:08:34	0.646	27.98
10:09:28	0.646	28.00
10:10:21	0.645	28.04
10:11:15	0.645	28.05
10:12:09	0.645	28.08
10:13:03	0.645	28.11
10:13:56	0.644	28.12
10:14:50	0.644	28.15
10:15:43	0.643	28.18
10:16:37	0.643	28.19
10:17:31	0.643	28.22
10:18:24	0.642	28.25
10:19:18	0.642	28.26

Mass (g) Single Contained
8.515 Initial
8.513 Final
8.494D.H.
03/25/99
by me,

SC5 5A1 98 02/23/99

Time	Aw	Temp (C)
11:05:31	0.739	27.79
11:06:27	0.756	28.20
11:07:23	0.757	28.46
11:08:18	0.759	28.63
11:09:13	0.764	28.75
11:10:08	0.770	28.84
11:11:02	0.775	28.91
11:11:57	0.780	28.96
11:12:51	0.784	29.01
11:13:45	0.788	29.05
11:14:39	0.793	29.07
11:15:33	0.796	29.10
11:16:27	0.799	29.13
11:17:21	0.802	29.14
11:18:15	0.805	29.16
11:19:09	0.807	29.18
11:20:03	0.809	29.19
11:20:57	0.811	29.20
11:21:51	0.813	29.21
11:22:45	0.814	29.23
11:23:39	0.815	29.23
11:24:33	0.816	29.24
11:25:27	0.818	29.25
11:26:21	0.818	29.27
11:27:14	0.819	29.26
11:28:08	0.820	29.29
11:29:02	0.820	29.30
11:29:55	0.822	29.30
11:30:49	0.822	29.33
11:31:43	0.823	29.33
11:32:36	0.824	29.34
11:33:24	0.824	29.36
11:34:11	0.824	29.36

Mass (g) Single Contained
6.854 Initial
6.847 Final
6.823

Final Calibration 02/23/99

Time	Aw	Temp (C)
13:05:28	1.000	29.51 H ₂ O
13:06:21	0.999	29.53 H ₂ O
13:07:15	1.000	29.54 H ₂ O
13:08:09	0.999	29.57 H ₂ O
13:09:02	1.000	29.58 H ₂ O
13:09:56	1.001	29.60 H ₂ O
13:10:50	1.000	29.61 H ₂ O
13:11:43	1.000	29.62 H ₂ O
13:12:37	1.001	29.62 H ₂ O
13:15:23	0.757	28.05 NaCl
13:16:20	0.754	28.49 NaCl
13:17:16	0.754	28.79 NaCl
13:18:11	0.754	29.00 NaCl
13:19:07	0.754	29.15 NaCl
13:20:02	0.754	29.27 NaCl
13:20:58	0.754	29.36 NaCl
13:21:53	0.754	29.42 NaCl
13:24:36	0.839	28.22 KCl
13:25:32	0.838	28.67 KCl
13:26:27	0.839	28.94 KCl
13:27:22	0.840	29.13 KCl
13:28:17	0.840	29.26 KCl
13:29:12	0.840	29.35 KCl
13:30:07	0.840	29.43 KCl
13:31:01	0.840	29.47 KCl
13:31:55	0.839	29.52 KCl

Initial Calibration 02/25/99

Time	Aw	Temp (C)
9:32:52	0.998	26.11 H ₂ O
9:33:47	0.998	26.23 H ₂ O
9:34:42	0.999	26.32 H ₂ O
9:35:37	1.000	26.40 H ₂ O
9:36:31	1.000	26.48 H ₂ O
9:37:26	1.000	26.55 H ₂ O
9:38:20	1.001	26.59 H ₂ O
9:39:15	1.001	26.65 H ₂ O
9:40:09	1.001	26.71 H ₂ O
9:43:29	0.756	26.41 NaCl
9:44:25	0.756	26.56 NaCl
9:45:22	0.756	26.68 NaCl
9:46:18	0.755	26.79 NaCl
9:47:14	0.755	26.89 NaCl
9:48:10	0.756	26.95 NaCl
9:49:06	0.755	27.01 NaCl
9:50:02	0.755	27.09 NaCl
9:50:57	0.755	27.12 NaCl
9:54:03	0.842	26.41 KCl
9:55:00	0.841	26.72 KCl
9:55:56	0.842	26.93 KCl
9:56:51	0.842	27.09 KCl
9:57:47	0.842	27.21 KCl
9:58:42	0.843	27.28 KCl
9:59:37	0.842	27.37 KCl
10:00:32	0.842	27.44 KCl
10:01:27	0.842	27.49 KCl

D.H.
03/25/99

To Page No. _____

ited by

Date

Recorded by

Project No. _____

Book No. _____

TITLE _____

SC 98 2A1 02/25/99

Time	Aw	Temp (C)
12:14:07	0.787	28.72
12:15:05	0.790	29.10
12:16:01	0.794	29.34
12:16:57	0.798	29.53
12:17:53	0.802	29.65
12:18:48	0.806	29.75
12:19:43	0.809	29.83
12:20:38	0.812	29.89
12:21:34	0.816	29.93
12:22:29	0.818	29.98
12:23:24	0.821	30.02
12:24:19	0.824	30.04
12:25:14	0.826	30.06
12:26:09	0.828	30.09
12:27:04	0.831	30.09
12:27:59	0.832	30.11
12:28:54	0.834	30.12
12:29:49	0.836	30.13
12:30:44	0.837	30.13
12:31:38	0.838	30.14
12:32:33	0.839	30.16
12:33:28	0.841	30.15
12:34:23	0.842	30.16
12:35:18	0.842	30.18
12:36:12	0.844	30.17
12:37:07	0.845	30.18
12:38:02	0.845	30.19
12:38:57	0.846	30.20
12:39:51	0.847	30.21
12:40:46	0.848	30.22
12:41:41	0.849	30.23
12:42:35	0.849	30.23
12:43:30	0.850	30.24

Mass (g) Triple Contained
7.085 Initial
7.082 Final
7.067

D.H.
03/25/99

SC5 2C1 98 02/25/99

Time	Aw	Temp (C)
10:55:29	0.871	27.80
10:56:25	0.879	28.21
10:57:20	0.883	28.48
10:58:14	0.886	28.68
10:59:08	0.889	28.82
11:00:03	0.892	28.94
11:00:56	0.894	29.03
11:01:50	0.896	29.11
11:02:44	0.897	29.16
11:03:37	0.899	29.21
11:04:31	0.900	29.26
11:05:24	0.902	29.28
11:06:18	0.903	29.32
11:07:11	0.903	29.36
11:08:05	0.905	29.38
11:08:58	0.905	29.41
11:09:51	0.906	29.43
11:10:45	0.906	29.46
11:11:38	0.908	29.47
11:12:31	0.907	29.50
11:13:25	0.908	29.51
11:14:18	0.909	29.54
11:15:12	0.909	29.55
11:16:05	0.909	29.57
11:16:58	0.909	29.57
11:17:52	0.910	29.59
11:18:45	0.910	29.60
11:19:38	0.910	29.62
11:20:32	0.910	29.62
11:21:25	0.911	29.62
11:22:18	0.912	29.64
11:23:12	0.912	29.65
11:24:05	0.912	29.66

Mass (g) Triple Contained
7.091 Initial
7.084 Final
7.073

SC5 3B1 98 02/25/99

Time	Aw	Temp (C)
12:48:51	0.788	28.87
12:49:49	0.784	29.26
12:50:45	0.783	29.49
12:51:41	0.782	29.65
12:52:37	0.782	29.77
12:53:33	0.783	29.86
12:54:29	0.785	29.92
12:55:24	0.788	29.97
12:56:20	0.791	30.00
12:57:16	0.794	30.04
12:58:11	0.798	30.06
12:59:07	0.801	30.08
13:00:03	0.804	30.10
13:00:58	0.807	30.12
13:01:54	0.810	30.13
13:02:49	0.813	30.14
13:03:45	0.815	30.15
13:04:40	0.818	30.15
13:05:36	0.820	30.16
13:06:31	0.823	30.16
13:07:26	0.824	30.16
13:08:22	0.827	30.17
13:09:17	0.829	30.17
13:10:13	0.830	30.17
13:11:08	0.832	30.18
13:12:03	0.834	30.17
13:12:59	0.836	30.18
13:13:54	0.838	30.18
13:14:49	0.839	30.20
13:15:44	0.840	30.20
13:16:40	0.841	30.21
13:17:35	0.843	30.21
13:18:30	0.844	30.21

Mass (g) Triple Contained
7.009 Initial
7.001 Final
6.996

D.H.
03/25/99

SC5 6A1 98 02/25/99

Time	Aw	Temp (C)
10:06:37	0.661	27.77
10:07:33	0.655	27.80
10:08:29	0.650	27.83
10:09:25	0.648	27.86
10:10:20	0.649	27.88
10:11:16	0.649	27.91
10:12:11	0.648	27.94
10:13:07	0.647	27.96
10:14:02	0.644	27.99
10:14:57	0.641	28.02
10:15:53	0.639	28.05
10:16:48	0.636	28.07
10:17:43	0.631	28.11
10:18:38	0.627	28.12
10:19:33	0.622	28.16
10:20:29	0.618	28.19
10:21:24	0.615	28.20
10:22:19	0.612	28.24
10:23:14	0.610	28.27
10:24:10	0.608	28.30
10:25:05	0.605	28.32
10:26:00	0.603	28.35
10:26:55	0.601	28.38
10:27:50	0.599	28.41
10:28:45	0.597	28.44
10:29:40	0.596	28.47
10:30:35	0.596	28.51
10:31:31	0.594	28.53
10:32:26	0.593	28.56
10:33:21	0.591	28.58
10:34:16	0.590	28.62
10:35:11	0.589	28.64
10:36:07	0.587	28.67

Mass (g) Triple Contained
8.121 Initial
8.121 Final
8.117

SC5 6B1 98 02/25/99

Time	Aw	Temp (C)
11:39:46	0.689	28.50
11:40:39	0.676	28.89
11:41:32	0.668	29.16
11:42:24	0.660	29.35
11:43:17	0.654	29.48
11:44:09	0.647	29.58
11:45:01	0.642	29.65
11:45:54	0.641	29.69
11:46:46	0.640	29.73
11:47:39	0.638	29.76
11:48:31	0.637	29.78
11:49:23	0.635	29.81
11:50:15	0.633	29.82
11:51:07	0.631	29.84
11:52:00	0.628	29.84
11:52:52	0.625	29.85
11:53:44	0.622	29.87
11:54:36	0.620	29.87
11:55:28	0.618	29.88
11:56:20	0.616	29.90
11:57:12	0.614	29.90
11:58:04	0.612	29.92
11:58:57	0.611	29.92
11:59:49	0.608	29.94
12:00:41	0.607	29.96
12:01:33	0.606	29.96
12:02:25	0.603	29.98
12:03:17	0.602	29.99
12:04:10	0.601	30.00
12:05:02	0.599	30.01
12:05:54	0.598	30.02
12:06:46	0.597	30.02
12:07:38	0.596	30.02

Mass (g) Triple Contained
7.512 Initial
7.512 Final
7.507

D.H.
03/25/99

Final Calibration 02/25/99

Time	Aw	Temp (C)
13:38:46	0.998	29.94 H ₂ O
13:39:39	0.998	29.96 H ₂ O
13:40:33	0.998	29.98 H ₂ O
13:41:26	0.998	29.99 H ₂ O
13:42:19	0.998	30.01 H ₂ O
13:43:13	0.999	30.02 H ₂ O
13:44:06	0.999	30.02 H ₂ O
13:44:59	0.999	30.03 H ₂ O
13:45:53	1.000	30.03 H ₂ O
13:49:31	0.754	29.05 NaCl
13:50:27	0.754	29.33 NaCl
13:51:23	0.753	29.53 NaCl
13:52:18	0.753	29.66 NaCl
13:53:13	0.753	29.77 NaCl
13:54:08	0.754	29.84 NaCl
13:55:04	0.754	29.89 NaCl
13:55:59	0.754	29.93 NaCl
13:59:40	0.839	28.57 KCl
14:00:36	0.838	29.04 KCl
14:01:31	0.838	29.32 KCl
14:02:26	0.839	29.51 KCl
14:03:21	0.839	29.63 KCl
14:04:16	0.839	29.73 KCl
14:05:10	0.838	29.80 KCl
14:06:05	0.838	29.84 KCl
14:06:59	0.838	29.87 KCl

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04/16/99

The following results pertain to data obtained from permeameter cells #1 and #2. The procedures for these runs model those given on pg 76 of lab book 271. Slight modifications were performed concerning the filter paper placed on both ends of the sample. Instead of filter paper, filter plates were made from 1/16 inch thick plastic nubber to prevent the latex membranes from pulling through and busting. D.H. 4/16/99

Sample: SC 5-98-2A		Test-Ksat	
Width(cm): 2.54	Area(cm ²): 5.07	Height(cm): 4.0	
Time			
Start time: 8:15		Stop time: 13:53	
Start date: 1-15		Stop date: 1-22	
Elapsed Time			
Time(hrs): 173.6		Time(sec): 625.080	
Pressure			
Confining Pressure(psig): 100			
Inflow Pressure(psig): 90			
Outflow Pressure(psig): 5			
Differential Pressure (dP)			
dP(psig) = Inflow-Outflow		dP(cm H ₂ O) = dP(psig)*27.68*2.54	
85 [psig]		5976 [cm H ₂ O]	
Fluid Levels			
Initial (ml)		Final (ml)	
Confining: 13.6		Confining: 12.8	
Inflow: 2.45		Inflow: 4.5	
Outflow: 23.2		Outflow: 21.15	
Fluid Level Changes			
Confining (ml): 0.8			
Inflow (ml): 2.3			
Outflow (ml): 2.05			
Volume change			
[Inflow (ml) + Outflow (ml)] / 2			
2.18 [ml]			
Ksat Calculation			
Ksat = (Q / A) * (dL / dH)			
Q = Volume change (ml) / Elapsed time (sec)		= (1) 3.49E ⁻⁶ [ml/sec]	
A = Area (cm ²)		= (2) 5.07 [cm ²]	
dL = Sample Height (cm)		= (3) 4.0 [cm]	
dH = Differential Pressure (cm H ₂ O)		= (4) 5976 [cm H ₂ O]	
Ksat = [1 / 2] * [3 / 4] (cm/sec)		4.60E ⁻¹⁰ [cm/sec]	
Notes			
this experiment was conducted in permeameter # 2			
D.H. 01/22/99			

To Page No. _____

Witnessed & Understood by me,

Date

Invented by

Date

Recorded by

Sample: 3C

Test-Ksat

Width(cm): 2.54 Area(cm²): 4.9/ Height(cm): 4.09

Time

Start time: 15:50

Stop time: 15:15

Start date: 2-2-99

Stop date: 2-12-99

Elapsed Time

Time(hrs): 240

Time(sec): 861300

Pressure

Confining Pressure(psig): 100

Inflow Pressure(psig): 90

Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow

dP(cm H₂O) = dP(psig)*27.68*2.54

85

[psig]

5976

[cm H₂O]

Fluid Levels

Initial (ml)

Final (ml)

Confining: 19.5

Confining: 18.7

Inflow: 0.3

Inflow: 0.7

Outflow: 23.2

Outflow: 22.8

Fluid Level Changes

Confining (ml): 0.8

Inflow (ml): 0.4

Outflow (ml): 0.4

Volume change

[Inflow (ml) + Outflow (ml)] / 2

0.4

[ml]

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 4.64×10^{-7} [ml/sec]A = Area (cm²) = (2) 4.9/ [cm²]

dL = Sample Height (cm) = (3) 4.09 [cm]

dH = Differential Pressure (cm H₂O) = (4) 5976 [cm H₂O]Ksat = [1 / 2] * [3 / 4] (cm/sec) = 6.47×10^{-11} [cm/sec]

Notes

D.H. 2/10/99

Sample: 5C 5-98-2B

Test-Ksat

Width(cm): 2.54 Area(cm²): 5.07 Height(cm): 3.975

Time

Start time: 8:15

Stop time: 13:53

Start date: 1-15

Stop date: 1-22

Elapsed Time

Time(hrs): 749.6173.6

Time(sec): 8125080

Pressure

Confining Pressure(psig): 100

Inflow Pressure(psig): 90

Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow

dP(cm H₂O) = dP(psig)*27.68*2.54

85

[psig]

5976

[cm H₂O]

Fluid Levels

Initial (ml)

Final (ml)

Confining: 12.8

Confining: 13.1

Inflow: 1.5

Inflow: 4.8

Outflow: 23.7

Outflow: 21.0

Fluid Level Changes

Confining (ml): 0.2

Inflow (ml): 3.3

Outflow (ml): 2.3

Volume change

[Inflow (ml) + Outflow (ml)] / 2

3.0

[ml]

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 4.80×10^{-6} [ml/sec]A = Area (cm²) = (2) 5.07 [cm²]

dL = Sample Height (cm) = (3) 3.975 [cm]

dH = Differential Pressure (cm H₂O) = (4) 5976 [cm H₂O]Ksat = [1 / 2] * [3 / 4] (cm/sec) = 6.30×10^{-10} [cm/sec]

Notes

D.H. 01/22/99

This experiment was conducted in permeameter cell # 1

Recorded by

Project No.
Book No.

D.H. 4/16/99

Sample: SC-98-38 CELL #2 Test-Ksat

Width(cm): 2.5 Area(cm²): 4.91 Height(cm): 4

Time

Start time: 8:00 am

Stop time: 8:00 am

Start date: 3/5/99

Stop date: 3/11/99

Elapsed Time

Time(hrs): 144

Time(sec): 518,400

Pressure

Confining Pressure(psig): 100 psi

Inflow Pressure(psig): 90 psi

Outflow Pressure(psig): 5 psi

Differential Pressure (dP)

dP(psig) = Inflow-Outflow

85

(psig)

dP(cm H₂O) = dP(psig)*27.68*2.54

5976.112

(cm H₂O)

Fluid Levels

Initial (ml)

Confining: 6.6

Inflow: 13.15

Outflow: 13.40

Final (ml)

Confining: 6.7

Inflow: 13.45

Outflow: 13.2

Fluid Level Changes

Confining (ml): .1

Inflow (ml): .3

Outflow (ml): .2

Volume change

[Inflow (ml) + Outflow (ml)] / 2

.25

(ml)

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 4.82E-7 (ml/sec)

A = Area (cm²) = (2) 4.91 (cm²)

dL = Sample Height (cm) = (3) 4 (cm)

dH = Differential Pressure (cm H₂O) = (4) 5976.112 (cm H₂O)Ksat = [1 / 2] * [3 / 4] (cm/sec) = 6.57 x 10⁻¹¹ (cm/sec)

Notes

Started run on 3/11/99 at 16:40, low level on 3/11/99, left run for 1 week before inflow & outflow due to air.

DH 4/16/99

Sample: SC-98-5A CELL #1 Test-Ksat

Width(cm): 2.5 Area(cm²): 4.91 Height(cm): 3.82

Time

Start time: 7:30 am

Stop time: 8:00 am

Start date: 3/9/99

Stop date: 3/11/99

Elapsed Time

Time(hrs): 48.5

Time(sec): 174,600

Pressure

Confining Pressure(psig): 100

Inflow Pressure(psig): 90

Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow

85

(psig)

dP(cm H₂O) = dP(psig)*27.68*2.54

5976.112

(cm H₂O)

Fluid Levels

Initial (ml)

Confining: 14.0

Inflow: 7.7

Outflow: 18.2

Final (ml)

Confining: 14.1

Inflow: 8.4

Outflow: 17.6

Fluid Level Changes

Confining (ml): .1

Inflow (ml): .7

Outflow (ml): .6

Volume change

[Inflow (ml) + Outflow (ml)] / 2

.65

(ml)

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 3.72 x 10⁻⁶ (ml/sec)A = Area (cm²) = (2) 4.91 (cm²)

dL = Sample Height (cm) = (3) 3.82 (cm)

dH = Differential Pressure (cm H₂O) = (4) 5976.11 (cm H₂O)Ksat = [1 / 2] * [3 / 4] (cm/sec) = 4.84 x 10⁻¹⁰ (cm/sec)

Notes

Started Run on 3/11/99 at 16:40, inflow > outflow substantially DH initially. For first week and half, possible air remained within lines during this time.

DH 4/16/99

Recorded by _____

Witnessed _____

Sample: SC-98-6B		Test-Ksat	
Width(cm): 2.5	Area(cm ²): 4.91	Height(cm): 4	
Time			
Start time: 13:00	Stop time: 15:05		
Start date: 3/11/99	Stop date: 3/11/99		
Elapsed Time			
Time(hrs): 2.05 hrs	Time(sec): 7500		
Pressure			
Confining Pressure(psig): 100			
Inflow Pressure(psig): 90			
Outflow Pressure(psig): 5			
Differential Pressure (dP)			
dP(psig) = Inflow-Outflow		dP(cm H ₂ O) = dP(psig)*27.68*2.54	
85 [psig]		5976.112 [cm H ₂ O]	
Fluid Levels			
Initial (ml)		Final (ml)	
Confining: 4.4		Confining: 5.0	
Inflow: 3.4		Inflow: 8.7	
Outflow: 19.4		Outflow: 14.0	
Fluid Level Changes			
Confining (ml): .6			
Inflow (ml): 8.3 - pH 5.3			
Outflow (ml): 5.4			
Volume change			
[Inflow (ml) + Outflow (ml)] / 2			
5.35		[ml]	
Ksat Calculation			
Ksat = (Q / A) * (dL / dH)			
Q = Volume change (ml) / Elapsed time (sec)		= (1) 7.13×10^{-4} [ml/sec]	
A = Area (cm ²)		= (2) 4.91 [cm ²]	
dL = Sample Height (cm)		= (3) 4 [cm]	
dH = Differential Pressure (cm H ₂ O)		= (4) 5976.11 [cm H ₂ O]	
Ksat = [1 / 2] * [3 / 4] (cm/sec)		9.72 $\times 10^{-8}$ [cm/sec]	
Notes			
Confining level changed due to swelling effect of latex membrane clumped together at bottom of permeometer cell.			

04/27/99

The following data was obtained from the ten tuft samples on 3/16/99 and 4/13/99. The procedures for these results were performed in the same manner as those mentioned on pages 6 & 87 of Lab Book 271 with the exception of a prolonged dry time between runs. Due to lower moisture contents, samples were allowed the to 44 hours in ambient conditions for 30 minutes each time an experiment was conducted. Data has been shown on following pages.

C.D.H. 4/27/99

Witnessed & Understood by me,

Date

Invented by

Recorded by

Date

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Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by	

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9

SC5 5A1 98 03/16/99

Time	Aw	Temp (C)
14:26:23	0.505	26.89
14:27:20	0.516	27.19
14:28:16	0.523	27.36
14:29:12	0.527	27.48
14:30:07	0.531	27.56
14:31:02	0.533	27.62
14:31:57	0.535	27.64
14:32:52	0.537	27.67
14:33:47	0.537	27.71
14:34:42	0.538	27.72
14:35:36	0.539	27.73
14:36:31	0.54	27.75
14:37:26	0.541	27.75
14:38:21	0.541	27.78
14:39:15	0.541	27.79
14:40:10	0.541	27.78
14:41:05	0.541	27.8
14:41:59	0.541	27.8
14:42:54	0.541	27.81
14:43:49	0.541	27.81
14:44:44	0.541	27.81
14:45:38	0.54	27.81
14:46:33	0.54	27.81
14:47:27	0.54	27.82
14:48:22	0.54	27.82
14:49:16	0.54	27.81
14:50:11	0.539	27.81
14:51:05	0.539	27.81
14:52:00	0.539	27.81
14:52:55	0.539	27.8
14:53:50	0.538	27.81
14:54:44	0.538	27.8
14:55:39	0.538	27.81
14:56:34	0.538	27.82

Mass (g) Single Contained

6.819 Initial
6.817 Final
6.809

SC5 6A1 98 03/16/99

Time	Aw	Temp (C)
17:02:16	0.6	25.41
17:03:18	0.602	25.3
17:04:21	0.604	25.16
17:05:24	0.606	25.17
17:06:26	0.604	25.11
17:07:28	0.603	25
17:08:31	0.604	25
17:09:33	0.6	25.03
17:10:36	0.598	24.95
17:11:38	0.595	25.02
17:12:40	0.589	25.04
17:13:43	0.589	24.94
17:14:45	0.585	25.06
17:15:47	0.582	25.01
17:16:50	0.582	24.94
17:17:53	0.578	25.06
17:18:55	0.576	24.99
17:19:58	0.577	24.95
17:21:01	0.573	25.04
17:22:03	0.571	24.97
17:23:06	0.572	24.93
17:24:09	0.57	25.04
17:25:11	0.567	25
17:26:14	0.569	24.93
17:27:17	0.566	25.05
17:28:20	0.564	25
17:29:23	0.564	24.99
17:30:26	0.561	25.06
17:31:28	0.56	25
17:32:31	0.561	24.97

Mass (g) Triple Contained

8.113 Initial
8.112 Final
8.107

SC5 6B1 98 03/16/99

Time	Aw	Temp (C)
15:45:40	0.576	25.6
15:46:40	0.585	25.38
15:47:40	0.591	25.27
15:48:40	0.591	25.22
15:49:40	0.59	25.13
15:50:41	0.592	25.09
15:51:41	0.589	25.12
15:52:41	0.585	25.03
15:53:41	0.585	24.96
15:54:41	0.58	25.07
15:55:41	0.578	24.97
15:56:41	0.578	24.89
15:57:41	0.577	25.03
15:58:41	0.575	24.97
15:59:41	0.573	24.88
16:00:41	0.573	24.96
16:01:41	0.57	24.98
16:02:41	0.571	24.92
16:03:41	0.568	25.04
16:04:40	0.566	24.97
16:05:40	0.567	24.9
16:06:41	0.566	25.04
16:07:41	0.564	24.96
16:08:41	0.563	24.89
16:09:41	0.564	24.88
16:10:42	0.562	24.96
16:11:42	0.559	24.91
16:12:42	0.56	24.85
16:13:42	0.558	25.01
16:14:42	0.556	24.96
16:15:42	0.557	24.87
16:16:42	0.556	25.01
16:17:41	0.555	24.96
16:18:42	0.555	24.91

Mass (g) Triple Contained

7.512 Initial
7.512 Final
7.509

Final Calibration 03/16/99

Time	Aw	Temp (C)
8:16:40	0.998	24.14 H ₂ O
8:17:36	0.999	24.24 H ₂ O
8:18:32	0.999	24.31 H ₂ O
8:19:28	0.999	24.38 H ₂ O
8:20:24	1	24.43 H ₂ O
8:21:19	1.001	24.48 H ₂ O
8:22:15	1.001	24.53 H ₂ O
8:23:11	1.001	24.59 H ₂ O
8:24:06	1.002	24.62 H ₂ O
9:28:15	0.758	25.46 NaCl
9:29:11	0.758	25.63 NaCl
9:30:08	0.756	25.77 NaCl
9:31:05	0.756	25.86 NaCl
9:32:02	0.755	25.93 NaCl
9:32:58	0.755	25.97 NaCl
9:33:55	0.756	26 NaCl
9:34:51	0.755	26.05 NaCl
9:37:42	0.844	24.84 KCl
9:38:39	0.843	25.26 KCl
9:39:36	0.844	25.54 KCl
9:40:32	0.844	25.72 KCl
9:41:28	0.844	25.85 KCl
9:42:24	0.844	25.94 KCl
9:43:19	0.844	26.01 KCl
9:44:15	0.845	26.07 KCl

SC 98 2A1 04/13/99

Time	Aw	Temp (C)
16:00:55	0.541	25.65
16:01:56	0.544	25.44
16:02:56	0.544	25.45
16:03:56	0.544	25.32
16:04:57	0.546	25.21
16:05:57	0.544	25.27
16:06:57	0.544	25.16
16:07:58	0.547	25.12
16:08:58	0.544	25.18
16:09:59	0.543	25.12
16:11:00	0.546	25.13
16:12:01	0.544	25.13
16:13:01	0.543	25.05
16:14:02	0.544	25.12
16:15:02	0.542	25.12
16:16:03	0.545	25.07
16:17:04	0.542	25.16
16:18:04	0.543	25.07
16:19:05	0.543	25.18
16:20:05	0.542	25.14
16:21:06	0.543	25.04
16:22:06	0.542	25.17
16:23:07	0.541	25.11
16:24:08	0.543	25.1
16:25:09	0.541	25.13
16:26:09	0.543	25.03
16:27:10	0.541	25.18
16:28:11	0.541	25.08
16:29:12	0.542	25.11
16:30:12	0.54	25.14
16:31:13	0.542	25.07
16:32:13	0.54	25.15
16:33:14	0.541	25.06
16:34:14	0.541	25.18

Mass (g) Triple Contained

6.986 Initial
6.985 Final
6.968

SC5 98 2B1 04/13/99

Time	Aw	Temp (C)
13:55:33	0.513	25.52
13:56:34	0.517	25.23
13:57:34	0.516	25.31
13:58:34	0.516	25.13
13:59:35	0.52	24.98
14:00:36	0.518	25.15
14:01:37	0.517	25.03
14:02:38	0.518	24.93
14:03:39	0.52	24.99
14:04:40	0.518	24.99
14:05:41	0.518	24.92
14:06:42	0.52	24.99
14:07:43	0.518	25
14:08:44	0.518	24.93
14:09:45	0.521	24.97
14:10:46	0.519	25.04
14:11:47	0.518	24.97
14:12:48	0.521	24.91
14:13:49	0.519	25.06
14:14:49	0.519	25.01
14:15:50	0.521	24.9
14:16:51	0.519	25.13
14:17:52	0.518	25.05
14:18:52	0.521	24.92
14:19:53	0.52	25.11
14:20:55	0.519	25.03
14:21:56	0.522	24.91
14:22:56	0.52	25.13
14:23:57	0.519	25.03
14:24:58	0.52	24.9
14:26:00	0.522	25.01
14:27:01	0.519	25.03
14:28:01	0.518	24.92
14:29:02	0.52	24.88

Mass (g) Double Contained

6.682 Initial
6.681 Final
6.658

SC5 2C1 98 04/13/99

Time	Aw	Temp (C)
13:48:14	0.565	25.31
13:49:16	0.569	25.2
13:50:17	0.568	25.19
13:51:18	0.569	25.06
13:52:20	0.57	25.15
13:53:22	0.569	25.08
13:54:24	0.571	25.1
13:55:25	0.569	25.14
13:56:27	0.572	25.07
13:57:29	0.57	25.2
13:58:31	0.571	25.08
13:59:32	0.571	25.17
14:00:34	0.571	25.14
14:01:36	0.575	25.07
14:02:37	0.574	25.18
14:03:39	0.575	25.09
14:04:41	0.576	25.12
14:05:43	0.573	25.16
14:06:44	0.572	25.06
14:07:46	0.574	25.08
14:08:48	0.571	25.11
14:09:49	0.573	25.1
14:10:51	0.571	25.15
14:11:53	0.572	25.08
14:12:54	0.571	25.17
14:13:55	0.571	25.11
14:14:57	0.572	25.16
14:15:59	0.57	25.15
14:17:00	0.571	25.03
14:18:02	0.57	25.15

Mass (g) Triple Contained

6.970 Initial
6.971 Final
6.960

Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____

SC5 3A1 98 04/13/99

Time	Aw	Temp (C)
12:03:56	0.548	25.24
12:04:57	0.552	25.1
12:05:56	0.551	25.16
12:06:56	0.552	25.04
12:07:56	0.556	24.92
12:08:56	0.554	25.1
12:09:57	0.554	24.99
12:10:57	0.556	24.87
12:11:58	0.556	25.05
12:12:58	0.555	24.97
12:13:58	0.556	24.88
12:15:00	0.558	24.98
12:16:00	0.557	24.95
12:17:00	0.555	24.88
12:18:00	0.557	24.79
12:19:01	0.558	24.95
12:20:02	0.556	24.93
12:21:02	0.557	24.85
12:22:03	0.558	24.95
12:23:03	0.556	24.94
12:24:03	0.556	24.89
12:25:04	0.558	24.9
12:26:04	0.556	24.96
12:27:04	0.557	24.92
12:28:05	0.558	25.02
12:29:05	0.557	25.01
12:30:06	0.556	24.92
12:31:06	0.559	24.87
12:32:07	0.557	25.01
12:33:07	0.556	24.94
12:34:07	0.557	24.87
12:35:08	0.557	24.99
12:36:08	0.556	24.99
12:37:09	0.559	24.99

Mass (g) Single Contained
 7.380 Initial
 7.380 Final
 7.354

SC5 3B1 98 04/13/99

Time	Aw	Temp (C)
15:01:23	0.602	25.22
15:02:24	0.61	25.18
15:03:23	0.611	25.21
15:04:23	0.615	25.08
15:05:22	0.617	25.15
15:06:22	0.617	25.11
15:07:21	0.62	25.07
15:08:21	0.619	25.15
15:09:20	0.621	25.07
15:10:19	0.621	25.19
15:11:19	0.62	25.17
15:12:18	0.624	25.1
15:13:17	0.622	25.23
15:14:16	0.622	25.14
15:15:16	0.624	25.08
15:16:15	0.622	25.18
15:17:14	0.623	25.11
15:18:14	0.623	25.18
15:19:13	0.622	25.17
15:20:12	0.625	25.11
15:21:11	0.622	25.22
15:22:11	0.623	25.13
15:23:10	0.624	25.19
15:24:10	0.622	25.15
15:25:09	0.623	25.06
15:26:08	0.624	25.11
15:27:07	0.623	25.12
15:28:07	0.625	25.05
15:29:06	0.622	25.19
15:30:05	0.624	25.07
15:31:05	0.624	25.15
15:32:04	0.622	25.13
15:33:03	0.624	25.07
15:34:02	0.622	25.19

Mass (g) Triple Contained
 6.915 Initial
 6.913 Final
 6.889

SC5 3C1 98 04/13/99

Time	Aw	Temp (C)
10:48:53	0.557	25.22
10:49:54	0.555	25.22
10:50:55	0.554	25.07
10:51:56	0.557	24.92
10:52:57	0.555	25.09
10:53:58	0.554	24.96
10:54:59	0.555	24.87
10:55:59	0.557	24.96
10:56:59	0.555	24.96
10:57:59	0.554	24.9
10:58:59	0.554	24.9
10:59:59	0.556	24.92
11:00:59	0.555	24.96
11:01:57	0.554	24.92
11:02:56	0.557	24.84
11:03:56	0.554	25.02
11:04:56	0.554	24.85
11:05:56	0.557	24.89
11:06:56	0.555	25.03
11:07:56	0.555	24.84
11:08:56	0.556	24.85
11:09:56	0.555	25
11:10:56	0.554	24.96
11:11:56	0.556	24.87
11:12:56	0.556	25.03
11:13:56	0.554	25.01
11:14:56	0.555	24.96
11:15:56	0.555	25.01
11:16:56	0.554	24.92
11:17:56	0.557	24.84
11:18:56	0.554	25.04
11:19:56	0.554	24.95
11:20:56	0.556	24.85
11:21:56	0.555	25.07

Mass (g) Single Contained
 6.597 Initial
 6.595 Final
 6.546

SC5 4A1 98 04/13/99

Time	Aw	Temp (C)
13:03:52	0.498	25.41
13:04:50	0.501	25.43
13:05:48	0.504	25.28
13:06:46	0.507	25.1
13:07:44	0.509	25.16
13:08:41	0.509	25.09
13:09:39	0.511	24.96
13:10:37	0.513	25.05
13:11:35	0.512	25.02
13:12:33	0.512	24.96
13:13:31	0.515	24.94
13:14:29	0.513	25.02
13:15:27	0.513	24.98
13:16:24	0.516	24.99
13:17:22	0.515	25.08
13:18:20	0.514	25.01
13:19:17	0.515	24.93
13:20:15	0.516	25.05
13:21:13	0.514	25.04
13:22:10	0.515	24.95
13:23:07	0.516	25.05
13:24:05	0.515	25.02
13:25:03	0.515	24.95
13:26:00	0.516	25.03
13:26:58	0.514	25.03
13:27:56	0.515	24.97
13:28:54	0.515	25.09
13:29:52	0.514	25.08
13:30:50	0.515	25.01
13:31:48	0.516	25.14
13:32:46	0.515	25.1
13:33:44	0.514	25.02
13:34:42	0.516	24.94
13:35:40	0.516	25.09

Mass (g) Single Contained
 6.490 Initial
 6.488 Final
 6.467

SC5 5A1 98 04/13/99

Time	Aw	Temp (C)
10:09:10	0.85	25.35
10:10:10	0.843	25.32
10:11:10	0.84	25.15
10:12:10	0.84	24.99
10:13:11	0.839	25.07
10:14:11	0.836	25.02
10:15:11	0.834	24.92
10:16:11	0.833	25.03
10:17:11	0.836	24.99
10:18:11	0.835	24.89
10:19:11	0.837	24.78
10:20:12	0.834	24.94
10:21:12	0.82	24.91
10:22:12	0.818	24.84
10:23:12	0.819	24.89
10:24:12	0.814	24.93
10:25:12	0.811	24.88
10:26:13	0.813	24.85
10:27:13	0.808	24.99
10:28:13	0.806	24.9
10:29:14	0.806	24.81
10:30:14	0.804	25
10:31:14	0.802	24.92
10:32:15	0.802	24.84
10:33:15	0.803	24.93
10:34:15	0.8	24.93
10:35:15	0.806	24.88
10:36:15	0.809	24.81
10:37:16	0.809	24.84
10:38:16	0.805	24.92
10:39:17	0.806	24.89
10:40:17	0.805	25
10:41:17	0.803	25.01
10:42:17	0.805	24.93

Mass (g) Single Contained
 6.812 Initial
 6.811 Final
 6.801

SC5 6A1 98 04/13/99

Time	Aw	Temp (C)
12:33:34	0.784	25.05
12:34:37	0.789	25.15
12:35:39	0.747	25.1
12:36:41	0.743	25.05
12:37:44	0.732	25.13
12:38:47	0.728	25.05
12:39:49	0.73	24.96
12:40:52	0.723	25.09
12:41:55	0.721	25.01
12:42:57	0.722	24.99
12:43:59	0.715	25.07
12:44:59	0.717	24.97
12:45:57	0.714	25.07
12:46:59	0.71	25.03
12:47:59	0.712	24.94
12:48:59	0.708	25.08
12:49:59	0.707	25.02
12:50:59	0.708	25.04
12:51:59	0.708	25.07
12:52:59	0.705	25.02
12:53:59	0.708	25.02
12:54:59	0.703	25.16
12:55:59	0.705	25.05
12:56:59	0.705	25.11
12:57:59	0.702	25.11
12:58:59	0.704	25
12:59:59	0.704	25.07
13:00:59	0.708	25.08
13:01:59	0.702	25.12
13:02:59	0.705	25.02
13:03:59	0.703	25.12
13:04:59	0.701	25.1
13:05:59	0.705	24.97
13:06:59	0.701	25.12

Mass (g) Triple Contained
 6.113 Initial
 6.113 Final
 6.108

SC5 6B1 98 04/13/99

Time	Aw	Temp (C)
14:22:08	0.487	25.43
14:23:07	0.491	25.41
14:24:06	0.495	25.23
14:25:05	0.497	25.27
14:26:03	0.497	25.18
14:27:02	0.498	25.07
14:28:01	0.5	25.07
14:29:00	0.499	25.11
14:29:58	0.501	25.01
14:30:57	0.5	25.19
14:31:56	0.499	25.1
14:32:54	0.501	25.01
14:33:53	0.499	25.16
14:34:52	0.499	25.07
14:35:51	0.5	25.07
14:36:50	0.499	25.1
14:37:49	0.499	25.03
14:38:48	0.499	25.08
14:39:46	0.498	25.08
14:40:45	0.499	25.02
14:41:44	0.498	25.12
14:42:43	0.497	25.09
14:43:42	0.5	25.08
14:44:41	0.497	25.12
14:45:40	0.497	25.03
14:46:39	0.499	25.01
14:47:38	0.497	25.08
14:48:37	0.497	25.01
14:49:36	0.496	25.13
14:50:35	0.495	25.09
14:51:35	0.497	25.1
14:52:34	0.495	25.15
14:53:32	0.495	25.07
14:54:31	0.495	25.15

Mass (g) Triple Contained
 7.511 Initial
 7.512 Final
 7.507

Final Calibration 04/13/99

Time	Aw	Temp (C)
14:32:36	0.999	24.85 H ₂ O
14:33:36	0.999	24.8 H ₂ O
14:34:36	0.997	24.93 H ₂ O
14:35:35	1.001	24.82 H ₂ O
14:36:35	1.001	24.77 H ₂ O
14:37:34	0.997	24.76 H ₂ O
14:38:35	1.003	24.87 H ₂ O
14:39:34	0.998	24.78 H ₂ O
14:40:34	1.001	24.84 H ₂ O
14:41:34	0.757	25.12 NaCl
14:42:33	0.754	25.04 NaCl
14:43:34	0.757	24.93 NaCl
14:44:35	0.754	25.09 NaCl
14:45:35	0.755	24.98 NaCl
14:46:36	0.755	25.11 NaCl
14:47:36	0.753	25.05 NaCl
14:48:36	0.754	24.93 NaCl
14:49:36	0.842	25.05 KCl
14:50:36	0.842	25.03 KCl
14:51:36	0.843	24.98 KCl
14:52:36	0.845	25.05 KCl
14:53:36	0.842	25.06 KCl
14:54:36	0.847	24.96 KCl

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Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____

TITLE _____

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4/29/99

The following permeameter cell results for the individual tuff samples were obtained in the same manner as mentioned on pg. 76 of Lab Book 271 and pg. 4 of this Book. Ksat values obtained have shown to be adequate in comparison to previous experiments.

D.H. 4/29/99

Sample: SC-98-68

Test-Ksat

Width(cm): 2.5

Area(cm²): 4.91

Height(cm): 4

Time

Start time: 9:10

Stop time: 15:00

Start date: 3/18/99

Stop date: 3/18/99

Elapsed Time

Time(hrs): 5.83

Time(sec): 21000

Pressure

Confining Pressure(psig): 100

Inflow Pressure(psig): 90

Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow

85

[psig]

dP(cm H₂O) = dP(psig)*27.68*2.54

5976.11

[cm H₂O]

Fluid Levels

Initial (ml)

Confining: 5

Inflow: .6

Outflow: 23.2

Final (ml)

Confining: 5.6

Inflow: 13.6

Outflow: 10.3

Fluid Level Changes

Confining (ml): 0.6

Inflow (ml): 13.0

Outflow (ml): 12.9

Volume change

[Inflow (ml) + Outflow (ml)] / 2

12.95

[ml]

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 6.17 x 10⁻⁴ [ml/sec]A = Area (cm²) = (2) 4.91 [cm²]

dL = Sample Height (cm) = (3) 4.0 [cm]

dH = Differential Pressure (cm H₂O) = (4) 5976.11 [cm H₂O]Ksat = [1 / 2] * [3 / 4] (cm/sec) = 8.41 x 10⁻⁸ [cm/sec]

Notes

D.H. 4/29/99

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Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____

Sample: SC-98-6B Test=Ksat

Width(cm): 2.5 Area(cm²): 4.9/ Height(cm): 4

Time

Start time: 15:08 Stop time: 19:38
Start date: 3/19/99 Stop date: 3/19/99

Elapsed Time

Time(hrs): 4.5 Time(sec): 16,200

Pressure

Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow 85 [psig] dP(cm H2O) = dP(psig)*27.68*2.54 5976.1/2 [cm H2O]

Fluid Levels

Initial (ml)	Final (ml)
Confining: <u>4.9</u>	Confining: <u>5.6</u>
Inflow: <u>0.1</u>	Inflow: <u>9.7</u>
Outflow: <u>23.1</u>	Outflow: <u>13.5</u>

Fluid Level Changes

Confining (ml): 0.7
Inflow (ml): 9.6
Outflow (ml): 9.6

Volume change

[Inflow (ml) + Outflow (ml)] / 2 9.6 [ml]

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 5.93 x 10⁻⁴ [ml/sec]
A = Area (cm²) = (2) 4.9/ [cm²]
dL = Sample Height (cm) = (3) 4 [cm]
dH = Differential Pressure (cm H2O) = (4) 5976.1/2 [cm H2O]
Ksat = [1 / 2] * [3 / 4] (cm/sec) 8.08 x 10⁻⁸ [cm/sec]

Notes

Sample: SC-98-2C Cell #2 Test=Ksat

Width(cm): 2.5 Area(cm²): 4.9/ Height(cm): 4.025

Time

Start time: 7:45 Stop time: 7:50
Start date: 3/25/99 Stop date: 3/30/99

Elapsed Time

Time(hrs): 12008 Time(sec): 432,300

Pressure

Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow 85 [psig] dP(cm H2O) = dP(psig)*27.68*2.54 5976.1/2 [cm H2O]

Fluid Levels

Initial (ml)	Final (ml)
Confining: <u>17.1</u>	Confining: <u>12.0</u>
Inflow: <u>12.5</u>	Inflow: <u>12.3</u>
Outflow: <u>17.9</u>	Outflow: <u>17.1</u>

Fluid Level Changes

Confining (ml): 0.1
Inflow (ml): .8
Outflow (ml): .8

Volume change

[Inflow (ml) + Outflow (ml)] / 2 .8 [ml]

Ksat Calculation

Ksat = (Q / A) * (dL / dH)

Q = Volume change (ml) / Elapsed time (sec) = (1) 1.85 x 10⁻⁴ [ml/sec]
A = Area (cm²) = (2) 4.9/ [cm²]
dL = Sample Height (cm) = (3) 4.025 [cm]
dH = Differential Pressure (cm H2O) = (4) 5976.1/2 [cm H2O]
Ksat = [1 / 2] * [3 / 4] (cm/sec) 2.56 x 10⁻¹⁰ [cm/sec]

Notes

Witnessed at

Recorded by

Sample: SC-98-2C CELL#2 Test=Ksat

Width(cm): 2.5 Area(cm²): 4.91 Height(cm): 4.075

Time

Start time: 7:15	Stop time: 8:20
Start date: 4-2-99	Stop date: 4-6-99

Elapsed Time

Time(hrs): 97.083	Time(sec): 349,500
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Pressure

Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow	dP(cm H ₂ O) = dP(psig)*27.68*2.54
85 [psig]	5,976.112 [cm H ₂ O]

Fluid Levels

Initial (ml)	Final (ml)
Confining: 3.2	Confining: 3.2
Inflow: 1.5	Inflow: 2.3
Outflow: 2.8	Outflow: 2.1

Fluid Level Changes

Confining (ml): 0
Inflow (ml): .8
Outflow (ml): .7

Volume change

[Inflow (ml) + Outflow (ml)] / 2	[ml]
.75	

Ksat Calculation

$$Ksat = (Q / A) * (dL / dH)$$

Q = Volume change (ml) / Elapsed time (sec) = (1) 2.15×10^{-6} [ml/sec]A = Area (cm²) = (2) 4.91 [cm²]

dL = Sample Height (cm) = (3) 4.075 [cm]

dH = Differential Pressure (cm H₂O) = (4) 5,976.112 [cm H₂O]Ksat = [1 / 2] * [3 / 4] (cm/sec) = 2.98×10^{-10} [cm/sec]

Notes

Sample: SC-98-3A CELL#2 Test=Ksat

Width(cm): 2.5 Area(cm²): 4.91 Height(cm): 4.05

Time

Start time: 7:15	Stop time: 5:00 D.H. 4-14-99 17:00
Start date: 4-2-99	Stop date: 4-14-99

Elapsed Time

Time(hrs): 297.75	Time(sec): 1,071,900
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Pressure

Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5

Differential Pressure (dP)

dP(psig) = Inflow-Outflow	dP(cm H ₂ O) = dP(psig)*27.68*2.54
85 [psig]	5,976.112 [cm H ₂ O]

Fluid Levels

Initial (ml)	Final (ml)
Confining: 16.40	Confining: 15.40
Inflow: .50	Inflow: 1.10
Outflow: 23.50	Outflow: 22.90

Fluid Level Changes

Confining (ml): 1.0
Inflow (ml): .6
Outflow (ml): .6

Volume change

[Inflow (ml) + Outflow (ml)] / 2	[ml]
.6	

Ksat Calculation

$$Ksat = (Q / A) * (dL / dH)$$

Q = Volume change (ml) / Elapsed time (sec) = (1) 5.60×10^{-7} [ml/sec]A = Area (cm²) = (2) 4.91 [cm²]

dL = Sample Height (cm) = (3) 4.05 [cm]

dH = Differential Pressure (cm H₂O) = (4) 5,976.112 [cm H₂O]Ksat = [1 / 2] * [3 / 4] (cm/sec) = 7.73×10^{-11} [cm/sec]

Notes

D.H. 4-14-99

Recorded by

Project No.
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5/6/99 - Continued aqua lab dry retention cycle on 5/04/99. Required drying time between runs ^{D.H. 5/6/99} has been increased as appropriate for each sample. An oven has been used as the drying source when samples ~~shows to have reached~~ ^{D.H. 5/6/99} for samples who have reached equilibrium with atmospheric conditions. Samples are placed in the oven at 105°C until their mass readings decrease by $\approx .02$ g. D.H. 5/6/99

Initial Calibration 05/04/99				SC 98 2A1 05/04/99				SC5 98 2B1 05/04/99				SC5 2C1 98 05/04/99				SC5 3A1 98 05/04/99			
Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)	
7:10:36	0.997	24.8	H ₂ O	14:28:57	0.637	25.22		10:15:17	0.621	25.21		13:15:44	0.632	24.8		11:32:41	0.596	25.16	
7:11:39	1	24.81	H ₂ O	14:30:01	0.644	25.2		10:16:19	0.622	25.14		13:16:50	0.637	24.8		11:33:44	0.598	25.03	
7:12:40	0.997	24.89	H ₂ O	14:31:03	0.647	25.04		10:17:20	0.622	25.02		13:17:54	0.643	24.72		11:34:47	0.601	25.11	
7:13:42	1	24.83	H ₂ O	14:32:05	0.651	24.93		10:18:22	0.625	24.97		13:18:58	0.645	24.87		11:35:50	0.6	25.07	
7:14:44	1	24.89	H ₂ O	14:33:08	0.655	24.98		10:19:23	0.624	25.07		13:20:02	0.646	24.85		11:36:52	0.6	24.97	
7:15:46	0.997	24.89	H ₂ O	14:34:11	0.654	24.97		10:20:24	0.624	25		13:21:06	0.649	24.84		11:37:55	0.603	25	
7:16:47	0.999	24.83	H ₂ O	14:35:13	0.655	24.88		10:21:26	0.628	24.96		13:22:10	0.648	24.91		11:38:57	0.601	25.06	
7:17:49	1.003	24.83	H ₂ O	14:36:17	0.659	24.87		10:22:27	0.625	25.08		13:23:14	0.651	24.85		11:39:59	0.6	24.98	
7:18:50	0.998	24.89	H ₂ O	14:37:19	0.658	24.95		10:23:29	0.624	24.97		13:24:18	0.65	24.99		11:41:02	0.604	24.96	
7:34:29	0.758	23.77	NaCl	14:38:22	0.658	24.89		10:24:30	0.626	24.87		13:25:22	0.649	24.93		11:42:05	0.601	25.09	
7:35:34	0.754	24.14	NaCl	14:39:25	0.662	24.88		10:25:32	0.626	24.99		13:26:26	0.652	24.84		11:43:07	0.6	25	
7:36:38	0.754	24.28	NaCl	14:40:27	0.659	24.97		10:26:33	0.624	24.99		13:27:30	0.651	25		11:44:10	0.604	24.92	
7:37:43	0.757	24.42	NaCl	14:41:30	0.66	24.9		10:27:35	0.625	24.92		13:28:34	0.65	24.93		11:45:12	0.602	25.08	
7:38:47	0.755	24.62	NaCl	14:42:33	0.661	24.93		10:28:36	0.627	24.98		13:29:37	0.653	24.84		11:46:14	0.601	25.02	
7:39:51	0.756	24.61	NaCl	14:43:35	0.661	24.95		10:29:38	0.625	25.03		13:30:41	0.652	24.96		11:47:17	0.604	24.93	
7:40:55	0.757	24.79	NaCl	14:44:37	0.661	25.01		10:30:39	0.625	24.94		13:31:45	0.65	24.93		11:48:20	0.602	25.09	
7:41:58	0.754	24.82	NaCl	14:45:40	0.661	24.98		10:31:41	0.626	24.88		13:32:49	0.653	24.83		11:49:22	0.601	25.04	
7:43:01	0.754	24.77	NaCl	14:46:42	0.662	25.04		10:32:42	0.626	25.05		13:33:53	0.653	24.99		11:50:25	0.603	24.94	
7:57:28	0.847	24.96	KCl	14:47:45	0.661	25.03		10:33:43	0.626	25.01		13:34:57	0.651	24.93		11:51:27	0.603	25.09	
7:58:32	0.844	24.93	KCl	14:48:47	0.664	24.94		10:34:45	0.626	24.93		13:36:01	0.65	24.8		11:52:30	0.601	25.04	
7:59:35	0.846	24.86	KCl	14:49:50	0.662	25.09		10:35:46	0.626	25.04		13:37:05	0.653	24.75		11:53:32	0.603	24.94	
8:00:37	0.845	24.98	KCl	14:50:53	0.661	25		10:36:48	0.625	25.05		13:38:09	0.651	24.92		11:54:35	0.603	25.09	
8:01:40	0.844	24.95	KCl	14:51:55	0.663	25.02		10:37:49	0.625	24.98		13:39:13	0.65	24.85		11:55:37	0.601	25.06	
8:02:43	0.848	24.93	KCl	14:52:57	0.661	25.04		10:38:51	0.627	25.06		13:40:16	0.652	24.77		11:56:40	0.603	25.11	
8:03:46	0.844	25.04	KCl	14:54:00	0.664	24.99		10:39:53	0.625	24.98		13:41:20	0.652	24.93		11:57:42	0.604	25.11	
8:04:49	0.845	24.95	KCl	14:55:02	0.662	25.07		10:40:53	0.625	24.98		13:42:24	0.65	24.88		11:58:45	0.601	25.04	
8:05:52	0.848	24.96	KCl	14:56:04	0.661	25.02		10:41:54	0.626	25.07		13:43:28	0.651	24.8		11:59:47	0.601	24.94	
				14:57:07	0.665	24.98		10:42:55	0.624	25.08		13:44:32	0.651	24.87		12:00:50	0.604	24.9	
				14:58:10	0.662	25.06		10:43:57	0.626	24.97		13:45:36	0.65	24.9		12:01:52	0.602	25.06	
				14:59:12	0.661	24.99		10:44:58	0.625	25.11		13:46:39	0.651	24.83		12:02:55	0.601	24.95	
				15:00:14	0.664	24.93		10:46:00	0.624	25.07		13:47:43	0.65	24.96		12:03:57	0.602	24.87	
				15:01:17	0.662	25.02		10:47:01	0.626	24.96		13:48:47	0.649	24.95					
				15:02:19	0.661	24.93		10:48:03	0.625	25.11		13:49:51	0.652	24.92		Mass (g) Single Contained			
				15:03:22	0.664	24.92		10:49:04	0.624	25.05		13:50:55	0.649	25.01		7.360 Initial			
																7.360 Final			
																7.342			
				Mass (g) Triple Contained				Mass (g) Double Contained				Mass (g) Triple Contained							
				6.993 Initial				6.680 Initial				6.969 Initial							
				6.982 Final				6.679 Final				6.968 Final							
				6.955				6.652				6.939							

SC5 3B1 98 05/04/99				SC5 3C1 98 05/04/99				SC5 4A1 98 05/04/99				SC5 5A1 98 05/04/99				SC5 6A1 98 05/04/99			
Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)		Time	Aw	Temp (C)	
9:39:21	0.676	24.84		10:55:35	0.608	25.21		8:39:03	0.682	25.33		9:33:08	0.631	25.48		12:24:35	0.575	24.95	
9:40:26	0.677	24.9		10:56:37	0.611	25.05		8:40:04	0.684	25.31		9:34:09	0.632	25.28		12:25:40	0.585	24.94	
9:41:30	0.679	24.86		10:57:38	0.613	25.14		8:41:03	0.684	25.13		9:35:09	0.635	25.1		12:26:44	0.589	24.81	
9:42:35	0.682	24.93		10:58:39	0.612	25.07		8:42:03	0.685	25		9:36:09	0.636	25.15		12:27:48	0.595	24.72	
9:43:39	0.68	24.98		10:59:40	0.612	24.96		8:43:02	0.692	24.96		9:37:09	0.634	25.09		12:28:52	0.593	24.84	
9:44:43	0.68	24.91		11:00:42	0.616	24.97		8:44:02	0.69	25.04		9:38:09	0.637	24.98		12:29:55	0.593	24.8	
9:45:47	0.682	24.96		11:01:43	0.614	25.03		8:45:01	0.689	24.95		9:39:09	0.637	25.11		12:30:58	0.594	24.74	
9:46:51	0.68	25.02		11:02:44	0.613	24.94		8:46:01	0.689	24.86		9:40:09	0.635	25.04		12:32:01	0.592	24.87	
9:47:55	0.683	24.95		11:03:46	0.616	24.89		8:47:00	0.689	24.97		9:41:09	0.635	24.95		12:33:03	0.592	24.81	
9:48:58	0.682	25.09		11:04:47	0.615	25.05		8:48:00	0.686	24.96		9:42:09	0.638	24.9		12:34:06	0.592	24.88	
9:50:02	0.681	25.04		11:05:49	0.614	24.99		8:48:59	0.684	24.9		9:43:09	0.635	25.04		12:35:09	0.591	24.87	
9:51:06	0.682	24.94		11:06:50	0.616	24.91		8:49:59	0.687	24.86		9:44:09	0.635	24.98		12:36:11	0.593	24.86	
9:52:09	0.683	25.08		11:07:52	0.616	25.06		8:50:58	0.683	25.01		9:45:09	0.636	24.9		12:37:14	0.591	24.94	
9:53:13	0.681	25.04		11:08:53	0.615	25		8:51:58	0.682	24.98		9:46:10	0.636	25.05		12:38:16	0.589	24.85	
9:54:16	0.682	24.95		11:09:54	0.614	24.94		8:52:57	0.683	24.91		9:47:10	0.635	25.01		12:39:18	0.591	24.78	
9:55:20	0.684	25.02		11:10:55	0.617	24.94		8:53:57	0.682	25.06		9:48:10	0.636	24.93		12:40:21	0.589	24.91	
9:56:23	0.681	25.05		11:11:57	0.616	25.03		8:54:56	0.68	25		9:49:10	0.636	25.04		12:41:23	0.587	24.87	
9:57:26	0.681	24.95		11:12:58	0.614	24.97		8:55:55	0.679	24.91		9:50:10	0.636	25.03		12:42:25	0.588	24.8	
9:58:30	0.683	25.01		11:13:59	0.617	24.9		8:56:55	0.682	24.83		9:51:10	0.636	24.95		12:43:27	0.586	24.92	
9:59:33	0.68	25.06		11:15:01	0.616	25.06		8:57:54	0.68	24.98		9:52:11	0.636	25.08		12:44:29	0.587	24.97	
10:00:36	0.683	24.97		11:16:02	0.615	25.01		8:58:54	0.678	24.96		9:53:11	0.635	25.04		12:45:31	0.585	24.92	
10:01:40	0.682	25.14		11:17:03	0.617	24.93		8:59:53	0.68	24.88		9:54:11	0.634	24.97		12:46:33	0.585	24.87	
10:02:43	0.68	25.08		11:18:05	0.616	25.04		9:00:52	0.679	25.02		9:55:11	0.637	24.99		12:47:34	0.584	24.94	
10:03:46	0.682	24.96		11:19:06	0.615	25.04		9:01:51	0.677	25		9:56:12	0.635	25.05		12:48:36	0.584	24.89	
10:04:49	0.681	25.1		11:20:07	0.616	24.95		9:02:51	0.678	24.92		9:57:12	0.634	25		12:49:37	0.582	25	
10:05:52	0.68	25.06		11:21:08	0.616	25.09		9:03:50	0.678	24.97		9:58:12	0.637	24.98		12:50:39	0.582	24.93	
10:06:55	0.683	24.95		11:22:09	0.615	25.04		9:04:50	0.676	25.03		9:59:12	0.634	25.07		12:51:41	0.582	24.96	
10:07:58	0.68	25.14		11:23:11	0.617	24.96		9:05:49	0.675	24.97		10:00:12	0.634	25.02		12:52:42	0.58	24.98	
10:09:00	0.68	25.04		11:24:12	0.617	25.13		9:06:49	0.677	24.99		10:01:13	0.637	24.97		12:53:44	0.582	24.87	
10:10:03	0.682	24.94		11:25:13	0.616	25.04		9:07:48	0.673	25.06		10:02:13	0.634	25.07		12:54:45	0.58	25.02	
10:11:06	0.682	25.08		11:26:15	0.616	24.95		9:08:47	0.672	25		10:03:13	0.634	25		12:55:47	0.579	24.94	
10:12:08	0.68	25.03		11:27:17	0.617	25.02		9:09:47	0.675	24.97		10:04:13	0.635	24.91		12:56:48	0.58	24.85	
10:13:11	0.679	24.93		11:28:18	0.616	25.04		9:10:46	0.671	25.06		10:05:13	0.635	25.07		12:57:50	0.578	24.97	
10:14:15	0.683	24.89						9:11:45	0.671	24.98		10:06:14	0.633	25.01		12:58:51	0.577	24.91	
Mass (g) Triple Contained 6.890 Initial 6.890 Final 6.870				Mass (g) Triple Contained 6.890 Initial 6.890 Final 6.870				Mass (g) Triple Contained 6.891 Initial 6.891 Final 6.884				Mass (g) Triple Contained 6.813 Initial 6.813 Final 6.797				Mass (g) Triple Contained 6.812 Initial 6.812 Final 8.105			

SC5 6B1 98 05/04/99

Time	Aw	Temp (C)
10:56:53	0.639	24.75
10:57:53	0.642	24.88
10:58:52	0.642	24.96
10:59:51	0.641	24.94
11:00:51	0.644	24.91
11:01:50	0.641	25.06
11:02:50	0.64	25
11:03:49	0.641	24.93
11:04:49	0.64	25.09
11:05:48	0.638	25.06
11:06:47	0.64	24.98
11:07:47	0.638	25.12
11:08:46	0.636	25.06
11:09:46	0.637	24.98
11:10:45	0.637	25.12
11:11:45	0.635	25.08
11:12:44	0.635	24.89
11:13:44	0.636	25.06
11:14:43	0.633	25.08
11:15:42	0.632	25
11:16:42	0.635	24.93
11:17:42	0.632	25.09
11:18:41	0.63	25.01
11:19:40	0.63	24.94
11:20:40	0.63	25.05
11:21:39	0.627	25.07
11:22:39	0.629	24.98
11:23:39	0.628	25.13
11:24:38	0.625	25.06
11:25:38	0.626	25
11:26:37	0.625	25.12
11:27:37	0.624	25.1
11:28:36	0.623	25.03
11:29:37	0.626	25.11

Final Calibration 05/04/99

Time	Aw	Temp (C)
7:18:50	0.998	24.89 H ₂ O
7:19:52	0.999	24.83 H ₂ O
7:20:53	1.005	24.79 H ₂ O
7:21:54	0.998	24.92 H ₂ O
7:22:56	0.998	24.86 H ₂ O
7:23:57	1.004	24.78 H ₂ O
7:24:58	0.999	24.93 H ₂ O
7:25:59	0.997	24.87 H ₂ O
7:45:08	0.755	24.9 NaCl
7:46:12	0.755	24.83 NaCl
7:47:16	0.757	24.92 NaCl
7:48:19	0.755	24.93 NaCl
7:49:23	0.755	24.84 NaCl
7:50:27	0.757	24.93 NaCl
7:51:30	0.755	24.94 NaCl
7:52:34	0.755	24.85 NaCl
7:53:38	0.758	24.91 NaCl
8:10:04	0.844	25.01 KCl
8:11:07	0.848	25 KCl
8:12:10	0.845	25.08 KCl
8:13:13	0.844	25 KCl
8:14:16	0.848	24.98 KCl
8:15:19	0.844	25.05 KCl
8:16:21	0.844	24.97 KCl
8:17:24	0.848	24.97 KCl
8:18:27	0.845	25.01 KCl
8:19:30	0.844	24.91 KCl

Mass (g) Triple Contained

7.505 Initial
7.505 Final
7.503

DH
5/6/99

6/2/99 - Continued to take μ_{sat} values through the use of the two individual permeameter cells. Have begun to repeat some of the samples to see if similar readings can be obtained at a later time under a different (lower) differential pressure. So far, most samples have shown to behave in the proper manner. As shown by the sample 4A, two differential pressures were used on two different experiments and the same results were obtained. Also, the time factor involved between the two was almost doubled. D.H. 6/2/99

To Page No. _____

Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____

Sample: SC-98-4A CELL #2 Test=Ksat

Width(cm): 2.5 Area(cm²): 4.9/ Height(cm): 4.1

Time
Start time: 8:35 Stop time: 7:50
Start date: 6-1-99 Stop date: 6-2-99
Elapsed Time
Time(hrs): 23.25 Time(sec): 83,200

Pressure
Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5
Differential Pressure (dP)
dP(psig) = Inflow-Outflow 85 [psig]
dP(cm H2O) = dP(psig)*27.68*2.54 5976.1/2 [cm H2O]

Fluid Levels
Initial (ml) Final (ml)
Confining: 10.3 Confining: 10.3
Inflow: 14.0 Inflow: 14.0
Outflow: 15.5 Outflow: 14.7

Fluid Level Changes
Confining (ml): 0.0
Inflow (ml): 1.5
Outflow (ml): 1.5

Volume change
[Inflow (ml) + Outflow (ml)] / 2
1.5 [ml]

Ksat Calculation
Ksat = (Q / A) * (dL / dH)
Q = Volume change (ml) / Elapsed time (sec) = (1) 1.79x10⁻⁵ [ml/sec]
A = Area (cm²) = (2) 4.9/ [cm²]
dL = Sample Height (cm) = (3) 4.1 [cm]
dH = Differential Pressure (cm H2O) = (4) 5976.1/2 [cm H2O]
Ksat = [1 / 2] * [3 / 4] (cm/sec) 2.50x10⁻⁹ [cm/sec]

Notes

Sample: SC-98-4A Cell #2 Test=Ksat

Width(cm): 2.5 Area(cm²): 4.9/ Height(cm): 4.1

Time
Start time: 10:00 Stop time: 7:40
Start date: 5-4 Stop date: 5-6
Elapsed Time
Time(hrs): 45.67 Time(sec): 164,400

Pressure
Confining Pressure(psig): 100
Inflow Pressure(psig): 80
Outflow Pressure(psig): 5
Differential Pressure (dP)
dP(psig) = Inflow-Outflow 75 [psig]
dP(cm H2O) = dP(psig)*27.68*2.54 5273.04 [cm H2O]

Fluid Levels
Initial (ml) Final (ml)
Confining: 13.8 Confining: 13.8
Inflow: 14.3 Inflow: 16.9
Outflow: 9.2 Outflow: 6.6

Fluid Level Changes
Confining (ml): 0.0
Inflow (ml): 2.6
Outflow (ml): 2.6

Volume change
[Inflow (ml) + Outflow (ml)] / 2
2.6 [ml]

Ksat Calculation
Ksat = (Q / A) * (dL / dH)
Q = Volume change (ml) / Elapsed time (sec) = (1) 1.58x10⁻⁵ [ml/sec]
A = Area (cm²) = (2) 4.9/ [cm²]
dL = Sample Height (cm) = (3) 4.1 [cm]
dH = Differential Pressure (cm H2O) = (4) 5273.04 [cm H2O]
Ksat = [1 / 2] * [3 / 4] (cm/sec) 2.50x10⁻⁹ [cm/sec]

Notes

TIT F

Project No.

From Page No.

6/24/99 Continue to run aqualab and obtain values for drying retention cycles. Procedures follow those given on pg. 15 of this lab book. D.M. 6/24/99

Initial Calibration			06/23/99			SC 98 2A1			06/23/99			SC 98 2B1			06/23/99			SC 98 2A1			06/23/99			SC 2C1 98			06/23/99			SC 2C1 98			06/23/99		
Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)			
15:14:12	0.997	24.77 H ₂ O	—	13:07:28	0.571	25.44	—	11:42:46	0.679	25	—	7:21:12	0.626	24.72	—	11:42:46	0.679	25	—	7:21:12	0.626	24.72	—	11:42:46	0.679	25	—	7:21:12	0.626	24.72	—	11:42:46	0.679	25	
15:16:23	0.997	24.87 H ₂ O	—	13:08:36	0.568	25.34	—	11:43:55	0.678	25.04	—	7:22:23	0.627	24.74	—	11:43:55	0.678	25.04	—	7:22:23	0.627	24.74	—	11:43:55	0.678	25.04	—	7:22:23	0.627	24.74	—	11:43:55	0.678	25.04	
15:19:36	0.997	24.84 H ₂ O	—	13:09:46	0.566	25.21	—	11:45:03	0.678	24.86	—	7:23:33	0.624	24.88	—	11:45:03	0.678	24.86	—	7:23:33	0.624	24.88	—	11:45:03	0.678	24.86	—	7:23:33	0.624	24.88	—	11:45:03	0.678	24.86	
15:20:40	1.003	24.76 H ₂ O	—	13:10:54	0.562	25.26	—	11:46:12	0.681	25	—	7:24:42	0.623	24.81	—	11:46:12	0.681	25	—	7:24:42	0.623	24.81	—	11:46:12	0.681	25	—	7:24:42	0.623	24.81	—	11:46:12	0.681	25	
15:21:44	1.001	24.89 H ₂ O	—	13:12:03	0.56	25.14	—	11:47:19	0.678	25.09	—	7:25:52	0.625	24.92	—	11:47:19	0.678	25.09	—	7:25:52	0.625	24.92	—	11:47:19	0.678	25.09	—	7:25:52	0.625	24.92	—	11:47:19	0.678	25.09	
15:22:48	0.998	24.91 H ₂ O	—	13:13:11	0.56	25.15	—	11:48:27	0.677	25	—	7:27:01	0.621	24.94	—	11:48:27	0.677	25	—	7:27:01	0.621	24.94	—	11:48:27	0.677	25	—	7:27:01	0.621	24.94	—	11:48:27	0.677	25	
15:23:51	1.001	24.85 H ₂ O	—	13:14:20	0.557	25.2	—	11:49:36	0.68	25.06	—	7:28:19	0.623	25	—	11:49:36	0.68	25.06	—	7:28:19	0.623	25	—	11:49:36	0.68	25.06	—	7:28:19	0.623	25	—	11:49:36	0.68	25.06	
15:25:58	0.998	24.99 H ₂ O	—	13:15:29	0.559	25.18	—	11:50:44	0.676	25.1	—	7:30:27	0.62	24.97	—	11:50:44	0.676	25.1	—	7:30:27	0.62	24.97	—	11:50:44	0.676	25.1	—	7:30:27	0.62	24.97	—	11:50:44	0.676	25.1	
8:02:01	0.772	25.07 NaCl	—	13:16:37	0.555	25.27	—	11:51:52	0.677	24.98	—	7:31:36	0.622	24.86	—	11:51:52	0.677	24.98	—	7:31:36	0.622	24.86	—	11:51:52	0.677	24.98	—	7:31:36	0.622	24.86	—	11:51:52	0.677	24.98	
8:03:15	0.764	25.01 NaCl	—	13:17:45	0.555	25.17	—	11:53:00	0.679	25.06	—	7:32:45	0.621	25.03	—	11:53:00	0.679	25.06	—	7:32:45	0.621	25.03	—	11:53:00	0.679	25.06	—	7:32:45	0.621	25.03	—	11:53:00	0.679	25.06	
8:04:28	0.766	24.95 NaCl	—	13:18:54	0.557	25.24	—	11:54:09	0.675	25.07	—	7:33:53	0.619	24.97	—	11:54:09	0.675	25.07	—	7:33:53	0.619	24.97	—	11:54:09	0.675	25.07	—	7:33:53	0.619	24.97	—	11:54:09	0.675	25.07	
8:05:41	0.76	25.09 NaCl	—	13:20:03	0.553	25.24	—	11:55:16	0.676	24.97	—	7:35:02	0.621	24.88	—	11:55:16	0.676	24.97	—	7:35:02	0.621	24.88	—	11:55:16	0.676	24.97	—	7:35:02	0.621	24.88	—	11:55:16	0.676	24.97	
8:06:53	0.761	24.95 NaCl	—	13:21:11	0.554	25.12	—	11:56:25	0.679	25.08	—	7:36:10	0.62	25.06	—	11:56:25	0.679	25.08	—	7:36:10	0.62	25.06	—	11:56:25	0.679	25.08	—	7:36:10	0.62	25.06	—	11:56:25	0.679	25.08	
8:08:07	0.762	25.05 NaCl	—	13:22:20	0.555	25.24	—	11:57:33	0.674	25.07	—	7:37:18	0.618	25.01	—	11:57:33	0.674	25.07	—	7:37:18	0.618	25.01	—	11:57:33	0.674	25.07	—	7:37:18	0.618	25.01	—	11:57:33	0.674	25.07	
8:09:19	0.757	25.03 NaCl	—	13:23:28	0.552	25.2	—	11:58:41	0.675	24.93	—	7:38:27	0.62	24.92	—	11:58:41	0.675	24.93	—	7:38:27	0.62	24.92	—	11:58:41	0.675	24.93	—	7:38:27	0.62	24.92	—	11:58:41	0.675	24.93	
8:10:32	0.759	24.84 NaCl	—	13:24:37	0.552	25.1	—	11:59:49	0.676	25.01	—	7:39:35	0.62	25.05	—	11:59:49	0.676	25.01	—	7:39:35	0.62	25.05	—	11:59:49	0.676	25.01	—	7:39:35	0.62	25.05	—	11:59:49	0.676	25.01	
8:11:45	0.761	24.95 NaCl	—	13:25:46	0.553	25.16	—	12:00:57	0.673	25.04	—	7:40:44	0.618	25.05	—	12:00:57	0.673	25.04	—	7:40:44	0.618	25.05	—	12:00:57	0.673	25.04	—	7:40:44	0.618	25.05	—	12:00:57	0.673	25.04	
8:22:17	0.847	24.74 KCl	—	13:26:54	0.55	25.18	—	12:02:05	0.677	24.94	—	7:41:52	0.618	24.96	—	12:02:05	0.677	24.94	—	7:41:52	0.618	24.96	—	12:02:05	0.677	24.94	—	7:41:52	0.618	24.96	—	12:02:05	0.677	24.94	
8:23:29	0.85	24.77 KCl	—	13:28:03	0.552	25.08	—	12:03:13	0.673	25.15	—	7:43:00	0.62	25.04	—	12:03:13	0.673	25.15	—	7:43:00	0.62	25.04	—	12:03:13	0.673	25.15	—	7:43:00	0.62	25.04	—	12:03:13	0.673	25.15	
8:24:40	0.845	24.99 KCl	—	13:29:11	0.55	25.25	—	12:04:21	0.673	25.05	—	7:44:08	0.618	25.08	—	12:04:21	0.673	25.05	—	7:44:08	0.618	25.08	—	12:04:21	0.673	25.05	—	7:44:08	0.618	25.08	—	12:04:21	0.673	25.05	
8:25:51	0.847	24.86 KCl	—	13:30:20	0.55	25.16	—	12:05:29	0.676	25	—	7:45:16	0.617	24.98	—	12:05:29	0.676	25	—	7:45:16	0.617	24.98	—	12:05:29	0.676	25	—	7:45:16	0.617	24.98	—	12:05:29	0.676	25	
8:27:02	0.847	24.99 KCl	—	13:31:28	0.551	25.23	—	12:06:37	0.673	25.01	—	7:46:25	0.62	25.03	—	12:06:37	0.673	25.01	—	7:46:25	0.62	25.03	—	12:06:37	0.673	25.01	—	7:46:25	0.62	25.03	—	12:06:37	0.673	25.01	
8:28:12	0.846	24.96 KCl	—	13:32:36	0.549	25.25	—	12:07:45	0.672	25.1	—	7:47:32	0.617	25.08	—	12:07:45	0.672	25.1	—	7:47:32	0.617	25.08	—	12:07:45	0.672	25.1	—	7:47:32	0.617	25.08	—	12:07:45	0.672	25.1	
8:29:24	0.851	25.02 KCl	—	13:33:44	0.551	25.13	—	12:08:54	0.676	24.96	—	7:48:40	0.616	25	—	12:08:54	0.676	24.96	—	7:48:40	0.616	25	—	12:08:54	0.676	24.96	—	7:48:40	0.616	25	—	12:08:54	0.676	24.96	
8:30:34	0.845	25.05 KCl	—	13:34:53	0.548	25.29	—	12:10:01	0.672	25.12	—	7:49:48	0.62	24.96	—	12:10:01	0.672	25.12	—	7:49:48	0.62	24.96	—	12:10:01	0.672	25.12	—	7:49:48	0.62	24.96	—	12:10:01	0.672	25.12	
8:31:45	0.847	24.89 KCl	—	13:36:00	0.548	25.21	—	12:11:09	0.672	25.01	—	7:50:56	0.617	25.09	—	12:11:09	0.672	25.01	—	7:50:56	0.617	25.09	—	12:11:09	0.672	25.01	—	7:50:56	0.617	25.09	—	12:11:09	0.672	25.01	
			—	13:37:09	0.55	25.1	—	12:12:17	0.674	25.03	—	7:52:04	0.616	24.96	—	12:12:17	0.674	25.03	—	7:52:04	0.616	24.96	—	12:12:17	0.674	25.03	—	7:52:04	0.616	24.96	—	12:12:17	0.674	25.03	
			—	13:38:17	0.548	25.27	—	12:13:25	0.671	25.12	—	7:53:12	0.617	24.88	—	12:13:25	0.671	25.12	—	7:53:12	0.617	24.88	—	12:13:25	0.671	25.12	—	7:53:12	0.617	24.88	—	12:13:25	0.671	25.12	
			—	13:39:25	0.546	25.17	—	12:14:33	0.673	25.01	—	7:54:20	0.616	25.04	—	12:14:33	0.673	25.01	—	7:54:20	0.616	25.04	—	12:14:33	0.673	25.01	—	7:54:20	0.616	25.04	—	12:14:33	0.673	25.01	
			—	13:40:34	0.55	25.17	—	12:15:41	0.671	25.18	—	7:55:28	0.615	25	—	12:15:41	0.671	25.18	—	7:55:28	0.615	25	—	12:15:41	0.671	25.18	—	7:55:28	0.615	25	—	12:15:41	0.671	25.18	
			—	13:41:42	0.547	25.23	—	12:16:48	0.671	25.09	—	7:56:36	0.619	24.97	—	12:16:48	0.671	25.09	—	7:56:36	0.619	24.97	—	12:16:48	0.671	25.09	—	7:56:36	0.619	24.97	—	12:16:48	0.671	25.09	
			—	13:42:50	0.548	25.12	—	12:17:57	0.674	25.07	—	7:57:44	0.616	25.09	—	12:17:57	0.674	25.07	—	7:57:44	0.616	25.09	—	12:17:57	0.674	25.07	—	7:57:44	0.616	25.09	—	12:17:57	0.674	25.07	
			—	13:43:58	0.549	25.22	—	12:19:05	0.671	25.16	—	7:58:52	0.615	24.99	—	12:19:05	0.671	25.16	—	7:58:52	0.615	24.99	—	12:19:05	0.671	25.16	—	7:58:52	0.615	24.99	—	12:19:05	0.671	25.16	
			—	13:45:06	0.546	25.21	—	12:20:13	0.67	25.05	—				—	12:20:13	0.67	25.05	—				—	12:20:13	0.67	25.05	—				—	12:20:13	0.67	25.05	
			—				—				—				—			—				—			—			—				—			
			—				—				—				—			—				—			—			—				—			
			—				—				—				—			—				—			—			—				—			

SC5 3A1 98			SC5 3B1 98			SC5 3C1 98			SC5 4A1 98		
Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)
12:43:08	0.862	24.8	8:36:24	0.625	24.82	14:45:35	0.601	25.49	9:11:34	0.713	25.34
12:44:17	0.665	24.88	8:37:33	0.622	24.97	14:46:44	0.605	25.38	9:12:44	0.721	25.1
12:45:26	0.67	25	8:38:42	0.621	24.91	14:47:53	0.612	25.36	9:13:53	0.72	25.21
12:46:34	0.668	25.08	8:39:50	0.623	24.97	14:49:00	0.613	25.36	9:15:02	0.719	25.09
12:47:43	0.673	24.96	8:40:59	0.62	25.03	14:50:08	0.617	25.25	9:16:11	0.725	24.94
12:48:51	0.671	25.19	8:42:06	0.62	25	14:51:15	0.618	25.39	9:17:20	0.721	25.12
12:49:59	0.671	25.06	8:43:14	0.619	25.12	14:52:22	0.62	25.33	9:18:29	0.723	25.02
12:51:07	0.674	24.95	8:44:21	0.62	25.06	14:53:30	0.622	25.37	9:19:38	0.724	25.08
12:52:15	0.672	25.14	8:45:29	0.62	25.19	14:54:37	0.622	25.35	9:20:46	0.717	25.09
12:53:23	0.671	25.08	8:46:36	0.617	25.15	14:55:44	0.625	25.41	9:21:55	0.721	24.94
12:54:32	0.674	25.02	8:47:43	0.621	25.05	14:56:51	0.624	25.37	9:23:04	0.725	24.93
12:55:39	0.671	25.17	8:48:50	0.617	25.18	14:57:58	0.627	25.3	9:24:13	0.719	25.06
12:56:47	0.671	25.07	8:49:57	0.616	25.07	14:59:05	0.625	25.38	9:25:21	0.722	24.95
12:57:55	0.673	25.12	8:51:05	0.619	25.03	15:00:12	0.626	25.27	9:26:30	0.722	25.03
12:59:03	0.67	25.17	8:52:12	0.617	25.14	15:01:19	0.628	25.29	9:27:39	0.718	25.07
13:00:12	0.674	25.09	8:53:19	0.615	25.06	15:02:26	0.626	25.32	9:28:48	0.722	24.95
13:01:20	0.671	25.24	8:54:26	0.619	25.05	15:03:33	0.63	25.29	9:29:57	0.721	25.06
13:02:28	0.67	25.15	8:55:33	0.615	25.11	15:04:40	0.628	25.34	9:31:05	0.717	25.05
13:03:36	0.675	25.13	8:56:40	0.615	25.04	15:05:47	0.63	25.23	9:32:14	0.722	24.91
13:04:44	0.671	25.21	8:57:48	0.617	25.09	15:06:54	0.629	25.36	9:33:23	0.718	25.11
13:05:51	0.672	25.08	8:58:54	0.614	25.14	15:08:01	0.629	25.26	9:34:31	0.716	25.02
13:07:00	0.674	25.21	9:00:01	0.615	25.05	15:09:09	0.632	25.26	9:35:39	0.722	24.89
13:08:08	0.67	25.14	9:01:08	0.616	25.14	15:10:16	0.63	25.28	9:36:48	0.717	25.11
13:09:16	0.67	25	9:02:15	0.613	25.14	15:11:23	0.63	25.18	9:37:56	0.716	25.03
13:10:24	0.674	25.02	9:03:22	0.617	25.05	15:12:30	0.631	25.27	9:39:05	0.722	24.9
13:11:31	0.669	25.1	9:04:29	0.615	25.19	15:13:36	0.629	25.26	9:40:14	0.716	25.12
13:12:38	0.67	25	9:05:35	0.613	25.12	15:14:43	0.632	25.21	9:41:22	0.715	25.04
13:13:47	0.673	25.06	9:06:42	0.615	25.07	15:15:50	0.63	25.33	9:42:30	0.72	24.92
13:14:55	0.668	25.13	9:07:48	0.613	25.17	15:16:57	0.631	25.23	9:43:39	0.714	25.13
13:16:03	0.67	25.02	9:08:55	0.614	25.09	15:18:04	0.634	25.32	9:44:48	0.713	25.02
13:17:17	0.67	25.14	9:10:02	0.614	25.2	15:19:11	0.632	25.27	9:45:56	0.719	24.91
13:18:19	0.668	25.11	9:11:08	0.612	25.17	15:20:18	0.631	25.15	9:47:04	0.713	25.1
13:19:27	0.671	25.02	9:12:15	0.616	25.08	15:21:25	0.635	25.11	9:48:13	0.714	25.04
13:20:35	0.668	25.2	9:13:22	0.613	25.21	15:22:32	0.632	25.2			
Mass (g)	Single Contained		Mass (g)	Triple Contained		Mass (g)	Single Contained		Mass (g)	Single Contained	
7.361	Initial		6.886	Initial		6.354	Initial		8.487	Initial	
7.360	Final		6.886	Final		6.350	Final		8.487	Final	
7.326			6.862			6.327			8.484		

To Page No.

Witnessed & Understood by me,

Date**Invented by**

Recorded by

Date _____

SCS 54.98	06/23/99	SCS 64.198	06/23/99	SCS 68.198	06/23/99	Final Calibration	06/23/99
Time (hr)	Temp (C)	Time (hr)	Temp (C)	Time (hr)	Temp (C)	Time (hr)	Temp (C)
9:32:05	0.709	9:22:05	0.626	12:38:21	0.883	7:41:33	1
9:33:14	0.704	9:23:10	0.623	12:39:29	0.877	7:42:44	0.999
9:34:21	0.703	9:24:16	0.623	12:40:35	0.877	7:45:05	0.999
9:35:30	0.702	9:25:21	0.623	12:41:42	0.875	7:46:17	1.000
9:36:37	0.698	9:26:26	0.621	12:42:48	0.869	7:48:29	0.999
9:37:45	0.702	9:27:31	0.621	12:43:54	0.868	7:50:41	1.002
9:38:52	0.697	9:28:35	0.618	12:45:01	0.858	7:52:49	0.998
10:00:00	0.697	9:29:40	0.618	12:46:07	0.857	7:53:21	1.003
10:01:08	0.7	9:30:45	0.618	12:47:13	0.85	7:54:27	0.998
10:02:16	0.695	9:31:48	0.616	12:48:20	0.844	7:55:21	0.998
10:03:23	0.695	9:32:54	0.617	12:49:26	0.844	7:56:22	0.998
10:04:31	0.693	9:33:58	0.614	12:50:32	0.838	7:57:25	0.998
10:05:39	0.688	9:35:03	0.616	12:51:38	0.835	7:58:29	0.998
10:06:46	0.688	9:36:07	0.614	12:52:45	0.833	7:59:33	0.998
10:07:53	0.692	9:37:11	0.613	12:53:51	0.833	8:00:37	0.998
10:09:01	0.692	9:38:16	0.613	12:54:58	0.822	8:01:41	0.998
10:10:09	0.691	9:39:20	0.612	12:56:05	0.82	8:02:45	0.998
10:11:16	0.685	9:40:24	0.612	12:57:11	0.821	8:03:49	0.998
10:12:24	0.691	9:41:29	0.612	12:58:17	0.815	8:04:53	0.998
10:13:31	0.69	9:42:33	0.612	12:59:24	0.813	8:05:57	0.998
10:14:39	0.693	9:43:37	0.612	13:00:30	0.813	8:06:59	0.998
10:15:46	0.69	9:44:42	0.611	13:01:37	0.806	8:08:03	0.998
10:16:54	0.69	9:45:46	0.609	13:02:43	0.804	8:09:07	0.998
10:18:02	0.692	9:46:50	0.61	13:03:49	0.804	8:10:11	0.998
10:19:10	0.689	9:47:54	0.61	13:04:56	0.799	8:11:15	0.998
10:20:17	0.689	9:48:58	0.608	13:06:02	0.799	8:12:19	0.998
10:21:25	0.688	9:50:03	0.608	13:07:08	0.799	8:13:23	0.998
10:22:33	0.688	9:51:07	0.61	13:08:14	0.799	8:14:27	0.998
10:23:40	0.688	9:52:12	0.61	13:09:20	0.799	8:15:31	0.998
10:24:48	0.688	9:53:16	0.605	13:10:26	0.791	8:16:35	0.998
10:25:55	0.69	9:54:20	0.607	13:11:32	0.787	8:17:39	0.998
10:27:02	0.686	9:55:25	0.607	13:12:40	0.789	8:18:43	0.998
10:28:10	0.686	9:56:29	0.605	13:13:46	0.783	8:19:47	0.998
10:29:18	0.688	9:57:33	0.605	13:14:53	0.781	8:20:51	0.998
Mass (g)	Single Contained	Mass (g)	Triple Contained	Mass (g)	Triple Contained		
6.814	Initial	8.111	Initial	7.507	Initial		
6.811	Final	8.105	Final	7.506	Final		
6.788				7.500			

7/6/99 - The following are two additional runs performed in order to try and repeat previous experiment values. D.H. 7/6/99

Sample: SC-9F-4A Test=Keat

Width(cm): 25 Area(cm²): 4.91 Height(cm): 4.1

Time
Start time: 10:15 Stop time: 13:15
Start date: 6-24 Stop date: 6-29
Elapsed Time
Time(hrs): 123.0 Time(sec): 442,800.0

Pressure
Confining Pressure(psig): 100
Inflow Pressure(psig): 90
Outflow Pressure(psig): 5

Differential Pressure (dP)
dP(psig) = Inflow-Outflow
75 (psig)
dP(cm H2O) = dP(psig)*27.68*2.54
5976.112 [cm H2O]

Fluid Levels
Initial (ml) Final (ml)
Confining: 13.6 Confining: 13.6
Inflow: 11.25 Inflow: 18.5
Outflow: 13.6 Outflow: 6.5

Fluid Level Changes
Confining (ml): 0.0
Inflow (ml): 7.15
Outflow (ml): 0.1

Volume change
[Inflow (ml) + Outflow (ml)] / 2
7.13 [ml]

Keat Calculation
Keat = (Q / A) * (dL / dH)
Q = Volume change (ml) / Elapsed time (sec) = (1) 1.64×10^{-5} [ml/sec]
A = Area (cm²) = (2) 4.91 [cm²]
dL = Sample Height (cm) = (3) 4.1 [cm]
dH = Differential Pressure (cm H2O) = (4) 5976.12 [cm H2O]
Keat = [1 / 2] * [3 / 4] (cm/sec) = 2.25×10^{-9} [cm/sec]

Notes

Witnessed & Understood by me,

Date

Invented by

Recorded by

Date

No.

Sample: <u>5c-74-54</u>		Test-Test	
Width(cm): <u>2.5</u>	Area(cm ²): <u>4.91</u>	Height(cm): <u>3.82</u>	
Time			
Start time: <u>8:35</u>	Stop time: <u>13:35</u>		
Start date: <u>6-28</u>	Stop date: <u>7-4</u>		
Elapsed Time			
Time(hrs): <u>149</u>	Time(sec): <u>536,400</u>		
Pressure			
Confining Pressure(psig): <u>100</u>			
Inflow Pressure(psig): <u>99</u>			
Outflow Pressure(psig): <u>98</u>			
Differential Pressure (dp)			
dp(psig) = Inflow-Outflow		dp(cm H ₂ O) = dp(psig)*27.68*2.54	
<u>15</u> (psig)		<u>5976.112</u> [cm H ₂ O]	
Fluid Levels			
Initial (ml)		Final (ml)	
Confining: <u>13.5</u>	Confining: <u>13.5</u>		
Inflow: <u>5</u>	Inflow: <u>6.8</u>		
Outflow: <u>30.6</u>	Outflow: <u>18.9</u>		
Fluid Level Changes			
Confining (ml): <u>0.0</u>			
Inflow (ml): <u>1.8</u>			
Outflow (ml): <u>1.7</u>			
Volume Change			
(Inflow (ml) - Outflow (ml)) / 2			
<u>0.05</u>		<u>[ml]</u>	
Test Calculation			
Ksat = (Q / A) * (dL / dH)			
Q = Volume change (ml) / Elapsed time (sec)		= (1) <u>3.36 x 10⁻⁴</u> [ml/sec]	
A = Area (cm ²)		= (2) <u>4.91</u> [cm ²]	
dL = Sample Height (cm)		= (3) <u>3.82</u> [cm]	
dH = Differential Pressure (cm H ₂ O)		= (4) <u>5976.112</u> [cm H ₂ O]	
Ksat = (1 / 2) * (3 / 4) (cm/sec)		<u>4.24 x 10⁻¹⁰</u> [cm/sec]	
Notes			

7/7/99

Dry retention cycle data: Have continued using aqualab to obtain values for the drying curve. The aqualab was placed inside the environmental room in an effort to prevent changes in humidity & temperature. Everything has been working fine so far, a piece of flexy glass was placed over the aqualab in order to prevent possible air gas associated with the room. Data collection for the sampler has begun to take over a more individual term due to drying times an actual moisture retainers found in each data will be shown on an individual basis (per sample) at a later time. Procedures have remained relatively the same with a few exceptions. These include the following: Calibration is checked and recorded as necessary when the system has been shut down for an ample period of time. Drying times range from 15 min - 90 min depending on sample type, and samples are kept in plastic containers as previously mentioned, but have also been placed inside desiccant canisters to prevent moisture absorption between runs. The following samples were run had runs performed on 7/7/99 (PAI) DH 7/7/99

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7/12/99

Have continued drying retention cycle. Data has been obtained for samples ^{P.H. 7/12/99} 3A1 in the manner mentioned on 7/7/99. The amount of time between runs has been decreased due to the actual moisture contents found in each sample. D.H. 7/12/99.

7/21/99

Data has been obtained for samples 3A1, 3B1, 2C1 & 6B1 in the manner mentioned on 7/12/99 & 7/7/99. D.H. 7/21/99

7/22/99

Sorption measurements have begun for the ten tuff samples. Measurements will be performed on the same samples used for heat values. Procedures are as follows: Dry the samples in oven at 105°C, After 48hrs remove and allow to cool in desiccator for 2hrs, rap surfaces from edge up with parafilm and tape, attach hanging device, hang from bottom of scale, tare scale, raise pan of water to bottom desiccated surface of sample, allow ^{P.H. 7/22/99} data collection for one hour, remove and place sample back into the oven. The results for all runs will be shown at a later time in the form of graphs and ^{P.H. 7/22/99} a summary. So far, data has been obtained for samples 6A & 6B. D.H. 7/22/99

7/30/99

Continued sorption measurements for samples 2C1, ^{P.H. 7/30/99} 4A1, and 5A. Data has been collected in the same manner as previously mentioned on 7/22/99. I have also continued to obtain data for the dry retention curve. From the 23 of July to the present, samples 2A1, 2B1, 3C1, 3B1, 3A1, 4A1, 6A1, and 6B1 have been ran through the aqua lab in the same manner as previously discussed. The data has been placed in an Excel spreadsheet and will be shown at a later time. D.H. 7/30/99

8/4/99

Ran aqua lab measurements on samples 4A1, 3C1, 2C1 and 3B1. Values obtained continue to approach dry end values predicted for Au results. D.H. 8/4/99

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8/5/99

Ran sorptivity measurements on samples 3A, 3B, 2B, and 2C. When graphed, data will eventually approach a linear line with slight deviations. Large deviations are believed to be a result of the scale and the relatively slow rate of absorption. D.H. 8/5/99

8/16/99

Sorptivity experiment was run for sample 2C, but was ended early due to buoyancy problem with sample placement. Additional aqua lab runs were performed on samples 2C1, 2A1, and 2B1. Samples are reaching very small A_w values and are having very little changes in mass with respect to time placed in water. D.H. 8/16/99

8/17/99

Dry retention data obtained for sample 2C1. Sorptivity measurements made for samples 5A and 2A. D.H. 8/17/99

8/19/99

Ran an additional sorptivity for 5A. Data results show to be inconclusive due to "floating" problem. (The mass of the sample becomes less on an average of .001 every 5 min.) Will redo and try again. As seen in the past, this is mainly a result of water depth in contact with the sample. D.H. 8/19/99

8/20/99

Completely dried samples 2A1, 2B1, 2C1, 3A1, 3B1, 3C1, 4A1, 5A1, 6A1, & 6B1. m oven at 110°C. Ran porosity test with Multi pycnometer. Calculations and procedures model those given in lab book 271 on pgs. 8-40 with the exception of the gas being used to determine the volume - pore volume. Instead of helium, nitrogen gas is used. When using helium, the P_g value would not stabilize. Before changing, the system was checked for leaks and other possible sources of error. It is believed a possible reaction of the zeolites found in the tail samples may be occurring with the helium gas. An average of 5 values was used to get a V_p value. The porosity was then computed from these. The results have been shown in the following: D.H. 8/20/99

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2A1		Vr=89.669		Avg. Vp=		3.110	
h=0.663cm		Vc=148.196		Porosity=		0.074	
P1=	17.183	17.132	17.137	17.002	17.074		
P2=	6.564	6.539	6.546	6.496	6.524		
Vp=	3.133	2.935	3.117	3.174	3.192		
2B1		Vr=89.669		Avg. Vp=		2.703	
h=0.653cm		Vc=148.196		Porosity=		0.183	
P1=	17.552	17.071	17.142	17.117	17.089		
P2=	6.676	6.514	6.537	6.532	6.522		
Vp=	2.115	2.873	2.726	2.889	2.914		
2C1		Vr=89.669		Avg. Vp=		3.128	
h=0.699cm		Vc=148.196		Porosity=		0.116	
P1=	17.184	17.136	17.137	17.238	17.468		
P2=	6.564	6.547	6.545	6.586	6.672		
Vp=	3.119	3.167	3.082	3.168	3.102		
3A1		Vr=89.791		Avg. Vp=		3.331	
h=0.711cm		Vc=148.294		Porosity=		0.076	
P1=	17.203	17.110	17.582	17.091	17.050		
P2=	6.576	6.541	6.724	6.534	6.519		
Vp=	3.288	3.308	3.397	3.318	3.342		
3B1		Vr=89.791		Avg. Vp=		3.199	
h=0.673cm		Vc=148.294		Porosity=		0.062	
P1=	17.163	17.055	17.202	17.000	17.066		
P2=	6.560	6.519	6.577	6.498	6.525		
Vp=	3.165	3.175	3.239	3.176	3.239		
3C1		Vr=89.791		Avg. Vp=		3.041	
h=0.6096cm		Vc=148.294		Porosity=		0.016	
P1=	17.074	17.090	17.006	17.066	17.009		
P2=	6.523	6.528	6.496	6.520	6.498		
Vp=	3.057	3.017	3.020	3.059	3.051		
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4A1

h=0.7366cm

Vr=89.791

Vc=148.294

Avg. Vp=

3.705

Porosity=**0.007**

P1=

17.017

17.180

17.132

17.153

17.101

P2=

6.518

6.579

6.559

6.568

6.549

Vp=

3.760

3.709

3.651

3.685

3.718

5A1

h=0.6096cm

Vr=89.791

Vc=148.294

Avg. Vp=

2.739

Porosity=**0.113**

P1=

17.121

17.204

17.102

17.305

17.081

P2=

6.531

6.564

6.525

6.603

6.517

Vp=

2.699

2.747

2.744

2.763

2.744

6A1

h=0.7366cm

Vr=89.791

Vc=148.294

Avg. Vp=

3.326

Porosity=**0.109**

P1=

17.197

17.100

17.061

17.321

17.043

P2=

6.578

6.539

6.525

6.626

6.519

Vp=

3.343

3.275

3.308

3.364

3.340

6B1

h=0.691cm

Vr=89.791

Vc=148.294

Avg. Vp=

3.104

Porosity=**0.113**

P1=

17.140

17.019

17.228

17.084

17.120

P2=

6.549

6.504

6.582

6.528

6.543

Vp=

3.085

3.130

3.063

3.100

3.144

8/25/99

The following is the remaining dry retention cycle data obtained for each of the ten tuft samples. The data has been grouped in sets by sample. A complete set for each sample (from full saturation to dry) will be shown later. D.H. 8/25/99

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SC5 2A1 98

23-Jul

SC5 2A1 98

27-Jul

SC5 2A1 98

4-Aug

SC5 2A1 98

16-Aug

Time	Aw	Temp (C)
9:12:01	0.175	25.16
9:13:04	0.158	25.19
9:14:09	0.149	25
9:15:14	0.141	25.15
9:16:20	0.135	25.04
9:17:28	0.131	24.91
9:18:36	0.127	25.07
9:19:45	0.124	24.97
9:20:54	0.122	24.91
9:22:04	0.119	25.04
9:23:13	0.117	24.91
9:24:24	0.116	25.09
9:25:34	0.114	25.01
9:26:44	0.113	24.95
9:27:55	0.112	25.08
9:29:05	0.111	24.97
9:30:17	0.111	25.14
9:31:27	0.109	25.06
9:32:37	0.109	24.95
9:33:49	0.108	25.07
9:35:00	0.107	25.05
9:36:12	0.107	25.01
9:37:23	0.106	25.09
9:38:34	0.106	24.99
9:39:45	0.106	25.16
9:40:57	0.105	25.05
9:42:09	0.106	25.12
9:43:21	0.105	25.1
9:44:33	0.105	24.95
9:45:44	0.105	25.07
9:46:55	0.104	25.06
9:48:07	0.104	25.05
9:49:18	0.104	25.12
9:50:30	0.104	25.02
9:51:41	0.104	25.17
9:52:53	0.103	25.07
9:54:06	0.104	25.11

6.922 Start
6.923 Finish
6.91 Oven

Time	Aw	Temp (C)
9:15:21	0.143	25.18
9:16:26	0.127	25.22
9:17:32	0.115	25.18
9:18:39	0.107	25
9:19:47	0.1	25.11
9:20:53	0.095	25.03
9:22:03	0.092	25.16
9:23:13	0.088	25.08
9:24:23	0.085	24.91
9:25:35	0.083	25.07
9:26:49	0.081	25.01
9:28:02	0.08	25.01
9:29:16	0.078	25.08
9:30:31	0.078	25.08
9:31:45	0.076	25.15
9:32:59	0.076	25
9:34:15	0.075	25.15
9:35:29	0.074	25.1
9:36:45	0.074	24.98
9:38:00	0.073	25.13
9:39:16	0.073	24.99
9:40:33	0.073	25.18
9:41:49	0.072	25.08
9:43:04	0.072	24.92
9:44:20	0.072	25.15
9:45:37	0.071	25.05
9:46:54	0.072	24.96
9:48:09	0.071	25.14
9:49:26	0.071	25.04
9:50:42	0.071	25.05
9:51:58	0.071	25.09
9:53:13	0.07	24.95
9:54:30	0.071	25.07
9:55:46	0.071	25.1

6.913 Start
6.915 Finish
6.905 Oven

D.H.
8/20/99

Time	Aw	Temp (C)
9:14:08	0.136	25.34
9:15:12	0.119	25.23
9:16:16	0.108	25.04
9:17:21	0.099	25.13
9:18:27	0.092	25.01
9:19:36	0.088	24.92
9:20:44	0.083	25.04
9:21:51	0.08	24.92
9:23:00	0.078	24.87
9:24:09	0.075	24.99
9:25:18	0.073	24.9
9:26:30	0.072	24.85
9:27:43	0.07	25.01
9:28:55	0.069	24.92
9:30:07	0.068	24.98
9:31:22	0.067	25.04
9:32:35	0.067	24.9
9:33:47	0.066	25.11
9:34:59	0.065	25.04
9:36:11	0.065	24.93
9:37:24	0.064	25.1
9:38:37	0.064	24.99
9:39:51	0.064	25.14
9:41:05	0.063	25.09
9:42:20	0.063	24.97
9:43:33	0.062	25.15
9:44:45	0.062	25.06
9:46:01	0.062	25.06
9:47:15	0.062	25.16
9:48:29	0.062	25.02
9:49:43	0.062	25.2

6.906 Start
6.907 Finish
6.901 Oven

Time	Aw	Temp (C)
12:01:11	0.126	26.03
12:02:16	0.11	25.68
12:03:21	0.101	25.55
12:04:26	0.092	25.49
12:05:32	0.085	25.27
12:06:40	0.082	25.1
12:07:47	0.078	25.23
12:08:55	0.074	25.14
12:10:05	0.073	25.05
12:11:15	0.071	25.24
12:12:26	0.069	25.17
12:13:37	0.068	25.07
12:14:48	0.067	25.27
12:16:01	0.065	25.17
12:17:13	0.065	25.03
12:18:26	0.064	25.25
12:19:36	0.063	25.16
12:20:49	0.063	25.2
12:22:01	0.063	25.28
12:23:14	0.062	25.17
12:24:28	0.062	25.31
12:25:41	0.062	25.29
12:26:54	0.061	25.14
12:28:08	0.062	25.16
12:29:23	0.061	25.25
12:30:37	0.061	25.11
12:31:51	0.061	25.29
12:33:05	0.061	25.25
12:34:19	0.061	25.2
12:35:33	0.061	25.34
12:36:47	0.061	25.25
12:38:02	0.061	25.4
12:39:15	0.061	25.36
12:40:30	0.061	25.35

6.901 Start
6.901 Finish
Oven

D.H.
8/20/99

Time	Aw	Temp (C)
10:01:43	0.14	25.28
10:02:49	0.126	25.07
10:03:56	0.114	25.25
10:05:05	0.105	25.11
10:06:15	0.1	25
10:07:25	0.094	25.12
10:08:36	0.09	24.99
10:09:47	0.087	25.07
10:11:01	0.084	25.09
10:12:15	0.083	24.98
10:13:29	0.081	25.14
10:14:45	0.079	24.98
10:16:02	0.079	24.91
10:17:17	0.077	25.08
10:18:33	0.076	24.93
10:19:50	0.076	24.98
10:21:07	0.075	25.03
10:22:23	0.074	24.91
10:23:39	0.074	25.09
10:24:55	0.074	25.01
10:26:12	0.074	25.2
10:27:29	0.073	25.14
10:28:47	0.073	25.05
10:30:04	0.073	25.18
10:31:21	0.073	25
10:32:38	0.073	25.21
10:33:53	0.072	25.07
10:35:11	0.072	24.99
10:36:28	0.072	25.14
10:37:45	0.072	25.07
10:39:02	0.072	25.21
10:40:20	0.072	25.07
10:41:36	0.072	25.24
10:42:53	0.072	25.07

6.627 Start
6.63 Finish
6.618 Oven

Time	Aw	Temp (C)
11:24:07	0.109	25.44
11:25:21	0.091	25.2
11:26:30	0.081	25.14
11:27:41	0.073	25.19
11:28:55	0.069	25.02
11:30:07	0.065	25.18
11:31:23	0.062	25.05
11:32:41	0.061	24.93
11:33:55	0.059	25.12
11:35:12	0.056	24.97
11:36:31	0.056	24.9
11:37:52	0.054	25.07
11:39:13	0.054	24.93
11:40:34	0.053	25.17
11:41:55	0.052	25
11:43:18	0.052	24.92
11:44:40	0.051	25.11
11:46:01	0.051	25.01
11:47:24	0.051	25.22
11:48:47	0.051	25.05
11:50:12	0.051	25.22
11:51:34	0.05	25.14
11:52:58	0.05	25.06
11:54:19	0.05	25.18
11:55:42	0.05	24.99
11:57:05	0.05	25.2
11:58:28	0.05	25.09
11:59:51	0.05	25.24
12:01:13	0.05	25.17
12:02:37	0.05	25.11
12:03:59	0.05	25.2
12:05:24	0.05	25.08

6.619 Start
6.619 Finish
6.605 Oven

D.H.
8/20/99

Time	Aw	Temp (C)
11:29:24	0.109	25.22
11:30:50	0.096	25
11:32:07	0.091	25.03
11:33:22	0.087	25.04
11:34:39	0.084	24.88
11:35:55	0.083	25.03
11:37:10	0.081	25.02
11:38:24	0.08	24.9
11:39:40	0.079	25.06
11:40:55	0.079	25.06
11:42:09	0.078	24.95
11:43:24	0.078	25.1
11:44:38	0.077	25.14
11:45:51	0.077	25.05
11:47:06	0.078	25.23
11:48:19	0.077	25.16
11:49:32	0.077	25.04
11:50:46	0.077	25.22
11:51:59	0.077	25.14
11:53:13	0.077	25.05
11:54:26	0.077	25.23
11:55:39	0.077	25.14

Start
Finish
Oven

D.H.
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SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 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98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98				SC5 3A1 98							
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To Page No.

Witnessed & Understood by me.

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TITLE

SC5 3A1 98			SC5 3A1 98			SC5 3A1 98			SC5 3A1 98		
Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)
7:16:11	0.649	24.25	8:58:03	0.558	26.4	12:31:45	0.335	25.82	14:42:43	0.344	25.63
7:17:26	0.658	24.52	8:59:14	0.485	25.69	12:32:57	0.307	25.32	14:43:53	0.317	25.35
7:18:37	0.661	24.67	9:00:28	0.424	25.46	12:34:11	0.29	24.94	14:45:04	0.293	25.16
7:19:49	0.687	24.67	9:01:40	0.384	25.22	12:35:26	0.273	25.02	14:46:18	0.277	24.91
7:20:59	0.687	24.86	9:02:54	0.359	24.92	12:36:42	0.26	24.84	14:47:32	0.264	24.99
7:22:09	0.667	24.8	9:04:09	0.339	25.01	12:38:00	0.252	24.72	14:48:48	0.252	24.9
7:23:19	0.671	24.74	9:05:25	0.321	24.91	12:39:18	0.242	24.88	14:50:04	0.243	24.77
7:24:29	0.67	24.9	9:06:41	0.31	24.73	12:40:35	0.234	24.75	14:51:21	0.236	24.89
7:25:38	0.669	24.63	9:07:58	0.299	24.93	12:41:54	0.229	24.68	14:52:38	0.228	24.89
7:26:48	0.672	24.76	9:08:15	0.289	24.82	12:43:13	0.223	24.86	14:53:56	0.223	24.77
7:27:57	0.671	24.9	9:10:33	0.284	24.69	12:44:32	0.217	24.75	14:55:14	0.217	24.98
7:29:07	0.669	24.87	9:11:52	0.276	24.89	12:45:53	0.214	24.74	14:56:32	0.212	24.84
7:30:16	0.673	24.85	9:13:11	0.27	24.8	12:47:13	0.209	24.89	14:57:51	0.209	24.88
7:31:25	0.671	24.66	9:14:31	0.267	24.78	12:48:33	0.205	24.77	14:59:09	0.205	24.94
7:32:34	0.67	24.88	9:15:50	0.261	24.89	12:49:55	0.204	24.81	15:00:29	0.202	24.82
7:33:43	0.673	24.82	9:19:45	0.346	25.11	12:51:16	0.199	24.91	15:01:49	0.199	24.99
7:34:51	0.671	24.83	9:20:57	0.323	24.94	12:52:37	0.197	24.76	15:03:08	0.195	24.89
7:36:00	0.67	24.88	9:22:09	0.312	24.82	12:53:58	0.195	24.85	15:04:29	0.194	24.88
7:37:09	0.672	24.85	9:23:23	0.301	24.93	12:55:19	0.192	24.91	15:05:49	0.191	24.94
7:38:18	0.67	24.95	9:24:37	0.283	24.8	12:56:42	0.191	24.81	15:07:09	0.188	24.81
7:39:27	0.669	24.86	9:25:52	0.268	24.91	12:58:04	0.189	24.97	15:08:31	0.188	24.87
7:40:36	0.672	24.77	9:27:07	0.281	24.9	12:59:27	0.187	24.84	15:09:52	0.185	24.92
7:41:45	0.67	24.96	9:28:22	0.277	24.76	13:00:50	0.186	24.95	15:11:13	0.183	24.81
7:42:53	0.668	24.88	9:29:38	0.274	24.89	13:02:14	0.184	24.95	15:12:35	0.182	24.97
7:44:01	0.67	24.77	9:30:54	0.27	24.89	13:03:37	0.183	24.76	15:13:57	0.18	24.89
7:45:10	0.671	24.89	9:32:09	0.267	24.78	13:04:59	0.182	24.99	15:15:20	0.18	24.88
7:46:19	0.668	24.88	9:33:25	0.266	24.91	13:06:22	0.18	24.81	15:16:41	0.177	24.95
7:47:27	0.668	24.6	9:34:42	0.262	24.88	13:07:46	0.179	24.74	15:18:03	0.177	24.8
7:48:36	0.67	24.85	9:35:59	0.26	24.75	13:09:10	0.178	24.93	15:19:25	0.175	24.97
7:49:44	0.668	24.9	9:37:16	0.26	24.74	13:10:33	0.176	24.85	15:20:46	0.174	24.89
7:50:53	0.668	24.84	9:38:32	0.257	24.89	13:11:57	0.177	24.84	15:22:10	0.174	24.93
7:52:01	0.67	24.9	9:39:48	0.254	24.79	13:13:21	0.175	24.93	15:23:32	0.172	24.99
7:53:10	0.667	24.94	9:41:06	0.255	24.75	13:14:45	0.175	24.76	15:24:54	0.172	24.87
7:54:18	0.686	24.85	9:42:22	0.252	24.89	13:16:08	0.174	25	15:26:16	0.171	25.06
7:55:26	0.668	24.85	9:43:39	0.251	24.78	13:17:31	0.172	24.89	15:27:37	0.17	24.92
7:56:34	0.666	24.86	9:44:56	0.251	24.86	13:18:55	0.173	24.82	15:29:00	0.17	25
7:57:43	0.667	24.86	9:46:13	0.249	24.9	13:20:19	0.172	24.96	15:30:23	0.168	24.99
7:58:51	0.667	24.96	9:47:30	0.249	24.78	13:21:44	0.172	24.87	15:31:47	0.169	24.91
7:59:59	0.665	24.95	9:48:47	0.248	24.95	13:23:08	0.17	25.03	15:33:10	0.167	24.99
8:01:07	0.667	24.86	9:50:04	0.246	24.88	13:24:32	0.17	24.86	15:34:34	0.167	24.89
8:02:14	0.666	25	9:51:21	0.246	24.96	13:25:57	0.17	24.9	15:35:57	0.168	25.03
8:03:22	0.665	24.94	9:52:38	0.245	24.95	13:27:20	0.169	24.94	15:37:20	0.166	24.89
8:04:31	0.668	24.92	9:53:55	0.246	24.84	13:28:44	0.169	24.77	15:38:43	0.168	25.05
8:05:38	0.666	25.01	9:55:13	0.244	25	13:30:08	0.168	24.97	15:40:05	0.164	24.99
			9:56:30	0.243	24.9	13:31:33	0.167	24.88	15:41:29	0.165	24.91
			9:57:48	0.244	24.86	13:32:57	0.168	24.81	15:42:52	0.164	25.04
7.359 Start			9:58:05	0.243	24.99	13:34:21	0.167	24.97	15:44:15	0.163	24.88
7.357 Finish			10:00:23	0.242	24.87	13:35:47	0.167	24.82	15:45:38	0.163	25.06
7.324 Oven			10:01:41	0.243	24.95	13:37:11	0.167	25.06	15:47:01	0.162	24.96
			10:02:58	0.242	24.98	13:38:35	0.166	24.93	15:48:26	0.163	24.85
			10:04:15	0.242	24.83	13:40:00	0.166	24.85	15:49:49	0.162	25.01
			10:05:33	0.241	25.02	13:41:24	0.166	24.99	15:51:12	0.162	24.89
			10:06:50	0.241	24.91	13:42:48	0.166	24.83	15:52:35	0.162	25.07
			10:08:08	0.242	24.91	13:44:14	0.166	25.06	15:53:57	0.161	24.93
			10:09:26	0.241	25	13:45:38	0.165	24.94	15:55:21	0.162	24.92
			10:10:44	0.241	24.85	13:47:02	0.165	24.76	15:56:43	0.16	25
			10:12:01	0.241	25.03	13:48:26	0.165	24.98	15:58:06	0.16	24.83
			10:13:19	0.24	24.83	13:49:52	0.164	24.85			
			10:14:37	0.242	24.84	13:51:17	0.165	24.79			
			10:15:54	0.241	25.02	13:52:42	0.164	24.95	7.312 Start		
			10:17:11	0.24	24.87	13:54:07	0.165	24.83	7.316 Finish		
			10:18:29	0.241	24.81	13:55:32	0.164	25.03	7.303 Oven		
	</										

SCS 3A1 98			SCS 3A1 98			SCS 3A1 98			SCS 3B1 98			SCS 3B1 98			SCS 3B1 98		
Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)
8:44:43	0.133	24.61	12:06:10	0.144	24.71	7:43:40	0.319	25.06				12:42:57	0.18	25.2	13:35:11	0.149	25.65
8:46:21	0.114	24.81	12:07:16	0.128	24.44	7:44:46	0.27	24.86				12:44:05	0.162	24.91	13:36:13	0.134	25.64
8:48:01	0.104	24.09	12:08:23	0.118	24.81	7:45:51	0.239	25.07				12:45:10	0.149	25.01	13:37:16	0.123	25.45
8:49:42	0.094	24.39	12:09:31	0.108	24.53	7:46:56	0.218	24.95				12:46:16	0.14	24.92	13:38:24	0.116	25.23
8:51:26	0.088	23.99	12:10:41	0.1	24.32	7:48:03	0.203	24.81				12:47:23	0.135	24.82	13:39:24	0.11	25.34
8:53:14	0.085	24.19	12:11:51	0.095	24.16	7:49:10	0.191	24.96				12:48:30	0.129	24.87	13:40:29	0.104	25.26
8:54:59	0.08	24.28	12:13:03	0.092	24.45	7:50:18	0.182	24.87				12:49:37	0.124	24.82	13:41:36	0.1	25.08
8:56:49	0.079	24	12:14:14	0.087	24.38	7:51:27	0.175	24.96				12:50:46	0.121	24.77	13:42:42	0.097	25.18
8:58:38	0.076	24.51	12:15:28	0.083	24.24	7:52:37	0.168	24.92				12:51:53	0.117	24.93	13:43:49	0.093	25.15
7:00:25	0.073	24.06	12:16:42	0.082	24.14	7:53:47	0.162	24.79				12:53:01	0.114	24.88	13:44:57	0.09	25.06
7:02:17	0.074	24.06	12:17:58	0.08	24.5	7:54:58	0.158	24.92				12:54:10	0.112	24.86	13:46:06	0.089	25.03
7:04:06	0.072	24.52	12:19:13	0.077	24.34	7:56:09	0.153	24.88				12:55:19	0.11	24.98	13:47:15	0.087	25.15
7:05:54	0.07	24.11	12:20:28	0.075	24.23	7:57:21	0.15	24.74				12:56:28	0.108	24.98	13:48:23	0.085	25.09
7:07:45	0.071	24.42	12:21:46	0.076	24.32	7:58:33	0.146	24.93				12:57:37	0.107	25.05	13:49:32	0.084	25.05
7:09:34	0.069	24.41	12:23:03	0.074	24.51	7:59:45	0.142	24.87				12:58:46	0.105	24.97	13:50:42	0.083	25.23
7:11:25	0.069	24.21	12:24:18	0.072	24.28	8:00:59	0.141	24.84				12:59:56	0.103	24.86	13:51:52	0.081	25.14
7:13:13	0.068	24.63	12:25:34	0.071	24.19	8:02:12	0.137	24.95				13:01:06	0.102	24.82	13:53:02	0.081	25.11
7:15:02	0.068	24.26	12:26:51	0.071	24.49	8:03:26	0.135	24.8				13:02:16	0.101	24.98	13:54:12	0.08	25.26
7:16:50	0.068	24.76	12:28:07	0.07	24.5	8:04:40	0.133	24.88				13:03:25	0.099	24.9	13:55:22	0.079	25.2
7:18:39	0.067	24.43	12:29:23	0.069	24.35	8:05:54	0.13	24.9				13:04:38	0.099	24.9	13:56:33	0.079	25.14
7:20:31	0.068	24.44	12:30:40	0.07	24.41	8:07:08	0.13	24.83				13:05:46	0.098	25.02	13:57:43	0.078	25.31
7:22:19	0.067	24.61	12:31:57	0.069	24.6	8:08:22	0.127	24.97				13:06:57	0.097	25.01	13:58:53	0.077	25.22
7:24:10	0.068	24.43	12:33:14	0.068	24.43	8:09:37	0.128	24.69				13:08:07	0.097	24.93	14:00:05	0.076	25.16
7:25:59	0.067	24.67	12:34:33	0.068	24.32	8:10:52	0.124	25.04				13:09:17	0.096	25.04	14:01:16	0.076	25.2
7:27:51	0.068	24.53	12:35:51	0.068	24.69	8:12:07	0.123	24.93				13:10:28	0.098	24.92	14:02:26	0.076	25.11
7:29:37	0.067	24.76	12:37:08	0.067	24.52	8:13:22	0.122	25.01				13:11:38	0.095	25.15	14:03:38	0.076	25.3
7:31:25	0.068	24.47	12:38:26	0.067	24.37	8:14:38	0.12	24.98				13:12:49	0.094	25.03	14:04:48	0.076	25.3
7:33:12	0.067	24.82	12:39:45	0.067	24.54	8:15:54	0.119	24.85				13:14:01	0.094	24.98	14:06:00	0.075	25.23
7:35:01	0.068	24.41	12:41:03	0.066	24.62	8:17:10	0.118	25.02				13:15:12	0.094	25.11	14:07:12	0.076	25.15
7:36:48	0.068	24.93	12:42:21	0.065	24.49	8:18:26	0.117	24.94				13:16:22	0.093	25.01	14:08:23	0.075	25.32
7:38:37	0.067	24.41	12:43:41	0.066	24.5	8:19:43	0.116	25.1				13:17:33	0.093	25.1	14:09:34	0.075	25.23
7:40:25	0.068	24.3	12:45:01	0.066	24.75	8:20:59	0.116	24.96				13:18:44	0.093	25.12	14:10:47	0.075	25.2
7:42:09	0.067	24.72	12:46:18	0.065	24.49	8:22:15	0.115	25.11				13:19:56	0.092	25	14:11:59	0.075	25.32
7:43:54	0.067	24.33	12:47:37	0.065	24.37	8:23:32	0.113	25.04				13:21:07	0.093	25.15	14:13:11	0.075	25.22
						8:24:49	0.113	24.95				13:22:19	0.092	25.11			
7.286 Start			7.283 Start			8:26:06	0.112	25.05				13:23:30	0.092	24.99	6.807 Start		
7.287 Finish			7.286 Finish			8:27:23	0.111	24.9				13:24:41	0.092	25.16	6.807 Finish		
7.282 Oven			7.281 Oven			8:28:41	0.111	25.05							Oven		
												6.815 Start					
												6.815 Finish					
												6.805 Oven					
						7.285 Start											
						7.287 Finish											
						7.279 Oven											

Witnessed & Understood by me,

Date _____

Invented by

Date _____

Recorded by

Time	Aw	Temp (C)
9:47:30	0.483	24.95
9:48:33	0.483	25.03
9:49:36	0.482	25.02
9:50:38	0.486	24.95
9:51:41	0.485	25.11
9:52:43	0.485	25.01
9:53:45	0.486	24.92
9:54:47	0.486	25.05
9:55:49	0.485	25.02
9:56:52	0.488	24.94
9:57:54	0.487	25.1
9:58:56	0.486	25.01
9:59:59	0.489	25
10:01:01	0.487	25.07
10:02:03	0.488	24.99
10:03:05	0.489	25.07
10:04:07	0.488	25.08
10:05:09	0.489	24.99
10:06:12	0.49	25.09
10:07:14	0.489	25.09
10:08:16	0.49	25.06
10:09:18	0.49	25.14
10:10:20	0.489	25.11
10:11:23	0.492	25.12
10:12:25	0.49	25.14
10:13:27	0.49	25.08
10:14:29	0.492	25.11
10:15:31	0.49	25.16
10:16:34	0.492	25.05
10:17:36	0.492	25.18
10:18:37	0.491	25.13
10:19:40	0.494	25.05
10:20:42	0.492	25.18
10:21:44	0.492	25.07
10:22:47	0.493	25.07
10:23:49	0.492	25.13
10:24:51	0.494	25.07
10:25:54	0.493	25.17
10:26:55	0.492	25.11
10:27:58	0.495	25.14

6.877 Start
6.876 Finish
6.832 Oven

Time	Aw	Temp (C)
12:03:18	0.218	25.02
12:04:18	0.201	25.01
12:05:18	0.19	24.9
12:06:19	0.184	24.87
12:07:21	0.177	24.94
12:08:22	0.172	24.79
12:09:24	0.169	24.72
12:10:26	0.166	24.85
12:11:29	0.163	24.86
12:12:31	0.162	24.79
12:13:35	0.16	24.92
12:14:38	0.158	24.94
12:15:42	0.157	24.83
12:16:46	0.156	24.99
12:17:49	0.154	24.97
12:18:53	0.154	24.86
12:19:57	0.153	25.02
12:21:00	0.152	24.97
12:22:05	0.151	25.05
12:23:09	0.15	25.06
12:24:14	0.151	25.01
12:25:18	0.15	25.13
12:26:22	0.149	25.01
12:27:26	0.149	24.9
12:28:31	0.148	25.07
12:29:35	0.147	25
12:30:40	0.148	24.92
12:31:44	0.147	25.07
12:32:49	0.147	25.01
12:33:54	0.147	24.99
12:34:59	0.147	25.11
12:36:03	0.146	25.02
12:37:08	0.146	24.97
12:38:13	0.146	25.1
12:39:17	0.145	25.05
12:40:22	0.146	24.99
12:41:27	0.146	25.14

6.832 Start
6.834 Finish
6.817 Oven

Time	Aw	Temp (C)
8:25:12	0.167	24.87
8:26:16	0.151	25
8:27:20	0.141	24.89
8:28:26	0.135	24.74
8:29:31	0.129	24.91
8:30:37	0.125	24.88
8:31:44	0.122	24.77
8:32:51	0.118	24.95
8:33:58	0.115	24.89
8:35:06	0.113	24.79
8:36:13	0.111	24.96
8:37:20	0.109	24.92
8:38:29	0.108	24.84
8:39:37	0.107	24.99
8:40:45	0.105	24.94
8:41:54	0.105	25
8:43:02	0.103	25.04
8:44:10	0.102	24.92
8:45:21	0.102	24.9
8:46:30	0.1	25.01
8:47:40	0.1	24.89
8:48:49	0.1	25.1
8:49:58	0.099	25
8:51:08	0.099	24.91
8:52:18	0.098	25.07
8:53:28	0.097	24.99
8:54:38	0.098	24.93
8:55:46	0.097	25.09
8:56:56	0.096	25
8:58:06	0.097	24.97
8:59:16	0.096	25.1
9:00:26	0.096	24.98
9:01:36	0.096	25.01
9:02:46	0.095	25.08
9:03:56	0.095	24.98
9:05:07	0.096	25.01
9:06:17	0.095	25.08

6.82 Start
6.821 Finish
6.81 Oven

D.H.
8/25/99

Time	Aw	Temp (C)
8:03:08	0.143	24.87
8:04:14	0.128	24.74
8:05:20	0.119	24.82
8:06:25	0.11	24.82
8:07:32	0.104	24.75
8:08:40	0.1	24.8
8:09:47	0.096	24.87
8:10:55	0.093	24.78
8:12:04	0.091	24.86
8:13:13	0.088	24.91
8:14:22	0.086	24.84
8:15:33	0.085	24.92
8:16:42	0.084	24.99
8:17:54	0.083	24.87
8:19:05	0.082	25.06
8:20:15	0.08	24.99
8:21:28	0.08	24.87
8:22:39	0.08	25.05
8:23:50	0.079	24.97
8:25:03	0.079	24.93
8:26:14	0.078	25.05
8:27:25	0.077	24.98
8:28:40	0.078	25.05
8:29:52	0.077	25.1
8:31:05	0.077	24.98
8:32:18	0.077	25.15
8:33:31	0.076	25.04
8:34:43	0.076	24.93
8:35:55	0.076	25.09
8:37:07	0.076	25.02
8:38:20	0.076	25.07
8:39:32	0.076	25.12
8:40:43	0.076	24.96
8:41:56	0.076	25.16
8:43:07	0.076	25.07
8:44:19	0.076	24.92
8:45:31	0.076	25.11
8:46:43	0.076	25.05

6.284 Start
6.285 Finish
6.276 Oven

Time	Aw	Temp (C)
11:17:50	0.147	25.61
11:18:52	0.132	25.32
11:19:53	0.122	25.07
11:20:57	0.115	25
11:22:00	0.109	25.05
11:23:03	0.104	24.93
11:24:07	0.1	24.85
11:25:12	0.097	25.01
11:26:18	0.094	25.03
11:27:25	0.093	24.98
11:28:31	0.091	25.12
11:29:38	0.089	25
11:30:44	0.087	24.91
11:31:50	0.086	25.1
11:32:57	0.085	25.07
11:34:05	0.085	25.02
11:35:13	0.084	25.16
11:36:20	0.083	25.08
11:37:29	0.083	25.05
11:38:37	0.082	25.2
11:39:44	0.081	25.1
11:40:53	0.082	25.17
11:42:02	0.081	25.21
11:43:11	0.08	25.09
11:44:20	0.081	25.07
11:45:29	0.08	25.17
11:46:36	0.08	25.08
11:47:45	0.08	25.12
11:48:54	0.08	25.18
11:50:03	0.079	25.08
11:51:13	0.079	25.14
11:52:21	0.079	25.22
11:53:30	0.08	25.19
11:54:38	0.08	25.36

6.278 Start
6.28 Finish
6.276 Oven

Time	Aw	Temp (C)
8:11:23	0.73	25.35
8:12:23	0.703	25.28
8:13:24	0.688	25.2
8:14:24	0.672	25.18
8:15:23	0.665	25.09
8:16:23	0.654	25.17
8:17:23	0.646	25.1
8:18:23	0.641	25.13
8:19:23	0.635	25.11
8:20:24	0.631	25.16
8:21:24	0.626	25.13
8:22:24	0.624	25.05
8:23:25	0.619	25.16
8:24:25	0.616	25.09
8:25:26	0.615	25.06
8:26:26	0.61	25.12
8:27:26	0.609	25.03
8:28:27	0.607	25.11
8:29:28	0.604	25.09
8:30:28	0.603	25
8:31:29	0.602	25.1
8:32:29	0.598	25.06
8:33:30	0.597	24.97
8:34:31	0.596	25.05
8:35:32	0.594	25.04
8:36:32	0.594	24.99
8:37:33	0.592	25.1
8:38:34	0.59	25.07
8:39:35	0.591	24.98
8:40:36	0.588	25.12
8:41:37	0.586	25.06
8:42:39	0.588	25.01
8:43:40	0.585	25.1
8:44:41	0.583	25.03
8:45:42	0.585	24.98
8:46:43	0.582	25.08
8:47:43	0.581	25.02
8:48:44	0.582	25.01
8:49:45	0.58	25.1
8:50:46	0.578	25.04
8:51:47	0.58	25
8:52:48	0.578	25.09

6.342 Start
6.344 Finish
6.308 Oven

Time	Aw	Temp (C)
8:45:35	0.2	24.8
8:46:38	0.197	24.84
8:47:43	0.193	24.86
8:48:47	0.191	24.79
8:49:51	0.189	24.91
8:50:55	0.187	24.91
8:52:00	0.186	24.93
8:53:04	0.184	25
8:54:08	0.183	24.93
8:55:13	0.183	24.96
8:56:18	0.182	25.02
8:57:23	0.181	24.93
8:58:29	0.181	25.01
8:59:33	0.179	25.01
9:00:37	0.179	24.93
9:01:42	0.179	25.02
9:02:46	0.178	25.02
9:03:51	0.178	24.94
9:04:56	0.178	25.07
9:06:01	0.178	24.99
9:07:05	0.177	24.9
9:08:11	0.177	25.03
9:09:16	0.176	25.01
9:10:20	0.175	24.94
9:11:25	0.176	24.99
9:12:30	0.175	25.02
9:13:35	0.176	24.94
9:14:41	0.175	25.09
9:15:45	0.175	25.03
9:16:51	0.175	25.07
9:17:55	0.174	25.11
9:19:01	0.175	24.99
9:20:07	0.175	25.14
9:21:12	0.175	25.05

6.307 Start
6.312 Finish
6.294 Oven

Time	Aw	Temp (C)
12:12:39	0.151	25.58
12:13:45	0.134	25.48
12:14:51	0.126	25.32
12:15:56	0.119	25.36
12:17:03	0.113	25.22
12:18:12	0.11	25.16
12:19:20	0.106	25.22
12:20:28	0.103	25.21
12:21:37	0.101	25.21
12:22:47	0.098	25.18
12:23:57	0.096	25.04
12:25:08	0.096	25.15
12:26:19	0.094	25.15
12:27:32	0.093	25.01
12:28:45	0.092	25.19
12:29:57	0.091	25.08
12:31:09	0.091	25
12:32:21	0.09	25.14
12:33:34	0.09	25.05
12:34:47	0.09	25.3
12:35:59	0.089	25.1
12:37:10	0.088	24.98
12:38:23	0.089	25.09
12:39:36	0.088	25.1
12:40:50	0.089	25.08
12:42:02	0.088	25.2
12:43:15	0.088	25.1
12:44:28	0.088	25.26
12:45:41	0.088	25.17
12:46:54	0.088	25.14
12:48:06	0.088	25.22
12:49:18	0.088	25.07
12:50:32	0.089	25.27
12:51:44	0.088	25.18
12:52:56	0.088	25.01
12:54:09	0.088	25.19

6.294 Start
6.298 Finish
6.281 Oven

SCS 4A1 98	22-Jul	
Time	Aw	Temp (C)
10:47:01	0.326	25.14
10:47:57	0.31	25.03
10:48:53	0.297	25.13
10:49	0.298	25.02
10:50:46	0.292	24.95
10:51:42	0.276	25.05
10:52:38	0.272	24.98
10:53:36	0.269	25.04
10:54:33	0.265	25.06
10:55:30	0.263	24.99
10:56:27	0.262	25.01
10:57:25	0.259	25.06
10:58:22	0.258	25.05
10:59:20	0.257	25.02
11:00:17	0.258	25.05
11:01:15	0.255	24.98
11:02:12	0.255	25.09
11:03:10	0.254	25.08
11:04:08	0.254	24.99
11:05:05	0.254	25.12
11:06:03	0.253	25.07
11:07:00	0.254	25.05
11:07:59	0.254	25.06
11:08:57	0.254	25.08
11:09:54	0.254	24.99
11:10:52	0.255	25.04
11:11:50	0.256	24.94
11:12:47	0.255	25.04
11:13:44	0.255	24.96
11:14:41	0.255	25.09
11:15:39	0.255	25.07
11:16:37	0.257	25.05
11:17:35	0.256	25.12
11:18:32	0.256	25.06

TITLE _____

Book No. _____

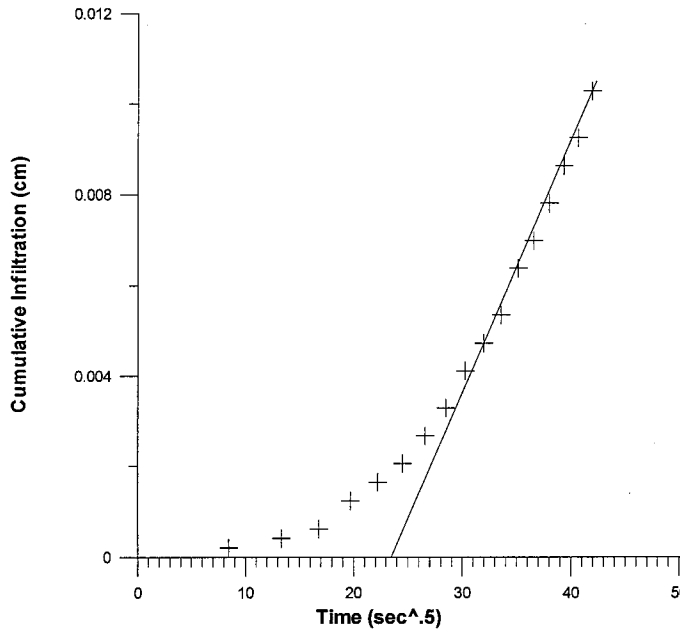
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Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)
8:34:16	0.167	24.97	8:06:05	0.166	25.18	9:21:30	0.231	25.09	13:38:59	0.239	25.55	10:13:36	0.214	25.36	10:13:36	0.214	25.36
8:35:21	0.152	24.8	8:07:07	0.149	25.09	9:22:31	0.208	25.05	13:39:57	0.214	25.36	10:14:39	0.19	25.28	10:14:39	0.19	25.28
8:36:25	0.14	24.94	8:08:10	0.139	24.97	9:23:33	0.194	25.04	13:40:54	0.197	25.41	10:15:41	0.174	25.31	10:15:41	0.174	25.31
8:37:29	0.131	24.83	8:09:13	0.13	25.03	9:24:36	0.183	25.06	13:41:53	0.185	25.32	10:16:44	0.165	25.19	10:16:44	0.165	25.19
8:38:34	0.126	24.84	8:10:17	0.122	24.9	9:25:40	0.177	25.11	13:42:52	0.178	25.17	10:17:47	0.158	25.29	10:17:47	0.158	25.29
8:39:40	0.12	24.91	8:11:22	0.118	24.81	9:26:43	0.17	25.11	13:43:52	0.171	25.28	10:18:50	0.152	25.22	10:18:50	0.152	25.22
8:40:46	0.117	24.78	8:12:28	0.113	24.95	9:27:47	0.165	25	13:44:53	0.165	25.19	10:19:54	0.148	25.11	10:19:54	0.148	25.11
8:41:52	0.113	24.98	8:13:34	0.109	24.89	9:28:52	0.162	25.1	13:45:53	0.162	25.08	10:20:59	0.146	25.16	10:20:59	0.146	25.16
8:42:58	0.11	24.9	8:14:41	0.107	24.78	9:29:56	0.159	25.07	13:46:54	0.159	25.18	10:22:05	0.143	25.2	10:22:05	0.143	25.2
8:44:05	0.109	24.78	8:15:48	0.104	24.96	9:31:02	0.156	24.89	13:47:54	0.158	25.12	10:23:10	0.142	25.07	10:23:10	0.142	25.07
8:45:13	0.107	24.92	8:16:56	0.101	24.89	9:32:07	0.156	25.11	13:48:56	0.154	25.05	10:24:16	0.142	25.23	10:24:16	0.142	25.23
8:46:20	0.105	24.84	8:18:04	0.1	24.85	9:33:12	0.154	25.05	13:49:58	0.154	25.05	10:25:21	0.14	25.15	10:25:21	0.14	25.15
8:47:29	0.104	25.02	8:19:11	0.098	24.99	9:34:19	0.153	25.04	13:50:59	0.152	25.1	10:26:26	0.139	25.03	10:26:26	0.139	25.03
8:48:37	0.103	24.96	8:20:20	0.097	24.91	9:35:25	0.152	25.11	13:52:02	0.151	25.02	10:27:33	0.14	25.09	10:27:33	0.14	25.09
8:49:46	0.102	24.87	8:21:29	0.096	24.96	9:36:30	0.152	25.02	13:53:04	0.151	25.02	10:28:40	0.139	25.12	10:28:40	0.139	25.12
8:50:54	0.101	25.02	8:22:37	0.095	25	9:37:36	0.151	25.13	13:54:06	0.15	25.09	10:29:45	0.139	25.03	10:29:45	0.139	25.03
8:52:03	0.1	24.92	8:23:45	0.094	24.89	9:38:41	0.151	25.09	13:55:08	0.15	25.03	10:30:53	0.139	25.17	10:30:53	0.139	25.17
8:53:12	0.1	25	8:24:54	0.094	25	9:39:48	0.152	25.11	13:56:11	0.15	25.01	10:32:00	0.139	25.13	10:32:00	0.139	25.13
8:54:22	0.099	25.02	8:26:03	0.093	25.01	9:40:53	0.151	25.13	13:57:13	0.15	25.1	10:33:07	0.14	25.15	10:33:07	0.14	25.15
8:55:31	0.099	24.9	8:27:11	0.092	24.91	9:41:59	0.151	25.02	13:58:15	0.15	25.04	10:34:13	0.141	25.23	10:34:13	0.141	25.23
8:56:41	0.099	25.04	8:28:22	0.092	25.02	9:43:04	0.152	25.07	13:59:17	0.151	25.17	10:35:20	0.141	25.14	10:35:20	0.141	25.14
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8:58:59	0.098	24.89	8:30:40	0.091	24.88	9:45:16	0.152	25.01	14:01:22	0.151	25.07	10:37:33	0.142	25.2	10:37:33	0.142	25.2
9:00:08	0.098	25.06	8:31:50	0.091	24.82	9:46:21	0.152	25.13	14:02:25	0.152	25.18	10:38:39	0.142	25.09	10:38:39	0.142	25.09
9:01:17	0.097	24.98	8:32:58	0.091	25.03	9:47:27	0.153	25.07	14:03:27	0.151	25.17	10:39:46	0.143	25.15	10:39:46	0.143	25.15
9:02:28	0.098	24.93	8:34:08	0.09	24.92	9:48:33	0.153	25.19	14:04:31	0.153	25.11	10:40:53	0.144	25.16	10:40:53	0.144	25.16
9:03:37	0.097	25.07	8:35:18	0.09	24.84	9:49:38	0.153	25.16	14:05:33	0.153	25.22	10:41:59	0.144	25.06	10:41:59	0.144	25.06
9:04:46	0.097	24.96	8:36:27	0.09	25.02	9:50:44	0.155	25.09	14:06:35	0.153	25.07	10:43:06	0.146	25.14	10:43:06	0.146	25.14
9:05:56	0.097	24.93	8:37:37	0.09	24.97	9:51:50	0.154	25.2	14:07:37	0.154	25.01	10:44:12	0.146	25.15	10:44:12	0.146	25.15
9:07:06	0.097	25.04	8:38:47	0.09	25.08	9:52:55	0.155	25.1	14:08:39	0.155	25.05	10:45:19	0.147	25.09	10:45:19	0.147	25.09
9:08:15	0.097	24.92	8:39:56	0.089	25.1	9:54:01	0.156	25.12	14:09:42	0.156	25.08	10:46:25	0.148	25.09	10:46:25	0.148	25.09
9:09:26	0.097	25.08	8:41:07	0.09	25.06	9:55:07	0.156	25.14	14:10:44	0.156	25	10:47:31	0.149	25.17	10:47:31	0.149	25.17
9:10:36	0.097	25.01				9:56:12	0.157	25.04	14:11:45	0.157	24.96	10:48:37	0.15	25.09	10:48:37	0.15	25.09
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6.783 Finish			6.778 Finish			8.106 Finish			8.104 Finish			8.102 Finish					
6.778 Oven			6.778 Oven			8.102 Oven			8.1 Oven			8.099 Oven					

D.H. 8/25/99

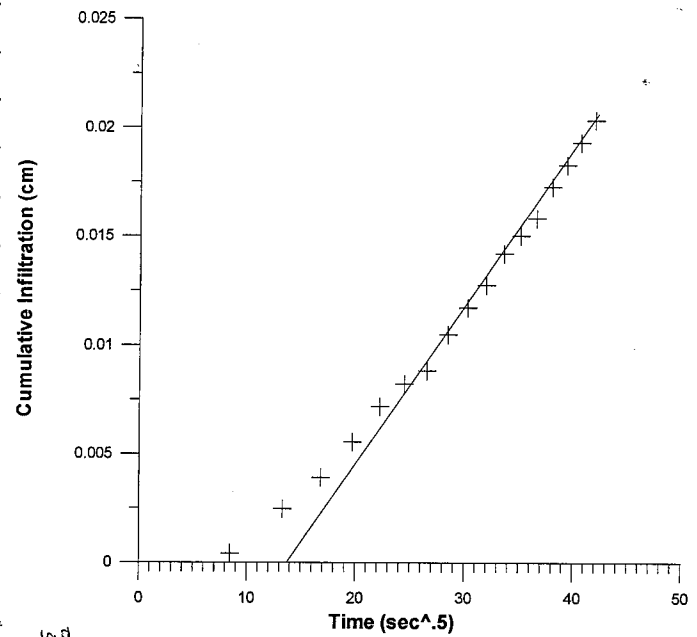
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Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)	Time	Aw	Temp (C)
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9:14:47	0.484	24.59	14:09:39	0.857	25.1	8:38:40	0.189	24.96	15:15:45	0.196	25.15	11:47:23	0.175	25.1	11:47:23	0.175	25.1
9:15:44	0.481	24.44	14:10:38	0.85	25.05	8:39:42	0.186	24.9	15:16:43	0.19	25.05	11:48:22	0.17	25.01	11:48:22	0.17	25.01
9:16:40	0.48	24.33	14:11:36	0.833	25.17	8:40:44	0.182	25.05	15:17:41	0.184	25.17	11:49:22	0.167	25.06	11:49:22	0.167	25.06
9:17:37	0.477	24.34	14:12:34	0.821	25.11	8:41:46	0.18	24.99	15:18:39	0.18	25.1	11:50:23	0.163	25.09	11:50:23	0.163	25.09
9:18:33	0.479	24.35	14:13:33	0.811	25.02	8:42:49	0.18	25.02	15:19:37	0.177	25.01	11:51:23	0.161	25	11:51:23	0.161	25
9:19:31	0.48	24.57	14:14:31	0.793	25.16	8:43:51	0.179	25.05	15:20:37	0.176	25.08	11:52:25	0.16	25.05	11:52:25	0.16	25.05
9:20:28	0.478	24.54	14:15:29	0.778	25.1	8:44:54	0.177	24.98	15:21:36	0.173	25.08	11:53:26	0.159	25.1	11:53:26	0.159	25.1
9:21:25	0.476	24.33	14:16:28	0.767	25.07	8:45:57	0.178	25	15:22:35	0.171	25.02	11:54:26	0.158	25.02	11:54:26	0.158	25.02
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9:23:18	0.473	24.22	14:18:24	0.738	25.06	8:48:02	0.178	24.96	15:24:35	0.171	25.09	11:56:30	0.157	25.09	11:56:30	0.157	25.09
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9:25:12	0.475	24.45	14:20:21	0.713	25.13	8:50:08	0.178	25.06	15:26:34	0.17	24.95	11:58:34	0.158	25.17	11:58:34	0.158	25.17
9:26:10	0.473	24.47	14:21:20	0.707	25.03	8:51:10	0.179	24.98	15:27:35	0.171	24.99	11:59:35	0.158	25.12	11:59:35	0.158	25.12
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9:28:03	0.47	24.28	14:23:17	0.688	25.11	8:53:15	0.18	25.06	15:29:34	0.171	25.01	12:01:39	0.159	25.19	12:01:39	0.159	25.19
9:29:00	0.47	24.27	14:24:16	0.682	25.01	8:54:17	0.181	25	15:30:34	0.172	25.08	12:02:40	0.159	25.11	12:02:40	0.159	25.11
9:29:57	0.471	24.41	14:25:15	0.671	25.13	8:55:19	0.182	25.11	15:31:34	0.172	25.11	12:03:42	0.161	25.06	12:03:42	0.161	25.06
9:30:54	0.469	24.53	14:26:14	0.662	25.09	8:56:22	0.182	25.05	15:32:34	0.172	25.04	12:04:43	0.161	25.17	12:04:43	0.161	25.17
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9:34:41	0.468	24.67	14:29:09	0.64	25.08	9:00:31	0.186	25.16	15:36:34	0.175	24.97	12:08:48	0.165	25.12	12:08:48	0.165	25.12
9:35:38	0.466	24.63	14:30:07	0.637	25	9:01:33	0.186	25.08	15:37:35	0.176	25.1	12:09:50	0.166	25.03	12:09:50	0.166	25.03
9:36:34	0.468	24.58	14:31:06	0.63	25.13	9:02:35	0.188	25	15:38:35	0.176	25.06	12:10:51	0.168	25.14	12:10:51	0.168	25.14
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9:38:28	0.469	24.7	14:33:03	0.621	25.03	9:04:39	0.19	25.07	15:40:36	0.179	25.12	12:12:54	0.169	25.09	12:12:54	0.169	25.09
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9:40:22	0.468	24.47	14:35:01	0.61	25.08	9:06:42	0.192	25.11	15:42:36	0.181	25.06	12:14:56	0.172	25.16	12:14:56	0.172	25.16
9:41:18	0.467	24.41	14:35:59	0.608	25.01	9:07:44	0.192	25.06	15:43:35	0.181	25.16	12:15:57	0.172	25.07	12:15:57	0.172	25.07
9:42:16	0.468	24.57	14:36:58	0.601	25.13	9:08:46	0.194	24.98	15:44:35	0.182	25.11	12:16:58	0.174	25.01	12:16:58	0.174	25.01
9:43:13	0.467	24.59	14:37:56	0.597	25.1	9:09:48	0.194	25.09	15:45:35	0.183	25.05	12:17:59	0.175	25.14	12:17:59	0.175	25.14
9:44:10	0.465	24.51	14:38:55	0.597	25.06												
9:45:06	0.466	24.44	14:39:54	0.591	25.16												
9:46:03	0.468	24.47	14:40:52	0.586	25.06												
			14:41:51	0.586	24.94												
7.504 Start			7.502 Start			7.499 Start			7.497 Start			7.494 Start			7.494 Start		
7.505 Finish			7.504 Finish			7.499 Finish			7.498 Finish			7.494 Finish			7.494 Finish		
7.499 Oven			7.497 Oven			7.494 Oven			7.494 Oven			7.494 Oven			7.494 Oven		

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2A1

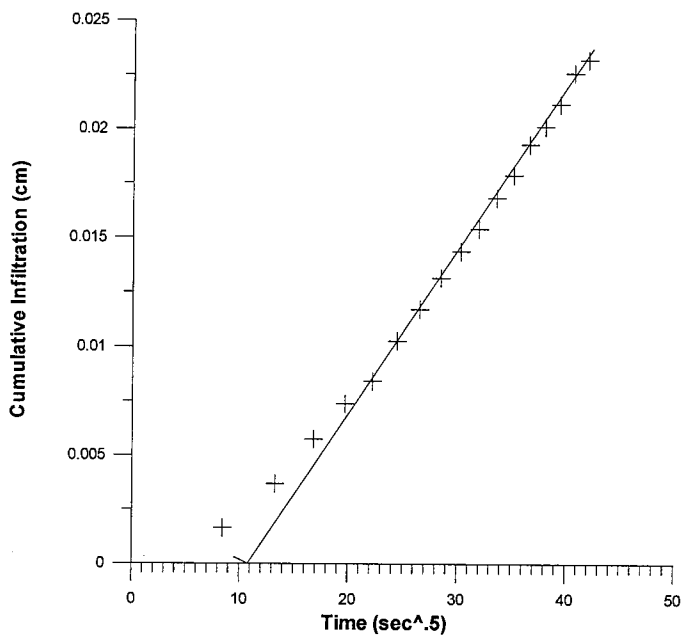


2B1

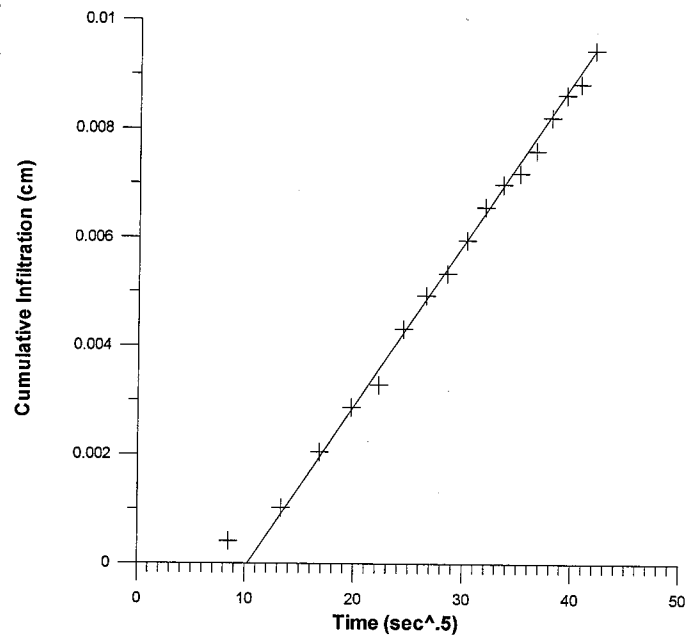


D.H. 8/26/99

2C1



3A1



D.H. 8/26/99

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Witnessed & Understood by me, _____

Date _____

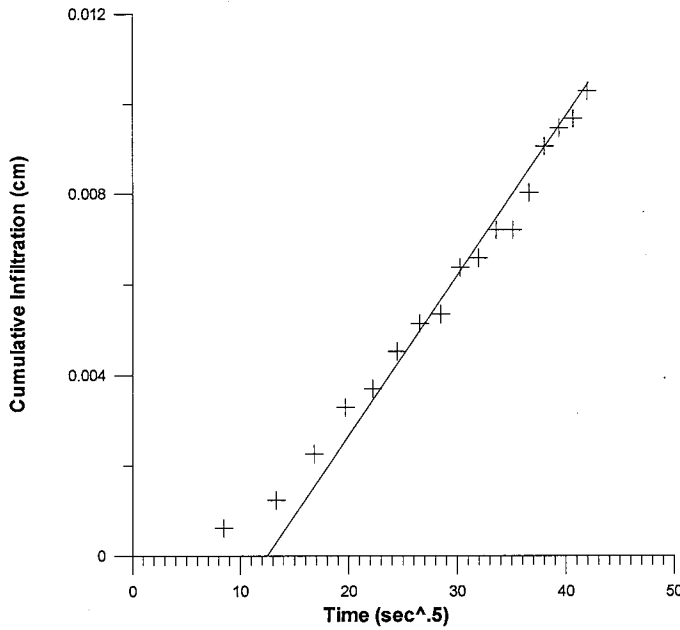
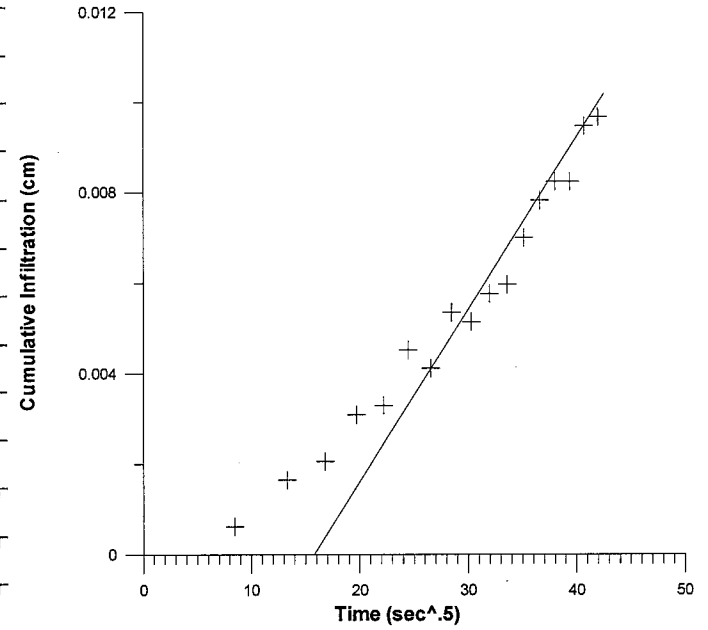
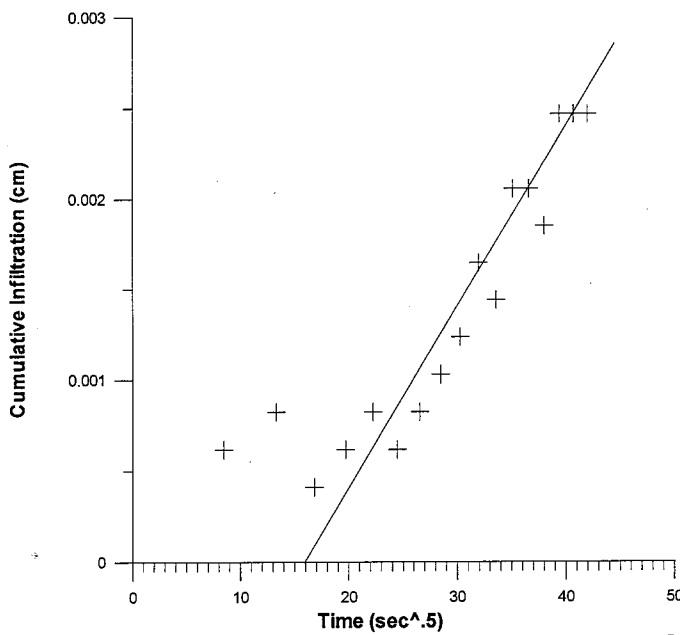
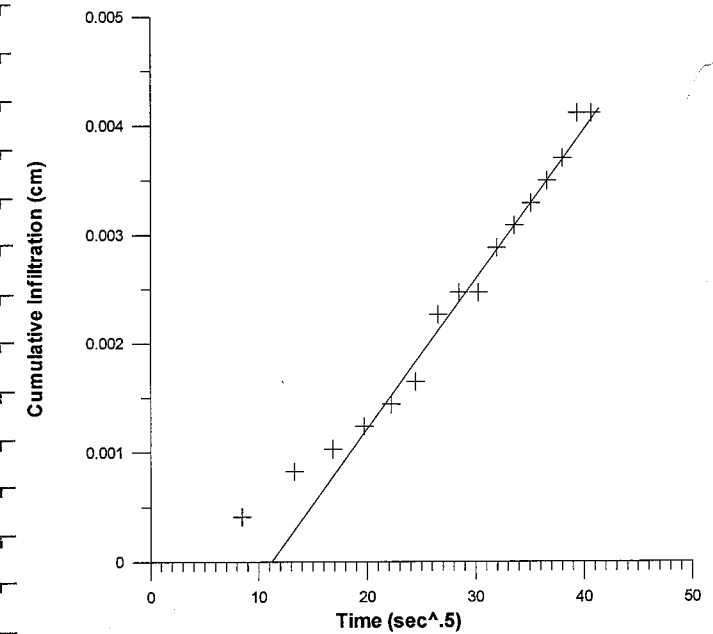
Invented by _____

Date _____

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From Page No. _____

3B1**3C1**D.H.
8/26/99**4A1****5A1**D.H.
8/26/99

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Witnessed & Understood by me, _____

Date _____

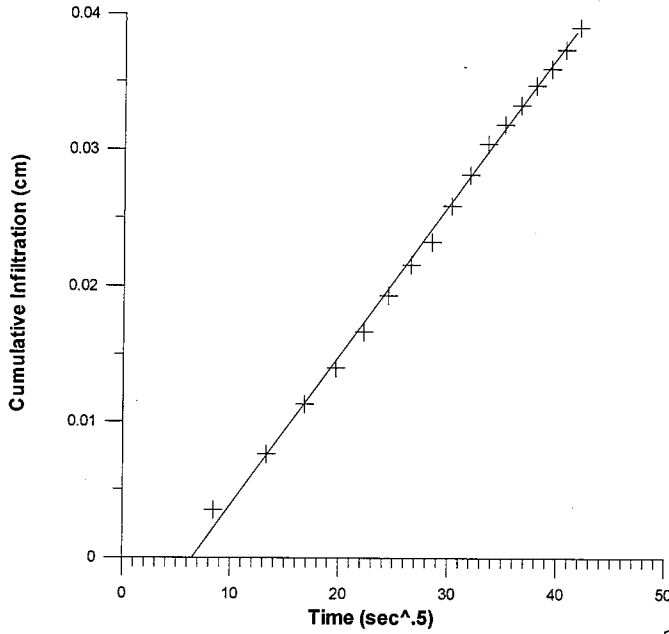
Invented by _____

Date _____

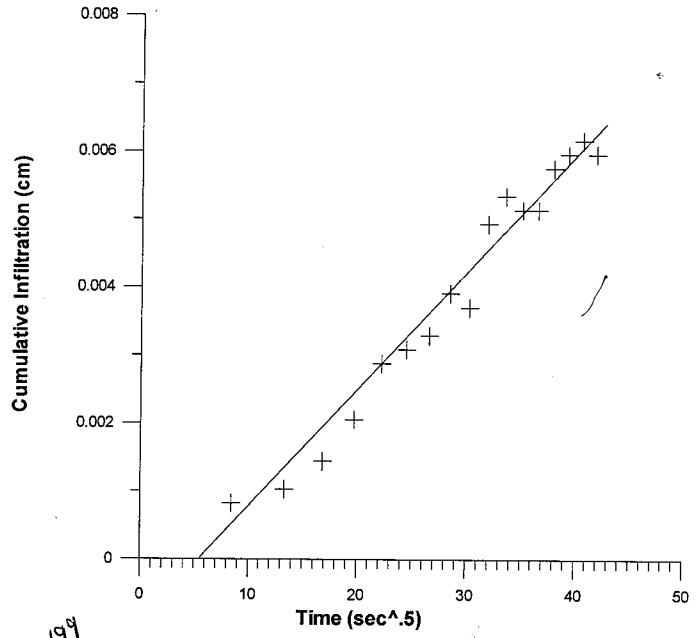
Recorded by _____

From Page No. _____

6A1

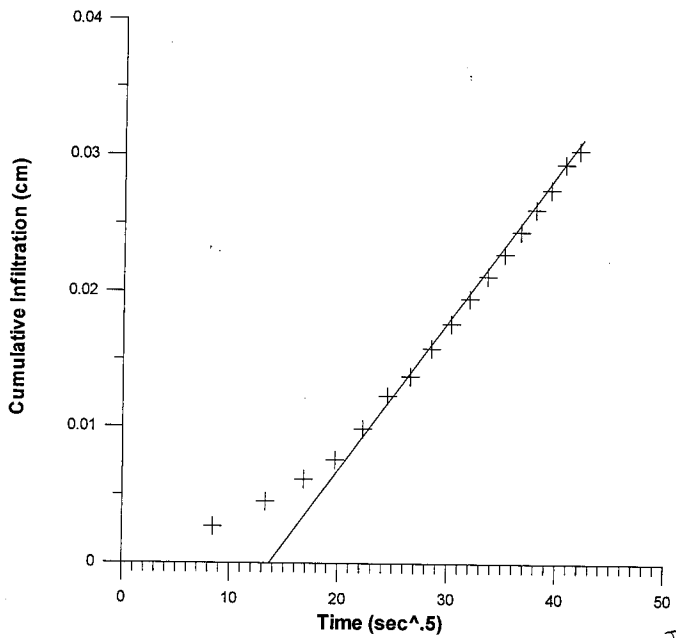


6A3

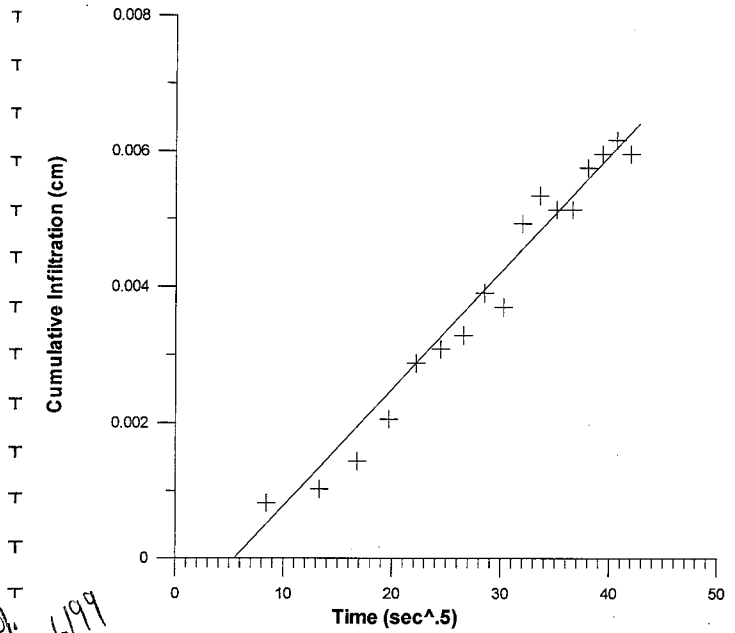


D.H.
8/26/99

6A5



6A3



D.H.
8/26/99

To Page No. _____

Witnessed & Understood by me, _____

Date _____

Invented by _____

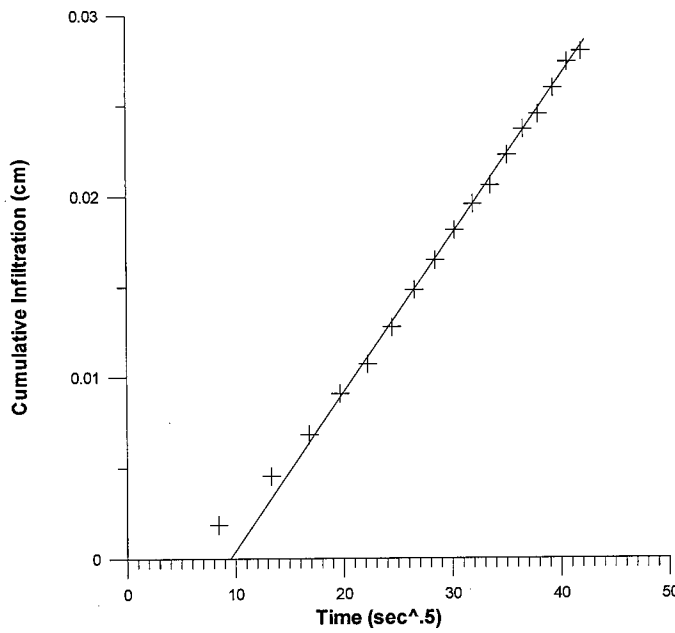
Date _____

Recorded by _____

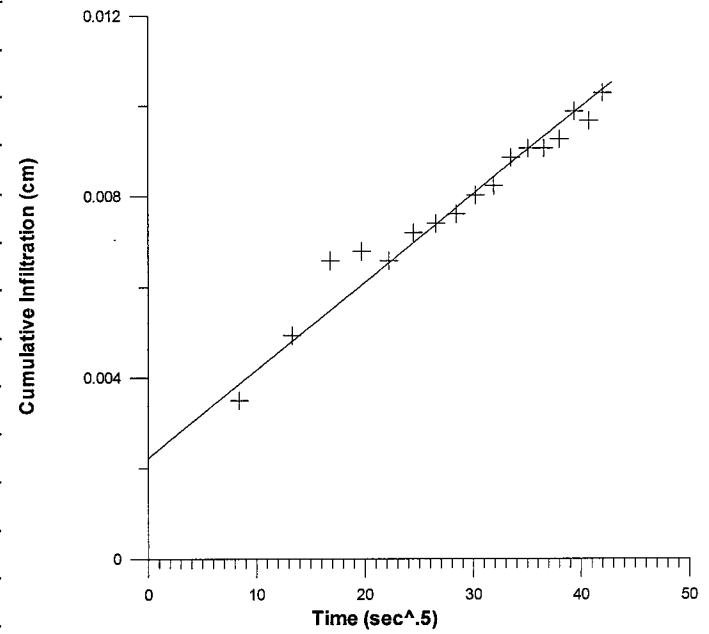
TITLE _____

From Page No. _____

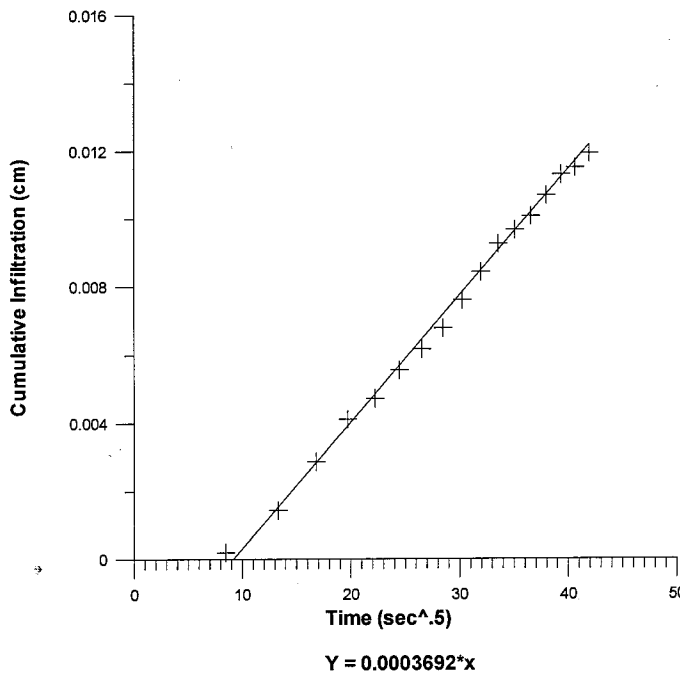
6B1



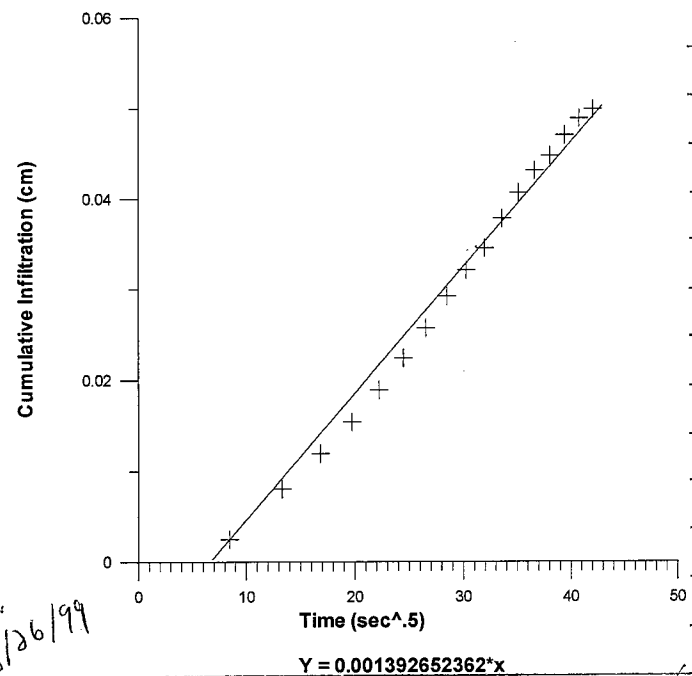
6B2

D.H.
8/26/99

6B3



6B4

D.H.
8/26/99

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Witnessed & Understood by me, _____

Date _____

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8/26/99

A short summary of the previous sorptivity measurements has been provided on pg. 36 of this lab book. Pages 34 and 35 of this lab book were accidentally clipped when the summary was being attached.

D.H. 8/26/99

8/27/99

On 8/27/99, wet retention cycle data was begun for samples 2A1, 2R1, 2C1, 3A1, 3R1, 3C1, 4A1, 5A1, 6A1, and 6R1. The samples first run through the aqua lab was performed at "100%" dry capabilities. The samples were placed in the oven for 3 days at 105°C , allowed to cool for 2 hrs in desiccator, and then placed in individual sample cups sealed with paraffin. All sample cups were then placed inside a glass jug to help prevent moisture gain or loss. The samples and measurements taken will all be located in the environmental room of Bldg. 51. ($T = 22^{\circ}\text{C} \pm 2$, Humidity = 55 ± 3).

D.H. 8/27/99

9/2/99

Have continued to perform wet retention procedures for the ten tuff samples. The samples are allowed to sit in the aqua lab for approximately 30 min each or until a steady state is seen as a result. A moisture increase for each sample is gained through placing a small drop of DI- H_2O on the sample surface prior to placing back in the sealed conditions. Before and after each measurement in the aqua lab, a mass is recorded to observe any changes in conditions. Mass values (in g) tend to change by (.001) on average.

D.H. 9/2/99

9/8/99

Wet moisture retention procedures continue for the ten tuff samples. All data collected will be shown at a later time as previously done for the drying cycle. All mass recordings will be in (g) and Temperatures in ($^{\circ}\text{C}$). A second run from dry to wet may be necessary for some of the samples. An increase in A_w values from run to run for samples 4A1, 5A1, 6A1 and 6R1 has been observed as greater than 0.1 in many instances.

D.H. 9/8/99

To Page No. _____

Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____

From Page No. _____

Final entry:
This Notebook appears to comply
with QAP-001.

P.C. [Signature]
5/4/2000

I have reviewed this Notebook
again and I still find it to
comply with QAP-001. There is sufficient
information so that another
qualified person could repeat the
activity.

[Signature]
8/25/2000
QCB 5/4/00

Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____



From Page No. _____

Sorption Graphs

2A1	2B1	2C1	3A1	3B1	3C1	4A1	5A1	6A1	6B1
5.52E-04	7.17E-04	4.17E-04	2.99E-04	3.53E-04	3.80E-04	9.92E-05	1.33E-04	1.09E-03	8.71E-04
								1.72E-04	1.94E-04
								1.39E-03	3.69E-04
								1.09E-03	

D.H.
8/26/99

To Page No. _____

Witnessed & Understood by me, _____

Date _____

Invented by _____

Date _____

Recorded by _____