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Getränkeanalytik

Determination of Carbon Dioxide (CO₂) in non sparkling wines by the Veitshöchheim CO₂-cylinder

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page 1/2

Technical informations and using instructions

Basic informations:

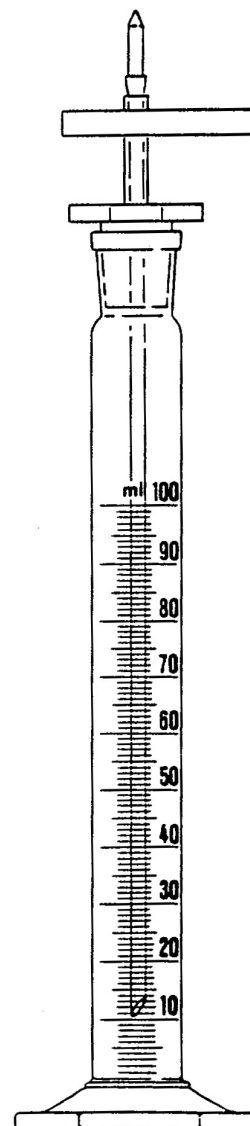
- This simple method allows the determination of carbon dioxide in wines: A sample of 100 ml is put into a cylinder which is closed. By shaking the cylinder in intervals the dissolved carbon dioxide is removed from the wine and an excess pressure in the cylinder results. In the pauses between shaking the excess pressure is compensated by releasing wine via a pinchcock.

The release of wine through the opening of the pinchcock ends when the dissolved carbon dioxide is removed completely from the wine.

The original concentration in g/l of carbon dioxide in the sample can now be determined with the attached table by using the remaining volume of wine and the wine temperature.

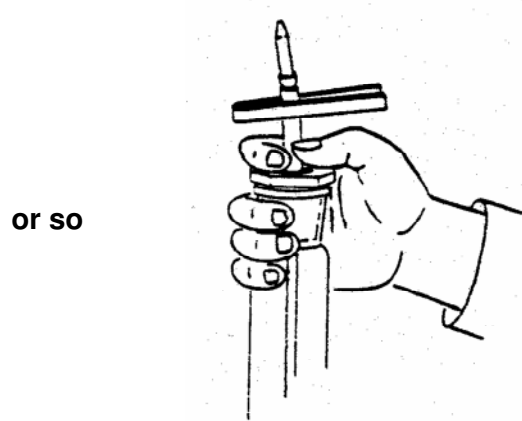
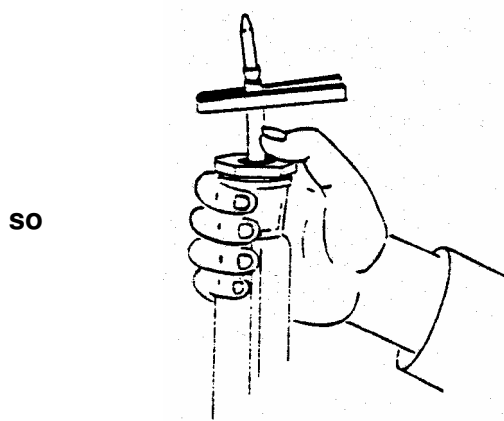
Equipment:

- Cylinder for the determination of carbon dioxide according to the method of Veitshöchheim together with a plug of plastic, a pipe, pinchcock and teflon tip.
- Thermometer 0 to 50°C, tube filled with blue petrol, contained in a metal case with fastener.
- Table for carbon dioxide concentration in g/l, expressed in dependence on the remaining volume of wine from 100 to 42 ml and on the temperature from 0 to 20°C.



Procedure (using instructions):**The best temperature of the sample is 5 to 10°C.**

- Let around 100 ml of the sample of wine flow down slowly along the inner wall of the cylinder. To prevent the removal of carbon dioxide before the determination, the temperature of the wine should be low and should not exceed 10°C.
- For the exact adjustment of the wine sample to 100 ml use a pipette; in case you use the pinchcock for this purpose, regard to empty the pipe afterwards completely into the sink.
- After the adjustment of the wine sample to exactly 100 ml insert the pipe into the cylinder and close the cylinder with the plug.
- You may hold the cylinder during the shaking as shown in the figures a) or b).



- Shake the cylinder according to the following recommendations:
- The shaking should not be performed too strongly in the vertical or horizontal direction; during shaking no gas should come into the pipe to the pinchcock. We recommend approximately 5 seconds for each shaking.
- After each shaking wait until all bubbles have moved up. Afterwards open the pinchcock and release, by the excess pressure, wine through the teflon tip.
- Repeat shaking and releasing e.g. 5 times – if necessary more – until no more wine is released when opening the pinchcock.
- After all carbon dioxide is removed from the wine, take the pipe out of the cylinder; by doing this, regard that the wine in the pipe and pinchcock are completely emptied into the cylinder by opening the pinchcock.
- Wait until the foam has disappeared,
- Read the remaining quantity of wine in the cylinder at the scale and measure the temperature of the wine. Using this data consult the table and determine the original concentration of carbon dioxide in the wine sample in g/l.

Example:

The remaining quantity is 80 ml, the temperature 10°C. With these data the table states an original concentration of 1,28 g carbon dioxide per litre.

Adjustment-table for the Veitshöchheim CO₂-cylinder (content of CO₂ g/l)

<i>ml</i>	°C	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0,35	0,34	0,33	0,33	0,33	0,31	0,31	0,30	0,29	0,28	0,28	0,27	0,27	0,27	0,26	0,26	0,25	0,24	0,24	0,23	0,22	
98	0,42	0,41	0,40	0,40	0,39	0,38	0,37	0,37	0,36	0,35	0,34	0,34	0,33	0,33	0,32	0,32	0,31	0,30	0,29	0,28	0,27	
97	0,50	0,49	0,48	0,47	0,46	0,45	0,44	0,43	0,42	0,41	0,40	0,40	0,39	0,39	0,38	0,38	0,36	0,35	0,34	0,33	0,32	
96	0,57	0,56	0,55	0,54	0,53	0,52	0,51	0,50	0,49	0,48	0,46	0,46	0,45	0,44	0,44	0,43	0,42	0,41	0,40	0,38	0,37	
95	0,65	0,64	0,63	0,61	0,60	0,59	0,58	0,56	0,55	0,54	0,53	0,52	0,51	0,50	0,50	0,49	0,48	0,46	0,45	0,43	0,42	
94	0,72	0,71	0,69	0,68	0,67	0,65	0,64	0,62	0,61	0,59	0,58	0,57	0,57	0,56	0,55	0,54	0,52	0,51	0,50	0,48	0,47	
93	0,79	0,77	0,76	0,74	0,73	0,71	0,70	0,68	0,67	0,65	0,64	0,63	0,62	0,61	0,60	0,59	0,58	0,56	0,55	0,53	0,51	
92	0,85	0,84	0,82	0,81	0,79	0,78	0,76	0,74	0,72	0,71	0,69	0,68	0,67	0,66	0,66	0,65	0,63	0,61	0,59	0,58	0,56	
91	0,92	0,91	0,89	0,87	0,86	0,84	0,82	0,80	0,78	0,76	0,75	0,74	0,73	0,72	0,71	0,70	0,68	0,66	0,64	0,62	0,60	
90	0,99	0,97	0,95	0,94	0,92	0,90	0,88	0,86	0,84	0,82	0,80	0,79	0,78	0,77	0,76	0,75	0,73	0,71	0,69	0,67	0,65	
89	1,05	1,03	1,01	0,99	0,97	0,96	0,93	0,91	0,89	0,87	0,85	0,84	0,83	0,82	0,81	0,80	0,78	0,76	0,73	0,71	0,69	
88	1,11	1,09	1,07	1,05	1,03	1,01	0,99	0,97	0,94	0,92	0,90	0,89	0,88	0,87	0,86	0,84	0,82	0,80	0,78	0,75	0,73	
87	1,17	1,15	1,13	1,11	1,09	1,07	1,04	1,02	1,00	0,97	0,95	0,94	0,93	0,92	0,90	0,89	0,87	0,84	0,82	0,80	0,77	
86	1,23	1,21	1,19	1,16	1,14	1,12	1,10	1,07	1,05	1,02	1,00	0,99	0,98	0,96	0,95	0,94	0,91	0,89	0,86	0,84	0,81	
85	1,29	1,27	1,24	1,22	1,20	1,18	1,15	1,13	1,10	1,08	1,05	1,04	1,02	1,01	1,00	0,99	0,96	0,93	0,91	0,88	0,87	
84	1,34	1,32	1,30	1,27	1,25	1,23	1,20	1,17	1,15	1,12	1,10	1,08	1,07	1,06	1,04	1,03	1,00	0,97	0,95	0,92	0,89	
83	1,40	1,37	1,35	1,33	1,30	1,28	1,25	1,22	1,20	1,19	1,14	1,13	1,11	1,10	1,09	1,07	1,04	1,02	0,99	0,96	0,95	
82	1,45	1,43	1,40	1,38	1,35	1,33	1,30	1,27	1,24	1,22	1,19	1,17	1,16	1,14	1,13	1,11	1,09	1,06	1,03	1,00	0,97	
81	1,51	1,48	1,46	1,43	1,40	1,38	1,35	1,32	1,29	1,26	1,23	1,22	1,20	1,19	1,17	1,16	1,13	1,10	1,07	1,04	1,01	
80	1,56	1,53	1,51	1,48	1,46	1,43	1,40	1,37	1,34	1,32	1,28	1,26	1,25	1,23	1,22	1,20	1,17	1,14	1,11	1,08	1,05	
79	1,61	1,58	1,56	1,53	1,50	1,48	1,44	1,41	1,38	1,35	1,32	1,31	1,29	1,27	1,26	1,24	1,21	1,18	1,15	1,12	1,09	
78	1,66	1,63	1,60	1,58	1,55	1,52	1,49	1,46	1,43	1,40	1,36	1,35	1,33	1,31	1,30	1,28	1,25	1,22	1,18	1,15	1,12	
77	1,71	1,69	1,65	1,62	1,59	1,57	1,53	1,50	1,47	1,44	1,41	1,39	1,37	1,35	1,34	1,32	1,29	1,25	1,22	1,19	1,16	
76	1,76	1,73	1,70	1,67	1,64	1,61	1,58	1,55	1,51	1,48	1,45	1,43	1,41	1,40	1,38	1,36	1,33	1,29	1,26	1,22	1,19	
75	1,81	1,78	1,75	1,72	1,69	1,66	1,62	1,59	1,56	1,52	1,49	1,47	1,45	1,44	1,42	1,40	1,37	1,35	1,30	1,26	1,23	
74	1,86	1,82	1,79	1,76	1,73	1,70	1,66	1,63	1,60	1,56	1,53	1,51	1,49	1,47	1,46	1,44	1,40	1,37	1,33	1,30	1,26	
73	1,90	1,87	1,84	1,81	1,77	1,74	1,71	1,67	1,64	1,60	1,57	1,55	1,53	1,51	1,49	1,48	1,44	1,40	1,37	1,33	1,29	

Continue on next page

<i>ml</i>	°C	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
72		1,95	1,92	1,88	1,85	1,82	1,78	1,75	1,71	1,68	1,64	1,61	1,59	1,57	1,55	1,53	1,51	1,48	1,44	1,40	1,36	1,33
71		1,99	1,96	1,93	1,89	1,86	1,83	1,79	1,76	1,72	1,68	1,65	1,63	1,61	1,59	1,57	1,55	1,51	1,48	1,44	1,40	1,36
70		2,04	2,01	1,97	1,94	1,90	1,87	1,83	1,80	1,76	1,72	1,69	1,67	1,65	1,63	1,61	1,59	1,55	1,51	1,47	1,43	1,40
69		2,08	2,05	2,01	1,98	1,94	1,91	1,87	1,84	1,80	1,76	1,72	1,70	1,68	1,66	1,65	1,63	1,59	1,55	1,51	1,47	1,43
68		2,12	2,09	2,05	2,02	1,99	1,95	1,91	1,87	1,84	1,80	1,76	1,74	1,72	1,70	1,68	1,66	1,62	1,58	1,54	1,50	1,46
67		2,17	2,13	2,10	2,06	2,03	1,99	1,95	1,91	1,87	1,83	1,80	1,78	1,76	1,74	1,72	1,70	1,66	1,62	1,57	1,53	1,49
66		2,21	2,17	2,14	2,10	2,07	2,03	1,99	1,95	1,91	1,87	1,83	1,81	1,79	1,77	1,75	1,73	1,69	1,65	1,61	1,57	1,52
65		2,25	2,21	2,18	2,14	2,11	2,07	2,03	1,99	1,95	1,91	1,87	1,85	1,83	1,81	1,79	1,77	1,73	1,68	1,64	1,60	1,56
64		2,29	2,25	2,22	2,18	2,15	2,11	2,07	2,03	1,99	1,95	1,91	1,89	1,86	1,84	1,82	1,80	1,76	1,72	1,67	1,63	1,57
63		2,33	2,30	2,26	2,22	2,18	2,15	2,11	2,06	2,02	1,98	1,94	1,92	1,90	1,88	1,86	1,84	1,79	1,75	1,71	1,66	1,61
62		2,37	2,34	2,30	2,26	2,22	2,18	2,14	2,10	2,06	2,02	1,98	1,95	1,93	1,91	1,89	1,87	1,82	1,78	1,74	1,69	1,65
61		2,41	2,38	2,34	2,30	2,26	2,22	2,18	2,14	2,10	2,05	2,01	1,99	1,97	1,95	1,92	1,90	1,86	1,81	1,77	1,72	1,68
60		2,46	2,42	2,38	2,34	2,30	2,26	2,22	2,17	2,13	2,09	2,05	2,02	2,00	1,98	1,96	1,94	1,89	1,85	1,80	1,76	1,71
59		2,49	2,45	2,41	2,37	2,33	2,30	2,25	2,21	2,17	2,12	2,08	2,06	2,03	2,01	1,99	1,97	1,92	1,88	1,83	1,79	1,74
58		2,53	2,49	2,45	2,41	2,37	2,33	2,29	2,24	2,20	2,16	2,11	2,09	2,07	2,04	2,02	2,00	1,95	1,91	1,86	1,82	1,77
57		2,57	2,53	2,49	2,45	2,41	2,37	2,32	2,28	2,23	2,19	2,14	2,12	2,10	2,08	2,05	2,03	1,99	1,94	1,89	1,85	1,80
56		2,60	2,56	2,52	2,48	2,44	2,40	2,36	2,31	2,27	2,22	2,18	2,15	2,13	2,11	2,07	2,06	2,02	1,97	1,92	1,88	1,83
55		2,64	2,60	2,56	2,52	2,48	2,44	2,39	2,35	2,30	2,26	2,21	2,19	2,16	2,14	2,12	2,10	2,05	2,00	1,95	1,91	1,89
54		2,68	2,64	2,59	2,55	2,51	2,47	2,42	2,38	2,33	2,29	2,24	2,22	2,20	2,17	2,15	2,13	2,08	2,03	1,98	1,94	1,87
53		2,71	2,67	2,63	2,59	2,55	2,50	2,46	2,41	2,37	2,32	2,27	2,25	2,23	2,20	2,18	2,16	2,11	2,06	2,01	1,96	1,92
52		2,75	2,71	2,66	2,62	2,58	2,54	2,49	2,45	2,40	2,35	2,31	2,28	2,26	2,24	2,21	2,19	2,14	2,09	2,04	1,99	1,94
51		2,78	2,74	2,70	2,66	2,61	2,57	2,52	2,48	2,43	2,38	2,34	2,31	2,29	2,27	2,24	2,22	2,17	2,12	2,07	2,02	1,97
50		2,82	2,78	2,73	2,69	2,65	2,61	2,56	2,51	2,46	2,42	2,37	2,35	2,32	2,30	2,27	2,25	2,20	2,15	2,10	2,05	2,00
49		2,86	2,81	2,77	2,73	2,68	2,64	2,59	2,54	2,50	2,45	2,40	2,38	2,35	2,33	2,30	2,28	2,23	2,18	2,13	2,08	2,03
48		2,89	2,85	2,80	2,76	2,72	2,67	2,62	2,58	2,53	2,48	2,43	2,41	2,38	2,36	2,33	2,31	2,26	2,21	2,16	2,11	2,06
47		2,93	2,88	2,84	2,79	2,75	2,71	2,66	2,61	2,56	2,51	2,46	2,44	2,41	2,39	2,36	2,34	2,28	2,24	2,19	2,13	2,09
46		2,96	2,92	2,87	2,83	2,78	2,74	2,69	2,64	2,59	2,54	2,49	2,47	2,44	2,42	2,39	2,37	2,31	2,27	2,22	2,16	2,11
45		3,00	2,95	2,91	2,86	2,82	2,77	2,72	2,67	2,62	2,57	2,52	2,50	2,47	2,45	2,42	2,40	2,35	2,30	2,25	2,19	2,14
44		3,03	2,98	2,94	2,89	2,85	2,80	2,75	2,70	2,65	2,60	2,55	2,53	2,50	2,48	2,45	2,43	2,38	2,32	2,27	2,22	2,17
43		3,06	3,02	2,97	2,93	2,88	2,83	2,78	2,73	2,68	2,63	2,58	2,56	2,53	2,51	2,48	2,46	2,41	2,35	2,30	2,25	2,19
42		3,09	3,05	3,00	2,96	2,91	2,87	2,82	2,76	2,71	2,66	2,61	2,59	2,56	2,54	2,51	2,49	2,44	2,38	2,33	2,27	2,22