

TABLE 1 (continued)

Buffer	Pressure bars	Temp °K	$f_{H_2}$ bars	Log $f_{Cl_2}$ bars	Log $f_{O_2}$ bars	$f_{HCl}$ bars	$f_{H_2O}$ bars	Log $m_{HCl}$ *	
FMQ, OH(AgAgClX, HOCl)	500	600	1.5136	-16.197	-33.183	3.330	110.0	-0.428	
		700	3.8019	-13.172	-26.429	11.830	233.6	0.123	
		800	5.8884	-11.082	-21.548	21.827	327.3	0.384	
	1000	900	6.9183	- 9.561	-17.844	28.347	376.5	0.498	
		600	1.8197	-16.062	-32.973	4.266	140.2	-0.617	
		700	4.4668	-13.056	-26.184	14.656	309.7	-0.131	
	2000	800	8.3176	-10.952	-21.192	30.130	493.3	0.163	
		900	11.2200	- 9.442	-17.380	41.400	642.7	0.282	
		600	2.4547	-15.792	-32.592	6.76	217.4	-0.914	
	3000	700	5.8884	-12.825	-25.800	21.953	481.8	-0.411	
		800	10.7150	-10.694	-20.777	46.026	795.6	-0.098	
		900	15.8490	- 9.204	-16.910	64.714	1103.9	0.037	
	GCH, CH(AgAgClX, HOCl)	500	600	3.0200	-15.522	-32.238	10.233	326.4	-1.121
			700	7.5858	-12.594	-25.463	32.509	710.1	-0.619
			800	13.8040	-10.435	-20.439	70.388	1174.1	-0.283
		1000	900	20.8930	- 8.965	-16.569	97.836	1634.1	-0.140
			600	2.43	-16.197	-33.17	4.22	109.6	-0.325
			700	8.12	-13.172	-26.45	17.29	229.0	0.287
2000		800	20.26	-11.082	-21.61	40.49	305.0	0.653	
		900	41.35	- 9.561	-17.99	69.30	318.0	0.886	
		600	3.74	-16.060	-32.98	6.11	139.7	-0.461	
3000	700	12.53	-13.056	-26.20	24.54	304.9	0.093		
	800	31.28	-10.952	-21.23	58.43	471.4	0.450		
	900	64.2	- 9.442	-17.47	99.03	581.6	0.661		
	600	6.78	-15.792	-32.59	11.23	216.8	-0.688		
	700	22.08	-12.825	-25.81	42.51	476.3	-0.124		
	800	54.18	-10.694	-20.81	103.49	769.8	0.254		
900	109.43	- 9.204	-16.97	170.05	1032.7	0.456			
	600	10.15	-15.522	-32.24	18.76	325.8	-0.858		
	700	32.18	-12.594	-25.47	66.95	704.2	-0.305		
800	77.66	-10.435	-20.46	166.96	1146.0	0.098			
	900	155.6	- 8.965	-16.61	266.99	1556.1	0.296		

\* For details of buffer notation see Eugster and Skippen (1967). M: magnetite; H: hematite; N: nickel; B: bunsenite; F: fayalite; Q: quartz; G: graphite.

volved in (9), we have calculated  $m_{HCl}$  values, assuming ideal mixing of ideal gases, and we found the difference between the two sets of values to be always less than and usually much less than 10 percent. Values for  $m_{HCl}$  calculated from eq (9) can be found in table 1.

Calculated HCl fugacities at 2000 bars for three hydrogen buffers are plotted as a function of temperature in figure 1. Values vary between 0.1 and 100 bars. The variation of  $m_{HCl}$  as a function of  $f_{H_2}$  is expressed in figure 2, drawn for 500°C, 2000 bars.

EXPERIMENTAL APPARATUS AND PROCEDURES

The experimental set-up follows that developed by Eugster and Skippen (1967) for C-O-H gases, except that the internal buffer is a mixture of Ag + AgCl wrapped in silver foil, instead of graphite. The arrangement is shown in figure 3.

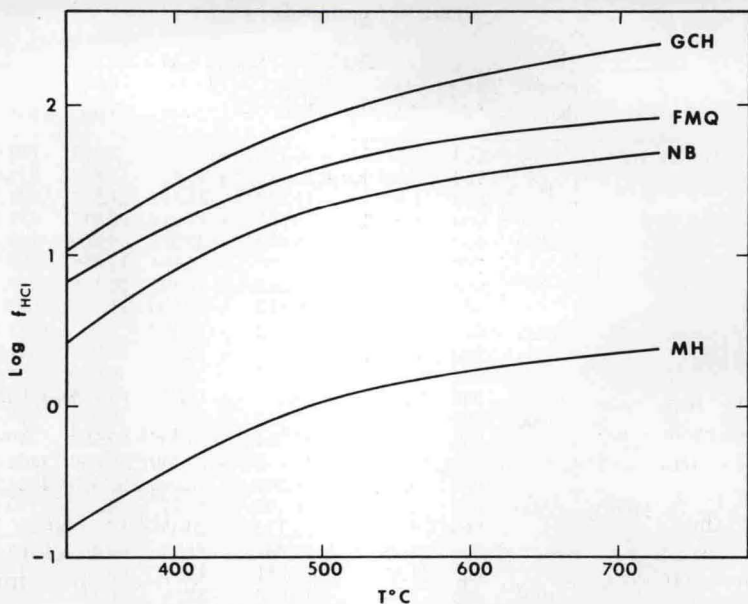


Fig. 1. Calculated HCl fugacities (in bars) for different oxygen buffers at 2000 bars pressure. MH: magnetite + hematite; NB: nickel + bunsenite; FMQ: fayalite + magnetite + quartz; GCH: graphite + methane.

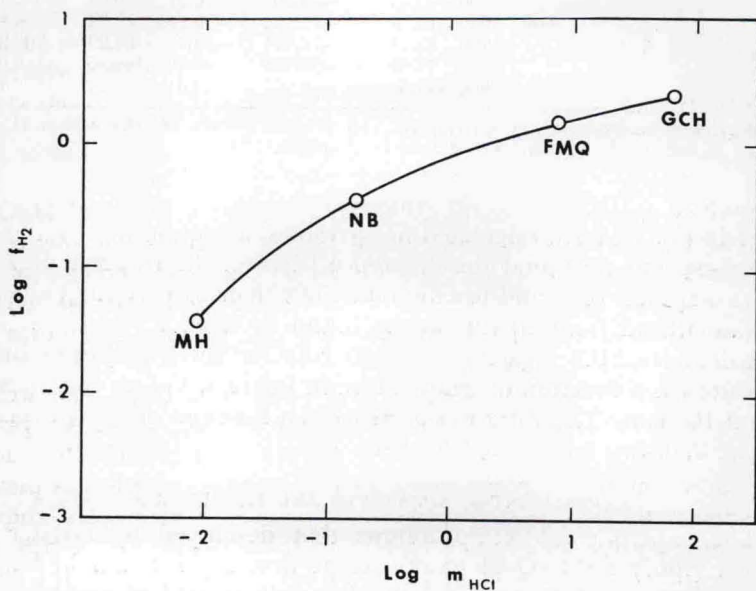


Fig. 2. Calculated HCl molalities as a function of imposed hydrogen fugacities at 500°C and 2000 bars pressure. For buffer notations see figure 1.