

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		
		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		
		2000	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		
		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		
		900	20.8930	-8.965	-16.569	97.836	1634.1	-0.140		
		GCH, CH(AgAgClX, HOCl)	500	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
800	20.26			-11.082	-21.61	40.49	305.0	0.653		
1000	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		
	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		
	2000		600	6.78	-15.792	-32.59	11.23	216.8	-0.688	
3000	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.

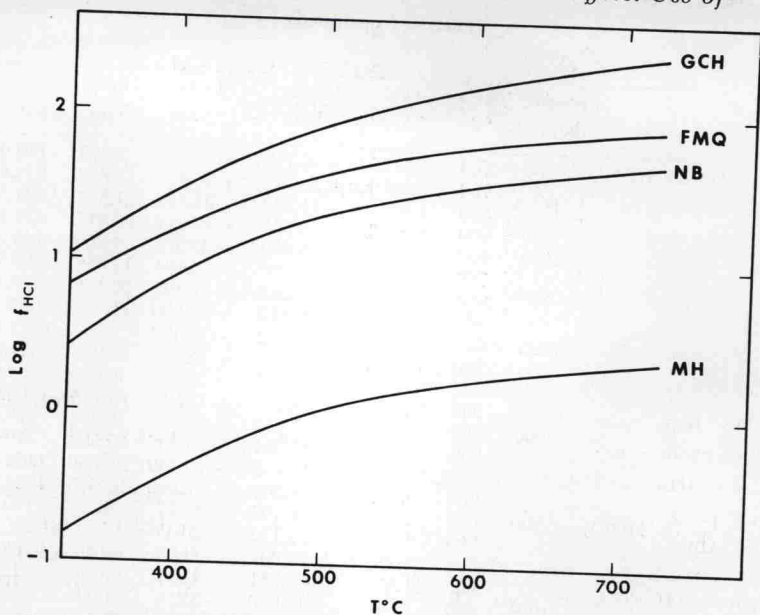


Fig. 1. Calculated HCl fugacities (in bars) for different oxygen buffers at 2000 bars pressure. MH: magnetite + hematite; NB: nickel + bunsenite; FMQ: fayalite + magnetite + quartz; GCH: graphite + methane.

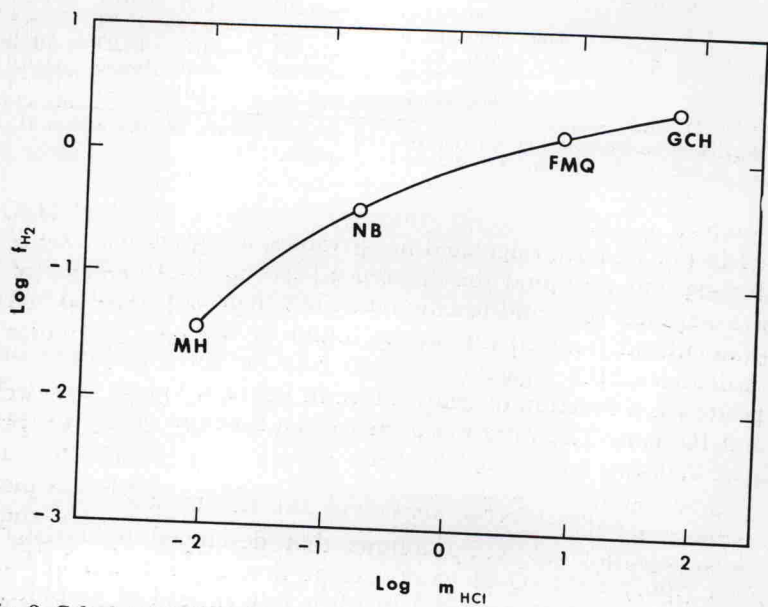


Fig. 2. Calculated HCl molalities as a function of imposed hydrogen fugacities at 500°C and 2000 bars pressure. For buffer notations see figure 1.