



DISTRIBUTION OF FREE SO₂ From pH 3.0 – 4.0 (pKa = 1.81)

pH	% Molecular SO ₂ (m)	% Bisulfite (HSO ₃ ⁻)	% Sulfite (SO ₃ ⁼)	Minimum ppm of Free SO ₂		
				0.8 molecular	0.5 molecular	0.3 molecular
3.00	6.1	93.9	0.012	13	8	5
3.05	5.3			15	9	6
3.10	4.9	95.1	0.015	16	10	6
3.15	4.3			19	12	7
3.20	3.9	96.1	0.019	21	13	8
3.25	3.4			23	15	9
3.30	3.1	96.8	0.024	26	16	10
3.35	2.7			29	18	11
3.40	2.5	97.5	0.030	32	20	12
3.45	2.2			37	23	14
3.50	2.0	98.0	0.038	40	25	15
3.55	1.8			46	29	17
3.60	1.6	98.4	0.048	50	31	19
3.65	1.4			57	36	21
3.70	1.3	98.7	0.061	63	39	23
3.75	1.1			72	45	27
3.80	1.0	98.9	0.077	79	49	30
3.85	0.9			91	57	33
3.90	0.8	99.1	0.097	99	62	38
3.95	0.7			114	71	43
4.00	0.7	99.2	0.122	125	78	43

This table shows the percent of molecular SO₂ present in the pH range from 3.0 to 4.0. Multiplying this percent by the free SO₂ will give the ppm (mg/L) of molecular SO₂. To attain a desired level of molecular SO₂, the amount of free SO₂ needed can be determined by dividing the desired molecular (mg/l) by the percent available at the given pH. For example, if the wine pH is 3.5 and the desired molecular level is 0.8 mg/L, then the needed amount of free SO₂ would be calculated $0.8/0.02 = 40\text{ppm}$ free SO₂.