

# Corrosion Tables, page 1 of 4

## Corrosion Rates in Phosphoric Acid (H<sub>3</sub>PO<sub>4</sub>)

Alloy	Notes	Concentration, %	Temperature		Time	Corrosion Rate		Ref
			C	F		mm/yr	mils/yr	
17-4PH	condition H 1075	2.5		boiling	5x48hr	nil	nil	13
17-4PH	condition H 1075	20		boiling	5x48hr	0.025	1	13
17-4PH	condition H 1075	50		boiling	5x48hr	0.08	3	13
17-4PH	condition H 1075	70		boiling	5x48hr	1.5	60	13
2205	—	70	110	230	—	0.22	8.7	9
304	—	50		boiling	5x48hr	0.18	7	13
304	—	70		boiling	5x48hr	0.81	32	13
316	—	20		boiling	—	0.183	7.2	1
316	—	54		boiling	—	0.580	2.28	1
316	—	60		boiling	—	0.305	12	1
316L	—	70	110	230	—	3.9	154	9
317L	—	70	110	230	—	2.4	95	9
AL-6XN	—	10	120	248	120hr	0.021	0.81	1
AL-6XN	—	10	135	275	120hr	0.197	7.76	1
AL-6XN	—	10	150	302	120hr	0.400	15.75	1
AL-6XN	—	20		boiling	5x48hr	0.006	0.24	1
AL-6XN	—	54		boiling	—	0.015	0.059	1
AL-6XN	plus 800ppm Cl <sup>-</sup>	70	100	212	168hr	1.22	48	1
AL-6XN	plus 1% HF	70	100	212	168hr	0.518	20.4	1
825	chemically pure	60		boiling	3x20hr	0.17	6.8	12
825	chemically pure	70		boiling	4x20hr	0.18	7.1	12
825	chemically pure	85		boiling	4x20hr	1.3	50	12
825	wet process acid +20%HF	20	21-29	70-85	624hr	0.036	1.4	12
G-30	% P <sub>2</sub> O <sub>5</sub>	44	116	241	—	0.18	7.0	6
G-30	% P <sub>2</sub> O <sub>5</sub> + 2000ppm Cl <sup>-</sup>	44	116	241	—	0.19	7.7	6
G-30	% P <sub>2</sub> O <sub>5</sub>	52	149	300	—	0.70	28	6
G-30	% P <sub>2</sub> O <sub>5</sub> + 2000ppm Cl <sup>-</sup>	54	116	241	—	0.18	7	6
625	plus 0.8% HF	55		boiling	48hr	0.42	16.5	16
B-2	chemically pure	10		boiling	120hr	0.05	2	11
B-2	chemically pure	30		boiling	120hr	0.08	3	11
B-2	chemically pure	50		boiling	120hr	0.15	6	11
B-2	chemically pure	85		boiling	120hr	0.63	25	11

## Corrosion Rates in Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>)

Alloy	Notes	Concentration, %	Temperature		Time	Corrosion Rate		Ref
			C	F		mm/yr	mils/yr	
17-4PH	condition H 1075	2	35	95	5x48hr	nil	nil	13
17-4PH	condition H 1075	5	35	95	5x48hr	0.28	11	13
17-4PH	condition H 1075	1	80	176	5x48hr	0.025	1	13
17-4PH	condition H 1075	2	80	176	5x48hr	0.33	13	13
17-4PH	condition H 1075	98	35	95	5x48hr	nil	nil	13
17-4PH	condition H 1075	98	80	176	5x48hr	0.18	7	13
2205	nitrogen purge	10	55	131	96hr	0.06	2.3	10
2205	nitrogen purge	10	60	140	96hr	0.17	6.7	10
2205	nitrogen purge	10	70	158	96hr	0.32	13	10

# Corrosion Tables, continued

## Corrosion Rates in Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>) continued

Alloy	Notes	Concentration, %	Temperature		Time	Corrosion Rate		Ref
			C	F		mm/yr	mils/yr	
2205	nitrogen purge	60	15	59	96hr	4.0	157	10
2205	nitrogen purge	96.4	20	68	96hr	0.11	4.4	10
2205	nitrogen purge	96.4	25	77	96hr	0.14	5.4	10
2507	plus 2000 ppm Cl <sup>-</sup>	10	67	153	—	0.10	4	14
2507	plus 2000 ppm Cl <sup>-</sup>	20	23	73	—	0.10	4	14
304	—	1	35	95	5x48hr	0.71	28	13
304	—	5	35	95	5x48hr	6.1	240	13
304	—	1	80	176	5x48hr	8.9	350	13
304	—	95	30	86	—	0.28	11	2
316	—	10	boiling		5x48hr	9.42	371	1
316	reagent grade	10	80	176	5x48hr	2.3	91	18
316	" + 59ppm Cl <sup>-</sup>	10	80	176	5x48hr	5.56	219	18
316	" + 119ppm Cl <sup>-</sup>	10	80	176	5x48hr	5.6	221	18
316	" + 1187ppm Cl <sup>-</sup>	10	80	176	5x48hr	2.0	80	18
316	" + 10600ppm Cl <sup>-</sup>	10	80	176	5x48hr	6.3	250	18
316	reagent grade	30	80	176	5x48hr	60.34	2375	18
316	" + 80ppm Cl <sup>-</sup>	30	80	176	48hr	dissolved		18
316	" + 135ppm Cl <sup>-</sup>	30	80	176	48hr	dissolved		18
316	" + 1277ppm Cl <sup>-</sup>	30	80	176	5x48hr	10.4	407	18
316	" + 10900 ppm Cl <sup>-</sup>	30	80	176	5x48hr	8.84	348	18
Nitronic 50	industrial grade	80	80	176	3x48hr	0.05	2.0	18
Nitronic 50	"	80	100	212	48hr	66.5	2620	18
Nitronic 50	"	93	100	212	3x48hr	9.25	364	18
Nitronic 50	"	93	120	248	3x48hr	9.73	383	18
Nitronic 50	"	98	100	212	3x48hr	0.24	9.4	18
Nitronic 50	"	98	120	248	3x48hr	0.23	9.3	18
1018	plus	15	71	160	—	7.44	293	3
20Cb-3	0.15%	15	71	160	—	0.127	5	3
RA330	Oakite®	15	71	160	—	0.461	18.8	3
RA333	PC-10	15	71	160	—	0.241	9.85	3
600	inhibitor	15	71	160	—	0.205	8.07	3
AL-6XN	—	pH 1.5	65.6	150	—	0.0007	0.029	1
AL-6XN	—	pH 1.0	65.6	150	—	0.0007	0.029	1
AL-6XN	—	pH 0.5	65.6	150	—	0.0013	0.053	1
AL-6XN	—	pH 0.5	79.4	175	—	0.0013	0.053	1
AL-6XN	—	pH 1.5	93.3	200	—	0.0013	0.053	1
AL-6XN	—	pH 1.0	93.3	200	—	0.0027	0.11	1
AL-6XN	—	pH 0.5	93.3	200	—	0.541	21.3	1
AL-6XN	—	10	boiling		5x48hr	2.14	84.4	1
AL-6XN	—	10	boiling		5x48hr	2.34	92.3	1
904L	—	10	boiling		5x48hr	2.52	99.4	1
904L	—	10	boiling		5x48hr	2.56	101	1
904L	reagent grade	5	80	176	3x48hr	0.005	0.2	18
904L	"	10	80	176	3x48hr	0.013	0.5	18
904L	" + 10,000ppm Cl <sup>-</sup>	10	80	176	3x48hr	2.87	113	18

# Corrosion Tables, continued

## Corrosion Rates in Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>) continued

Alloy	Notes	Concentration, %	Temperature		Time	Corrosion Rate		Ref
			C	F		mm/yr	mils/yr	
904L	" + 10,000ppm Cl <sup>-</sup>	30	80	176	3x48hr	4.01	158	18
904L	"	45	80	176	3x48hr	1.9	75	18
904L	"	90	80	176	3x48hr	3.86	152	18
904L	"	96	80	176	3x48hr	3.30	130	18
20Cb-3	reagent grade	5	80	176	3x48hr	0.0038	0.15	18
20Cb-3	"	10	80	176	3x48hr	0.066	2.6	18
20Cb-3	"	10	80	176	5x48hr	0.065	2.5	18
20Cb-3	" + 59ppm Cl <sup>-</sup>	10	80	176	5x48hr	0.098	3.9	18
20Cb-3	" + 119ppm Cl <sup>-</sup>	10	80	176	5x48hr	0.094	3.7	18
20Cb-3	" + 594ppm Cl <sup>-</sup>	10	80	176	5x48hr	0.18	7	18
20Cb-3	" + 859ppm Cl <sup>-</sup>	10	80	176	5x48hr	0.34	14	18
20Cb-3	" + 1187ppm Cl <sup>-</sup>	10	80	176	5x48hr	0.37	15	18
20Cb-3	" + 10600ppm Cl <sup>-</sup>	10	80	176	5x48hr	1.1	43	18
20Cb-3	" + 10,000ppm Cl <sup>-</sup>	10	80	176	3x48hr	0.97	38	18
20Cb-3	reagent grade	30	80	176	5x48hr	0.24	9.4	18
20Cb-3	" + 32ppm Cl <sup>-</sup>	30	80	176	5x48hr	0.21	8.2	18
20Cb-3	" + 85ppm Cl <sup>-</sup>	30	80	176	5x48hr	0.22	8.9	18
20Cb-3	" + 1055ppm Cl <sup>-</sup>	30	80	176	5x48hr	0.42	16	18
20Cb-3	" + 10,625ppm Cl <sup>-</sup>	30	80	176	5x48hr	2.0	80	18
20Cb-3	" + 10,000ppm Cl <sup>-</sup>	30	80	176	3x48hr	1.8	70	18
20Cb-3	"	45	80	176	3x48hr	0.16	6.3	18
20Cb-3	"	90	80	176	3x48hr	0.343	13.5	18
20Cb-3	"	96	80	176	3x48hr	0.48	19	18
N08020	(control alloy)	60	50	122	96hr	0.02	0.9	10
825	C.P. acid	40	50	122	168hr	0.013	0.5	12
825	C.P. acid	40	100	212	168hr	0.36	14.0	12
825	C.P. acid	40		boiling	48hr	0.28	11.0	12
825	C.P. acid	50	50	122	168hr	0.025	1.0	12
825	C.P. acid	50	100	212	168hr	0.36	14.0	12
825	C.P. acid	50		boiling	48hr	0.51	20.0	12
825	C.P. acid	60	50	122	168hr	0.10	4.0	12
825	C.P. acid	60	100	212	48hr	0.51	20.0	12
825	C.P. acid	60		boiling	48hr	3.05	120	12
825	C.P. acid	80	50	122	168hr	0.13	5.0	12
825	C.P. acid	80	100	212	168hr	0.51	20.0	12
825	C.P. acid	80		boiling	48hr	34.5	1360	12
825	plant acid	25.3	50	122	168hr	0.013	0.5	12
825	plant acid	25.3		boiling	48hr	0.41	16	12
825	plant acid	50.3	50	122	168hr	0.13	5.0	12
825	plant acid	50.3	100	212	168hr	1.3	50	12
825	plant acid	50.3		boiling	48hr	48.8	1920	12
825	plus 22% HNO <sub>3</sub>	50	66	150	288hr	0.013	0.5	12
825	plus 22% HNO <sub>3</sub>	50	83	182	240hr	0.11	4.3	12
G-30	—	25		boiling	—	0.19	7.5	6
G-30	—	50	107	225	—	1.05	42	6
G-30	—	80	52	125	—	0.3	12	6
G-30	—	99	130	226	—	0.86	34	6
G-30	—	99	140	284	—	1.2	46	6
G-30	plus 10%HNO <sub>3</sub>	50		boiling	—	0.41	16	6
G-30	plus 5%HNO <sub>3</sub>	60		boiling	—	1.1	45	6
G-30	plus 0.5%HNO <sub>3</sub>	70		boiling	—	3.4	133	6

# Corrosion Tables, continued

## Corrosion Rates in Sulphuric Acid (H<sub>2</sub>SO<sub>4</sub>) continued

Alloy	Notes	Concentration, %	Temperature		Time	Corrosion Rate		Ref
			C	F		mm/yr	mils/yr	
C-276	—	10	boiling		—	1.1	43	7
C-276	—	20	79	174	—	0.076	3	7
C-276	—	20	boiling		—	1.1	42	7
C-276	—	30	79	174	—	0.10	4	7
C-276	—	30	boiling		—	1.4	55	7
C-276	—	70	38	100	—	nil	nil	7
C-276	—	95	30	86	—	<0.01	0.12	2
C-22	industrial grade	10	boiling		3x48hr	0.12	4.5	18
C-22	" +10,000ppm Cl <sup>-</sup>	10	boiling		3x48hr	3.26	128	18
C-22	—	10	boiling		—	0.28	11	7
C-22	—	20	79	174	—	0.025	1	7
C-22	—	20	boiling		—	0.84	33	7
C-22	—	30	79	174	—	0.076	3	7
C-22	—	30	boiling		—	1.6	64	7
C-22	—	70	38	100	—	nil	nil	7
625	—	15	80	176	—	0.19	7.4	16
625	—	50	80	176	—	0.43	17	16
625	—	60	80	176	—	0.71	28	16
625	—	70	80	176	—	1.6	64	16
625	—	80	80	176	—	2.3	90	16
625	plus 4.9% HF	28	49-79	120-175	—	1.2	49	16
400	boiling	5	101	214	23hr	0.086	3.4	15
400	boiling	10	102	216	23hr	0.061	2.4	15
400	boiling	19	104	219	23hr	0.19	7.5	15
400	boiling	50	123	253	20hr	16.5	650	15
400	boiling	75	182	360	20hr	58.4	2300	15
400	boiling	96	293	560	3hr	83.8	3300	15
B-2	—	2	boiling		120hr	<0.02	0.5	11
B-2	—	5	boiling		120hr	0.08	3	11
B-2	—	10	boiling		120hr	0.05	2	11
B-2	—	20	boiling		120hr	<0.02	0.7	11
B-2	—	30	boiling		120hr	<0.02	0.7	11
B-2	—	40	boiling		120hr	<0.03	0.9	11
B-2	—	50	boiling		120hr	0.03	1	11
B-2	—	60	boiling		120hr	0.05	2	11
B-2	—	70	boiling		120hr	0.23	9	11

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