

### **1324 APPROXIMATE CYLINDER STRENGTH**

Strength of Concrete Cylinders -- Specification requirements are normally based upon the strength of the concrete at 28 days but it is usually advisable, especially at the start of a project, to submit cylinders for 7 and 14 day tests so that the 28 day strength may be forecast, and to see that the concrete shows normal progressive hardening. For concrete without fly ash, the following formula will give a close approximation of the 28 day strength which may be expected from a known 7 day strength.

$$\text{English: } S_{28} = S_7 + (30\sqrt{S_7})$$

$$\text{Metric: } S_{28} = S_7 + (78.8\sqrt{S_7})$$

In which  $S_{28}$  = approximate 28 day strength and  $S_7$  = known 7 day strength.

For approximating strengths at other ages from known strengths at various ages the following table may be used.

Probable Compressive Strength For Concrete Without Fly Ash

AGE	psi	kPa	psi	kPa	Psi	kPa	psi	kPa	psi	kPa
100	1550	10690	2250	15510	2900	19990	3490	24060	4150	28610
90	1500	10340	2180	15030	2830	19510	3440	23720	4050	27920
80	1460	10070	2110	14550	2740	18890	3350	23100	3950	27230
70	1390	9580	2030	14000	2640	18200	3250	22410	3830	26410
60	1330	9170	1940	13380	2540	17510	3120	21510	3690	25440
55	1290	8890	1890	13030	2470	17030	3050	21030	3610	24890
50	1250	8620	1840	12690	2410	16620	2970	20480	3520	24270
45	1200	8270	1780	12270	2330	16060	2890	19930	3420	23580
40	1150	7930	1700	11720	2250	15510	2790	19240	3310	22820
38	1130	7790	1670	11510	2220	15310	2760	19030	3280	22610
36	1110	7650	1640	11310	2190	15100	2720	18750	3230	22270
34	1080	7450	1610	11100	2140	14750	2670	18410	3180	21930
32	1050	7240	1580	10890	2100	14480	2620	18060	3120	21510
30	1030	7100	1540	10620	2050	14130	2560	17650	3060	21100
28	1000	6900	1500	10310	2000	13840	2500	17190	3000	20730
26	960	6620	1450	10000	1950	13440	2450	16890	2930	20200
24	920	6340	1400	9650	1890	13030	2380	16410	2850	19650
22	890	6140	1350	9310	1830	12620	2310	15930	2780	19170
20	850	5860	1300	8960	1770	12200	2240	15440	2700	18620
19	830	5720	1270	8760	1730	11930	2200	15170	2650	18270
18	800	5520	1240	8550	1690	11650	2150	14820	2600	17930
17	780	5380	1200	8270	1650	11380	2100	14480	2550	17580
16	750	5170	1170	8070	1600	11030	2050	14130	2490	17170
15	720	4960	1130	7790	1550	10690	2000	13790	2430	16750
14	690	4760	1090	7520	1500	10340	1950	13440	2360	16270
13	660	4550	1050	7240	1450	10000	1890	13030	2300	15860
12	630	4340	1000	6890	1400	9650	1820	12550	2230	15380
11	590	4070	950	6550	1350	9310	1750	12070	2150	14820
10	550	3790	900	6210	1280	8830	1680	11580	2070	14270
9	510	3520	840	5790	1200	8270	1590	10960	1980	13650
8	460	3170	780	5380	1130	7790	1500	10340	1880	12960
7	400	2760	700	4830	1040	7170	1380	9510	1750	12070
6	340	2340	600	4140	920	6340	1260	8690	1610	11100

## Probable Compressive Strength For Concrete Without Fly Ash

AGE	psi	kPa	psi	kPa	psi	KPa	psi	kPa
100	4720	32540	5400	37230	5970	41160	6560	45230
90	4620	31850	5240	36130	5840	40270	6430	44330
80	4510	31100	5150	35510	5710	39370	6290	43370
70	4380	30200	5000	34470	5550	38270	6110	42130
60	4220	29100	4840	33370	5370	37020	5930	40890
55	4140	28540	4750	32750	5270	36340	5820	40130
50	4050	27920	4640	31990	5170	35650	5700	39300
45	3950	27230	4520	31160	5040	34750	5570	38400
40	3830	26410	4400	30340	4910	33850	5430	37440
38	3790	26130	4350	29990	4860	33510	5380	37090
36	3740	25790	4300	29650	4800	33090	5310	36610
34	3680	25370	4220	29100	4720	32540	5240	36130
32	3620	24960	4160	28680	4650	32060	5170	35650
30	3560	24550	4090	28200	4570	31510	5090	35090
28	3500	24150	4000	27590	4500	31050	5000	34460
26	3410	23510	3930	27100	4400	30340	4900	33780
24	3340	23030	3840	26480	4300	29650	4800	33090
22	3250	22410	3750	25860	4200	28960	4700	32410
20	3160	21790	3640	25100	4100	28270	4590	31650
19	3110	21440	3590	24750	4040	27850	4510	31100
18	3050	21030	3520	24270	3980	27440	4450	30680
17	3000	20680	3460	23860	3910	26960	4380	30200
16	2940	20270	3400	23440	3830	26410	4300	29650
15	2870	19790	3310	22820	3770	25990	4210	29030
14	2800	19310	3250	22410	3690	25440	4130	28480
13	2740	18890	3180	21930	3600	24820	4050	27920
12	2660	18340	3090	21300	3500	24130	3960	27300
11	2570	17720	3000	20680	3400	23440	3850	26540
10	2490	17170	2900	19990	3300	22750	3730	25720
9	2380	16410	2780	19170	3170	21860	3600	24820
8	2280	15720	2650	18270	3050	21030	3460	23860
7	2120	14620	2500	17240	2890	19930	3280	22610
6	1980	13650	2340	16130	2700	18620	3100	21370