Drilling Feed & Speed Chart for

Polyclad TURBOÒ FR-4 High Tg PCB Material

Recommended Tycom Drill Series: Series 100, 150, 450, 460, 480

(Note: Chart is based on 120K RPM Spindle Capability. Please use maximum spindle speed if listed RPM is unattainable)

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Max Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
0.10mm	0.0040	24	120	200	-0.011	300	0.20	126
0.13mm	0.0050	27	120	300	-0.011	300	0.23	157
0.15mm	0.0059	30	120	300	-0.011	400	0.25	185
#96	0.0063	33	120	400	-0.011	400	0.28	198
#95	0.0067	36	120	400	-0.012	400	0.30	210
#94	0.0071	39	120	500	-0.012	500	0.33	223
#93	0.0075	42	120	500	-0.012	500	0.35	236
#92	0.0079	45	120	500	-0.012	500	0.38	248
#91	0.0083	48	120	600	-0.012	500	0.40	261
#90	0.0087	51	120	600	-0.012	500	0.43	273
#89	0.0091	54	120	700	-0.012	700	0.45	286
#88	0.0095	57	120	700	-0.012	700	0.48	298
0.25mm	0.0098	60	120	800	-0.012	700	0.50	308
#87	0.0100	64	120	800	-0.012	700	0.53	314
#86	0.0105	70	120	800	-0.012	700	0.58	330
#85	0.0110	76	120	900	-0.013	800	0.63	345
#84	0.0115	81	120	900	-0.013	800	0.68	360
0.30mm	0.0118	82	117	1000	-0.013	800	0.70	360
#83	0.0120	84	115	1000	-0.013	800	0.73	360
#82	0.0125	86	110	1000	-0.013	800	0.78	360
#81	0.0130	88	106	1000	-0.013	800	0.83	360
#80	0.0135	90	102	1000	-0.013	800	0.88	360
0.35mm	0.0138	90	100	1000	-0.013	1000	0.90	360
#79	0.0145	95	95	1000	-0.013	1000	1.00	360
1/64	0.0156	100	88	1000	-0.014	1000	1.14	360
0.40mm	0.0158	102	87	1000	-0.014	1000	1.17	360
#78	0.0160	104	86	1000	-0.014	1000	1.21	360
0.45mm	0.0177	104	78	1000	-0.014	1000	1.33	360
#77	0.0180	105	76	1000	-0.014	1000	1.38	360
0.50mm	0.0197	106	70	1000	-0.015	1000	1.51	360
#76	0.0200	106	69	1000	-0.015	1000	1.54	360
#75	0.0210	107	66	1000	-0.015	1200	1.62	360
0.55mm	0.0217	108	63	1000	-0.015	1200	1.71	360
#74	0.0225	109	61	1000	-0.015	1200	1.79	360
0.60mm	0.0236	110	58	1000	-0.016	1200	1.90	360
#73	0.0240	110	57	1000	-0.016	1200	1.93	360

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
#72	0.0250	111	55	1000	-0.016	1200	2.02	360
0.65mm	0.0256	111	54	1000	-0.016	1200	2.06	360
#71	0.0260	112	53	1000	-0.016	1200	2.11	360
0.70mm	0.0276	113	50	1000	-0.016	1200	2.26	360
#70	0.0280	113	49	1000	-0.017	1200	2.31	360
#69	0.0292	114	47	1000	-0.017	1200	2.43	360
0.75mm	0.0295	114	47	1000	-0.017	1200	2.43	360
#68	0.0310	110	44	1000	-0.017	1200	2.50	360
1/32	0.0312	110	44	1000	-0.017	1200	2.50	360
0.80mm	0.0315	109	44	1000	-0.017	1200	2.50	360
#67	0.0320	108	43	1000	-0.017	1200	2.50	360
#66	0.0330	105	42	1000	-0.018	1200	2.50	360
0.85mm	0.0335	103	41	1000	-0.018	1200	2.50	360
#65	0.0350	98	39	1000	-0.018	1200	2.50	360
0.90mm	0.0354	98	39	1000	-0.018	1200	2.50	360
#64	0.0360	95	38	1000	-0.018	1200	2.50	360
#63	0.0370	95	38	1000	-0.019	1200	2.50	360
0.95mm	0.0374	93	37	1000	-0.019	1200	2.50	360
#62	0.0380	90	36	1000	-0.019	1200	2.50	360
#61	0.0390	88	35	1000	-0.019	1200	2.50	360
1.00mm	0.0394	88	35	1000	-0.019	1200	2.50	360
#60	0.0400	85	34	1000	-0.019	1200	2.50	360
#59	0.0410	85	34	1000	-0.020	1200	2.50	360
1.05mm	0.0413	83	33	1000	-0.020	1200	2.50	360
#58	0.0420	83	33	1000	-0.020	1200	2.50	360
#57	0.0430	80	32	1000	-0.020	1200	2.50	360
1.10mm	0.0433	80	32	1000	-0.020	1200	2.50	360
1.15mm	0.0453	75	30	1000	-0.021	1200	2.50	360
#56	0.0465	75	30	1000	-0.021	1200	2.50	360
3/64	0.0469	73	29	1000	-0.021	1200	2.50	360
1.20mm	0.0472	73	29	1000	-0.021	1200	2.50	360
1.25mm	0.0492	70	28	1000	-0.021	1200	2.50	360
1.30mm	0.0512	68	27	1000	-0.022	1200	2.50	360
#55	0.0520	65	26	1000	-0.022	1200	2.50	360
1.35mm	0.0531	65	26	1000	-0.022	1200	2.50	360
#54	0.0550	63	25	1000	-0.023	1200	2.50	360
1.40mm	0.0551	63	25	1000	-0.023	1200	2.50	360
1.45mm	0.0571	60	24	1000	-0.023	1200	2.50	360
1.50mm	0.0591	58	23	1000	-0.024	1200	2.50	360
#53	0.0595	58	23	1000	-0.024	1200	2.50	360
1.55mm	0.0610	58	23	1000	-0.024	1200	2.50	360
1/16	0.0625	55	22	1000	-0.025	1200	2.50	360
1.60mm	0.0630	55	22	1000	-0.025	1200	2.50	360
#52	0.0635	55	22	1000	-0.025	1200	2.50	360
1.65mm	0.0650	53	21	1000	-0.025	1200	2.50	360
1.70mm	0.0669	53	21	1000	-0.026	1200	2.50	360
#51	0.0670	53	21	1000	-0.026	1200	2.50	360
1.75mm	0.0689	50	20	1000	-0.026	1200	2.50	361

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
#50	0.0700	50	20	1000	-0.026	1200	2.50	366
1.80mm	0.0709	50	20	1000	-0.027	1000	2.50	371
1.85mm	0.0728	50	20	1000	-0.027	1000	2.50	381
#49	0.0730	50	20	1000	-0.027	1000	2.50	382
1.90mm	0.0748	50	20	1000	-0.027	1000	2.50	391
#48	0.0760	50	20	1000	-0.028	1000	2.50	398
1.95mm	0.0768	50	20	1000	-0.028	1000	2.50	402
5/64	0.0781	50	20	1000	-0.028	1000	2.50	409
#47	0.0785	50	20	1000	-0.028	1000	2.50	411
2.00mm	0.0787	50	20	1000	-0.028	1000	2.50	412
2.05mm	0.0807	50	20	1000	-0.029	1000	2.50	422
#46	0.0810	50	20	1000	-0.029	1000	2.50	424
#45	0.0820	50	20	1000	-0.029	1000	2.50	429
2.10mm	0.0827	50	20	1000	-0.029	1000	2.50	433
2.15mm	0.0846	50	20	1000	-0.030	1000	2.50	443
#44	0.0860	50	20	1000	-0.030	1000	2.50	450
2.20mm	0.0866	50	20	1000	-0.030	1000	2.50	453
2.25mm	0.0886	50	20	1000	-0.031	1000	2.50	464
#43	0.0890	50	20	1000	-0.031	1000	2.50	466
2.30mm	0.0906	50	20	1000	-0.031	1000	2.50	474
2.35mm	0.0925	50	20	1000	-0.032	1000	2.50	484
#42	0.0935	50	20	1000	-0.032	1000	2.50	489
3/32	0.0938	50	20	1000	-0.032	1000	2.50	491
2.40mm	0.0945	50	20	1000	-0.032	1000	2.50	495
#41	0.0960	50	20	1000	-0.032	1000	2.50	502
2.45mm	0.0965	50	20	1000	-0.033	1000	2.50	505
#40	0.0980	50	20	1000	-0.033	1000	2.50	513
2.50mm	0.0984	50	20	1000	-0.033	1000	2.50	515
#39	0.0995	50	20	1000	-0.033	1000	2.50	521
2.55mm	0.1004	50	20	1000	-0.033	1000	2.50	525
#38	0.1015	50	20	1000	-0.034	1000	2.50	531
2.60mm	0.1024	50	20	1000	-0.034	1000	2.50	536
#37	0.1040	50	20	1000	-0.034	1000	2.50	544
2.65mm	0.1043	50	20	1000	-0.034	1000	2.50	546
2.70mm	0.1063	50	20	1000	-0.035	1000	2.50	556
#36	0.1065	50	20	1000	-0.035	1000	2.50	557
2.75mm	0.1083	50	20	1000	-0.035	1000	2.50	567
7/64	0.1094	50	20	1000	-0.036	1000	2.50	573
#35	0.1100	50	20	1000	-0.036	1000	2.50	576
2.80mm	0.1102	50	20	1000	-0.036	1000	2.50	577
#34	0.1110	50	20	1000	-0.036	1000	2.50	581
2.85mm	0.1122	50	20	1000	-0.036	1000	2.50	587
#33	0.1130	50	20	1000	-0.036	1000	2.50	591
2.90mm	0.1142	50	20	1000	-0.037	1000	2.50	598
#32	0.1160	50	20	1000	-0.037	1000	2.50	607
2.95mm	0.1161	50	20	1000	-0.037	1000	2.50	608
3.00mm	0.1181	50	20	1000	-0.038	1000	2.50	618
#31	0.1200	50	20	1000	-0.038	1000	2.50	628

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
3.05mm	0.1201	50	20	1000	-0.038	1000	2.50	629
3.10mm	0.1220	50	20	1000	-0.038	1000	2.50	638
3.15mm	0.1240	50	20	1000	-0.039	1000	2.50	649
1/8	0.1250	50	20	1000	-0.039	1000	2.50	654
3.20mm	0.1260	40	20	1000	-0.018	800	2.00	659
3.25mm	0.1280	40	20	1000	-0.018	800	2.00	670
#30	0.1285	40	20	1000	-0.019	800	2.00	672
3.30mm	0.1299	40	20	1000	-0.019	800	2.00	680
3.35mm	0.1319	40	20	1000	-0.019	800	2.00	690
3.40mm	0.1339	40	20	1000	-0.019	800	2.00	701
3.45mm	0.1358	40	20	1000	-0.019	800	2.00	711
#29	0.1360	40	20	1000	-0.019	800	2.00	712
3.50mm	0.1378	35	20	1000	-0.019	800	1.75	721
3.55mm	0.1398	35	20	1000	-0.019	800	1.75	732
#28	0.1405	35	20	1000	-0.019	800	1.75	735
9/64	0.1406	35	20	1000	-0.019	800	1.75	736
3.60mm	0.1417	35	20	1000	-0.019	800	1.75	742
3.65mm	0.1437	35	20	1000	-0.020	800	1.75	752
#27	0.1440	35	20	1000	-0.020	800	1.75	754
3.70mm	0.1457	35	20	1000	-0.020	800	1.75	762
#26	0.1470	35	20	1000	-0.020	800	1.75	769
3.75mm	0.1476	35	20	1000	-0.020	800	1.75	772
#25	0.1495	35	20	1000	-0.020	800	1.75	782
3.80mm	0.1496	35	20	1000	-0.020	800	1.75	783
3.85mm	0.1516	35	20	1000	-0.020	800	1.75	793
#24	0.1520	35	20	1000	-0.020	600	1.75	795
3.90mm	0.1535	35	20	1000	-0.020	600	1.75	803
#23	0.1540	35	20	1000	-0.020	600	1.75	806
3.95	0.1555	30	20	1000	-0.020	600	1.50	814
5/32	0.1562	30	20	1000	-0.020	600	1.50	817
#22	0.1570	30	20	1000	-0.020	600	1.50	822
4.00mm	0.1575	30	20	1000	-0.020	600	1.50	824
#21	0.1590	30	20	1000	-0.021	600	1.50	832
4.05mm	0.1594	30	20	1000	-0.021	600	1.50	834
#20	0.1610	30	20	1000	-0.021	600	1.50	843
4.10mm	0.1614	30	20	1000	-0.021	600	1.50	845
4.15mm	0.1634	30	20	1000	-0.021	600	1.50	855
4.20mm	0.1654	30	20	1000	-0.021	600	1.50	866
#19	0.1660	30	20	1000	-0.021	600	1.50	869
4.25mm	0.1673	30	20	1000	-0.021	600	1.50	876
4.30mm	0.1693	30	20	1000	-0.021	600	1.50	886
#18	0.1695	30	20	1000	-0.021	600	1.50	887
4.35mm	0.1713	30	20	1000	-0.021	600	1.50	896
11/64	0.1719	30	20	1000	-0.021	600	1.50	900
#17	0.1730	30	20	1000	-0.021	500	1.50	905
4.40mm	0.1732	30	20	1000	-0.021	500	1.50	906
4.45mm	0.1752	30	20	1000	-0.022	500	1.50	917
#16	0.1770	30	20	1000	-0.022	500	1.50	926

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
4.50mm	0.1772	30	20	1000	-0.022	500	1.50	927
4.55mm	0.1792	30	20	1000	-0.022	500	1.50	938
#15	0.1800	30	20	1000	-0.022	500	1.50	942
4.60mm	0.1811	30	20	1000	-0.022	500	1.50	948
#14	0.1820	30	20	1000	-0.022	500	1.50	952
4.65mm	0.1831	30	20	1000	-0.022	500	1.50	958
#13	0.1850	30	20	1000	-0.022	500	1.50	968
4.70mm	0.1850	30	20	1000	-0.022	500	1.50	968
4.75mm	0.1870	30	20	1000	-0.022	500	1.50	979
3/16	0.1875	30	20	1000	-0.022	500	1.50	981
4.80mm	0.1890	30	20	1000	-0.023	500	1.50	989
#12	0.1890	30	20	1000	-0.023	500	1.50	989
4.85mm	0.1909	30	20	1000	-0.023	500	1.50	999
#11	0.1910	30	20	1000	-0.023	500	1.50	1000
4.90mm	0.1929	30	20	1000	-0.023	500	1.50	1010
#10	0.1935	30	20	1000	-0.023	500	1.50	1013
4.95mm	0.1949	30	20	1000	-0.023	500	1.50	1020
#9	0.1960	30	20	1000	-0.023	400	1.50	1026
5.00mm	0.1968	30	20	1000	-0.023	400	1.50	1030
5.05mm	0.1988	30	20	1000	-0.023	400	1.50	1040
#8	0.1990	30	20	1000	-0.023	400	1.50	1041
5.10mm	0.2008	25	20	1000	-0.023	400	1.25	1051
#7	0.2010	25	20	1000	-0.023	400	1.25	1052
5.15mm	0.2028	25	20	1000	-0.023	400	1.25	1061
13/64	0.2031	25	20	1000	-0.023	400	1.25	1063
#6	0.2040	25	20	1000	-0.024	400	1.25	1068
5.20mm	0.2047	25	20	1000	-0.024	400	1.25	1071
#5	0.2055	25	20	1000	-0.024	400	1.25	1075
5.25mm	0.2067	25	20	1000	-0.024	400	1.25	1082
5.30mm	0.2087	25	20	1000	-0.024	400	1.25	1092
#4	0.2090	25	20	1000	-0.024	400	1.25	1094
5.35mm	0.2106	25	20	1000	-0.024	400	1.25	1102
5.40mm	0.2126	25	20	1000	-0.024	400	1.25	1113
#3	0.2130	25	20	1000	-0.024	400	1.25	1115
5.45mm	0.2146	25	20	1000	-0.024	400	1.25	1123
5.50mm	0.2165	25	20	1000	-0.024	400	1.25	1133
5.55mm	0.2185	25	20	1000	-0.024	400	1.25	1143
7/32	0.2188	25	20	1000	-0.024	400	1.25	1145
5.60mm	0.2205	25	20	1000	-0.025	400	1.25	1154
#2	0.2210	25	20	1000	-0.025	400	1.25	1157
5.65mm	0.2224	25	20	1000	-0.025	400	1.25	1164
5.70mm	0.2244	25	20	1000	-0.025	400	1.25	1174
5.75mm	0.2264	25	20	1000	-0.025	400	1.25	1185
#1	0.2280	25	20	1000	-0.025	400	1.25	1193
5.80mm	0.2283	25	20	1000	-0.025	400	1.25	1195
5.85mm	0.2302	25	20	1000	-0.025	400	1.25	1205
5.90mm	0.2323	25	20	1000	-0.025	400	1.25	1216
A	0.2340	25	20	1000	-0.025	400	1.25	1225

Size	Diameter	Feed	Speed	Retract	Z-Axis Offset	Hits	Chipload	SFM
	(inch)	*(Inches/min)*	*(k-rpm)*	*(inches/min)*	*(inches)*		*(mils/rev)*	
5.95mm	0.2343	25	20	1000	-0.026	400	1.25	1226
15/64	0.2344	25	20	1000	-0.026	400	1.25	1227
6.00mm	0.2362	25	20	1000	-0.026	400	1.25	1236
B	0.2380	25	20	1000	-0.026	400	1.25	1246
6.05mm	0.2382	25	20	1000	-0.026	400	1.25	1247
6.10mm	0.2402	25	20	1000	-0.026	400	1.25	1257
C	0.2420	25	20	1000	-0.026	400	1.25	1266
6.15mm	0.2421	25	20	1000	-0.026	400	1.25	1267
6.20mm	0.2441	25	20	1000	-0.026	400	1.25	1277
D	0.2460	25	20	1000	-0.026	400	1.25	1287
6.25mm	0.2461	25	20	1000	-0.026	400	1.25	1288
6.30mm	0.2480	25	20	1000	-0.026	400	1.25	1298
6.35mm	0.2500	25	20	1000	-0.027	400	1.25	1308
6.40mm	0.2520	25	20	1000	-0.027	400	1.25	1319
6.50mm	0.2559	25	20	1000	-0.027	400	1.25	1339
F	0.2570	25	20	1000	-0.027	400	1.25	1345
6.60mm	0.2598	25	20	1000	-0.027	400	1.25	1360

In some cases, there may be an opportunity to increase the chipload based on the application's robustness. Variables such as machine technology and condition, stack support materials, and Tycom design selection may allow the increased throughput with higher chiploads. Multiply the recommended chipload by 1.15 to reach the higher chipload.

If the application is not as robust due to heavy glass, high copper content, tight annular ring requirements, or similar, multiply the recommended chipload by 0.85.