

GENERAL PURPOSE DRILLS

For general drilling applications

Application Guide • Speed & Feed

Work Material	Drill Series Number	Speed (SFM)	Feed Per Revolution (IPR)					Speed (m/min)	Feed Per Revolution (mm/rev)				
			1/16 - 1/8	>1/8 - 1/4	>1/4 - 3/8	>3/8 - 1/2	>1/2 - 3/4		1,5 - 3,0	>3,0 - 6,0	>6,0 - 9,0	>9,0 - 12,0	>12,0 - 20,0
Aluminum Alloys	D20	200-400	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-350	---	.002-.004	.004-.006	.006-.008	.008-.012	46-107	---	.0508-.1016	.1016-.1524	.1524-.2032	.2032-.3048
	D10	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Copper Alloys	D20	200-275	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	61-84	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	200-275	.002-.003	.003-.006	.006-.008	.008-.010	---	61-84	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-300	---	.002-.004	.004-.006	.006-.008	.008-.012	46-91	---	.0508-.1016	.1016-.1524	.1524-.2032	.2032-.3048
	D10	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Brass & Bronze	D20	200-275	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	61-84	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	200-275	.002-.003	.003-.006	.006-.008	.008-.010	---	61-84	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-300	---	.002-.004	.004-.006	.006-.008	.008-.012	46-91	---	.0508-.1016	.1016-.1524	.1524-.2032	.2032-.3048
	D10	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Composites, Plastics	D20	200-300	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	61-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	200-300	.002-.003	.003-.006	.006-.008	.008-.010	---	61-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	100-200	---	.0015-.003	.003-.0045	.0045-.006	.006-.009	30-61	---	.0381-.0762	.0762-.1143	.1143-.1524	.1524-.2286
	D10	200-300	.002-.003	.003-.006	.006-.008	.008-.010	---	61-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Magnesium Alloys	D20	200-400	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-350	---	.002-.004	.004-.006	.006-.008	.008-.012	46-107	---	.0508-.1016	.1016-.1524	.1524-.2032	.2032-.3048
	D10	200-400	.002-.003	.003-.006	.006-.008	.008-.010	---	61-122	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Cast Iron Gray	D30	300-400	.0015-.003	.003-.006	.006-.009	.009-.012	.012-.017	91-122	.0381-.0762	.0762-.1524	.1524-.2286	.2286-.3048	.3048-.4318
	D40	200-275	.0012-.0024	.0016-.004	.004-.006	.006-.008	---	61-84	.0305-.0609	.0406-.1016	.1016-.1524	.1524-.2032	---
	D20	225-300	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	69-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	225-300	.002-.003	.003-.006	.006-.008	.008-.010	---	69-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-300	---	.002-.004	.004-.006	.006-.008	.008-.012	46-91	---	.0508-.1016	.1016-.1524	.1524-.2032	.2032-.3048
	D10	225-300	.002-.003	.003-.006	.006-.008	.008-.010	---	69-91	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Cast Iron Ductile / Malleable	D30	200-275	.0015-.003	.003-.006	.006-.009	.009-.012	.012-.017	61-84	.0381-.0762	.0762-.1524	.1524-.2286	.2286-.3048	.3048-.4318
	D40	175-225	.0012-.0024	.0016-.004	.004-.006	.006-.008	---	53-69	.0305-.0609	.0406-.1016	.1016-.1524	.1524-.2032	---
	D20	150-250	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	46-76	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	150-250	.002-.003	.003-.006	.006-.008	.008-.010	---	46-76	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	150-250	---	.0018-.0036	.0036-.005	.005-.0072	.0072-.011	46-76	---	.0457-.0914	.0914-.1270	.1270-.1828	.1828-.2794
	D10	150-250	.002-.003	.003-.006	.006-.008	.008-.010	---	46-76	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Low Carbon Steel ≤ 38Hrc 1018, 12L14, 8620	D30	250-400	.0012-.0025	.0025-.005	.005-.007	.007-.010	.010-.012	76-122	.0305-.0635	.0635-.1270	.1270-.1778	.1778-.2540	.2540-.3048
	D20	100-175	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	30-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	100-175	.002-.003	.003-.006	.006-.008	.008-.010	---	30-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	D40	100-175	.0005-.002	.002-.004	.004-.005	.005-.006	---	30-53	.0127-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	D10	100-175	.002-.003	.003-.006	.006-.008	.008-.010	---	30-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Medium Carbon Steels ≤ 38Hrc 4140, 4340	D30	260-330	.0012-.0025	.0025-.005	.005-.007	.007-.010	.010-.012	79-100	.0305-.0635	.0635-.1270	.1270-.1778	.1778-.2540	.2540-.3048
	D40	100-175	.0005-.002	.002-.004	.004-.005	.005-.006	---	30-53	.0127-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	D20	75-150	.001-.0015	.0015-.003	.003-.004	.004-.006	.005-.006	23-46	.0254-.0381	.0381-.0762	.0762-.1016	.1016-.1524	.1270-.1524
	D21	75-150	.001-.0015	.0015-.003	.003-.004	.004-.006	---	23-46	.0254-.0381	.0381-.0762	.0762-.1016	.1016-.1524	---
	D10	100-175	.002-.003	.003-.006	.006-.008	.008-.010	---	30-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Tool & Die Steels ≤ 38Hrc A2, D2, H13, P20	D30	260-330	.0012-.0025	.0025-.005	.005-.007	.007-.010	.010-.012	79-100	.0305-.0635	.0635-.1270	.1270-.1778	.1778-.2540	.2540-.3048
	D40	100-175	.0005-.002	.002-.004	.004-.005	.005-.006	---	30-53	.0127-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	DT40	60-125	.0004-.0008	.0008-.0016	.0016-.0022	.0022-.0036	.0036-.0045	18-37	.0101-.0203	.0203-.0406	.0406-.0558	.0558-.0914	.0914-.1143
	D10	100-175	.002-.003	.003-.006	.006-.008	.008-.010	---	30-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Tool & Die Steels 39-48 Hrc A2, D2, H13, P20	D30	200-300	.0007-.0015	.0015-.003	.003-.004	.004-.006	.006-.008	61-91	.0178-.0381	.0381-.0762	.0762-.1016	.1016-.1524	.1524-.2032
	D40	75-125	.0005-.002	.002-.004	.004-.005	.005-.006	---	23-37	.0127-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	DT40	60-125	.0004-.0008	.0008-.0016	.0016-.0022	.0022-.0036	.0036-.0045	18-37	.0101-.0203	.0203-.0406	.0406-.0558	.0558-.0914	.0914-.1143
Tool Steels > 48 Hrc A2, D2	D40	40-75	.0008-.001	.001-.0015	.0015-.002	.002-.003	---	12-23	.0203-.0254	.0254-.0381	.0381-.0508	.0508-.0762	---
	DT40	25-60	.0004-.0008	.0008-.0016	.0016-.0022	.0022-.0036	.0036-.0045	8-18	.0101-.0203	.0203-.0406	.0406-.0558	.0558-.0914	.0914-.1143
Easy to Machine Stainless Steel 416, 410, 302, 303	D20	80-180	.002-.003	.003-.006	.006-.008	.008-.010	.010-.012	24-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	.2540-.3048
	D21	80-180	.002-.003	.003-.006	.006-.008	.008-.010	---	24-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
	DT20,DT22,DT21	80-180	---	.0012-.0025	.0025-.005	.005-.006	---	24-53	---	.0305-.0635	.0635-.1270	.1270-.1524	---
	D10	80-180	.002-.003	.003-.006	.006-.008	.008-.010	---	24-53	.0508-.0762	.0762-.1524	.1524-.2032	.2032-.2540	---
Moderate Machining Stainless Steels 304, 316, Invar, Kovar	D40	75-140	.0005-.001	.001-.002	.002-.003	.003-.004	---	23-42	.0127-.0254	.0254-.0508	.0508-.0762	.0762-.1016	---
	D20	60-125	.0003-.0015	.0015-.003	.003-.0045	.0045-.006	.006-.009	18-37	.0076-.0381	.0381-.0762	.0762-.1143	.1143-.1524	.1524-.2286
	D21	60-125	.0003-.0015	.0015-.003	.003-.0045	.0045-.006	---	18-37	.0076-.0381	.0381-.0762	.0762-.1143	.1143-.1524	---
	D10	60-125	.0003-.0015	.0015-.003	.003-.0045	.0045-.006	---	18-37	.0076-.0381	.0381-.0762	.0762-.1143	.1143-.1524	---
Difficult Stainless Steels 316L, 17-4, 15-5, 13-8	D40	50-100	.001-.002	.002-.004	.004-.005	.005-.006	---	15-30	.0254-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	D30	100-165	.0007-.0015	.0015-.003	.003-.005	.005-.007	.007-.010	30-50	.0178-.0381	.0381-.0762	.0762-.1270	.1270-.1778	.1778-.2540
Titanium	D40	50-100	.001-.002	.002-.004	.004-.005	.005-.006	---	15-30	.0254-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	D40	50-100	.001-.002	.002-.004	.004-.005	.005-.006	---	15-30	.0254-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
High Temp Alloys, Inconel®, Hastalloy	D40	50-100	.001-.002	.002-.004	.004-.005	.005-.006	---	15-30	.0254-.0508	.0508-.1016	.1016-.1270	.1270-.1524	---
	DT40	25-60	.0004-.0008	.0008-.0016	.0016-.0022	.0022-.0036	.0036-.0045	8-18	.0101-.0203	.0203-.0406	.0406-.0558	.0558-.0914	.0914-.1143

All recommendations should be considered as a starting point. Material properties, machine capabilities and setup rigidity will affect these values.