KenTIP Drills

KENNAMETAL

Cutting Data Recommendations

Cutting Groups	Material Group	Composition/Structure	Tensile Strength RM (Mpa)	Hardness HB	Cutting Speed vc: (m/min) (sfm)	Feed Rate Per Revolution by Drill Diameter: (mm/rev) (ipr) D = 8 mm .3150"	D = 10 mm .3937"	D = 12 mm .4724"	D = 14 mm .5512"	D = 16 mm .6299"
1.1	Unalloyed Steel, Cast Steel, Machining Steel	C = 0,10 - 0,25 Annealed, long-chipping	420	125	110 - 170 360 - 560	0,11 - 0,20 .004 - .008	0,13 - 0,24 .005 - .009	0,14 - 0,28 .006 - .011	0,17 - 0,32 .007 - .013	0,19 - 0,35 .008 - .014
1.2		C = 0,10 - 0,25 Annealed, short-chipping	420	125	120 - 180 390 - 590	0,11 - 0,20 .004 - .008	0,13 - 0,24 .005 - .009	0,14 - 0,28 .006 - .011	0,17 - 0,32 .007 - .013	0,19 - 0,35 .008 - .014
2.1		C = 0,25 - 0,55 Annealed, long-chipping	640	190	100 - 150 330 - 490	0,13 - 0,24 .005 - .009	0,15 - 0,29 .006 - .011	0,17 - 0,33 .008 - .013	0,19 - 0,36 .008 - .014	0,22 - 0,41 .009 - .016
2.2		C = 0,25 - 0,55 Annealed, short-chipping	640	190	110 - 155 360 - 510	0,13 - 0,24 .005 - .009	0,15 - 0,29 .006 - .011	0,17 - 0,33 .008 - .013	0,19 - 0,36 .008 - .014	0,22 - 0,41 .009 - .016
3		C = 0,25 - 0,55 Tempered	850	250	80 - 120 260 - 390	0,13 - 0,21 .005 - .008	0,15 - 0,25 .006 - .010	0,18 - 0,31 .007 - .012	0,21 - 0,39 .008 - .015	0,23 - 0,45 .009 - .018
4		C = 0,25 - 0,80 Annealed	915	270	70 - 95 230 - 310	0,11 - 0,20 .004 - .008	0,15 - 0,24 .006 - .009	0,16 - 0,29 .006 - .011	0,21 - 0,34 .008 - .013	0,23 - 0,37 .009 - .015
5		C = 0,25 - 0,80 Tempered	1020	300	50 - 75 160 - 250	0,11 - 0,19 .004 - .008	0,12 - 0,23 .005 - .009	0,16 - 0,28 .006 - .011	0,21 - 0,32 .008 - .013	0,23 - 0,35 .009 - .014
6	Low-Alloy Steel, Cast Steel, Machining Steel	Annealed	610	180	70 - 95 230 - 310	0,15 - 0,28 .006 - .011	0,16 - 0,35 .006 - .014	0,21 - 0,37 .008 - .015	0,23 - 0,46 .009 - .018	0,25 - 0,46 .010 - .018
7		Tempered	930	275	70 - 95 230 - 310	0,11 - 0,21 .004 - .008	0,14 - 0,25 .006 - .010	0,19 - 0,30 .008 - .012	0,21 - 0,33 .008 - .013	0,23 - 0,37 .009 - .015
8		Tempered	1020	300	60 - 90 200 - 300	0,11 - 0,19 .004 - .008	0,12 - 0,23 .005 - .009	0,16 - 0,26 .006 - .010	0,18 - 0,31 .007 - .012	0,21 - 0,33 .008 - .013
9		Tempered	1190	350	50 - 75 160 - 250	0,11 - 0,20 .004 - .008	0,12 - 0,23 .005 - .009	0,16 - 0,25 .006 - .010	0,17 - 0,29 .007 - .011	0,18 - 0,32 .007 - .013
15	Gray Cast Iron	Pearlitic/Ferritic		180	120 - 170 390 - 560	0,17 - 0,32 .007 - .013	0,20 - 0,37 .008 - .015	0,23 - 0,43 .009 - .017	0,27 - 0,48 .011 - .019	0,30 - 0,55 .012 - .022
16		Pearlitic (Martensitic)		260	90 - 120 300 - 390	0,14 - 0,25 .006 - .010	0,16 - 0,31 .006 - .012	0,19 - 0,35 .008 - .014	0,23 - 0,42 .009 - .017	0,26 - 0,47 .010 - .019
17	Cast Iron with Nodular Cast Iron	Ferritic		160	60 - 90 200 - 300	0,14 - 0,25 .006 - .010	0,16 - 0,30 .006 - .012	0,19 - 0,35 .008 - .014	0,22 - 0,40 .009 - .016	0,24 - 0,45 .009 - .018
18		Pearlitic		250	40 - 65 130 - 210	0,10 - 0,19 .004 - .008	0,12 - 0,22 .005 - .009	0,14 - 0,25 .006 - .010	0,16 - 0,31 .006 - .012	0,19 - 0,35 .008 - .019
19	Malleable Cast Iron	Ferritic		130	80 - 105 260 - 340	0,14 - 0,26 .006 - .010	0,17 - 0,31 .007 - .012	0,19 - 0,35 .008 - .014	0,21 - 0,40 .008 - .016	0,23 - 0,44 .009 - .017
20		Pearlitic		230	80 - 105 260 - 340	0,13 - 0,24 .005 - .010	0,15 - 0,28 .006 - .011	0,17 - 0,32 .007 - .013	0,19 - 0,35 .008 - .014	0,21 - 0,39 .008 - .015

Performance Diagrams

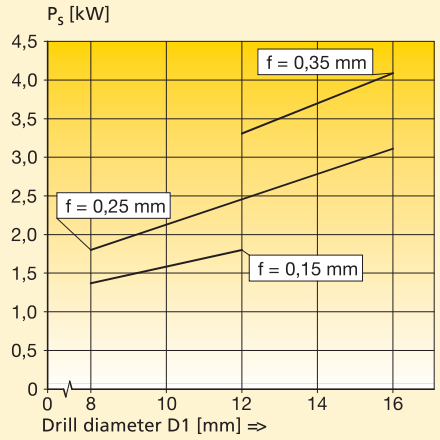
Note:

The diagrams are used to determine the feed force, drive power, and torque.

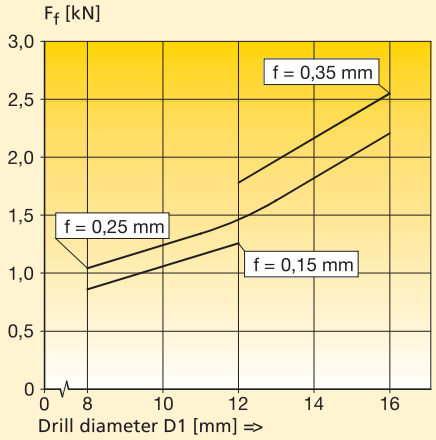
They are based on cutting force measurements in steel with a tensile strength of: Rm = 800 N/mm^2.

The base cutting speed used is: vc = 80 m/min (260 sfm).

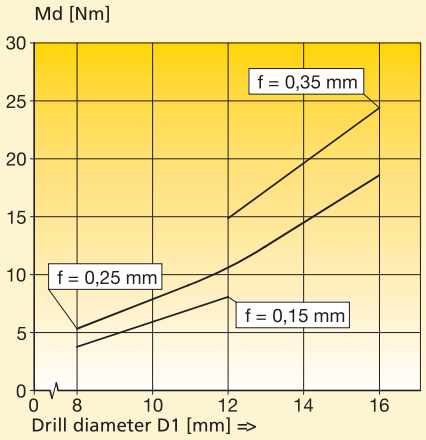
Drive Power



Feed Force



Torque



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