CASTELAR TOOL

PERFECT PITCH 4F

SPEEDS AND FEEDS

	WORK MATERIAL	TYPE OF CUT	AXIAL DOC	RADIAL DOC	SFM	IPT		
						1/4" Ø	3/8" Ø	1/2" Ø
CARBON STEEL	**LOW CARBON STEELS** ≤ 38 HRc 10xx; 11xx; 12xx; 12Lxx, 15xx	Slotting	≤1 x D	1 x D	255-305	0.0006-0.001	0.0009-0.0015	0.0012-0.002
		Roughing	≤1.5 x D	<.5 x D	325-380	0.0012-0.002	0.0013-0.0022	0.0018-0.003
		Adaptive	≤2 x D	<.2 x D	405-475	0.0015-0.0025	0.0018-0.003	0.0021-0.0035
		Finishing	≤1.5 x D	<.15 x D	370-435	0.0011-0.0018	0.0013-0.0021	0.0015-0.0025
	MEDIUM CARBON STEELS ≤ 38 HRc 13xx; 41xx; 43xx; 86xx, 92xx; 93xx; Chromoly	Slotting	≤1 x D	1 x D	245-290	0.0004-0.0007	0.0006-0.001	0.001-0.0017
		Roughing	≤1.5 x D	<.5 x D	310-360	0.0006-0.001	0.0009-0.0015	0.0017-0.0028
		Adaptive	≤2 x D	<.2 x D	385-450	0.0012-0.002	0.0012-0.002	0.0018-0.003
		Finishing	≤1.5 x D	<.15 x D	350-415	0.0008-0.0013	0.0011-0.0018	0.0012-0.002
TOOL STEEL	**TOOL & DIE STEELS** ≤ 38 HRc A2; A3; D2; H11; H13; M1; O-1; S-7; NAK 55	Slotting	≤1 x D	1 x D	195-230	0.0005-0.0008	0.0007-0.0012	0.001-0.0017
		Roughing	≤1.5 x D	<.5 x D	240-285	0.0006-0.001	0.0012-0.002	0.0017-0.0028
		Adaptive	≤2 x D	<.2 x D	305-355	0.0011-0.0018	0.0012-0.002	0.0018-0.003
		Finishing	≤1.5 x D	<.15 x D	280-330	0.0007-0.0012	0.0011-0.0018	0.0012-0.002
	TOOL & DIE STEELS 39 to 48 HRc P20; P21; S-136; PX-5; NAK 80	Slotting	≤.75 x D	1 x D	95-115	0.0003-0.0005	0.0005-0.0008	0.0006-0.001
		Roughing	≤1.5 x D	<.2 x D	125-145	0.0005-0.0009	0.0008-0.0014	0.0011-0.0018
		Adaptive	≤2 x D	<.1 x D	150-180	0.0006-0.001	0.0011-0.0018	0.0015-0.0025
		Finishing	≤1.5 x D	<.1 x D	145-165	0.0006-0.001	0.0009-0.0015	0.0012-0.002
STAINLESS STEEL	**MARTENSITIC** 72 - 85 HRb 410; 416; 420; 430F;	Slotting	≤1 x D	1 x D	195-230	0.0005-0.0009	0.0007-0.0012	0.001-0.0016
		Roughing	≤1.25 x D	.3 x D	245-290	0.0009-0.0015	0.0012-0.002	0.0018-0.003
		Adaptive	≤2 x D	.15 x D	310-365	0.0012-0.002	0.0018-0.003	0.0024-0.004
		Finishing	≤1.5 x D	<.15 x D	285-335	0.0011-0.0018	0.0013-0.0022	0.0016-0.0026
	AUSTENETIC 79-85 HRb 25-41 HRc 304; 304L; 316; 316L;	Slotting	≤1 x D	1 x D	180-210	0.0005-0.0009	0.0008-0.0013	0.0011-0.0018
		Roughing	≤1.25 x D	.3 x D	220-260	0.0009-0.0015	0.0012-0.002	0.0018-0.003
		Adaptive	≤2 x D	.1 x D	275-325	0.0012-0.002	0.0015-0.0025	0.0024-0.004
		Finishing	≤1.5 x D	<.1 x D	255-300	0.0008-0.0013	0.0011-0.0018	0.0014-0.0023
	DIFFICULT TO MACHINE 31 - 50 HRc 13-8 PH; 15-5 PH; 17-4 PH; Carpenter; Custo 465; Invar	Slotting	≤.75 x D	1 x D	135-160	0.0004-0.0006	0.0006-0.001	0.0007-0.0012
		Roughing	≤1.25 x D	.3 x D	170-200	0.0007-0.0011	0.001-0.0016	0.0013-0.0021
		Adaptive	≤1.5 x D	.1 x D	215-250	0.0009-0.0015	0.0011-0.0018	0.0015-0.0025
		Finishing	≤1.5 x D	<.1 x D	195-230	0.0007-0.0012	0.001-0.0016	0.0011-0.0019
CAST IRON	**GRAY** 100 - 200 HRb	Slotting	≤1 x D	1 x D	255-305	0.0008-0.0013	0.0011-0.0018	0.0015-0.0025
		Roughing	≤1.5 x D	.5 x D	325-380	0.0011-0.0018	0.0018-0.003	0.0021-0.0035
		Adaptive	≤2 x D	.2 x D	405-475	0.0013-0.0022	0.0021-0.0035	0.0024-0.004
		Finishing	≤1.5 x D	<.15 x D	370-435	0.0011-0.0018	0.0013-0.0021	0.0021-0.0035
	DUCTILE 150 - 300 HRb	Slotting	≤1 x D	1 x D	170-200	0.0005-0.0008	0.0008-0.0013	0.001-0.0017
		Roughing	≤1.5 x D	.5 x D	210-245	0.0008-0.0013	0.0013-0.0022	0.0018-0.003
		Adaptive	≤2 x D	.2 x D	260-310	0.0011-0.0018	0.0017-0.0028	0.0021-0.0035
		Finishing	≤1.5 x D	<.15 x D	240-285	0.0009-0.0015	0.0015-0.0025	0.0017-0.0028
	MALLEABLE 150 - 310 HRb	Slotting	≤.75 x D	1 x D	230-265	0.0005-0.0008	0.0008-0.0013	0.001-0.0017
		Roughing	≤1.5 x D	.5 x D	285-335	0.0008-0.0013	0.0013-0.0022	0.0018-0.003
		Adaptive	≤2 x D	.2 x D	355-420	0.0011-0.0018	0.0017-0.0028	0.0021-0.0035
		Finishing	≤1.5 x D	<.15 x D	325-380	0.0009-0.0015	0.0015-0.0025	0.0017-0.0028
SUPER ALLOYS	**PURE NICKEL** 75 - 98 HRb Nickel 200, Nickel 201	Roughing	≤1.25 x D	.3 x D	235-275	0.0012-0.002	0.0017-0.0028	0.0014-0.0024
		Adaptive	≤1.5 x D	.1 x D	280-330	0.0015-0.0025	0.0017-0.0033	0.0018-0.0036
		Finishing	≤1.5 x D	<.1 x D	270-315	0.0012-0.002	0.0018-0.003	0.0018-0.003
	NICKEL ALLOY 75-98 HRb 21 - 36 HRc Hastelloy C-22 In	Roughing	≤1.25 x D	.25 x D	60-70	0.0005-0.0008	0.0008-0.0014	0.0011-0.0018
		Adaptive	≤1.5 x D	.1 x D	70-85	0.0006-0.001	0.0011-0.0018	0.0013-0.0022
		Finishing	≤1.5 x D	<.1 x D	70-80	0.0005-0.0008	0.0009-0.0015	0.0012-0.002
	PURE TITANIUM 75 - 98 HRb 25 - 36 HRc	Roughing	≤1.25 x D	.3 x D	215-250	0.0013-0.0022	0.0018-0.003	0.0024-0.004
		Adaptive	≤1.5 x D	.1 x D	255-300	0.0016-0.0026	0.0022-0.0036	0.0029-0.0048
		Finishing	≤1.5 x D	<.1 x D	245-290	0.0013-0.0022	0.0015-0.0025	0.0018-0.003
	TITANIUM ALLOYS 21 - 36 HRc Ti 6Al-4V Ti 10V-2Fe-3Al	Roughing	≤1.25 x D	.25 x D	140-165	0.0006-0.001	0.0011-0.0018	0.0014-0.0023
		Adaptive	≤1.5 x D	.1 x D	170-200	0.001-0.0016	0.0015-0.0025	0.0018-0.003
		Finishing	≤1.5 x D	<.1 x D	160-190	0.0008-0.0013	0.0011-0.0019	0.0012-0.002
	COBALT ALLOY 75 - 98 HRb 21 - 36 HRc ASTM F562 ,	Roughing	≤1.25 x D	.25 x D	150-175	0.0006-0.001	0.001-0.0016	0.0012-0.002
		Adaptive	≤1.5 x D	.1 x D	180-210	0.0009-0.0015	0.0012-0.002	0.0015-0.0025
		Finishing	≤1.5 x D	<.1 x D	170-200	0.0008-0.0013	0.0008-0.0014	0.0011-0.0019

CASTELAR TOOL

PERFECT PITCH 4F

SPEEDS AND FEEDS

	WORK MATERIAL	TYPE OF CUT	AXIAL DOC	RADIAL DOC	SFM	5/8" Ø	3/4" Ø	1" Ø
CARBON STEEL	LOW CARBON STEELS ≤ 38 HRc 10xx; 11xx; 12xx; 12Lxx, 15xx	Slotting	≤1 x D	1 x D	255-305	0.0015-0.0025	0.0018-0.003	0.0021-0.0035
		Roughing	≤1.5 x D	<.5 x D	325-380	0.0023-0.0038	0.0027-0.0045	0.003-0.005
		Adaptive	≤2 x D	<.2 x D	405-475	0.0026-0.0043	0.003-0.005	0.0036-0.006
		Finishing	≤1.5 x D	<.15 x D	370-435	0.0017-0.0028	0.0018-0.003	0.0018-0.003
	MEDIUM CARBON STEELS ≤ 38 HRc 13xx; 41xx; 43xx; 86xx, 92xx; 93xx; Chromoly	Slotting	≤1 x D	1 x D	245-290	0.001-0.0017	0.001-0.0017	0.0012-0.002
		Roughing	≤1.5 x D	<.5 x D	310-360	0.0018-0.0029	0.0018-0.003	0.0024-0.004
		Adaptive	≤2 x D	<.2 x D	385-450	0.0021-0.0035	0.0024-0.004	0.003-0.005
		Finishing	≤1.5 x D	<.15 x D	350-415	0.0016-0.0026	0.0019-0.0032	0.0024-0.004
TOOL STEEL	TOOL & DIE STEELS ≤ 38 HRc A2; A3; D2; H11; H13; M1; O-1; S-7; NAK 55	Slotting	≤1 x D	1 x D	195-230	0.001-0.0017	0.001-0.0017	0.0012-0.002
		Roughing	≤1.5 x D	<.5 x D	240-285	0.0018-0.0029	0.0018-0.003	0.0024-0.004
		Adaptive	≤2 x D	<.2 x D	305-355	0.0021-0.0035	0.0024-0.004	0.003-0.005
		Finishing	≤1.5 x D	<.15 x D	280-330	0.0016-0.0026	0.0019-0.0032	0.0024-0.004
	TOOL & DIE STEELS 39 to 48 HRc P20; P21; S-136; PX-5; NAK 80	Slotting	≤.75 x D	1 x D	95-115	0.0008-0.0013	0.0009-0.0015	0.0011-0.0019
		Roughing	≤1.5 x D	<.2 x D	125-145	0.0013-0.0022	0.0015-0.0025	0.0021-0.0035
		Adaptive	≤2 x D	<.1 x D	150-180	0.0018-0.003	0.0021-0.0035	0.0024-0.004
		Finishing	≤1.5 x D	<.1 x D	145-165	0.0013-0.0022	0.0014-0.0023	0.0018-0.003
STAINLESS STEEL	MARTENSITIC 72 - 85 HRb 410; 416; 420; 430F;	Slotting	≤1 x D	1 x D	195-230	0.0013-0.0021	0.0015-0.0025	0.0018-0.003
		Roughing	≤1.25 x D	.3 x D	245-290	0.0021-0.0035	0.0024-0.004	0.0027-0.0045
		Adaptive	≤2 x D	.15 x D	310-365	0.0027-0.0045	0.003-0.005	0.0033-0.0055
		Finishing	≤1.5 x D	<.15 x D	285-335	0.0017-0.0027	0.0017-0.0028	0.0019-0.0032
	AUSTENETIC 79-85 HRb 25-41 HRc 304; 304L; 316; 316L;	Slotting	≤1 x D	1 x D	180-210	0.0013-0.0021	0.0014-0.0024	0.0018-0.003
		Roughing	≤1.25 x D	.3 x D	220-260	0.0021-0.0035	0.0024-0.004	0.0027-0.0045
		Adaptive	≤2 x D	.1 x D	275-325	0.0027-0.0045	0.003-0.005	0.0033-0.0055
		Finishing	≤1.5 x D	<.1 x D	255-300	0.0015-0.0025	0.0016-0.0027	0.0019-0.0032
	DIFFICULT TO MACHINE 31 - 50 HRc 13-8 PH; 15-5 PH; 17-4 PH; Carpenter; Custo 465; Invar	Slotting	≤.75 x D	1 x D	135-160	0.0009-0.0015	0.0011-0.0018	0.0013-0.0021
		Roughing	≤1.25 x D	.3 x D	170-200	0.0016-0.0026	0.0018-0.003	0.0021-0.0035
		Adaptive	≤1.5 x D	.1 x D	215-250	0.0018-0.003	0.0021-0.0035	0.0024-0.004
		Finishing	≤1.5 x D	<.1 x D	195-230	0.0014-0.0023	0.0016-0.0026	0.0017-0.0028
CAST IRON	GRAY 100 - 200 HRb	Slotting	≤1 x D	1 x D	255-305	0.0017-0.0028	0.0018-0.003	0.0021-0.0035
		Roughing	≤1.5 x D	.5 x D	325-380	0.0026-0.0044	0.0031-0.0052	0.0036-0.006
		Adaptive	≤2 x D	.2 x D	405-475	0.003-0.0049	0.0035-0.0058	0.0042-0.007
		Finishing	≤1.5 x D	<.15 x D	370-435	0.002-0.0033	0.0018-0.003	0.0021-0.0035
	DUCTILE 150 - 300 HRb	Slotting	≤1 x D	1 x D	170-200	0.0012-0.002	0.0013-0.0022	0.0018-0.003
		Roughing	≤1.5 x D	.5 x D	210-245	0.0021-0.0035	0.0024-0.004	0.0027-0.0045
		Adaptive	≤2 x D	.2 x D	260-310	0.0026-0.0043	0.003-0.005	0.0033-0.0055
		Finishing	≤1.5 x D	<.15 x D	240-285	0.0019-0.0032	0.0021-0.0035	0.0021-0.0035
	MALLEABLE 150 - 310 HRb	Slotting	≤.75 x D	1 x D	230-265	0.0012-0.002	0.0013-0.0022	0.0018-0.003
		Roughing	≤1.5 x D	.5 x D	285-335	0.0021-0.0035	0.0024-0.004	0.0027-0.0045
		Adaptive	≤2 x D	.2 x D	355-420	0.0026-0.0043	0.003-0.005	0.0033-0.0055
		Finishing	≤1.5 x D	<.15 x D	325-380	0.0019-0.0032	0.0021-0.0035	0.0021-0.0035
SUPER ALLOYS	PURE NICKEL 75 - 98 HRb Nickel 200, Nickel 201	Roughing	≤1.25 x D	.3 x D	235-275	0.0021-0.0035	0.0027-0.0045	0.0033-0.0055
		Adaptive	≤1.5 x D	.1 x D	280-330	0.0024-0.0043	0.003-0.005	0.0036-0.006
		Finishing	≤1.5 x D	<.1 x D	270-315	0.0018-0.003	0.0018-0.003	0.002-0.0034
	NICKEL ALLOY 75-98 HRb 21 - 36 HRc Hastelloy C-22 In	Roughing	≤1.25 x D	.25 x D	60-70	0.0014-0.0023	0.0017-0.0028	0.002-0.0034
		Adaptive	≤1.5 x D	.1 x D	70-85	0.0016-0.0027	0.0019-0.0032	0.0023-0.0038
		Finishing	≤1.5 x D	<.1 x D	70-80	0.0014-0.0023	0.0015-0.0025	0.0018-0.003
	PURE TITANIUM 75 - 98 HRb 25 - 36 HRc	Roughing	≤1.25 x D	.3 x D	215-250	0.0027-0.0045	0.003-0.005	0.0033-0.0055
		Adaptive	≤1.5 x D	.1 x D	255-300	0.0031-0.0052	0.0033-0.0055	0.0036-0.006
		Finishing	≤1.5 x D	<.1 x D	245-290	0.002-0.0033	0.0021-0.0035	0.0022-0.0037
	TITANIUM ALLOYS 21 - 36 HRc Ti 6Al-4V Ti 10V-2Fe-3Al	Roughing	≤1.25 x D	.25 x D	140-165	0.0016-0.0027	0.0018-0.003	0.0021-0.0035
		Adaptive	≤1.5 x D	.1 x D	170-200	0.002-0.0033	0.0021-0.0035	0.0027-0.0045
		Finishing	≤1.5 x D	<.1 x D	160-190	0.0014-0.0023	0.0015-0.0025	0.0018-0.003
	COBALT ALLOY 75 - 98 HRb 21 - 36 HRc ASTM F562 ,	Roughing	≤1.25 x D	.25 x D	150-175	0.0014-0.0023	0.0016-0.0026	0.002-0.0033
		Adaptive	≤1.5 x D	.1 x D	180-210	0.0017-0.0028	0.0018-0.003	0.0025-0.0042
		Finishing	≤1.5 x D	<.1 x D	170-200	0.0013-0.0021	0.0014-0.0023	0.0017-0.0028