

DISCOVER OUR

MILLING



Milling

NOMENCLATURE

CROMSON «ENDMILL»

- FLUTES

DIAMETER

CREM-Ti-5RC-0500-R010 Cr95

APPLICATIONS

AL- Aluminum
ALR- Aluminum Roughing
DM- Die & Mold
HD- Hard Material
HF- High Feed
SA (SAX)- Super Alloy
ST- Steel
SST- Stainless Steel
Ti- Titanium
TiX- Titanium HP
TP- Taper (NPT)

TOOL TYPE

S- Stub Length
M- Medium Length
R- Reg. Length
L- Long Length
E- Extended Length
N- Necking

C- Cylindrical Shank
W- Weldon Shank

RADIUS/CHAMFER

BN- Ball Nose
C- Chamfer
R- Radius
SQ- Square

COATING

Cr20- Uncoated
Cr35- AlCrN
Cr55- TiAlN
Cr75- TiAlN+
Cr95- TiAlCN

Summary application chart-Milling

Work Material	Type of Cut	Axial DOC	Radial DOC	Speed (SFM)	RECORD ST	STAR SST	ALLIANCE TI
Low carbon steel <= 38HRc 1018, 12L14, 8620	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	350 425			
Medium carbon steels <= 38HRc 4140, 4340	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	325 375			
Tool & die steels <= 38HRc A2, D2, O1, S7, P20, H13	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	325 375			
Tool steel 39HRc to 48HRc	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D 0.5 x D	225 275			
Easy to machine stainless steel 416, 410, 302, 303	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	300 375			
Moderately difficult stainless steel 304, 316, invar, kovar	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D 0.5 x D	275 350			
Difficult to machine stainless steel 316L, 17-4PH, 15-5PH, 13-8Mo	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300			
Cast iron Grey	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	400 500			
Cast iron Ductile	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D	300 400			
Cast iron Malleable	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D .75 x D	250 325			
Aluminum alloys 2024, 6061, 7075	Slotting	1 x D	1 x D 0.5 x D	800 1000			
Titanium alloys 6Al4V	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300			
High temperature alloys Inconel, haynes, stellite, hastelloy	Slotting	.25 x D 1 x D	1 x D .25 x D	70 95			



Highly recommended



Suitable for some applications

PISTON HD	TURBINE SRGH	OXYGEN HF	TAPER- MILL TP	DRIVER DM	MOTION AL	BOSS ALR	MAGNAT STX	PERFOR- MANCE TIX	BOOSTER SA
									
									
									
									
									
									
									
									
									
									
									
									
									

** The machining values shown are guidelines.

The optimum data for a particular machining process should be determined in trials or during machining.

Explanation of Milling symbols



Stub Length



Ramping



Trochoidal milling Opt.



Finishing



Regular Length



Trochoidal plunging



Center Cutting



Channel



Long/ Extra Length



Shallow ramping



Square end



Corner Radius

Grades chart & Milling application

CROMSON offers a variety of coating upon special request to meet the demands of every customer's needs and unique application demands. Through extensive testing, research and real world applications, CROMSON has worked to develop a full range of high performance coatings. These coating options allow us to address a multitude of situations with optimal results.

Please refer to the chart below for the various coatings available.

CROMSON GRADE

	Cr20	Cr35	Cr55	Cr75	Cr95
Proprietary	Uncoated	AlCrN	TiAlN	TiAlN+	TiAlCN
Coating process		PVD	PVD	PVD	PVD
Layer structure		Nano structure	Nano structure	Nano structure	Nano structure
Hardness (HV)		3000	3300	3300	3060
Coefficient of friction (fetting)		0.25	0.30-0.35	0.25	0.35
Thermal stability (C)		1100	900	900	1000
General Information		New generation PVD coating providing a high level of wear and abrasion resistance in combination with a micro grain carbide substrate for use in all ferrous materials at elevated cutting speed.	A thick PVD coating on a balanced wear resistance/tough fine grain carbide substrate provides users with predictable consistent results in general purpose applications in all materials.	In combination with a tough submicron grain carbide substrate and advanced PVD coating technology a high level of security and wear resistance is seen in demanding applications in titanium and steel up to 52 HRC.	New generation PVD coating providing a high level of wear. lower coefficient of friction combination with a micro grain carbide substrate for use in stainless steel and nickel-based high temperature alloys.

ALLIANCE

TI SERIES

- ⊙ High performance end mills feature differential flute spacing along with variable helix angle
- ⊙ Customized land relief is suited for titanium application
- ⊙ Ultra fine carbide rod assures optimised results
- ⊙ Controlled edge preparation and post coat process assure a longer tool life than most common brands on the market
- ⊙ Corner protection will also give an edge on this series
- ⊙ h6 tolerance for conventional and shrink fit applications
- ⊙ Available in long and extra long lengths
- ⊙ Cr35 AlCrN (PVD) coating design for high wear and abrasion resistance

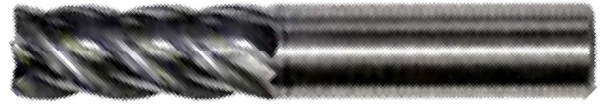


Work Material	Type of Cut	Axial DOC	Radial DOC	Speed (SFM)
Difficult to machine stainless steel 316L, 17-4PH, 15-5PH, 13-8Mo	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300
Titanium alloy 6Al4V	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300
High temperature alloy Inconel, haynes, stellite, hastelloy	Slotting	.25 x D 1 x D	1 x D .25 x D	70 95

CARBIDE END MILL - SQUARE OR RADIUS

TECHNICAL DETAILS

Tool Diameter Range	0.250-1.000 in
Shank tolerance	h6
Cutter tolerance	(+0.00-0.002 in) +0.00-0.05 mm
Number of flutes	4 or 5
Coating	TiAlN+ (PVD)
Center cutting	Yes
Variable pitch	Variable
Variable helix	Variable
Helix angle	35° to 38°



EDP Cromson	Cromson Description	Diam.	Length of cut	Overall length	Chamfer / radius	Cromson Grade	# Flutes
72001425	CREM-TI-4RC-0250- SQ Cr75	1/4	3/4	2.1/2	---	Cr75	4
72001430	CREM-TI-4RC-0250-R020- Cr75	1/4	3/4	2.1/2	.020	Cr75	4
72001435	CREM-TI-4RC-0250-R030- Cr75	1/4	3/4	2.1/2	.030	Cr75	4
72001440	CREM-TI-4RC-0250-R060- Cr75	1/4	3/4	2.1/2	.060	Cr75	4
72001445	CREM-TI-4LC-0250- SQ Cr75	1/4	1.1/4	3	---	Cr75	4
72001450	CREM-TI-4LC-0250-R020- Cr75	1/4	1.1/4	3	.020	Cr75	4
72001455	CREM-TI-4RC-0312- SQ Cr75	5/16	13/16	2.1/2	---	Cr75	4
72001460	CREM-TI-4RC-0312-R020- Cr75	5/16	13/16	2.1/2	.020	Cr75	4
72001465	CREM-TI-4RC-0375- SQ Cr75	3/8	7/8	2.1/2	---	Cr75	4
72001470	CREM-TI-4RC-0375-R020- Cr75	3/8	7/8	2.1/2	.020	Cr75	4
72001475	CREM-TI-4RC-0375-R030- Cr75	3/8	7/8	2.1/2	.030	Cr75	4
72001480	CREM-TI-4RC-0375-R060- Cr75	3/8	7/8	2.1/2	.060	Cr75	4
72001485	CREM-TI-4EC-0375- SQ Cr75	3/8	1.1/8	3	---	Cr75	4
72001490	CREM-TI-4EC-0375-R020- Cr75	3/8	1.1/8	3	.020	Cr75	4
72001495	CREM-TI-4RC-0500- SQ Cr75	1/2	1	3	---	Cr75	4
72001500	CREM-TI-4RC-0500-R030- Cr75	1/2	1	3	.030	Cr75	4
72001505	CREM-TI-4RC-0500-R060- Cr75	1/2	1	3	.060	Cr75	4
72001510	CREM-TI-4EC-0500- SQ Cr75	1/2	1.1/4	3	---	Cr75	4
72001515	CREM-TI-4EC-0500-R030- Cr75	1/2	1.1/4	3	.030	Cr75	4
72001520	CREM-TI-4EC-0500-R060- Cr75	1/2	1.1/4	3	.060	Cr75	4
72001525	CREM-TI-4EC-0500-R090- Cr75	1/2	1.1/4	3	.090	Cr75	4
72001530	CREM-TI-4EC-0500-R120- Cr75	1/2	1.1/4	3	.120	Cr75	4
72001535	CREM-TI-4RC-0625- SQ Cr75	5/8	1.1/4	3.1/2	---	Cr75	4
72001540	CREM-TI-4RC-0625-R030- Cr75	5/8	1.1/4	3.1/2	.030	Cr75	4
72001545	CREM-TI-4RC-0625-R060- Cr75	5/8	1.1/4	3.1/2	.060	Cr75	4
72001550	CREM-TI-4EC-0625- SQ Cr75	5/8	1.5/8	3.1/2	---	Cr75	4
72001555	CREM-TI-4EC-0625-R030- Cr75	5/8	1.5/8	3.1/2	.030	Cr75	4
72001560	CREM-TI-4RC-0750- SQ Cr75	3/4	1.1/2	4	---	Cr75	4
72001565	CREM-TI-4RC-0750-R030- Cr75	3/4	1.1/2	4	.030	Cr75	4
72001570	CREM-TI-4RC-0750-R060- Cr75	3/4	1.1/2	4	.060	Cr75	4

70

35

0 HARDNESS (HRC)

70
35
10 HARDNESS (HRC)

EDP Cromson	Cromson Description	Diam.	Length of cut	Overall length	Chamfer / radius	Cromson Grade	# Flutes
72001575	CREM-TI-4RC-0750-R090- Cr75	3/4	1.1/2	4	.090	Cr75	4
72001580	CREM-TI-4RC-0750-R120- Cr75	3/4	1.1/2	4	.120	Cr75	4
72001585	CREM-TI-4EC-0750- SQ Cr75	3/4	1.3/4	4	---	Cr75	4
72001590	CREM-TI-4EC-0750-R030- Cr75	3/4	1.3/4	4	.030	Cr75	4
72001595	CREM-TI-4EC-0750-R060- Cr75	3/4	1.3/4	4	.060	Cr75	4
72001600	CREM-TI-4EC-0750-R120- Cr75	3/4	1.3/4	4	.120	Cr75	4
72001605	CREM-TI-4RC-1000- SQ Cr75	1	1.1/2	4	---	Cr75	4
72001610	CREM-TI-4RC-1000-R030- Cr75	1	1.1/2	4	.030	Cr75	4
72001615	CREM-TI-4RC-1000-R060- Cr75	1	1.1/2	4	.060	Cr75	4
72001620	CREM-TI-4RC-1000-R120- Cr75	1	1.1/2	4	.120	Cr75	4
72001625	CREM-TI-5RC-0250- SQ Cr75	1/4	3/4	2.1/2	---	Cr75	5
72001630	CREM-TI-5RC-0250-R020- Cr75	1/4	3/4	2.1/2	.020	Cr75	5
72001635	CREM-TI-5RC-0250-R030- Cr75	1/4	3/4	2.1/2	.030	Cr75	5
72001640	CREM-TI-5RC-0250-R060- Cr75	1/4	3/4	2.1/2	.060	Cr75	5
72001645	CREM-TI-5RC-0312- SQ Cr75	5/16	13/16	2.1/2	---	Cr75	5
72001650	CREM-TI-5RC-0312-R020- Cr75	5/16	13/16	2.1/2	.020	Cr75	5
72001655	CREM-TI-5RC-0375- SQ Cr75	3/8	7/8	2.1/2	---	Cr75	5
72001660	CREM-TI-5RC-0375-R020- Cr75	3/8	7/8	2.1/2	.020	Cr75	5
72001665	CREM-TI-5RC-0375-R030- Cr75	3/8	7/8	2.1/2	.030	Cr75	5
72001670	CREM-TI-5RC-0375-R060- Cr75	3/8	7/8	2.1/2	.060	Cr75	5
72001675	CREM-TI-5RC-0375-R120- Cr75	3/8	7/8	2.1/2	.120	Cr75	5
72001680	CREM-TI-5EC-0375- SQ Cr75	3/8	1.1/8	3	---	Cr75	5
72001685	CREM-TI-5EC-0375-R030- Cr75	3/8	1.1/8	3	.020	Cr75	5
72001690	CREM-TI-5EC-0500- SQ Cr75	1/2	1.1/4	3	---	Cr75	5
72001695	CREM-TI-5EC-0500-R020- Cr75	1/2	1.1/4	3	.020	Cr75	5
72001700	CREM-TI-5EC-0500-R030- Cr75	1/2	1.1/4	3	.030	Cr75	5
72001705	CREM-TI-5EC-0500-R060- Cr75	1/2	1.1/4	3	.060	Cr75	5
72001710	CREM-TI-5EC-0500-R090- Cr75	1/2	1.1/4	3	.090	Cr75	5
72001715	CREM-TI-5EC-0500-R120- Cr75	1/2	1.1/4	3	.120	Cr75	5
72001720	CREM-TI-5RC-0625- SQ Cr75	5/8	1.1/4	3.1/2	---	Cr75	5
72001725	CREM-TI-5RC-0625-R030- Cr75	5/8	1.1/4	3.1/2	.030	Cr75	5
72001730	CREM-TI-5RC-0625-R060- Cr75	5/8	1.1/4	3.1/2	.060	Cr75	5
72001735	CREM-TI-5EC-0625- SQ Cr75	5/8	1.5/8	3.1/2	---	Cr75	5
72001740	CREM-TI-5EC-0625-R030- Cr75	5/8	1.5/8	3.1/2	.030	Cr75	5
72001745	CREM-TI-5RC-0750- SQ Cr75	3/4	1.1/2	4	---	Cr75	5
72001750	CREM-TI-5RC-0750-R030- Cr75	3/4	1.1/2	4	.030	Cr75	5
72001755	CREM-TI-5RC-0750-R060- Cr75	3/4	1.1/2	4	.060	Cr75	5
72001760	CREM-TI-5RC-0750-R090- Cr75	3/4	1.1/2	4	.090	Cr75	5
72001765	CREM-TI-5RC-0750-R120- Cr75	3/4	1.1/2	4	.120	Cr75	5
72001770	CREM-TI-5EC-0750- SQ Cr75	3/4	1.3/4	4	---	Cr75	5
72001775	CREM-TI-5EC-0750-R030- Cr75	3/4	1.3/4	4	.030	Cr75	5
72001780	CREM-TI-5EC-0750-R060- Cr75	3/4	1.3/4	4	.060	Cr75	5
72001785	CREM-TI-5EC-0750-R120- Cr75	3/4	1.3/4	4	.120	Cr75	5
72001790	CREM-TI-5RC-1000- SQ Cr75	1	1.1/2	4	---	Cr75	5
72001795	CREM-TI-5RC-1000-R030- Cr75	1	1.1/2	4	.030	Cr75	5
72001800	CREM-TI-5RC-1000-R060- Cr75	1	1.1/2	4	.060	Cr75	5
72001805	CREM-TI-5RC-1000-R120- Cr75	1	1.1/2	4	.120	Cr75	5

ALLIANCE-TI					Feed (inches Per Tooth)						
Work Material	Type of Cut	Axial DOC	Radial DOC	Speed (SFM)	1/8	1/4	3/8	1/2	5/8	3/4	1
Low carbon steel <= 38HRc 1018, 12L14, 8620	Slotting Peripheral - Rough	1 x D 1.5 x D"	1 x D 0.5 x D								
Medium carbon steel <= 38HRc 4140, 4340	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D								
Tool & die steel <= 38HRc A2, D2, O1, S7, P20, H13	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D								
Tool steel 39HRc to 48HRc	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D 0.5 x D								
Easy to machine stainless steel 416, 410, 302, 303	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D								
Moderately difficult stainless steel 304, 316, invar, kovar	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D 0.5 x D								
Difficult to machine stainless steel 316L, 17-4PH, 15-5PH, 13-8Mo	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300	.0004 .0005	.0009 .0011	.0012 .0016	.0018 .0022	.0022 .0028	.0027 .0033	.0036 .0044
Cast iron Grey	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D								
Cast iron Ductile	Slotting Peripheral - Rough	1 x D 1.5 x D	1 x D 0.5 x D								
Cast iron Malleable	Slotting Peripheral - Rough	.75 x D 1 x D	1 x D .75 x D								
Aluminum alloy 2024, 6061, 7075	Slotting	1 x D	1 x D 0.5 x D								
Titanium alloy 6Al4V	Slotting Peripheral - Rough	0.5 x D 1 x D	1 x D 0.5 x D	250 300	.0005 .0006	.0010 .0012	.0015 .0017	.0020 .0023	.0025 .0029	.0030 .0035	.0040 .0046
High temperature alloy Inconel, haynes, stellite, hastelloy	Slotting	.25 x D 1 x D	1 x D .25 x D	70 95	.0004 .0005	.0008 .0009	.0012 .0014	.0015 .0018	.0019 .0022	.0024 .0028	.0030 .0036

** The machining values shown are guidelines. The optimum data for a particular machining process should be determined in trials or during machining.