

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

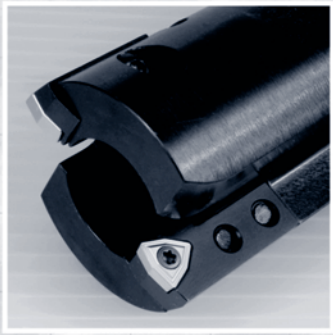
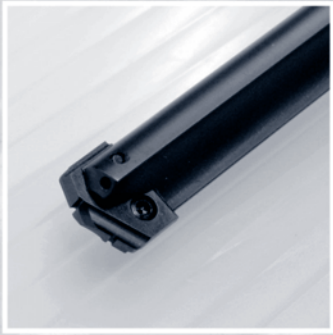
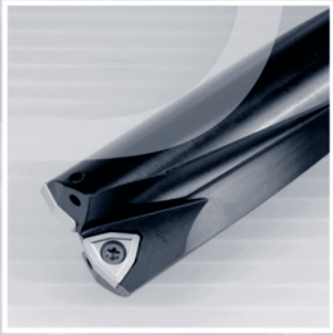
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide


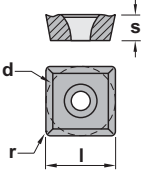

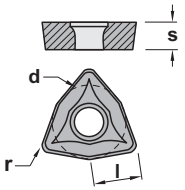

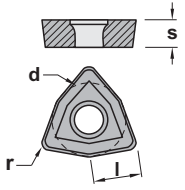

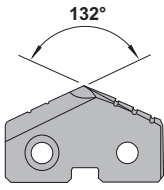
Drills



# Drills

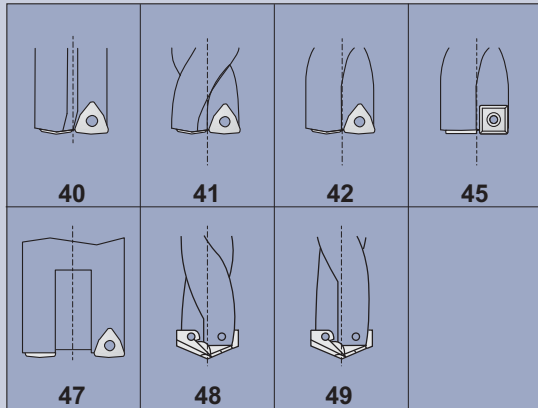
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- Inserts
- Face milling cutters
- Square shoulder cutters
- Slot cutters
- Porcupine cutters
- Specific applications and Sets
- Profile milling
- Solid carbide
- Drills

	Positive 11° clearance - Square insert						Normally available for immediate delivery ● Only available in a limited quantity ○									
	<b>SPMT</b>	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN25	TiN35	TL40	
	<b>SPMT 060304</b>	6,35	3,18	6,35	0,4								●	●		
	<b>SPMT 070308</b>	7,94	3,18	7,94	0,8								●	●	●	
	<b>SPMT 090308</b>	9,52	3,18	9,52	0,8								●	●	●	
	<b>SPMT 120408</b>	12,70	4,76	12,70	0,8								●	●	●	
	Positive 7° clearance - 80° Trigon insert.						Normally available for immediate delivery ● Only available in a limited quantity ○									
	<b>WCMT</b>	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN32	TiN35	TL40	
	<b>WCMT 030204</b>	3,46	2,38	5,56	0,4								●	●	●	
	<b>WCMT 040204</b>	3,99	2,38	6,35	0,4								●	●	●	
	<b>WCMT 050308</b>	5,07	3,18	7,94	0,8								●	●	●	
	<b>WCMT 06T308</b>	6,14	3,97	9,52	0,8								●	●	●	
	Positive 7° clearance - 80° Trigon insert.						Normally available for immediate delivery ● Only available in a limited quantity ○									
	<b>WCMX</b>	l	s	d	r	KM15	PM25	PM40	NC40	TiN16	ZR10	TiN22	TiN32	TiN35	TL40	
	<b>WCMX 030208</b>	3,46	2,38	5,56	0,8								●	●	●	
	<b>WCMX 040208</b>	3,99	2,38	6,35	0,8								●	●	●	
	<b>WCMX 050308</b>	5,07	3,18	7,94	0,8								●	●	●	
	<b>WCMX 06T308</b>	6,14	3,97	9,52	0,8								●	●	●	
	<b>WCMX 080412</b>	8,14	4,76	12,70	1,2								●	●	●	
	Positive inserts						Normally available for immediate delivery ● Only available in a limited quantity ○									
	<b>XPMT</b>	Diameter			s		HS15	TL40								
		Metric	Inch													
	<b>XPMT095</b>	9,50	3/8	2,4	○	○										
	<b>XPMT098</b>	9,80	-	2,4	●	●										
	<b>XPMT099</b>	9,92	25/64	2,4	○	○										
	<b>XPMT100</b>	10,00	-	2,4	●	●										
	<b>XPMT102</b>	10,20	-	2,4	●	●										
	<b>XPMT103</b>	10,32	13/32	2,4	○	○										
	<b>XPMT105</b>	10,50	-	2,4	●	●										
	<b>XPMT107</b>	10,72	27/64	2,4	○	○										
	<b>XPMT108</b>	10,80	-	2,4	●	●										
	<b>XPMT110</b>	11,00	-	2,4	●	●										
	<b>XPMT111</b>	11,11	7/16	2,4	○	○										
	<b>XPMT115</b>	11,50	29/64	2,4	○	○										
	<b>XPMT119</b>	11,91	15/32	2,4	○	○										
	<b>XPMT120</b>	12,00	-	2,4	●	●										
	<b>XPMT123</b>	12,30	31/64	2,4	○	○										
	<b>XPMT125</b>	12,50	-	2,4	●	●										
	<b>XPMT127</b>	12,70	1/2	2,4	○	○										
	<b>XPMT130</b>	13,00	-	3,2	●	●										
	<b>XPMT131</b>	13,10	33/64	3,2	○	○										
	<b>XPMT135</b>	13,50	17/32	3,2	○	○										
	<b>XPMT138</b>	13,89	35/64	3,2	○	○										
	<b>XPMT140</b>	14,00	-	3,2	●	●										
	<b>XPMT142</b>	14,29	9/16	3,2	○	○										
	<b>XPMT145</b>	14,50	-	3,2	●	●										
	<b>XPMT146</b>	14,68	37/64	3,2	○	○										
	<b>XPMT150</b>	15,00	-	3,2	●	●										
	<b>XPMT155</b>	15,50	39/64	3,2	○	○										
<b>XPMT158</b>	15,88	5/8	3,2	○	○											
<b>XPMT160</b>	16,00	-	3,2	●	●											
<b>XPMT162</b>	16,27	41/64	3,2	○	○											
<b>XPMT165</b>	16,50	-	3,2	●	●											
<b>XPMT166</b>	16,67	21/32	3,2	○	○											
<b>XPMT170</b>	17,00	-	3,2	●	●											
<b>XPMT174</b>	17,46	11/16	3,2	○	○											
<b>XPMT175</b>	17,50	-	3,2	●	●											

<b>4</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>63</b>	<b>027</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	

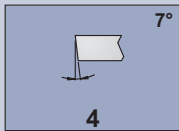
**1**



**2**

1	2	3	4	5
WCM.. 0302	WCM.. 0402	WCM.. 0503	WCM.. 06T3	WCM.. 0804
SPMT 0603	SPMT 0703	SPMT 0903	SPMT 1204	
XPMT 095 XPMT 110	XPMT 115 XPMT 127	XPMT 130 XPMT 175	XPMT 150 XPMT 175	

**3**



**4**

Ø20	Ø25	Ø32	Ø40	Ø20	Ø24	Ø28	Ø36
61	62	63	64	72	73	74	75

**5**



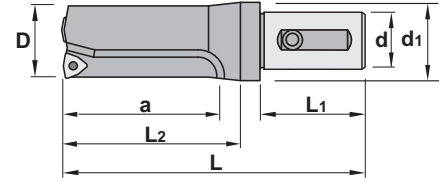
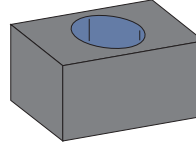
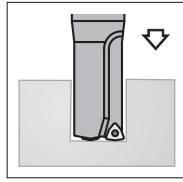


**Characteristics:**

Straight flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. lathes. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.



Max. hole depth = 2xDiameter (D)

40..										Radial Adj.				Insert size		Kg
Ref.	D	L	L1	L2	a	d	d1	Dmax								
4014.61.017,5	17,5	103	50	39	35	20	32	+1,00	19,5	1622	5507	WCM.. 0302..	0,200			
4014.61.018	18	103	50	40	36	20	32	+0,90	19,8	1622	5507	WCM.. 0302..	0,200			
4014.61.018,5	18,5	103	50	41	37	20	32	+0,85	20,2	1622	5507	WCM.. 0302..	0,200			
4014.61.019	19	103	50	42	38	20	32	+0,80	20,6	1622	5507	WCM.. 0302..	0,250			
4014.61.020	20	103	50	44	40	20	32	+0,75	21,5	1622	5507	WCM.. 0302..	0,250			
4024.62.022	22	123	55	48	44	25	40	+1,25	24,5	1625	5508	WCM.. 0402..	0,385			
4024.62.024	24	123	55	52	48	25	40	+0,75	25,5	1625	5508	WCM.. 0402..	0,380			
4024.62.025	25	123	55	54	50	25	40	+0,50	26,0	1625	5508	WCM.. 0402..	0,400			
4034.62.026	26	133	55	56	52	25	40	+2,50	31,0	1630	5509	WCM.. 0503..	0,430			
4034.62.027	27	133	55	58	54	25	40	+2,20	31,4	1630	5509	WCM.. 0503..	0,430			
4034.62.028	28	133	55	60	56	25	40	+2,10	32,2	1630	5509	WCM.. 0503..	0,485			
4034.62.029	29	133	55	62	58	25	40	+1,80	32,6	1630	5509	WCM.. 0503..	0,465			
4034.62.030	30	133	55	64	60	25	40	+1,80	33,0	1630	5509	WCM.. 0503..	0,475			
4044.63.031	31	153	60	66	62	32	50	+3,50	38,0	1635	5510	WCM.. 06T3..	0,785			
4044.63.032	32	153	60	68	64	32	50	+3,20	38,4	1635	5510	WCM.. 06T3..	0,800			
4044.63.034	34	153	60	73	68	32	50	+2,80	39,6	1635	5510	WCM.. 06T3..	0,850			
4044.63.035	35	153	60	75	70	32	50	+2,50	40,0	1635	5510	WCM.. 06T3..	0,850			
4044.63.038	38	163	60	80	76	32	50	+1,80	41,0	1635	5510	WCM.. 06T3..	0,950			
4044.63.039	39	163	60	82	78	32	50	+1,50	41,6	1635	5510	WCM.. 06T3..	0,950			
4044.63.040	40	163	60	84	80	32	50	+1,20	42,0	1635	5510	WCM.. 06T3..	1,000			
4054.64.042	42	193	65	89	84	40	60	+4,20	51,0	1640	5515	WCM.. 0804..	1,570			
4054.64.043	43	193	65	91	86	40	60	+4,00	51,4	1640	5515	WCM.. 0804..	1,560			
4054.64.045	45	193	65	95	90	40	60	+3,60	52,2	1640	5515	WCM.. 0804..	1,700			
4054.64.048	48	193	65	101	96	40	60	+2,70	53,4	1640	5515	WCM.. 0804..	2,050			
4054.64.049	49	213	65	103	98	40	60	+2,50	54,0	1640	5515	WCM.. 0804..	2,000			
4054.64.050	50	213	65	105	100	40	60	+2,20	54,4	1640	5515	WCM.. 0804..	2,215			
4054.64.052	52	213	65	110	104	40	60	+1,80	55,6	1640	5515	WCM.. 0804..	2,210			
4054.64.054	54	213	65	114	108	40	60	+1,20	56,4	1640	5515	WCM.. 0804..	2,300			
4054.64.055	55	213	65	116	110	40	60	+0,80	56,6	1640	5515	WCM.. 0804..	2,400			

WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.	
Ref.	WCM.. 0302..	3,46	2,38	5,56		
	WCM.. 0402..	3,99	2,38	6,35		
	WCM.. 0503..	5,07	3,18	7,94		
	WCM.. 06T3..	6,14	3,97	9,52		
	WCM.. 0804..	8,14	4,76	12,70		
	WCMT					
	WCMX					

For more information see page: I.02



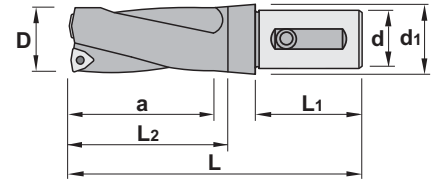
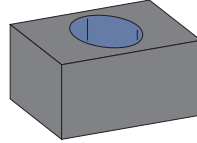
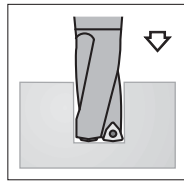
**Characteristics:**

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 2xDiameter (D)



41..												Insert size		Kg
Ref.	D	L	L1	L2	a	d	d1	Radial Adj. Dmax						
4114.62.017,5	17,5	108	55	39	35	25	40	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,200		
4114.62.018	18	108	55	40	36	25	40	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,200		
4114.62.018,5	18,5	113	55	41	37	25	40	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,200		
4114.62.019	19	113	55	42	38	25	40	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,250		
4114.62.020	20	113	55	44	40	25	40	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,250		
4124.62.022	22	123	55	48	44	25	40	+1,25 ↻ 24,5	1625	5508	WCM.. 0402..	0,375		
4124.62.024	24	123	55	52	48	25	40	+0,75 ↻ 25,5	1625	5508	WCM.. 0402..	0,385		
4124.62.025	25	123	55	54	50	25	40	+0,50 ↻ 26,0	1625	5508	WCM.. 0402..	0,390		
4134.63.026	26	138	60	56	52	32	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,425		
4134.63.027	27	138	60	58	54	32	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,430		
4134.63.028	28	138	60	60	56	32	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,440		
4134.63.029	29	138	60	62	58	32	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,450		
4134.63.030	30	138	60	64	60	32	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,470		
4144.64.031	31	158	65	66	62	40	60	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,765		
4144.64.032	32	158	65	68	64	40	60	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,780		
4144.64.034	34	158	65	73	68	40	60	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,800		
4144.64.035	35	158	65	75	70	40	60	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	0,815		
4144.64.038	38	168	65	80	76	40	60	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	0,930		
4144.64.039	39	168	65	82	78	40	60	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	0,950		
4144.64.040	40	168	65	84	80	40	60	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	0,970		
4154.64.042	42	193	65	89	84	40	60	+4,20 ↻ 51,0	1640	5515	WCM.. 0804..	1,550		
4154.64.043	43	193	65	91	86	40	60	+4,00 ↻ 51,4	1640	5515	WCM.. 0804..	1,530		
4154.64.045	45	193	65	95	90	40	60	+3,60 ↻ 52,2	1640	5515	WCM.. 0804..	1,630		
4154.64.048	48	193	65	101	96	40	60	+2,70 ↻ 53,4	1640	5515	WCM.. 0804..	1,700		
4154.64.049	49	213	65	103	98	40	60	+2,50 ↻ 54,0	1640	5515	WCM.. 0804..	2,050		
4154.64.050	50	213	65	105	100	40	60	+2,20 ↻ 54,4	1640	5515	WCM.. 0804..	2,100		
4154.64.052	52	213	65	110	104	40	60	+1,80 ↻ 55,6	1640	5515	WCM.. 0804..	2,120		
4154.64.054	54	213	65	114	108	40	60	+1,20 ↻ 56,4	1640	5515	WCM.. 0804..	2,150		
4154.64.055	55	213	65	116	110	40	60	+0,80 ↻ 56,6	1640	5515	WCM.. 0804..	2,200		

Ref.	WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.
	WCM.. 0302..		3,46	2,38	5,56	
WCM.. 0402..		3,99	2,38	6,35		
WCM.. 0503..		5,07	3,18	7,94		
WCM.. 06T3..		6,14	3,97	9,52		
WCM.. 0804..		8,14	4,76	12,70		

WCMT	WCMX				

For more information see page: I.02

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

Drills



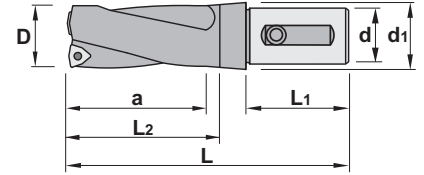
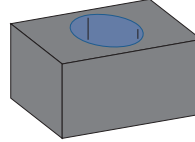
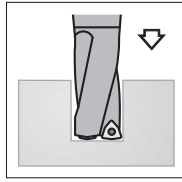
**Characteristics:**

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 55 mm.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 3xDiameter (D)



42..		Radial Adj.										Insert size		Kg
Ref.	D	L	L1	L2	a	d	d1	D <sub>max</sub>						
4214.62.017,5	17,5	127	55	56	53	25	40	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,220		
4214.62.018	18	128	55	57	54	25	40	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,230		
4214.62.018,5	18,5	130	55	59	56	25	40	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,240		
4214.62.019	19	131	55	60	57	25	40	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,240		
4214.62.020	20	136	55	64	60	25	40	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,250		
4224.62.022	22	142	55	69	66	25	40	+1,25 ↻ 24,5	1625	5508	WCM.. 0402..	0,400		
4224.62.024	24	150	55	76	72	25	40	+0,75 ↻ 25,5	1625	5508	WCM.. 0402..	0,450		
4224.62.025	25	154	55	79	75	25	40	+0,50 ↻ 26,0	1625	5508	WCM.. 0402..	0,475		
4234.63.026	26	162	60	81	78	32	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,475		
4234.63.027	27	165	60	84	81	32	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,500		
4234.63.028	28	169	60	87	84	32	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,550		
4234.63.029	29	172	60	90	87	32	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,570		
4234.63.030	30	177	60	94	90	32	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,600		
4244.64.031	31	186	65	97	93	40	60	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,850		
4244.64.032	32	189	65	100	96	40	60	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,900		
4244.64.034	34	196	65	106	102	40	60	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,975		
4244.64.035	35	200	65	109	105	40	60	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	1,000		
4244.64.038	38	211	65	118	114	40	60	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	1,170		
4244.64.039	39	214	65	121	117	40	60	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	1,200		
4244.64.040	40	218	65	124	120	40	60	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	1,300		
4254.64.042	42	225	65	130	126	40	60	+4,20 ↻ 51,0	1640	5515	WCM.. 0804..	1,600		
4254.64.043	43	229	65	133	129	40	60	+4,00 ↻ 51,4	1640	5515	WCM.. 0804..	1,750		
4254.64.045	45	237	65	140	135	40	60	+3,60 ↻ 52,2	1640	5515	WCM.. 0804..	1,900		
4254.64.048	48	248	65	149	144	40	60	+2,70 ↻ 53,4	1640	5515	WCM.. 0804..	2,250		
4254.64.049	49	251	65	152	147	40	60	+2,50 ↻ 54,0	1640	5515	WCM.. 0804..	2,200		
4254.64.050	50	255	65	155	150	40	60	+2,20 ↻ 54,4	1640	5515	WCM.. 0804..	2,400		
4254.64.052	52	262	65	161	156	40	60	+1,80 ↻ 55,6	1640	5515	WCM.. 0804..	2,500		
4254.64.054	54	269	65	167	162	40	60	+1,20 ↻ 56,4	1640	5515	WCM.. 0804..	2,700		
4254.64.055	55	274	65	171	165	40	60	+0,80 ↻ 56,6	1640	5515	WCM.. 0804..	2,850		

WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.	
Ref.	WCM.. 0302..	3,46	2,38	5,56		
	WCM.. 0402..	3,99	2,38	6,35		
	WCM.. 0503..	5,07	3,18	7,94		
	WCM.. 06T3..	6,14	3,97	9,52		
	WCM.. 0804..	8,14	4,76	12,70		
	WCMT					
	WCMX					

For more information see page: I.02



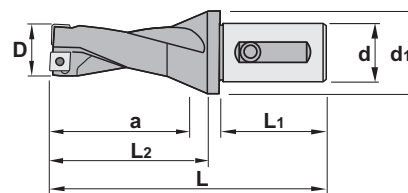
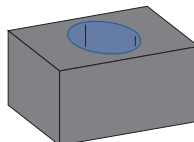
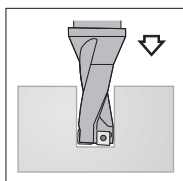
Max. hole depth = 3xDiameter (D)

**Characteristics:**

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down square inserts for stability and clean through-hole putting. Drills available from 15 to 55 mm.

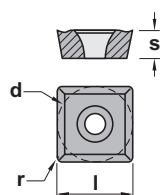
**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.



45..															
Ref.	D	L	L1	L2	a	d	d1	Radial Adj. Dmax			Insert size	kg			
4514.62.015	15	120	55	56	45	25	40	+0,50 ↻ 16,0	1225	5507	SPMT 0603..	0,240			
4514.62.016	16	121	55	56	48	25	40	+0,50 ↻ 17,0	1225	5007	SPMT 0603..	0,250			
4514.62.017	17	127	55	54	51	25	40	+0,50 ↻ 18,0	1225	5007	SPMT 0603..	0,250			
4514.62.017,5	17,5	127	55	56	53	25	40	+1,00 ↻ 19,5	1225	5507	SPMT 0603..	0,250			
4514.62.018	18	128	55	57	54	25	40	+0,90 ↻ 19,8	1225	5507	SPMT 0603..	0,230			
4514.62.018,5	18,5	130	55	59	56	25	40	+0,85 ↻ 20,2	1225	5507	SPMT 0603..	0,240			
4514.62.019	19	131	55	60	57	25	40	+0,80 ↻ 20,6	1225	5507	SPMT 0603..	0,240			
4514.62.020	20	136	55	64	60	25	40	+0,75 ↻ 21,5	1225	5507	SPMT 0603..	0,250			
4524.62.022	22	142	55	69	66	25	40	+1,25 ↻ 24,5	1225	5507	SPMT 0703..	0,400			
4524.62.024	24	150	55	76	72	25	40	+0,75 ↻ 25,5	1225	5507	SPMT 0703..	0,450			
4524.62.025	25	154	55	79	75	25	40	+0,50 ↻ 26,0	1225	5507	SPMT 0703..	0,475			
4534.63.026	26	162	55	81	78	32	50	+2,50 ↻ 31,0	1230	5508	SPMT 0903..	0,475			
4534.63.027	27	165	55	84	81	32	50	+2,20 ↻ 31,4	1230	5508	SPMT 0903..	0,500			
4534.63.028	28	169	55	87	84	32	50	+2,10 ↻ 32,2	1230	5508	SPMT 0903..	0,550			
4534.63.029	29	172	55	90	87	32	50	+1,80 ↻ 32,6	1230	5508	SPMT 0903..	0,570			
4534.63.030	30	177	55	94	90	32	50	+1,80 ↻ 33,0	1230	5508	SPMT 0903..	0,600			
4544.64.031	31	186	65	97	93	40	60	+3,50 ↻ 38,0	1230	5508	SPMT 0903..	0,850			
4544.64.032	32	189	65	100	96	40	60	+3,20 ↻ 38,4	1230	5508	SPMT 0903..	0,900			
4544.64.034	34	196	65	106	102	40	60	+2,80 ↻ 39,6	1230	5508	SPMT 0903..	0,975			
4544.64.035	35	200	65	109	105	40	60	+2,50 ↻ 40,0	1550	5520	SPMT 1204..	1,000			
4544.64.038	38	211	65	118	114	40	60	+1,80 ↻ 41,0	1550	5520	SPMT 1204..	1,170			
4544.64.039	39	214	65	121	117	40	60	+1,50 ↻ 41,6	1550	5520	SPMT 1204..	1,200			
4544.64.040	40	218	65	124	120	40	60	+1,20 ↻ 42,0	1550	5520	SPMT 1204..	1,300			
4554.64.042	42	225	65	130	126	40	60	+4,20 ↻ 51,0	1550	5520	SPMT 1204..	1,600			
4554.64.043	43	229	65	133	129	40	60	+4,00 ↻ 51,4	1550	5520	SPMT 1204..	1,750			
4554.64.045	45	237	65	140	135	40	60	+3,60 ↻ 52,2	1550	5520	SPMT 1204..	1,900			

SPMT		l	s	d	Positive 11° clearance - Square inserts		
Ref.	SPMT 060304	6,35	3,18	6,35	For more information see page: I.02		
	SPMT 070308	7,94	3,18	7,94			
	SPMT 090308	9,52	3,18	9,52			
	SPMT 120408	12,70	4,76	12,70			
	SPMT						



Drills  
Boring heads  
Arbors and adaptors



Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

Drills

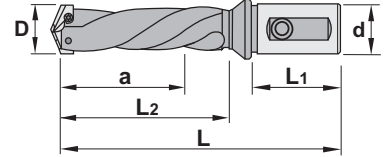
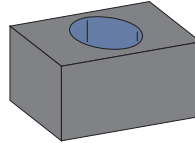
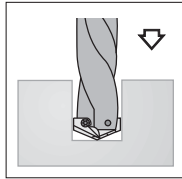


**Characteristics:**

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down spade inserts for stability and clean through-hole putting. Drills available from 9,5 to 17,5 mm.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.



Max. hole depth = 3xDiameter (D)

**48..**

Ref.	D	L	L1	L2	a	d	Insert size	KG
4814.61.009,5	9,50 ~ 11,0	120,0	42	50	35	20	XPMT 095 ~ XPMT 110	0,200
4824.61.011,5	11,5 ~ 12,7	125,0	42	55	40	20	XPMT 115 ~ XPMT 127	0,250
4834.61.013	13,0 ~ 17,5	140,0	42	65	53	20	XPMT 130 ~ XPMT 175	0,300
4834.61.015	15,5 ~ 17,5	140,0	42	75	53	20	XPMT 150 ~ XPMT 175	0,380

Ref.	4814.61.009,5	4824.61.011,5	4834.61.013	4834.61.015
		1420	1422	1425
		5506	5506	5507
		5507	5507	5507

Ref.	XPMT		s	
	XPMT 095 ~ XPMT 110		2,4	
XPMT 115 ~ XPMT 127		2,4		
XPMT 130 ~ XPMT 175		3,2		
XPMT 150 ~ XPMT 175		3,2		

For more information see page: I.02

XPMT					



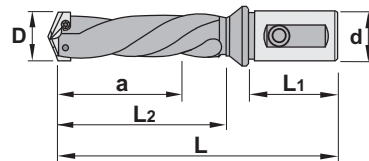
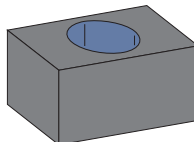
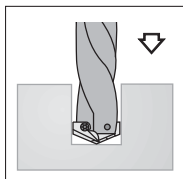
Long Series

**Characteristics:**



Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down spade inserts for stability and clean through-hole putting. Drills available from 9,5 to 17,5 mm.

**Applications:**

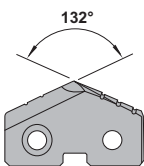
This drill works well on steels, alloyed steels, stainless steels and refractories.




49..		D	L	L1	L2	a	d	Insert size	kg
Ref.	4914.61.009,5	9,50 ~ 11,0	132	42	65	57	20	XPMT 095 ~ XPMT 110	0,200
	4924.61.011,5	11,5 ~ 12,7	142	42	75	69	20	XPMT 115 ~ XPMT 127	0,250
	4934.61.013	13,0 ~ 17,5	188	42	125	112	20	XPMT 130 ~ XPMT 175	0,300
	4934.61.015	15,5 ~ 17,5	198	42	135	122	20	XPMT 150 ~ XPMT 175	0,380

				
Ref.	4914.61.009,5		1420	5506
	4924.61.011,5		1422	5506
	4934.61.013		1425	5507
	4934.61.015		1425	5507

XPMT		s
Ref.	XPMT 095 ~ XPMT 110	2,4
	XPMT 115 ~ XPMT 127	2,4
	XPMT 130 ~ XPMT 175	3,2
	XPMT 150 ~ XPMT 175	3,2





XPMT					
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For more information see page: I.02

Drills

Boring heads

Arbors and adaptors

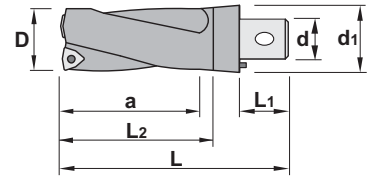
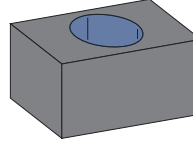
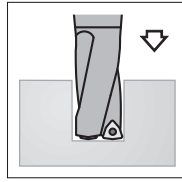


**Characteristics:**

Helical flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 17,5 to 40 mm.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.



Max. hole depth = 3xDiameter (D)

Ref.	42 <sup>1</sup> 44. <sup>72</sup> <sub>4</sub> . <sup>75</sup>							Radial Adj.	D <sub>max</sub>			Insert size	
	D	L	L <sub>1</sub>	L <sub>2</sub>	a	d	d <sub>1</sub>						
4214.72.017,5	17,5	92	20	56	53	20	32	+1,00 ↻ 19,5	1622	5507	WCM.. 0302..	0,070	
4214.72.018	18	93	20	57	54	20	32	+0,90 ↻ 19,8	1622	5507	WCM.. 0302..	0,080	
4214.72.018,5	18,5	95	20	59	56	20	32	+0,85 ↻ 20,2	1622	5507	WCM.. 0302..	0,080	
4214.72.019	19	96	20	60	57	20	32	+0,80 ↻ 20,6	1622	5507	WCM.. 0302..	0,090	
4214.72.020	20	101	20	64	60	20	32	+0,75 ↻ 21,5	1622	5507	WCM.. 0302..	0,110	
4224.73.022	22	112	25	69	66	24	42	+1,25 ↻ 24,5	1625	5508	WCM.. 0402..	0,320	
4224.73.024	24	120	25	76	72	24	42	+0,75 ↻ 26,5	1625	5508	WCM.. 0402..	0,370	
4224.73.025	25	124	25	79	75	24	42	+0,50 ↻ 26,0	1625	5508	WCM.. 0402..	0,400	
4234.74.026	26	132	30	81	78	28	50	+2,50 ↻ 31,0	1630	5509	WCM.. 0503..	0,375	
4234.74.027	27	135	30	84	81	28	50	+2,20 ↻ 31,4	1630	5509	WCM.. 0503..	0,400	
4234.74.028	28	139	30	87	84	28	50	+2,10 ↻ 32,2	1630	5509	WCM.. 0503..	0,450	
4234.74.029	29	142	30	90	87	28	50	+1,80 ↻ 32,6	1630	5509	WCM.. 0503..	0,470	
4234.74.030	30	147	30	94	90	28	50	+1,80 ↻ 33,0	1630	5509	WCM.. 0503..	0,500	
4244.75.031	31	161	40	97	93	36	68	+3,50 ↻ 38,0	1635	5510	WCM.. 06T3..	0,600	
4244.75.032	32	164	40	100	96	36	68	+3,20 ↻ 38,4	1635	5510	WCM.. 06T3..	0,750	
4244.75.034	34	171	40	106	102	36	68	+2,80 ↻ 39,6	1635	5510	WCM.. 06T3..	0,800	
4244.75.035	35	175	40	109	105	36	68	+2,50 ↻ 40,0	1635	5510	WCM.. 06T3..	0,850	
4244.75.038	38	186	40	118	114	36	68	+1,80 ↻ 41,0	1635	5510	WCM.. 06T3..	1,000	
4244.75.039	39	189	40	121	117	36	68	+1,50 ↻ 41,6	1635	5510	WCM.. 06T3..	1,050	
4244.75.040	40	193	40	124	120	36	68	+1,20 ↻ 42,0	1635	5510	WCM.. 06T3..	1,150	

Ref.	WCM..			Positive 7° clearance - 80° Trigon insert.
	l	s	d	
WCM.. 0302..	3,46	2,38	5,56	
WCM.. 0402..	3,99	2,38	6,35	
WCM.. 0503..	5,07	3,18	7,94	
WCM.. 06T3..	6,14	3,97	9,52	
	WCMT	WCMX		

For more information see page: I.02



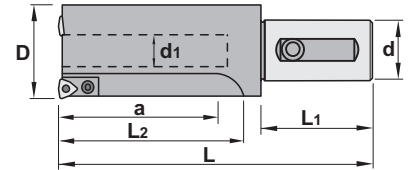
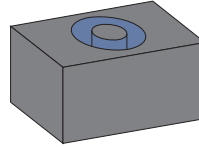
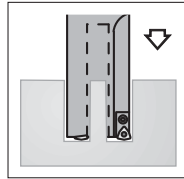
**Characteristics:**

Straight flute indexable insert drills provide faster cutting speeds and efficient chip removal for use on conventional C.N.C. machines. This type of drills incorporates a neutral-rake geometry and screw-down trigon inserts for stability and clean through-hole putting. Drills available from 60 to 100 mm. Specially recommended for low power machines.

**Applications:**

This drill works well on steels, alloyed steels, stainless steels and refractories.

Max. hole depth = 2.5xDiameter (D)

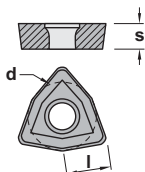


# 4744.64

Ref.	D	L	L1	L2	a	d	d1	Insert size	Kg
4744.64.060	60	260	65	160	150	40	24	WCM.. 06T3..	3,100
4744.64.065	65	275	65	175	165	40	29	WCM.. 06T3..	3,700
4744.64.070	70	285	65	185	175	40	34	WCM.. 06T3..	4,250
4744.64.075	75	300	65	200	190	40	39	WCM.. 06T3..	5,100
4744.64.080	80	310	65	210	200	40	44	WCM.. 06T3..	5,800
4744.64.085	85	325	65	225	215	40	49	WCM.. 06T3..	6,500
4744.64.090	90	335	65	235	225	40	54	WCM.. 06T3..	7,250
4744.64.095	95	350	65	250	240	40	59	WCM.. 06T3..	8,200
4744.64.100	100	360	65	260	250	40	64	WCM.. 06T3..	9,050

Ref.	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.060	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.065	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.070	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.075	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.080	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.085	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.090	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.095	1396	5510	1405	1635	1503	5002	5005	6806	6816
4744.64.100	1396	5510	1405	1635	1503	5002	5005	6806	6816

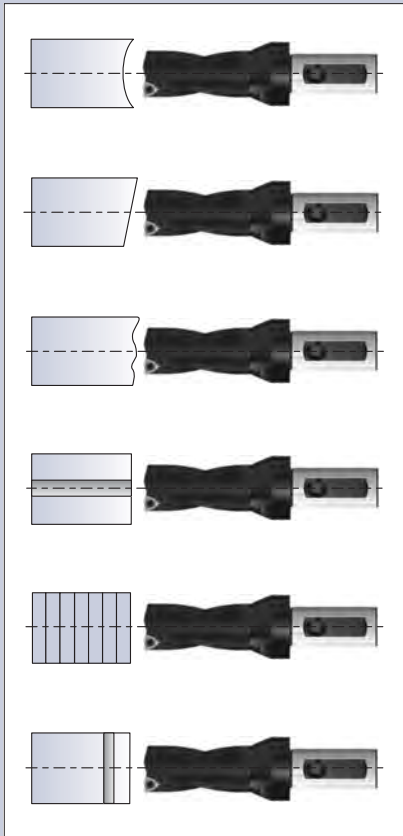
WCM..		l	s	d	Positive 7° clearance - 80° Trigon insert.
Ref.	WCM.. 06T3..	6,14	3,97	9,52	
For more information see page: I.02					
	WCMT	WCMX			



- Inserts
- Face milling cutters
- Square shoulder cutters
- Slot cutters
- Porcupine cutters
- Specific applications and Sets
- Profile milling
- Solid carbide
- Drills**



## Drills - Recommendations for the assembly



### Drills for indexable inserts

A concave surface is not normally recommended because there is the possibility that the tool turns away from the center. Feed should be reduced to 1/3 of the recommended.

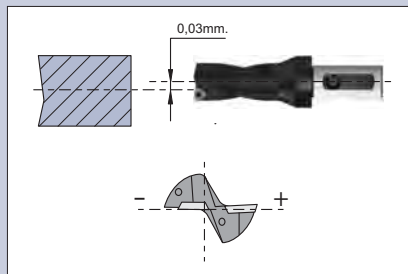
The surface of the tool to be drilled on should be preferably even. If the angles exceed 2°, feed should be reduced to 1/3 of the recommended.

If the starting surface is an uneven surface of the component, feed should be reduced so that the chip of the cutting edges can be avoided. The same can also happen at the way out from the tool.

When working with a hole made beforehand, this should not be bigger than 1/4 of the final size, because the tool could turn away.

There is the possibility to drill sets of more than one piece.

When the tool has a crossed hole, which is 1/4 bigger than the diameter of the drill, feed should be reduced when going through it.



### Fixed drills

The axis of the tool should not be deviated from the center of the piece more than 0,03 mm. so that the pointed tolerances are acquired.

The tool should be assembled in a way that the face of the central insert goes parallel to the cross movement axis of the machine.



### Drilling with drill-holders with housing for cutting fluid supply

When a drillholder with a housing supplier of cutting fluid is used, it has to have a fixed top so as to avoid that the housing turns around.

If it is the case that the cutting fluid has some dirty rests, this could lock the rotary housing and, consequently, the supplier tube will roll up around it, which can cause a serious accident.

If it is the case that the drillholder has not been used for a long time, check if it turns round in the housing before the spindle starts working.



### Drilling of through-holes

When through holes are drilled a disk is produced after the drill has finished the hole. This disk is oftenly thrown away at high speed through the dish claws and can cause injuries and accidents.

In order to avoid this accident, a suitable safety system has to be placed around the dish.

Inserts
Face milling cutters
Square shoulder cutters
Slot cutters
Porcupine cutters
Specific applications and Sets
Profile milling
Solid carbide
Drills

Material	HB	Condition	D mm.	Feed mm./Rev.	Cutting speed m./min.	
Unalloyed steel	P	90-200	Non-hardened 0,05-0,25%C	17,5-25,4	0,04-0,08	100-250
				26,0-30,0	0,06-0,10	
Unalloyed steel		125-225 150-225 180-225	Non-hardened 0,25-0,55%C Non-hardened 0,55-0,80%C High carbon & carbon tool steel	17,5-25,4	0,04-0,12	100-250
				26,0-30,0	0,09-0,19	
				31,0-41,3	0,11-0,20	
				42,0-80,0	0,14-0,25	
Low alloyed steel		150-260	Non-hardened	17,5-25,4	0,08-0,12	90-250
				26,0-30,0	0,09-0,16	
				31,0-41,3	0,11-0,20	
				42,0-80,0	0,14-0,22	
Low alloyed steel		220-400	Hardened	17,5-25,4	0,06-0,10	80-220
				26,0-30,0	0,08-0,15	
				31,0-41,3	0,08-0,15	
				42,0-80,0	0,11-0,20	
High alloyed steel		150-250 150-250	Annealed Annealed HSS	17,5-25,4	0,08-0,12	100-220
				26,0-30,0	0,09-0,18	
				31,0-41,3	0,11-0,22	
				42,0-80,0	0,14-0,25	
High alloyed steel		250-350 250-400	Hardened tool steel Hardened steel	17,5-25,4	0,08-0,12	90-200
				26,0-30,0	0,09-0,15	
				31,0-41,3	0,11-0,17	
				42,0-80,0	0,12-0,20	
Stainless steel		150-270	Ferritic, Martensitic 13-25%Cr	17,5-25,4	0,04-0,12	90-190
				26,0-30,0	0,10-0,16	
				31,0-41,3	0,11-0,18	
				42,0-80,0	0,11-0,18	
Steel castings		150-270	Unalloyed	17,5-25,4	0,05-0,08	100-230
				26,0-30,0	0,06-0,10	
				31,0-41,3	0,09-0,15	
				42,0-80,0	0,11-0,18	
Steel castings		90-225	Low alloyed (alloying elements < 5%)	17,5-25,4	0,08-0,12	90-200
				26,0-30,0	0,09-0,15	
				31,0-41,3	0,12-0,20	
				42,0-80,0	0,14-0,22	
Stainless steel	M	150-250	Austenitic Ni > 8%, 18-25% Cr	17,5-25,4	0,04-0,12	70-150
				26,0-30,0	0,10-0,16	
				31,0-41,3	0,11-0,18	
				42,0-80,0	0,11-0,18	
Malleable cast iron	K	110-145	Ferritic (short chipping)	17,5-25,4	0,11-0,18	90-200
				26,0-30,0	0,14-0,22	
				31,0-41,3	0,17-0,27	
				42,0-80,0	0,18-0,30	
Malleable cast iron		150-270	Pearlitic (long chipping)	17,5-25,4	0,09-0,15	80-180
				26,0-30,0	0,11-0,19	
				31,0-41,3	0,12-0,20	
				42,0-80,0	0,14-0,22	
Grey cast iron		150-220	Low tensile strength	17,5-25,4	0,09-0,15	80-180
				26,0-30,0	0,14-0,22	
				31,0-41,3	0,15-0,25	
				42,0-80,0	0,18-0,30	
Grey cast iron		200-330	High tensile strength	17,5-25,4	0,09-0,15	70-150
				26,0-30,0	0,12-0,20	
				31,0-41,3	0,14-0,22	
				42,0-80,0	0,15-0,25	
Nodular cast iron		125-230	Ferritic	17,5-25,4	0,09-0,15	80-180
				26,0-30,0	0,14-0,22	
				31,0-41,3	0,15-0,25	
				42,0-80,0	0,17-0,28	
Nodular cast iron		200-300	Pearlitic	17,5-25,4	0,09-0,15	70-150
				26,0-30,0	0,12-0,20	
				31,0-41,3	0,14-0,22	
				42,0-80,0	0,15-0,30	
Aluminium alloys		75-150 40-100 70-125	Wrought, solution treated & aged Cast Cast, solution treated & aged	17,5-25,4	0,08-0,12	150-375
				26,0-30,0	0,11-0,17	
				31,0-41,3	0,17-0,27	
				42,0-80,0	0,17-0,27	
Copper and copper alloys		50 - 160	Free cutting alloys (pb>1%) Brass and lead bronzes (pb<1%)	17,5-25,4	0,09-0,15	80-160
				26,0-30,0	0,09-0,15	
				31,0-41,3	0,15-0,25	
				42,0-80,0	0,15-0,25	

Material	HB	Condition	D mm.	Cutting speed m/min	Feed mm/Rev
<b>Unalloyed steel</b> <b>P</b>	90-200	Non-hardened 0,05-0,25%C	60-100	150-250	0,08-0,12
	125-225	Non-hardened 0,25-0,55%C		100-250	0,11-0,18
	150-225	Non-hardened 0,55-0,80%C		100-250	0,11-0,18
	180-225	High carbon & carbon tool steel		100-250	0,11-0,18
<b>Low alloyed steel</b>	150-260	Non-hardened	60-100	100-250	0,11-0,18
	220-400	Hardened		100-220	0,08-0,12
<b>High alloyed steel</b>	150-250	Annealed	60-100	100-220	0,11-0,19
	150-250	Annealed HSS		100-220	0,11-0,19
	250-350	Hardened tool steel		100-200	0,11-0,18
	250-400	Hardened steel		100-200	0,11-0,17
<b>Stainless steel</b>	150-270	Ferritic, Martensitic 13-25%Cr	60-100	100-200	0,11-0,17
<b>Steel castings</b>	90-225	Unalloyed	60-100	100-200	0,12-0,20
	150-250	Low alloyed (< 5%)		100-150	0,11-0,17

<b>Stainless steel</b> <b>M</b>	150-270	Austenitic Ni > 8%, 18-25% Cr	60-100	100-230	0,09-0,15
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<b>Malleable cast iron</b> <b>K</b>	110-145	Ferritic (short chipping)	60-100	100-200	0,17-0,27
	150-270	Pearlitic (long chipping)	60-100	90-180	0,12-0,20
<b>Grey cast iron</b>	150-220	Low tensile strength	60-100	90-180	0,15-0,25
	200-300	High tensile strength	60-100	90-150	0,14-0,22
<b>Nodular cast iron</b>	125-230	Ferritic	60-100	100-180	0,15-0,25
	200-300	Pearlitic	60-100	90-150	0,14-0,22
<b>Aluminium alloys</b>	75-150	Wrought, solution treated & aged	60-100	150-375	0,17-0,27
	40-100	Cast	60-100	150-375	0,17-0,27
	70-125	Cast, solution treated & aged	60-100	150-375	0,17-0,27
<b>Copper and copper alloys</b>	50-160	Free cutting alloys (pb>1%) Brass and lead bronzes (pb<1%)	60-100	100-160	0,15-0,25