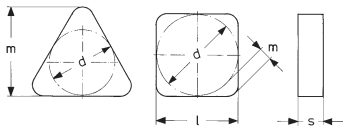
PŁYTKI DO FREZOWANIA

str.	rozdział:
D 64	Oznaczenie płytek do frezowania
D 66	Płytki do frezowania
D 72	Płytki do frezów tarczowych
D 73	Płytki do wiercenia
D 74	Płytki podporowe

FREZOWANIE – oznaczenie płytek (kod ISO)



S	P	K	N	12

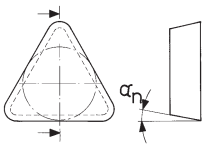
1. Kształt płytki i kąt naroża ε_r

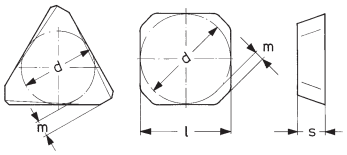
2. Kąt przyłożenia normalny α_n

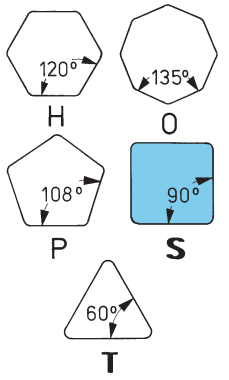
3. Dokładność płytki

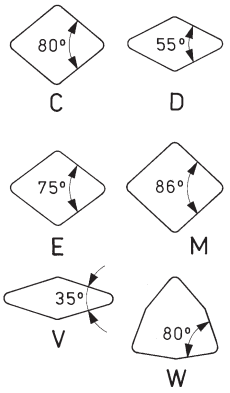
4. Kształt powierzchni natarcia i sposób mocowania płytki

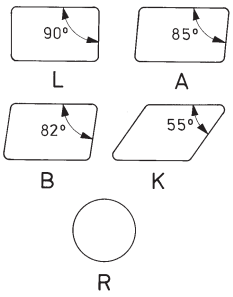
5. Długość boku płytki

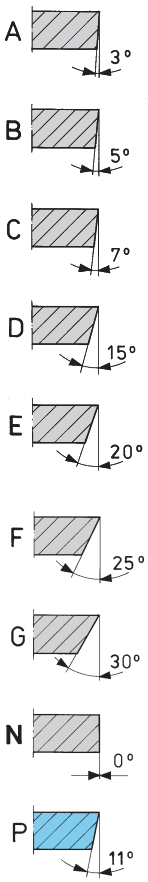










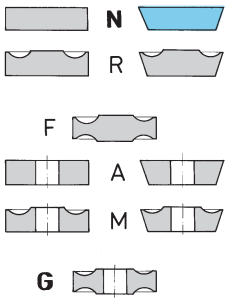


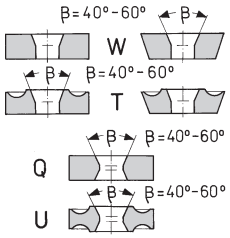
O – inne

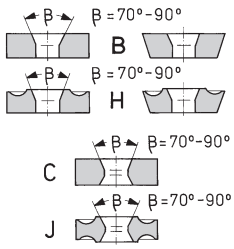
Tolerancja (mm)

l(d)	m	s
±0,025	±0,005	±0,025
A[1]		
±0,013	±0,005	±0,025
F[1]		
±0,025	±0,013	±0,025
C[1]		
±0,013	±0,013	±0,025
H		
±0,025	±0,025	±0,025
E		
±0,025	±0,025	±0,13
G		
±0,05 ±0,15 [2]	±0,005	±0,025
J[1]		
±0,05 ±0,15 [2]	±0,013	±0,025
K[1]		
±0,05 ±0,15 [2]	±0,025	±0,025
L[1]		
±0,05 ±0,15 [2]	±0,08 ±0,20 [2]	±0,13
M		
±0,05 ±0,15 [2]	±0,08 ±0,20 [2]	±0,025
N		
±0,08 ±0,25 [2]	±0,13 ±0,38 [2]	±0,13
U		

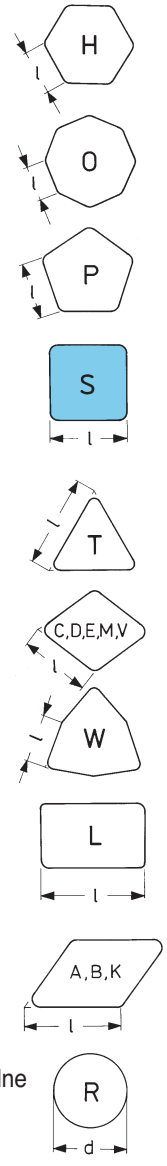
1) Odchyłki te stosuje się dla płytek szlifowanych ze ścinami
2) Wartości odchyłek (od–do) w zależności od wielkości „d"





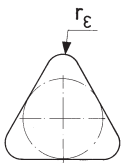


X – wykonanie specjalne



BAILDONIT

FREZOWANIE – oznaczenie płytek (kod ISO)

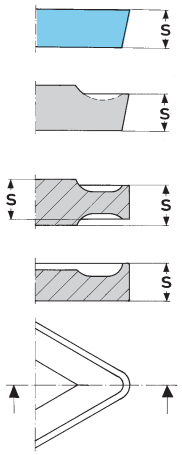


7. Promień naroża r_ε

Symbol	r_ε (mm)
00	<0,2
02	0,2
04	0,4
08	0,8
24	2,4
x	inne
00	dla płytek
MO	okrągłych

03	ED	S	R	—	

6. Grubość płytki

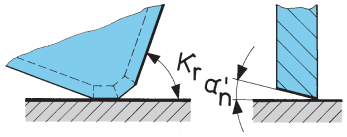


Symbols	(mm)
01	1,59
T1	1,98
02	2,38
03	**3,18**
T3	3,97
04	4,76
05	5,56
06	6,35
07	7,94
09	9,52
12	12,70

7. Kształt naroża płytki ze ścinami

Pierwsza litera określa kąt przystawienia κ_r

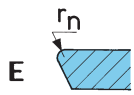
Druga litera określa normalny kąt przyłożenia ścinu krawędzi skrawającej pomocniczej α'_n



Symbol	κ_r
A	= 45°
D	= 60°
E	**= 75°**
F	= 85°
P	= 90°
Z	= inne

Symbol	α'_n
A	= 3°
B	= 5°
C	= 7°
D	**= 15°**
E	= 20°
F	= 25°
G	= 30°
N	= 0°
P	= 11°
Z	= inne

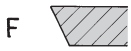
8. Postać krawędzi skrawającej



E – **zaokrąglona**
$r_n \geq 0{,}02$ mm



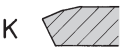
S – **ze ścinem i zaokrąglona**



F – **ostra**
$r_n < 0{,}02$ mm



T – **ze ścinem**

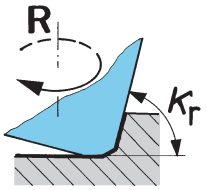


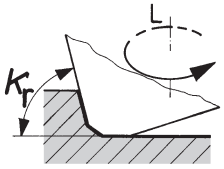
K – **z podwójnym ścinem**

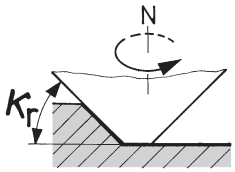


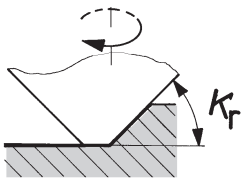
P – **z podwójnym ścinem i zaokrąglona**

9. Kierunek skrawania

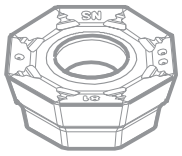








10. Symbol ustalony przez producenta np. geometria łamacza wiórów



Symbole dodatkowe

l (d) (mm)	Tolerancje mm				
	for l (d)		*for* m		
	Dokładność płytki				
	J,K,L,M,N	U	M i N	U i M	M
	Kształt płytki				
	H,O,P,S,T,C,D,E,M,W,R		H,O,P,S,T,C,E,N,W,R		D
4,76 5,56 6,35 (6) 7,94 (8) 9,525 (10)	±0,05	±0,08	±0,08	±0,13	±0,11
12,7 (12)	±0,08	±0,13	±0,13	±0,20	±0,15
15,875 (16) 19,05 (20)	±0,10	±0,18	±0, 15	±0,27	±0,18
25,4 (25)	±0,13	±0,25	±0,18	±0,38	
31,75 (32)	±0,15	±0,25	±0,20	±0,38	

Uzupełnienie do punktu 3

Uzupełnienie do punktu 5

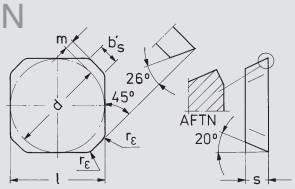
(mm)	Symbol literowy określający kształt płytki										
	H	O	P	S	T	C	D	E	M	V	W
4,76	–	–	–	04	08	04	05	04	04	08	–
5,56	–	–	–	05	09	05	06	05	05	09	03
6,35	03	02	04	06	11	06	07	06	06	11	04
7,94	04	03	05	07	13	08	09	08	07	13	05
9,525	05	04	07	09	16	09	11	09	09	16	06
12,70	07	05	09	12	22	12	15	13	12	22	08
15,875	09	06	11	15	27	16	19	16	15	27	10
19,05	11	07	13	19	33	19	23	19	19	33	13
25,40	14	10	18	25	44	25	31	26	25	44	17
31,75	18	13	23	31	54	32	38	32	31	54	21

d (mm)	Płytki okrągłe
	R
5,0	05
6,0	06
8,0	08
9,525	09
10,0	10
12,0	12
12,70	12
15,875	15
16,0	16
19,05	19
20,0	20
25,0	25
25,4	25
31,75	31
32,0	32

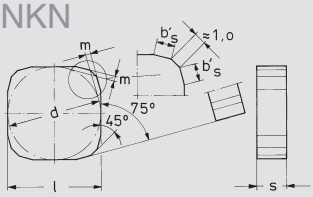
D

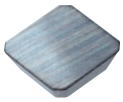
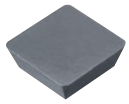
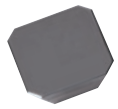
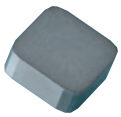
SEAN
SEGN
SEKN
SEKR
SNKN
SNHN

SEKN



SNKN



		Oznaczenie	l=d (mm)	s (mm)	rε (mm)	m (mm)	b's (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	12	SEAN 1203AFTN[1]	12,70	3,18	1,20	1,50	~2,30	❍							❍		❍	
		SEAN 1203AFN	12,70	3,18	1,20	1,50	~2,30	❍							❍		❍	
	15	SEAN 1504AFTN[2]	15,875	4,76	1,20	2,15	~2,30	❍							●		❍	
		SEAN 1504AFN	15,875	4,76	1,20	2,15	~2,30	❍							❍		❍	
	09	SEGN 090308	9,525	3,18	0,80	1,644	–									❍		
	12	SEGN 120304	12,70	3,18	0,40	2,466	–									●		
		SEGN 120312	12,70	3,18	1,20	2,137	–								●			
	12	SEKN 1204AZN	12,70	4,76	1,20	1,55	~2,30					❍			❍		❍	
		SEKN 1204AZTN[3]	12,70	4,76	1,20	1,55	~2,30					❍			●			
	12	SEKN 1203AFTN[4]	12,70	3,18	2,40	1,50	~1,60	❍				●			●			
		SEKN 1203AFN	12,70	3,18	2,40	1,50	~1,60	❍				●			❍		❍	
	15	SEKN 1504AFTN[5]	15,875	4,76	2,40	2,15	~1,60		❍			●			●			
		SEKN 1504AFN	15,875	4,76	2,40	2,15	~1,60	❍				❍			❍			
	12	SEKR 1203AFN	12,70	3,18	2,40	1,50	~1,60	●				●			❍		❍	
	12	SNKN 1204ENN	12,70	4,76	–	0,80	~1,50								●	❍	❍	
	12	SNHN 1204ENEN	12,70	4,76	–	0,95	~1,50	❍				❍			❍	❍		
	15	SNHN 1504ENEN	15,875	4,76	–	1,30	~1,50	❍				●			❍			

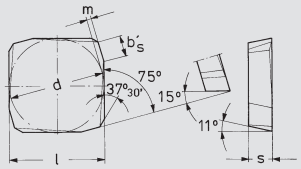
Krawędź ze ścinem

[1] T = 0,15 x 20°
[2] T = 0,15 x 20°
[3] T = 0,20 x 25°
[4] T = 0,15 x 20°
[5] T = 0,15 x 20°

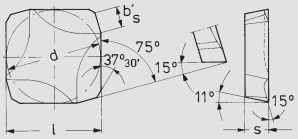
D

SPAN
SPKN
SPKR
LPKN

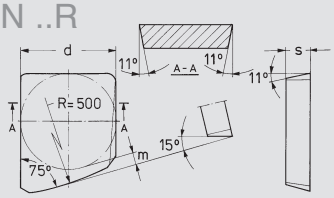
SPKN ..R

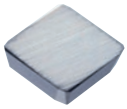
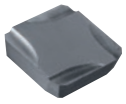


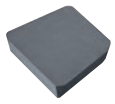
SPKR ..R



LPKN ..R



		Oznaczenie	l=d (mm)	s (mm)	m (mm)	b'$_s$ (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	12	SPAN 1203EDR	12,70	3,18	0,88	~1,40								●	❍		❍
	15	SPAN 1504EDR	15,875	4,76	1,26	~1,40								❍			
	12	SPKN 1203EDR	12,70	3,18	0,88	~1,40	❍	●	❍	●	●	●	●	●	❍	●	❍
		SPKN 1203EDL	12,70	3,18	0,92	~1,40	❍	❍			●		●	●	●	❍	❍
	15	SPKN 1504EDR	15,875	4,76	1,26	~1,40	❍	●	❍	●	●	●	●	●	❍	●	❍
		SPKN 1504EDL	15,875	4,76	1,26	~1,40					●		●	●		❍	❍
	12	SPKN 1203EDTR[1)]	12,70	3,18	0,90	~1,40	●							●		❍	
	12	SPKR 1203EDR	12,70	3,18	–	~1,40								●	●	❍	
		SPKR 1203EDL	12,70	3,18	–	~1,40								●	❍		
	12	SPKR 1203EDR-PR1	12,70	3,18	0,872	~1,60				●	●		●	●	❍		

		Oznaczenie	d (mm)	s (mm)	m (mm)												
	12	LPKN 1203ZZR	12,70	3,18	0,96									❍	❍		

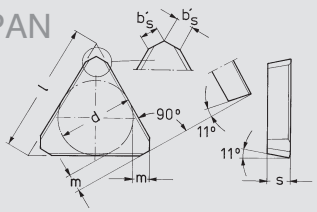
Krawędź ze ścinem

[1)] T = 0,35 x 10°

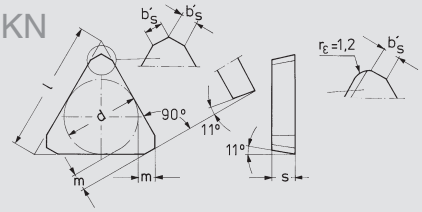
D

TPAN
TPKN
TPKR

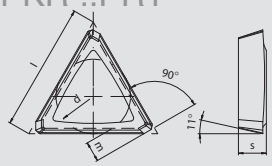
TPAN

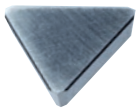
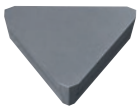
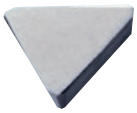


TPKN



TPKR ..PR1



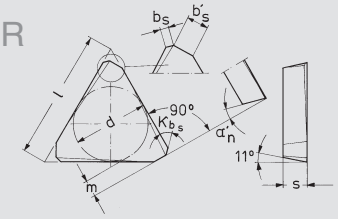
		Oznaczenie	l (mm)	d (mm)	s (mm)	m (mm)	b'$_s$ (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	16	TPAN 1603PPN	16,5	9,525	3,18	2,40	~1,20					❍			●			
	16 22	TPKN 1603PPN TPKN 2204PPN	16,5 22,0	9,525 12,70	3,18 4,76	2,40 3,48	~1,20 ~1,50	❍							❍ ❍			
	16 22 	TPKN 1603PPR TPKN 1603PPL TPKN 2204PPR TPKN 2204PPL	16,5 16,5 22,0 22,0	9,525 9,525 12,70 12,70	3,18 3,18 4,76 4,76	2,40 2,40 3,48 3,48	~1,00 ~1,00 ~1,50 ~1,50	❍ ❍ ❍	● ❍ ●	❍ ❍	● ●	● ● ● ❍	● ● 	● ● ● ●	● ● ● ❍	❍ ❍ ❍	● ❍ ●	❍ ❍ ❍
	16 22	TPKR 1603PPR-PR1 TPKR 2204PDR-PR1	16,5 22,0	9,525 12,70	3,18 4,76	2,42 3,465	~1,23 ~1,26			❍ ❍	● ●	● ●		● ●	● ●	❍ ❍		

D

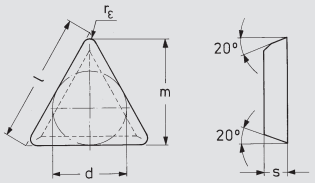
BALDONIT

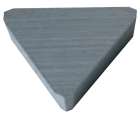
TPKN
TEGN

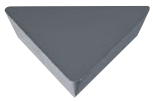
TPKN ..R



TEGN



		Oznaczenie	l (mm)	d (mm)	s (mm)	m (mm)	b_s (mm)	b'_s (mm)	K_{bs} (°)	α'_n (°)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	16	TPKN 1603PPR-A	16,5	9,525	3,18	2,40	~1,00	~1,20	30	11								❍			
	22	TPKN 2204PDR TPKN 2204PDTR[1)]	22,0 22,0	12,70 12,70	4,76 4,76	3,48 3,48	~0,70 ~0,70	~1,40 ~1,40	45 45	15 15	❍				● ❍			● ❍	❍	❍	❍

		Oznaczenie	l (mm)	d (mm)	s (mm)	m (mm)	rε (mm)														
	11 16	TEGN 110304 TEGN 110308 TEGN 160308	11 11 16,5	6,35 6,35 9,525	3,18 3,18 3,18	9,128 8,731 13,494	0,4 0,8 0,8											❍ ❍ ❍	❍ ❍ ❍			

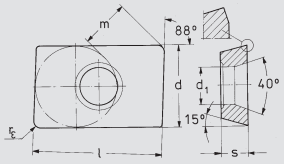
Krawędź ze ścinem

[1)] T = 0,20 x 20°

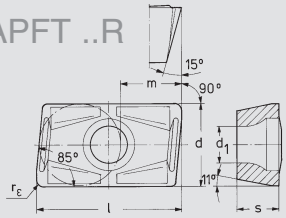
D

ADMT
ADMW
APFT
APKW
CCMX
RPHT

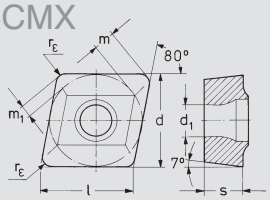
ADMW ..R



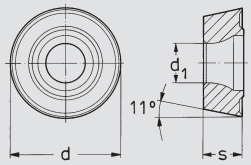
APFT ..R

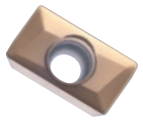


CCMX



RPHT



		Oznaczenie	l (mm)	d (mm)	s (mm)	r_ε (mm)	d_1 (mm)	m (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	15	ADMT 150308TR[1]	15	9,525	3,18	0,8	4,4	5,683	❍							❍			
	15	ADMW 150308R	15	9,525	3,18	0,8	4,4	5,683								❍			
		ADMW 150308TR[2]	15	9,525	3,18	0,8	4,4	5,683								❍			
	16	APFT 1604PDTR[3]	17	9,525	4,76	0,8	4,4	7,21	❍				●		●	●	❍	●	
	16	APFT 1604PDTR-PM1	17	9,525	5,56	0,8	4,4	7,21	❍	❍		●	●		●	●			
	16	APKW 160430TR[4]	17	9,525	4,76	3,0	4,4	6,03								●		❍	
		APKW 160450R	17	9,525	4,76	5,0	4,4	5,07								●			

		Oznaczenie	l (mm)	d (mm)	s (mm)	r_ε (mm)	d_1 (mm)	m (mm)	m_1 (mm)										
	06	CCMX 060204	6,4	6,35	2,38	0,4	2,5	1,543	0,848	●							❍		❍
	08	CCMX 080308	8,1	7,94	3,18	0,8	2,9	1,765	0,970	●				❍			●		❍
	09	CCMX 09T308	9,7	9,525	3,97	0,8	3,4	2,206	1,212	❍	❍			❍			❍		❍
	12	CCMX 120408	12,9	17,70	4,76	0,8	3,8	3,088	1,697	❍	❍			●			●		❍

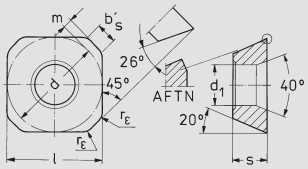
		Oznaczenie	d (mm)	s (mm)	d_1 (mm)														
	08	RPHT 0803MOT[5]	8,0	3,18	3,4	❍				❍									
	10	RPHT 10T3MOT[6]	10,0	3,97	4,4	❍													
	12	RPHT 1204MO	12,0	4,76	4,4	●										❍	❍		

Krawędź ze ścinem

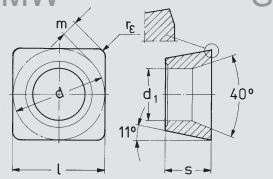
[1] T = 0,10 x 30°
[2] T = 0,15 x 20°
[3] T = 0,40 x 90°
[4] T = 0,20 x 20°
[5] T = 0,14 x 7°
[6] T = 0,12 x 7°

SEHX
SPMT
SPMW
SPMX
TCMT

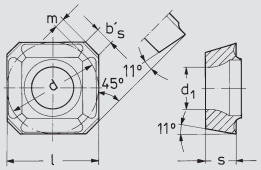
SEHX



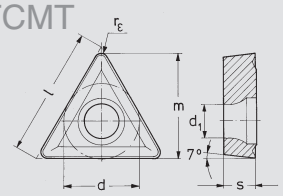
SPMW

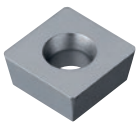


SPMX



TCMT



		Oznaczenie	l=d (mm)	s (mm)	r_ε (mm)	d_1 (mm)	m (mm)	b'_s (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N210	PVD N250	PVD N300	PVD N350	HW SM25T	HW H10S	HW H15X	HW H20S
	12	SEHX 1204AFTN[1)]	12,70	4,76	1,20	5,70	1,50	~2,30	❍							●			
		SEHX 1204AFN	12,70	4,76	1,20	5,70	1,50	~2,30	●							●		●	
	12	SPMW 120408	12,70	4,76	0,8	5,5	2,301	–								●	●		
		SPMW 120408T[1)]	12,70	4,76	0,8	5,5	2,301	–	❍							●			
	06	SPMX 0602AP	6,35	2,38	–	2,5	0,825	~1,0	❍				❍						
	09	SPMX 0903AP	9,525	3,18	–	3,4	1,25	~1,45								❍			

		Oznaczenie	l (mm)	d (mm)	s (mm)	r_ε (mm)	d_1 (mm)	m (mm)											
	16	TCMT 16T304	16,5	9,525	3,97	0,4	4,4	13,891								❍	❍		
		TCMT 16T308	16,5	9,525	3,97	0,8	4,4	13,494	❍							❍			
	22	TCMT 220408-11	22,0	12,70	4,76	0,8	5,5	18,256	❍							●	❍		

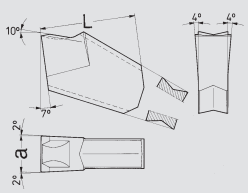
Krawędź ze ścinem

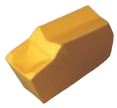
[1)] T = 0,15 x 20°

D

LFMX

LFMX ..N

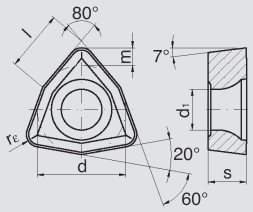


		Oznaczenie	a (mm)	L (mm)	gatunki PVD N435	HW SM25T	HW H15X	HW H20S
	3	LFMX 3N	3,1	11,0	●	❍		❍
	4	LFMX 4N	4,1	11,0	●	❍		❍
	5	LFMX 5N	5,1	11,0	●	❍		❍

D

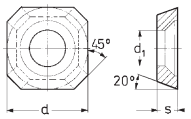
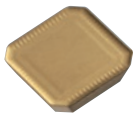
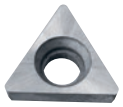
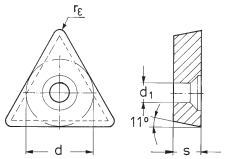
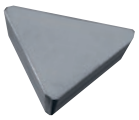
WCMX

WCMX



		Oznaczenie	l (mm)	d (mm)	s (mm)	r_ε (mm)	d_1 (mm)	m (mm)	gatunki: CVD NMP20	CVD NMK20	CVD NMK30	PVD N250	PVD N300	HW SM25T	HW H10S	HW H15X	HW H20S
	03	WCMX 030208	3,47	5,56	2,38	0,8	2,56	1,104			❍	❍					
	04	WCMX 040208	4,0	6,35	2,38	0,8	2,8	1,323			❍	❍					
	05	WCMX 050308	5,07	7,94	3,18	0,8	3,4	1,765			❍	❍					
	06	WCMX 06T308	6,14	9,525	3,97	0,8	3,8	2,205			❍	❍					

D

	Płytki podporowe	d (mm)	s (mm)	rε (mm)	d1 (mm)		Długość boku płytki	
	220.13-621-12	10,30	3,18	–	4,20		12,7	 SEKR SEAN SEKN
	220.13-624-15	12,20	3,18	–	4,20		15,875	
	175.11-624	10,85	3,18	0,60	4,20		22,0	 TPKN TPUN TPGN