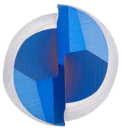
K202102 | FORMMAKER MICRO Z2 R0.3 ADN

Cooling	
Tolerance	d04
Coating	AlphaDura Navy

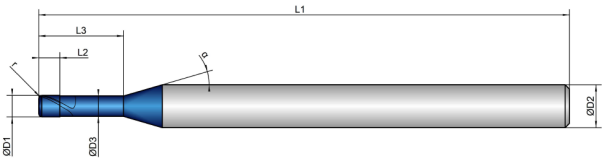
Strategy	HSC, HPC
Application	
Features	HA, R

Expert

- Ultrafine carbide grade developed for machining hardened steels
- Optimized face geometry for long tool life and highest dimensional accuracy
- Reinforced core for milling up to 70 HRC



- Multipass milling of 3D contours



- Tolerance D1: -0.001/-0.006 mm
- Tolerance D3: 0/-0.02 mm
- Radius tolerance r: 0/-0.003 mm (measured from 0-90°)

Roughing

inappropriate — optimal

Finishing

inappropriate — optimal

K202102	D1 mm ⌀	D3 mm ⌀	L2 mm	L3 mm	L1 mm	D2 mm ⌀	z #	r mm	°	α °
1X2	1.0	0.95	1.0	2.0	50.0	4.0	2	0.30	30	16
1X4	1.0	0.95	1.0	4.0	50.0	4.0	2	0.30	30	16
1X6	1.0	0.95	1.0	6.0	50.0	4.0	2	0.30	30	16
1X8	1.0	0.95	1.0	8.0	50.0	4.0	2	0.30	30	16
1X10	1.0	0.95	1.0	10.0	50.0	4.0	2	0.30	30	16
1X12	1.0	0.95	1.0	12.0	54.0	4.0	2	0.30	30	16
1X16	1.0	0.95	1.0	16.0	60.0	4.0	2	0.30	30	16
1X20	1.0	0.95	1.0	20.0	60.0	4.0	2	0.30	30	16
1,2X6	1.2	1.14	1.2	6.0	50.0	4.0	2	0.30	30	16
1,2X12	1.2	1.14	1.2	12.0	54.0	4.0	2	0.30	30	16
1,2X20	1.2	1.14	1.2	20.0	60.0	4.0	2	0.30	30	16
1,5X4	1.5	1.44	1.5	4.0	50.0	4.0	2	0.30	30	16

K202102	D1 mm ø	D3 mm ø	L2 mm	L3 mm	L1 mm	D2 mm ø	z # Z	r mm R	 °	α °
1,5X6	1.5	1.44	1.5	6.0	50.0	4.0	2	0.30	30	16
1,5X8	1.5	1.44	1.5	8.0	50.0	4.0	2	0.30	30	16
1,5X10	1.5	1.44	1.5	10.0	50.0	4.0	2	0.30	30	16
1,5X12	1.5	1.44	1.5	12.0	54.0	4.0	2	0.30	30	16
1,5X16	1.5	1.44	1.5	16.0	54.0	4.0	2	0.30	30	16
1,5X20	1.5	1.44	1.5	20.0	60.0	4.0	2	0.30	30	16
2X4	2.0	1.91	2.0	4.0	50.0	4.0	2	0.30	30	16
2X6	2.0	1.91	2.0	6.0	50.0	4.0	2	0.30	30	16
2X8	2.0	1.91	2.0	8.0	50.0	4.0	2	0.30	30	16
2X10	2.0	1.91	2.0	10.0	50.0	4.0	2	0.30	30	16
2X12	2.0	1.91	2.0	12.0	54.0	4.0	2	0.30	30	16
2X16	2.0	1.91	2.0	16.0	54.0	4.0	2	0.30	30	16
2X20	2.0	1.91	2.0	20.0	60.0	4.0	2	0.30	30	16
2X26	2.0	1.91	2.0	26.0	70.0	4.0	2	0.30	30	16
2,5X10	2.5	2.41	2.5	10.0	50.0	4.0	2	0.30	30	16
2,5X12	2.5	2.41	2.5	12.0	60.0	4.0	2	0.30	30	16
2,5X30	2.5	2.41	2.5	30.0	70.0	4.0	2	0.30	30	16
3X10	3.0	2.92	4.5	10.0	50.0	4.0	2	0.30	30	16
3X12	3.0	2.92	4.5	12.0	50.0	4.0	2	0.30	30	16
3X30	3.0	2.92	4.5	30.0	70.0	4.0	2	0.30	30	16

			Dimension	Ø1x2			Ø1x20			Ø1.2x6			Ø1.2x20		
			Infeed in mm	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.005xD	ae= 0.01xD ap= L2 max	ae= 0.01xD ap= 0.01xD	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.008xD	ae= 0.02xD ap= L2 max	ae= 0.015xD ap= 0.015xD
			Application												
	Material	Hardness in HRC	Feed (mm/Z)	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
H	HARDENED STEEL		Vc (m/min)												
1.1		46-55	110	0.015	0.02	0.022	0.007	0.01	0.012	0.015	0.02	0.022	0.01	0.015	0.017
1.2		56-60	70	0.014	0.019	0.021	0.006	0.009	0.011	0.014	0.019	0.021	0.009	0.014	0.016
1.3		60-65	50	0.012	0.017	0.019	0.005	0.008	0.01	0.012	0.017	0.019	0.007	0.012	0.014
1.4		66-70	40	0.011	0.016	0.018	0.004	0.007	0.009	0.011	0.016	0.018	0.006	0.011	0.013
	Material	Strength (N/mm²)	Feed (mm/Z)	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
M	STAINLESS STEEL		Vc (m/min)												
1.1	ferritic/martensitic	<850	90	0.016	0.021	0.023	0.006	0.011	0.013	0.016	0.021	0.023	0.011	0.016	0.018
2.1	austenitic	<650	75	0.015	0.02	0.022	0.005	0.01	0.012	0.015	0.02	0.022	0.01	0.015	0.017
2.2	austenitic	<750	70	0.013	0.018	0.02	0.004	0.008	0.01	0.013	0.018	0.02	0.008	0.013	0.015
3.1	DUPLEX STEEL | super austenitic	<1100	50	0.012	0.017	0.019	0.003	0.007	0.009	0.012	0.017	0.019	0.007	0.012	0.014
N	COPPER		Vc (m/min)												
	Tungsten Copper (WCu)	<700	110	0.016	0.021	0.023	0.006	0.011	0.013	0.016	0.021	0.023	0.011	0.016	0.018
P	STEEL		Vc (m/min)												
1.1	unalloyed	<500	190	0.018	0.025	0.027	0.008	0.015	0.017	0.02	0.025	0.027	0.015	0.02	0.022
1.2-1.5	unalloyed	<1100	180	0.018	0.025	0.027	0.008	0.015	0.017	0.02	0.025	0.027	0.015	0.02	0.022
2.1-2.2	low-alloyed	<950	170	0.017	0.023	0.024	0.007	0.013	0.015	0.018	0.023	0.025	0.013	0.018	0.02
2.3-2.4	low-alloyed	<1300	150	0.017	0.023	0.024	0.007	0.013	0.015	0.018	0.023	0.025	0.013	0.018	0.02
3.1-3.2	high-alloyed	<1100	150	0.016	0.021	0.023	0.006	0.011	0.013	0.016	0.021	0.023	0.011	0.016	0.018
3.3	high-alloyed	<1400	130	0.015	0.02	0.022	0.005	0.01	0.012	0.015	0.02	0.022	0.01	0.015	0.017
K	CASTINGS		Vc (m/min)												
1.1-1.2	Grey cast iron	<1000	190	0.018	0.025	0.027	0.008	0.015	0.017	0.02	0.025	0.027	0.015	0.02	0.022
2.1-2.2	Modular cast iron	<850	180	0.017	0.023	0.025	0.007	0.013	0.015	0.018	0.023	0.025	0.013	0.018	0.02
3.1-3.2	Malleable cast iron	<800	170	0.017	0.023	0.025	0.007	0.013	0.015	0.018	0.023	0.025	0.013	0.018	0.02

ADVICE | The values marked in turquoise are side applications!
Values in the table are the shortest and the longest overhang length (L3) of each dimension;
Please calculate fz, ap and ae depending on the given values. ae/ap(max) = 0.5x corner radius!

			Dimension	Ø1.5x4			Ø1.5x20			Ø2x4			Ø2x26		
			Infeed in mm	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.02xD	ae= 0.04xD ap= L2 max	ae= 0.04xD ap= 0.04xD	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.03xD	ae= 0.06xD ap= L2 max	ae= 0.05xD ap= 0.05xD
			Application												
	Material	**Hardness in HRC**	**Feed (mm/Z)**	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
H	HARDENED STEEL		**Vc (m/min)**												
1.1		46-55	110	0.017	0.022	0.024	0.01	0.015	0.017	0.025	0.03	0.032	0.02	0.025	0.027
1.2		56-60	70	0.016	0.021	0.022	0.009	0.014	0.016	0.023	0.028	0.03	0.019	0.024	0.026
1.3		60-65	50	0.014	0.019	0.02	0.007	0.012	0.014	0.021	0.026	0.028	0.018	0.023	0.025
1.4		66-70	40	0.013	0.018	0.019	0.006	0.011	0.013	0.019	0.025	0.027	0.017	0.022	0.024

	Material	**Strength (N/mm²)**	**Feed (mm/Z)**	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
M	STAINLESS STEEL		**Vc (m/min)**												
1.1	ferritic/martensitic	<850	90	0.018	0.023	0.025	0.011	0.016	0.018	0.026	0.031	0.033	0.021	0.026	0.028
2.1	austenitic	<650	75	0.017	0.022	0.024	0.01	0.015	0.017	0.024	0.029	0.031	0.019	0.025	0.027
2.2	austenitic	<750	70	0.015	0.02	0.022	0.008	0.013	0.015	0.022	0.027	0.029	0.017	0.024	0.026
3.1	DUPLEX STEEL | super austenitic	<1100	50	0.014	0.019	0.021	0.007	0.012	0.014	0.02	0.025	0.027	0.015	0.023	0.025
N	COPPER		**Vc (m/min)**												
	Tungsten Copper (WCu)	<700	110	0.018	0.023	0.025	0.011	0.016	0.018	0.026	0.031	0.033	0.021	0.026	0.028
P	STEEL		**Vc (m/min)**												
1.1	unalloyed	<500	190	0.022	0.027	0.029	0.015	0.02	0.022	0.03	0.037	0.039	0.025	0.032	0.034
1.2-1.5	unalloyed	<1100	180	0.022	0.027	0.029	0.015	0.02	0.022	0.03	0.037	0.039	0.025	0.032	0.034
2.1-2.2	low-alloyed	<950	170	0.02	0.025	0.027	0.013	0.018	0.02	0.028	0.035	0.037	0.023	0.03	0.032
2.3-2.4	low-alloyed	<1300	150	0.02	0.025	0.027	0.013	0.018	0.02	0.028	0.035	0.037	0.023	0.03	0.032
3.1-3.2	high-alloyed	<1100	150	0.018	0.023	0.025	0.011	0.016	0.018	0.026	0.032	0.034	0.021	0.027	0.029
3.3	high-alloyed	<1400	130	0.017	0.022	0.024	0.01	0.015	0.017	0.025	0.03	0.032	0.02	0.025	0.027
K	CASTINGS		**Vc (m/min)**												
1.1-1.2	Grey cast iron	<1000	190	0.022	0.027	0.029	0.015	0.02	0.022	0.03	0.037	0.039	0.025	0.032	0.034
2.1-2.2	Modular cast iron	<850	180	0.02	0.025	0.027	0.013	0.018	0.02	0.028	0.035	0.037	0.023	0.03	0.032
3.1-3.2	Malleable cast iron	<800	170	0.02	0.025	0.027	0.013	0.018	0.02	0.028	0.035	0.037	0.023	0.03	0.032

ADVICE | The values marked in turquoise are side applications!
Values in the table are the shortest and the longest overhang length (L3) of each dimension;
Please calculate fz, ap and ae depending on the given values.  ae/ap(max) = 0.5x corner radius!

			Dimension	Ø2.5x10			Ø2.5x30			Ø3x10			Ø3x30		
			Infeed in mm	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.02xD	ae= 0.04xD ap= L2 max	ae= 0.04xD ap= 0.04xD	ae= 1xD ap= 0.05xD	ae= 0.1xD ap= L2 max	ae= 0.1xD ap= 0.1xD	ae= 1xD ap= 0.03xD	ae= 0.05xD ap= L2 max	ae= 0.05xD ap= 0.05xD
			Application												
	Material	Hardness in HRC	Feed (mm/Z)	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
H	HARDENED STEEL		Vc (m/min)												
1.1		46-55	110	0.025	0.03	0.032	0.02	0.025	0.027	0.027	0.032	0.034	0.017	0.022	0.024
1.2		56-60	70	0.023	0.028	0.03	0.019	0.024	0.026	0.025	0.03	0.032	0.015	0.02	0.022
1.3		60-65	50	0.021	0.026	0.028	0.018	0.023	0.025	0.023	0.028	0.03	0.013	0.018	0.02
1.4		66-70	40	0.019	0.025	0.027	0.017	0.022	0.024	0.021	0.026	0.028	0.011	0.016	0.018
	Material	Strength (N/mm²)	Feed (mm/Z)	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz
M	STAINLESS STEEL		Vc (m/min)												
1.1	ferritic/martensitic	<850	90	0.026	0.031	0.033	0.021	0.026	0.028	0.028	0.033	0.034	0.018	0.023	0.025
2.1	austenitic	<650	75	0.024	0.029	0.031	0.019	0.024	0.026	0.026	0.031	0.033	0.016	0.021	0.023
2.2	austenitic	<750	70	0.022	0.027	0.029	0.017	0.022	0.024	0.024	0.029	0.031	0.014	0.019	0.021
3.1	DUPLEX STEEL | super austenitic	<1100	50	0.02	0.026	0.028	0.016	0.02	0.022	0.022	0.027	0.029	0.012	0.017	0.019
N	COPPER		Vc (m/min)												
	Tungsten Copper (WCu)	<700	110	0.026	0.031	0.033	0.021	0.026	0.028	0.028	0.033	0.034	0.018	0.023	0.025
P	STEEL		Vc (m/min)												
1.1	unalloyed	<500	190	0.03	0.036	0.038	0.025	0.031	0.033	0.032	0.038	0.04	0.022	0.028	0.03
1.2-1.5	unalloyed	<1100	180	0.03	0.036	0.038	0.025	0.031	0.033	0.032	0.038	0.04	0.022	0.028	0.03
2.1-2.2	low-alloyed	<950	170	0.028	0.034	0.036	0.023	0.029	0.031	0.03	0.036	0.038	0.02	0.026	0.028
2.3-2.4	low-alloyed	<1300	150	0.028	0.034	0.036	0.023	0.029	0.031	0.03	0.036	0.038	0.02	0.026	0.028
3.1-3.2	high-alloyed	<1100	150	0.026	0.031	0.033	0.021	0.026	0.028	0.028	0.033	0.035	0.018	0.023	0.025
3.3	high-alloyed	<1400	130	0.025	0.03	0.032	0.02	0.025	0.027	0.027	0.032	0.034	0.017	0.022	0.024
K	CASTINGS		Vc (m/min)												
1.1-1.2	Grey cast iron	<1000	190	0.03	0.036	0.038	0.025	0.031	0.033	0.032	0.038	0.04	0.022	0.028	0.03
2.1-2.2	Modular cast iron	<850	180	0.028	0.034	0.036	0.023	0.029	0.031	0.03	0.036	0.038	0.02	0.028	0.028
3.1-3.2	Malleable cast iron	<800	170	0.028	0.034	0.036	0.023	0.029	0.031	0.03	0.036	0.038	0.02	0.026	0.028

ADVICE | The values marked in turquoise are side applications!
Values in the table are the shortest and the longest overhang length (L3) of each dimension;
Please calculate fz, ap and ae depending on the given values.  ae/ap(max) = 0.5x corner radius!

EXPLANATION

APPLICATIONS

Multipass milling	Trimming	Deburring	Engraving
Corner rounding	Full slot milling	Forward and backward deburring	

COOLINGS

Air-cooling	Dry machining	Oil cooling	Cooling Lubricant
Minimum quantity lubrication			

FEATURES

0,5xD	1xD	1,5xD	2xD
2,5xD	3xD	3,5xD	4xD
5xD	Center cutting	Non-center cutting	Without Weldon
With Weldon	Internal cooling	Dynamic helical pitch	Chip breaker
Unequal tooth pitch	Roughing teeth	Helical immersion	Feed directions x,y
Feed directions x, y, z	Feed directions x, y, (z)	Corner radius	Corner bevel
Sharp edged			

STRATEGY

Extended Trochoidal Cutting	High Performance Cutting	High Speed Cutting	Multi Task Cutting
Universal Machining			

PROPERTIES

Cutting diameter	Small cutting diameter	Large cutting diameter	Undercut diameter
Cutting length	Total bevel length	Undercut length	Total length
Shank diameter	Number of teeth	Corner radius	Corner bevel
Programming radius	Maximum cutting depth	Helical angle	Alpha angle

APPLICATION TABLE

The values given in the application table are only guidelines. These values are largely dependent on the machining situation and application.

FIGURES

All technical drawings and photographs are given as an example. The product may deviate from the original in terms of colour and dimensions.

H 1.1-1.4 **HARDENED STEEL |** 46–70 HRC

Materialnumber	Germany | DIN	Europe | EN	France | AFNOR	Great Britain | BS	Italy | UNI	Sweden | SIS	Spain | UNE	Japan | JIS	USA | AISI
1.2311	40CrMnMo7			BP 20	35 CrMo 8 KU				P 20
1.2312	40CrMnMoS86		40 CMD 8						
1.2316	X36CrMo17	X 36 CrMo 17	X38CrMo 16 1		X 38 CrMo 16 1 KU		X 38 CrMo 16		D-4
1.2365	X32CrMoV33	X 32CrM0V 12 28	32 DCV 28	BH 10	30 CrMoV 12 27 KU		F.5313	SKD 7	H 10
1.2567	X30WCrV53	X 30 WCrV 5 3	Z 32 WCV 5		X 30 WCrV 5 3 KU			SKD 4	
1.2581	X30WCrV93	X 30 WCrV 9 3	Z 30 WCV 9	BH 21	X 30 WCrV 9 3 KU		X 30 WCrV 9	SKD 5	H 21
1.2738	40CrMnNiMo864		40 CMND 8				F.5303		
1.2885	X32CrMoCoV333		30 DCKV 28						
1.4028	X30Cr13	X 30 Cr 13	Z 30 Cr 13	420 S 45	X 30 Cr 13	2304	X 30 Cr 13	SUS 420 J2	420
1.4031	X40Cr13	X 40 Cr 13	Z 40 C 14		X 40 Cr 14	2304	X 40 Cr 13	SUS 420	420
1.4034	X45Cr13	X 45 Cr 13	Z 40 C 14	420 S 45	X 40 Cr 14		X 46 Cr 13		420
1.4112	X90CrMoV18	X 90 CrMoV 18	Z 3 CT 1 2	409 S 1 9	X 6 Cr Ti 1 2			SUS 440 B	440 B
1.5122	37 MnSi 4		38 MS 5						
1.6358	X2NiCoMoTi 1895								
1.6582	34CrNiMo6		35 NCD 6	817 M 40	35 NiCrMo 6 (KW)	2541	F.1270	SNCM 447	4340
1.7003	38 Cr 2		38 C 2	120 M 36	38 Cr 2		F.1200		
1.7006	46 Cr 2		45 C 2		4 5Cr 2				5045
1.7030	28 Cr 4			530 A 30					5130
1.7176	55 Cr 3		55 C 3	525 A 58	55 Cr 3	2253	F.1431	SUP 9	5155
1.0961	60SiCr7	60 SiCr 8	60 SC 7	250 A 61	60 SiCr 8		60 SiCr 8	SUP 7	9262
1.1248	Ck 75		XC 75	060 A 78		1774			1078
1.1273	90Mn4			060 A 96				SUP 4	1090
1.2083	X42Cr13	X 42 Cr 13	Z 40 C 14		X 41 Cr 13 KU	2314		SUS 420 J2	420
1.2323	48CrMoV67		45 CDV 6						
1.2343	X38CrMoVH1	X 38 CrMoV 5 1	Z 38 CDV 5	BH 11	X 37 CrMoV 5 1 KU		X 37 CrMoV 5	SKD 6	H 11
1.2367	X38CrMoV53		Z 38 CDV 5 3						
1.2510	100 MnCrW 4		90 MWCV 5	B0 1	95 MnWCr 5 KU	2140	F.5220	SKS 3	0 1
1.2542	45WCrV7	45 WCrV 8		BS 1	45 WCrV 8 KU	2710	45 WCrSi 8		S1
1.2550	60 WCrV 7		55 WC 20		55 WCrV 8 KU				
1.2606	X37CrMoW51		Z 35 CWDV 5	BH 12	X 35 CrMoW 05 KU		F.537	SKD 62	H 12
1.2711	54 NiCrMoV		55 NCDV 6						
1.2713	55 NiCrMoV 6		55 NCDV 7				F.520.S	SKT 4	L 6
1.2764	X19NiCrMo4								
1.2767	X45NiCrMo4	40 NiCrMo 4	Y 35 NCD 16		42 NiCrMo 15 7 KU				A 9
1.4109	X65CrMo14	X 70 CrMo 15	Z 70 CD 14					SUS 440 A	440 A
1.1157	40Mn4		35 M 5	150 M 36					1039
1.1231	Ck 67		XC 68	060 A 67	C 70	1770			1070
1.1274	Ck 101		XC 100	060 A 96		1870		SUP 4	1095
1.2080	X210Cr12		Z 200 C 12		X 210 Cr 13 KU			SKD 1	D 3
1.2101	62SiMnCr4								
1.2162	21MnCr5	21 MnCr 5	20 NC 5					SCR 420 H	
1.2201	X165CrV12								
1.2210	115CrV3	107 CrV 3 KU	100 C 3		107 CrV 3 KU		F.520.L		L2
1.2341	X6CrMo4								
1.2379	X155CrVMo121	X 153 CrMoV 12	Z 160 CDV 12	BD 2	X 155 CrVMo 12 1 KU	2310		SKD 11	D 2
1.2419	105WCr6	105 WCr 5	105 WC 13		107 WcR 5 KU	2140	105 WCr 5	SKS 31	
1.2601	X165CrMoV12	X 165 CrMoV 12			X 165 CrMoW 12 KU	2310	X 160 CrMoV 12		
1.2721	50NiCr13								
1.2735	15NiCr14		10 NC 12					SNC 22	
1.2833	100V1		Y1 105 V	BW 2	102 V 2 KU			SKS 43	W 210
1.2842	90MnCrV8	90 MnV 8	90 MV 8	BO 2	90 MnVCr 8 KU				0 2
1.3505	100Cr6		100 C 6	534 A 99	100 Cr 6	2258	F.1310	SUJ 2	52100
1.4125	X105CrMo17		Z 100 CD 17		X 105 CrMo 17			SUS 440 C	440 C
1.8161	58CrV4								
1.1520	C70W1								
1.2363	X100CrMoV51	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU	2260	X 100 CrMoV 5	SKD 12	A 2
1.2436	X210CrW12	X 210 CrW 12	Z 210 CW1 2		X 215 CrW 12 1 KU	2312	X 210 CrW 12	SKD 2	
1.2880	X165CrCoMo12								
1.3202	S12145	HS12-1-5-5		BT 15	HS 12-1-5-5		12-1-5-5		T 15
1.3207	S104310	HS10-4-3-10	Z130WKCDV10-10-04-04	BT 42	HS 10-4-3-10		10-4-3-10	SKH 57	M 44
1.3243	S6525	HS6-5-2-5	KCV 06-05-05-04-02		HS 6-5-2-5	2723	6-5-2-5	SKH 55	M 35
1.3246	S7425	HS1-8-1	Z110 WKCDV 07-05-04	T 11341	HS 7-4-2-5		7-4-2-5		M 41
1.3247	S21018	HS2-9-1-8	Z110 DKCWV 09-08-04	BM 42	HS 2-9-1-8		2-10-1-8		M 42
1.3249	S2928			BM 34			2-9-2-8		

Materialnumber	Germany | DIN	Europe | EN	France | AFNOR	Great Britain | BS	Italy | UNI	Sweden | SIS	Spain | UNE	Japan | JIS	USA | AISI
1.3257	S181215								
1.3333	S332	HS 3-3-2			HS 3-3-2				
1.3343	S652	HS6-5-3	Z85 WDCV 06-05-04-02	BM 2	HS 6-5-2	2722	6-5-2	SKH 51	M2
1.3344	S653		Z120 WDCV 06-05-04-03				6-5-3	SKH 52	M 3 Cl.2
1.3346	S291	HS1-8-1	Z85 DCWV 08-04-02-01	BM 1	HS 1-8-1				M1
1.3348	S292	HS2-9-2	Z100 DCWV 09-04-02-02		HS 2-9-2	2782	2-9-2		M 7
1.3355	S1801	HS18-0-1	Z80 WCV 18-04-01	BT 1	HS 18-0-1		18-0-1	SKH 2	T 1
1.1654	C 110 W								

Technical formulas

Calculate cutting speed (m/min)

$$Vc = \frac{D * \pi * n}{1000}$$

Calculate rotational speed (rpm)

$$n = \frac{Vc * 1000}{D * \pi}$$

Calculate feed rate (mm/min)

$$Vf = n * z * fz$$

Calculate feed per tooth (mm/number of teeth)

$$fz = \frac{Vf}{n * z}$$

Calculate chip removal rate (cm^3/min)

$$Q = \frac{ap * ae * Vf}{1000}$$

Calculate average chip thickness (mm)

$$hm = fz * \frac{\sqrt{ae}}{D}$$

Explanation of terms

Vc	Cutting speed	in m/min
n	Rotational speed	in rpm
Vf	Feed rate	in mm/min
Fz	Feed per tooth	in mm/number of teeth
z	Number of teeth (cutting)	
ap	Depth of cut	in mm
ae	Width of cut	in mm
hm	Average chip thickness	in mm
Q	Chip removal rate	in cm^3/min
D	Diameter of tool	in mm