

passion
for precision



Multicut XF

Extreme Finishing



Multicut **XF**

EXtreme Finishing

The **Multicut XF** is the best tool for finishing performance in tolerance, surface finish, and productivity. Performance to price ratio and improved surface finish make it easy to see how the **Multicut XF** can beat standard finishing tools. Extended tool-life also makes for more reliable finishing in automated applications. In some applications, it is even possible to substitute grinding by using **Multicut XF**.

The features of the **Multicut XF** including, extremely high helix, unequal spacing, odd number of teeth, and a large core diameter make the **Multicut XF** an extremely smooth cutting tool.

Standard finishing endmills tend to vibrate in many finishing operations, **Multicut XF** with our proven speeds and feeds does not, leaving you a perfect finish.

The advantages:

- **Extreme dimensional and positional accuracy**
- **Extreme surface quality on the part**
- **Extreme process security**
- **No vibrations**
- **Shorter machining times**
- **Lower production costs**



Reduction of the machining costs per workpiece

Feed rates with the Multicut XF are typically 50% higher than standard tools in finishing operations. Additionally, many finishing processes can be performed in only one step, leading to a 30% reduction of machining costs.

Cutting tooling costs

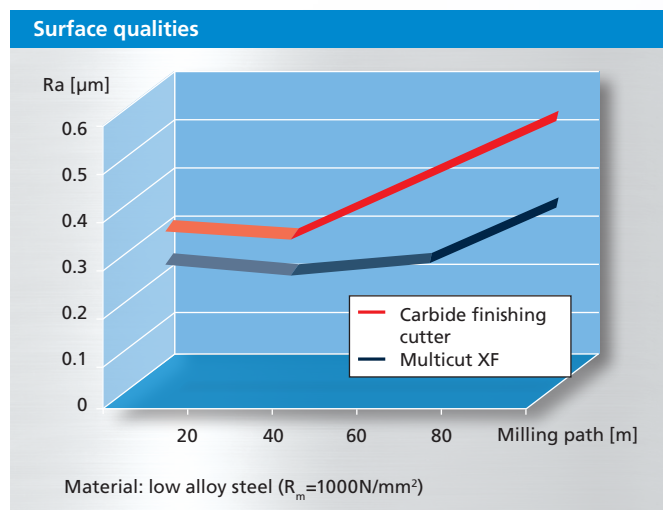
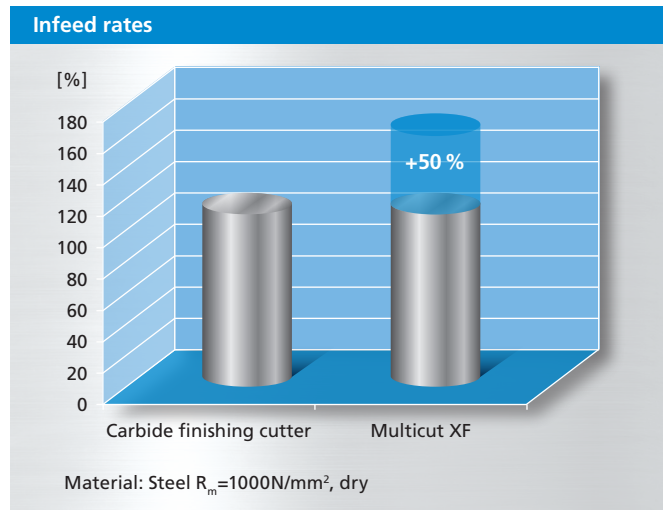
Due to the features in the Multicut XF, better surface qualities can be achieved over a longer tool-life. The high helix angle distributes the wear over a much longer cutting edge. Extending the tool-life by at least 50%, which results in a reduction of tool costs by more than 30%.

The best surface quality of the components

The very robust and rigid geometry enables a more exact dimensional accuracy for the workpiece. At the same time, the workpieces are finished with very high surface qualities, which are lower than $Ra=0.4$ even after a milling time of 90 minutes. Thanks to the processes safety at the highest surface removal volume, more parts per tool can be machined. This increases the degree of automation and reduces the number of tools.

Resharpening

The **Multicut XF** can be resharpened several times, if handled by experts, making it even more attractive to you.



ToolExpert 2.0, the easy Online Calculator for Speeds and Feeds

In today's world you have to be productive and accurate to stay alive. FRAISA not only develops high-quality, high-performance tools, but also online calculators that help you get the most out of those tools. Tool Expert 2.0 is a user-friendly online tool that helps you select the right tool to get proven cutting data, and buy online.

FRAISA ToolExpert offers numerous advantages:

- **Accurate:** proven cutting parameters based on tool & material
- **Fast:** find application parameters with just a few clicks
- **Easy:** access data online at any time and from anywhere
- **Extensive:** cutting data for FRAISA tools from a data-base of more than 10,000 materials

[4]

Try out our ToolExpert 2.0 right now and find the cutting data for the work with Multicut XF



Another service of FRAISA – machining workshops in the ToolLab

Transfer of Know-how through instruction and training courses



No-one is born a master in a trade, even in high-tech industries: knowledge has to be acquired, new technologies have to be learned and new ideas tested.

Therefore, FRAISA not only produces tools, it also educates users in its modern ToolSchool, on how to use them most effectively.

More than 1,500 customers worldwide attend the FRAISA ToolSchool every year.

For the North American market, FRAISA USA has built the ToolLab to bring training opportunity to the American customers. In the ToolLab, FRAISA USA trains their customers and demonstrates state-of-the-art cutting tool technology.

We will be happy to provide you with information about our upcoming FRAISA machining workshops.

[5]



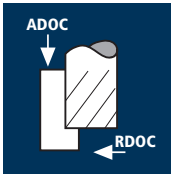
Where is it possible to ask questions concerning the product?

If you have any question, please send an email to info@fraisausa.com. You may also directly contact our local customer consultant.

The FRAISA application engineers will be happy to advise you.

For further information, please refer to www.fraisa.com/us

Application



Material

Steel
24 - 34 HRC



d1 [in]	fl	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM [min ⁻¹]	Feed [in/min]
1/8	5	590	0.0004	0.188	0.002	18030	36
3/16	5	590	0.0006	0.281	0.003	12020	36
1/4	5	590	0.0008	0.375	0.004	9015	36
3/8	7	590	0.0011	0.563	0.005	6010	46
1/2	7	590	0.0015	0.750	0.007	4505	47
5/8	7	590	0.0018	0.938	0.009	3605	45
3/4	7	590	0.0021	1.125	0.011	3005	44
1	7	590	0.0028	1.500	0.014	2255	44

Steel
34 - 42 HRC



1/8	5	490	0.0004	0.188	0.002	14975	30
3/16	5	490	0.0006	0.281	0.003	9980	30
1/4	5	490	0.0008	0.375	0.004	7485	30
3/8	7	490	0.0011	0.563	0.005	4990	38
1/2	7	490	0.0015	0.750	0.007	3745	39
5/8	7	490	0.0018	0.938	0.009	2995	38
3/4	7	490	0.0021	1.125	0.011	2495	37
1	7	490	0.0028	1.500	0.014	1870	37

Hardened tool steel
52 - 56 HRC



1/8	5	395	0.0003	0.188	0.002	12070	18
3/16	5	395	0.0005	0.281	0.003	8045	20
1/4	5	395	0.0007	0.375	0.004	6035	21
3/8	7	395	0.0010	0.563	0.005	4025	28
1/2	7	395	0.0012	0.750	0.007	3020	25
5/8	7	395	0.0016	0.938	0.009	2415	27
3/4	7	395	0.0019	1.125	0.011	2010	27
1	7	395	0.0025	1.500	0.014	1510	26

Hardened tool steel
56 - 60 HRC



1/8	5	330	0.0003	0.188	0.002	10085	15
3/16	5	330	0.0005	0.281	0.003	6725	17
1/4	5	330	0.0007	0.375	0.004	5040	18
3/8	7	330	0.0010	0.563	0.005	3360	24
1/2	7	330	0.0012	0.750	0.007	2520	21
5/8	7	330	0.0016	0.938	0.009	2015	23
3/4	7	330	0.0019	1.125	0.011	1680	22
1	7	330	0.0025	1.500	0.014	1260	22

Material

Titanium alloys
>300 HB
[Ti6Al4V]



1/8	5	230	0.0004	0.188	0.002	7030	14
3/16	5	230	0.0006	0.281	0.003	4685	14
1/4	5	230	0.0008	0.375	0.004	3515	14
3/8	7	230	0.0011	0.563	0.005	2345	18
1/2	7	230	0.0015	0.750	0.007	1755	18
5/8	7	230	0.0018	0.938	0.009	1405	18
3/4	7	230	0.0021	1.125	0.011	1170	17
1	7	230	0.0028	1.500	0.014	880	17

Stainless steel
[Cr-Ni/304]



1/8	5	260	0.0004	0.188	0.002	7945	16
3/16	5	260	0.0006	0.281	0.003	5295	16
1/4	5	260	0.0008	0.375	0.004	3975	16
3/8	7	260	0.0011	0.563	0.005	2650	20
1/2	7	260	0.0015	0.750	0.007	1985	21
5/8	7	260	0.0018	0.938	0.009	1590	20
3/4	7	260	0.0021	1.125	0.011	1325	19
1	7	260	0.0028	1.500	0.014	995	20

Hardened tool steel
60 - 64 HRC



1/8	5	200	0.0003	0.188	0.002	6110	9
3/16	5	200	0.0005	0.281	0.003	4075	10
1/4	5	200	0.0007	0.375	0.004	3055	11
3/8	7	200	0.0010	0.563	0.005	2035	14
1/2	7	200	0.0012	0.750	0.007	1530	13
5/8	7	200	0.0016	0.938	0.009	1220	14
3/4	7	200	0.0019	1.125	0.011	1020	14
1	7	200	0.0025	1.500	0.014	765	13

Hardened tool steel
64 - 70 HRC

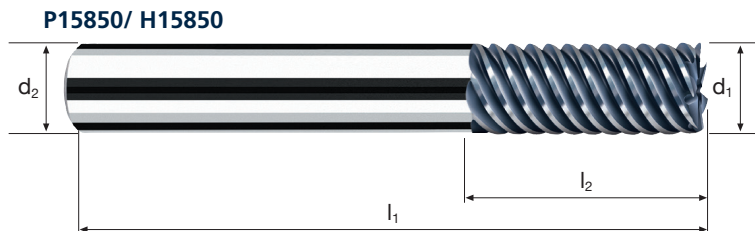
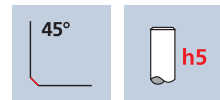


1/8	5	80	0.0003	0.188	0.002	2445	4
3/16	5	80	0.0005	0.281	0.003	1630	4
1/4	5	80	0.0007	0.375	0.004	1220	4
3/8	7	80	0.0010	0.563	0.005	815	6
1/2	7	80	0.0012	0.750	0.007	610	5
5/8	7	80	0.0016	0.938	0.009	490	5
3/4	7	80	0.0019	1.125	0.011	405	5
1	7	80	0.0025	1.500	0.014	305	5

Cylindrical end mills Multicut XF

Finishing, normal version

HM	λ 65°
XA	γ 8°

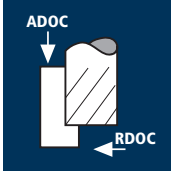


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium
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Example: Order-N°.							Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
							P	15850	188		P15850	H15850
Diameter Code	d1 e8	d2 h6	l1	l2	45°	fl						
188	1/8	1/4	2 1/4	1/4	-	5						
252	3/16	1/4	2 1/4	3/8	-	5						
312	1/4	1/4	2 1/2	3/4	0.004	5	•	•	•	•	•	
432	3/8	3/8	2 1/2	7/8	0.006	7	•	•	•	•	•	
530	1/2	1/2	3	1	0.006	7	•	•	•	•	•	
605	5/8	5/8	3 1/2	1 1/4	0.006	7	•	•	•	•	•	
652	3/4	3/4	4	1 1/2	0.006	7	•	•	•	•	•	
775	1	1	5	2	0.008	7	•	•	•	•	•	

Example: Order-N°.								Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
								P	15250	180		P15250	H15250
Ø Code	d1 e8	d2 h5	l1	l2	45°	α	z						
180	3	6	57	8	-	6.0°	5						
220	4	6	57	11	-	4.0°	5						
260	5	6	57	13	-	2.0°	5						
300	6	6	57	13	0.15	0.0°	5	•	•	•	•		
391	8	8	63	19	0.15	0.0°	7	•	•	•	•		
450	10	10	72	22	0.20	0.0°	7	•	•	•	•		
501	12	12	83	26	0.20	0.0°	7	•	•	•	•		
610	16	16	92	32	0.20	0.0°	7	•	•	•	•		
682	20	20	104	38	0.20	0.0°	7	•	•	•	•		

Application

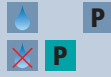


Material

Steel
24 - 34 HRC



Steel
34 - 42 HRC



Hardened tool steel
52 - 56 HRC



Hardened tool steel
56 - 60 HRC



d1 [in]	fl	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM [min ⁻¹]	Feed [in/min]
1/8	5	490	0.0004	0.313	0.002	14975	30
3/16	5	490	0.0005	0.469	0.003	9980	25
1/4	5	490	0.0006	0.625	0.004	7485	22
3/8	7	490	0.0011	0.938	0.005	4990	38
1/2	7	490	0.0015	1.250	0.007	3745	39
5/8	7	490	0.0018	1.563	0.009	2995	38
3/4	7	490	0.0021	1.875	0.011	2495	37
1	7	490	0.0028	2.500	0.014	1870	37
1 1/4	9	490	0.0031	3.125	0.018	1495	42
1/8	5	395	0.0004	0.313	0.002	12070	24
3/16	5	395	0.0005	0.469	0.003	8045	20
1/4	5	395	0.0006	0.625	0.004	6035	18
3/8	7	395	0.0011	0.938	0.005	4025	31
1/2	7	395	0.0015	1.250	0.007	3020	32
5/8	7	395	0.0018	1.563	0.009	2415	30
3/4	7	395	0.0021	1.875	0.011	2010	30
1	7	395	0.0028	2.500	0.014	1510	30
1 1/4	9	395	0.0031	3.125	0.018	1205	34
1/8	5	330	0.0003	0.313	0.002	10085	15
3/16	5	330	0.0004	0.469	0.003	6725	13
1/4	5	330	0.0006	0.625	0.004	5040	15
3/8	7	330	0.0010	0.938	0.005	3360	24
1/2	7	330	0.0012	1.250	0.007	2520	21
5/8	7	330	0.0016	1.563	0.009	2015	23
3/4	7	330	0.0019	1.875	0.011	1680	22
1	7	330	0.0025	2.500	0.014	1260	22
1 1/4	9	330	0.0028	3.125	0.018	1010	25
1/8	5	260	0.0003	0.313	0.002	7945	12
3/16	5	260	0.0004	0.469	0.003	5295	11
1/4	5	260	0.0006	0.625	0.004	3975	12
3/8	7	260	0.0010	0.938	0.005	2650	19
1/2	7	260	0.0012	1.250	0.007	1985	17
5/8	7	260	0.0016	1.563	0.009	1590	18
3/4	7	260	0.0019	1.875	0.011	1325	18
1	7	260	0.0025	2.500	0.014	995	17
1 1/4	9	260	0.0028	3.125	0.018	795	20

Material

Titanium alloys
>300 HB
[Ti6Al4V]



Stainless steel
[Cr-Ni/304]



Hardened tool steel
60 - 64 HRC



Hardened tool steel
64 - 70 HRC




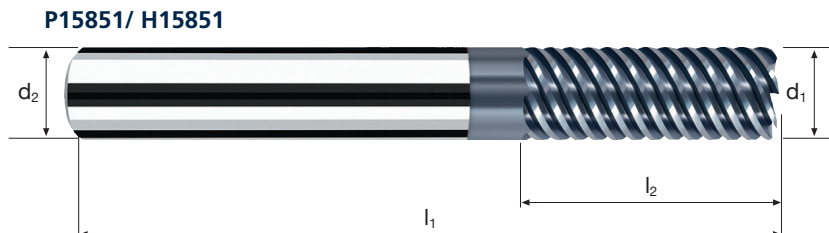
d1 [in]	fl	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM [min ⁻¹]	Feed [in/min]
1/8	5	195	0.0004	0.313	0.002	5960	12
3/16	5	195	0.0006	0.469	0.003	3975	12
1/4	5	195	0.0006	0.625	0.004	2980	9
3/8	7	195	0.0011	0.938	0.005	1985	15
1/2	7	195	0.0015	1.250	0.007	1490	16
5/8	7	195	0.0018	1.563	0.009	1190	15
3/4	7	195	0.0021	1.875	0.011	995	15
1	7	195	0.0028	2.500	0.014	745	15
1 1/4	9	195	0.0031	3.125	0.018	595	17
1/8	5	230	0.0004	0.313	0.002	7030	14
3/16	5	230	0.0006	0.469	0.003	4685	14
1/4	5	230	0.0006	0.625	0.004	3515	11
3/8	7	230	0.0011	0.938	0.005	2345	18
1/2	7	230	0.0015	1.250	0.007	1755	18
5/8	7	230	0.0018	1.563	0.009	1405	18
3/4	7	230	0.0021	1.875	0.011	1170	17
1	7	230	0.0028	2.500	0.014	880	17
1 1/4	9	230	0.0031	3.125	0.018	705	20
1/8	5	165	0.0003	0.313	0.002	5040	8
3/16	5	165	0.0004	0.469	0.003	3360	7
1/4	5	165	0.0006	0.625	0.004	2520	8
3/8	7	165	0.0010	0.938	0.005	1680	12
1/2	7	165	0.0012	1.250	0.007	1260	11
5/8	7	165	0.0016	1.563	0.009	1010	11
3/4	7	165	0.0019	1.875	0.011	840	11
1	7	165	0.0025	2.500	0.014	630	11
1 1/4	9	165	0.0028	3.125	0.018	505	13
1/8	5	65	0.0003	0.313	0.002	1985	3
3/16	5	65	0.0004	0.469	0.003	1325	3
1/4	5	65	0.0006	0.625	0.004	995	3
3/8	7	65	0.0010	0.938	0.005	660	5
1/2	7	65	0.0012	1.250	0.007	495	4
5/8	7	65	0.0016	1.563	0.009	395	4
3/4	7	65	0.0019	1.875	0.011	330	4
1	7	65	0.0025	2.500	0.014	250	4
1 1/4	9	65	0.0028	3.125	0.018	200	5

Cylindrical end mills Multicut XF

Finishing, medium length version

HM
XA λ **65°**
 γ **8°**

45° 

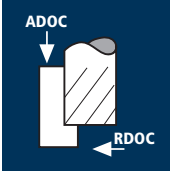


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium
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Example: Order-N°.							Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
							P	15851	188		P15851	H15851
Diameter Code	d1 e8	d2 h6	l1	l2	45°	fl						
188	1/8	1/4	2 1/4	3/8	-	5				•	•	•
252	3/16	1/4	2 1/2	9/16	-	5				•	•	•
312	1/4	1/4	3	1	0.004	5	•			•	•	•
430	3/8	3/8	3	1 1/8	0.006	7	•			•	•	•
432	3/8	3/8	3 1/2	1 1/2	0.006	7	•			•	•	•
528	1/2	1/2	3 1/2	1 1/2	0.006	7	•			•	•	•
530	1/2	1/2	4	2	0.006	7	•			•	•	•
603	5/8	5/8	4 1/2	2	0.006	7	•			•	•	•
605	5/8	5/8	5	2 1/2	0.006	7	•			•	•	•
652	3/4	3/4	5	2 1/2	0.006	7	•			•	•	•
654	3/4	3/4	5 1/2	3	0.006	7	•			•	•	•
775	1	1	6	3	0.008	7	•			•	•	•
777	1	1	7	4	0.008	7	•			•	•	•
815	1 1/4	1 1/4	8	5	0.008	9	•			•	•	•

Example: Order-N°.							Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
							P	15251	300		P15251	H15251
Ø Code	d1 e8	d2 h5	l1	l2	45°	z						
300	6	6	63	19	0.15	5	•			•	•	•
391	8	8	72	28	0.15	7	•			•	•	•
450	10	10	84	34	0.20	7	•			•	•	•
501	12	12	97	40	0.20	7	•			•	•	•
610	16	16	108	48	0.20	7	•			•	•	•
682	20	20	122	56	0.20	7	•			•	•	•

Application



Material

Steel
24 - 34 HRC



Steel
34 - 42 HRC



Hardened tool steel
52 - 56 HRC



Hardened tool steel
56 - 60 HRC



d1 [in]	fl	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM [min ⁻¹]	Feed [in/min]
1/4	5	245	0.0006	1.125	0.004	3745	11
3/8	7	245	0.0011	1.688	0.005	2495	19
1/2	7	245	0.0015	2.250	0.007	1870	20
5/8	7	245	0.0018	2.813	0.009	1495	19
3/4	7	245	0.0021	3.375	0.011	1250	18
1	7	245	0.0028	4.500	0.014	935	18
1 1/4	9	245	0.0031	5.625	0.018	750	21
1/4	5	195	0.0006	1.125	0.004	2980	9
3/8	7	195	0.0011	1.688	0.005	1985	15
1/2	7	195	0.0015	2.250	0.007	1490	16
5/8	7	195	0.0018	2.813	0.009	1190	15
3/4	7	195	0.0021	3.375	0.011	995	15
1	7	195	0.0028	4.500	0.014	745	15
1 1/4	9	195	0.0031	5.625	0.018	595	17
1/4	5	165	0.0006	1.125	0.004	2520	8
3/8	7	165	0.0010	1.688	0.005	1680	12
1/2	7	165	0.0012	2.250	0.007	1260	11
5/8	7	165	0.0016	2.813	0.009	1010	11
3/4	7	165	0.0019	3.375	0.011	840	11
1	7	165	0.0025	4.500	0.014	630	11
1 1/4	9	165	0.0028	5.625	0.018	505	13
1/4	5	130	0.0006	1.125	0.004	1985	6
3/8	7	130	0.0010	1.688	0.005	1325	9
1/2	7	130	0.0012	2.250	0.007	995	8
5/8	7	130	0.0016	2.813	0.009	795	9
3/4	7	130	0.0019	3.375	0.011	660	9
1	7	130	0.0025	4.500	0.014	495	9
1 1/4	9	130	0.0028	5.625	0.018	395	10

Material

Titanium alloys
>300 HB
[Ti6Al4V]



Stainless steel
[Cr-Ni/304]



Hardened tool steel
60 - 64 HRC



Hardened tool steel
64 - 70 HRC



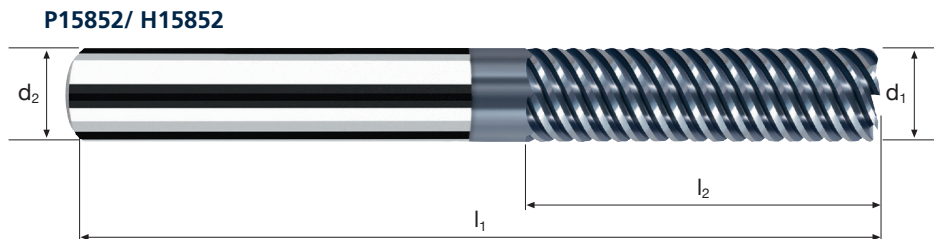
d1 [in]	fl	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM [min ⁻¹]	Feed [in/min]
1/4	5	100	0.0006	1.125	0.004	1530	5
3/8	7	100	0.0011	1.688	0.005	1020	8
1/2	7	100	0.0015	2.250	0.007	765	8
5/8	7	100	0.0018	2.813	0.009	610	8
3/4	7	100	0.0021	3.375	0.011	510	7
1	7	100	0.0028	4.500	0.014	380	7
1 1/4	9	100	0.0031	5.625	0.018	305	9
1/4	5	115	0.0006	1.125	0.004	1755	5
3/8	7	115	0.0011	1.688	0.005	1170	9
1/2	7	115	0.0015	2.250	0.007	880	9
5/8	7	115	0.0018	2.813	0.009	705	9
3/4	7	115	0.0021	3.375	0.011	585	9
1	7	115	0.0028	4.500	0.014	440	9
1 1/4	9	115	0.0031	5.625	0.018	350	10
1/4	5	80	0.0006	1.125	0.004	1220	4
3/8	7	80	0.0010	1.688	0.005	815	6
1/2	7	80	0.0012	2.250	0.007	610	5
5/8	7	80	0.0016	2.813	0.009	490	5
3/4	7	80	0.0019	3.375	0.011	405	5
1	7	80	0.0025	4.500	0.014	305	5
1 1/4	9	80	0.0028	5.625	0.018	245	6
1/4	5	50	0.0006	1.125	0.004	765	2
3/8	7	50	0.0010	1.688	0.005	510	4
1/2	7	50	0.0012	2.250	0.007	380	3
5/8	7	50	0.0016	2.813	0.009	305	3
3/4	7	50	0.0019	3.375	0.011	255	3
1	7	50	0.0025	4.500	0.014	190	3
1 1/4	9	50	0.0028	5.625	0.018	155	4

Cylindrical end mills Multicut XF

Finishing, long version

HM
XA λ **65°**
 γ **8°**

45° **h5**



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium
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[11]

Example: Order-N°.							Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
							P	15852	530		P15852	H15852
Diameter Code	d1 e8	d2 h6	l1	l2	45°	fl						
312	1/4	1/4	3 1/2	1 1/4	0.004	5	•	•	•	•	•	•
432	3/8	3/8	4	1 7/8	0.006	7	•	•	•	•	•	•
530	1/2	1/2	4 1/2	2 1/2	0.006	7	•	•	•	•	•	•
605	5/8	5/8	5 3/4	3 1/4	0.006	7	•	•	•	•	•	•
652	3/4	3/4	6 1/4	3 3/4	0.006	7	•	•	•	•	•	•
775	1	1	8	5	0.008	7	•	•	•	•	•	•
815	1 1/4	1 1/4	9	6	0.008	9	•	•	•	•	•	•

Example: Order-N°.							Coating	Article-N°.	Ø-Code	ReTool®	POLYCHROM	DURO-Si
							P	15254	300		P15254	H15254
Ø Code	d1 e8	d2 h5	l1	l2	45°	z						
300	6	6	70	26	0.15	5	•	•	•	•	•	•
391	8	8	80	36	0.15	7	•	•	•	•	•	•
450	10	10	100	45	0.20	7	•	•	•	•	•	•
501	12	12	110	53	0.20	7	•	•	•	•	•	•
610	16	16	123	63	0.20	7	•	•	•	•	•	•
682	20	20	141	75	0.20	7	•	•	•	•	•	•



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passion
for precision

