FRESAL CATALOGUE

• SOLID CARBIDE END MILLS •

FRESAL UTENSILI

CATALOGUE B 019.01 GB

SOLID CARBIDE END MILLS

FRESAL UTENSILI

www.fresal.com

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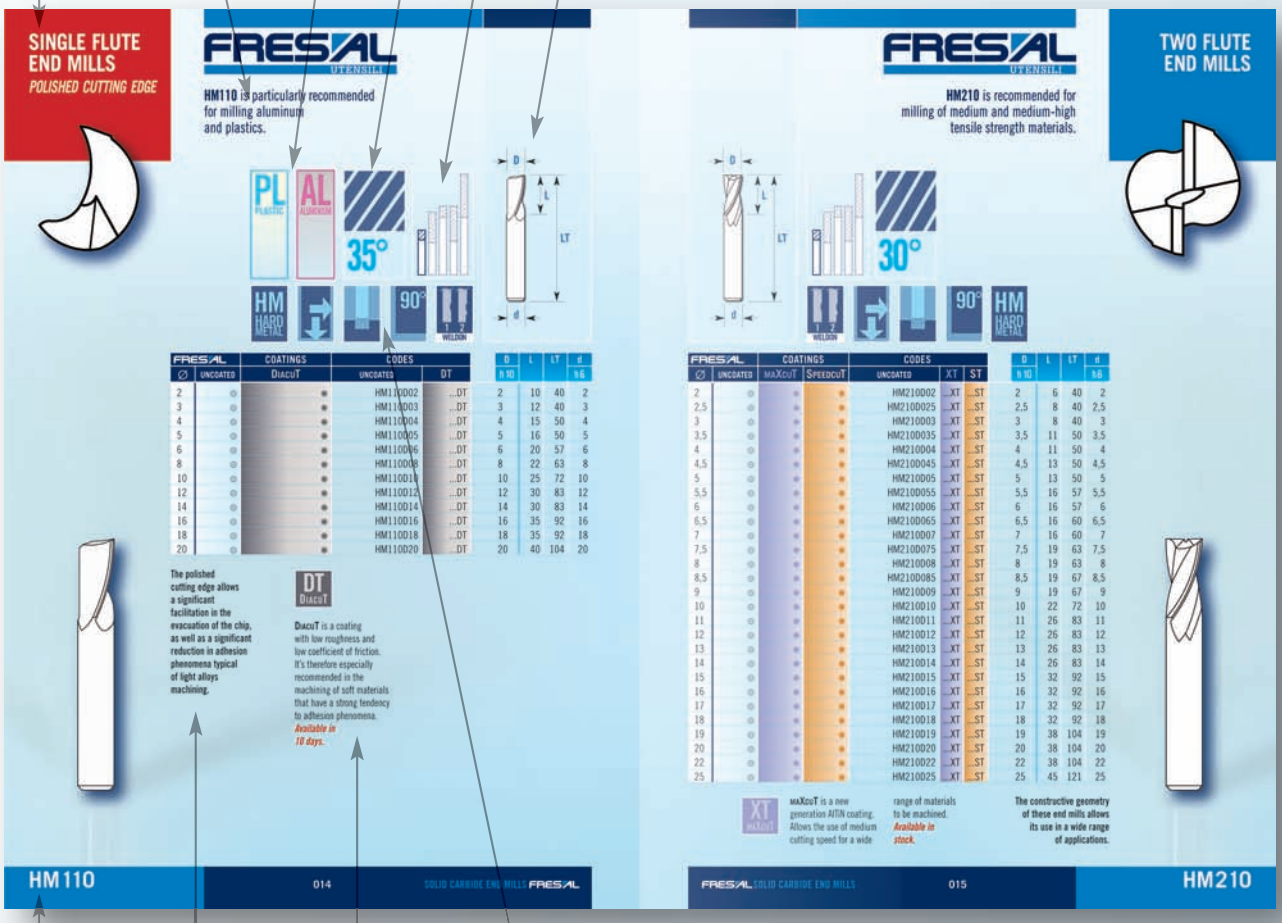
Key
to quickly find information

Short description.
Helix angle.
Lateral view.
Type of tools.
Material icons.
Length.



Fresal Code.
Peculiarities.
Coatings and delivery time.
Carbide grade and indication of use.

Guide to the catalogue consultation

For a better and faster reading, we have divided the products in the catalog according to the number of flutes:

Single flute end mills;

Two flute end mills;

Three flute end mills;

Four flute end mills;

Multi flute end mills for finishing;

Special Tools;

NEW.

FOUR FLUTE END MILLS

MULTI FLUTE END MILLS FOR FINISHING

NEW


THREE FLUTE END MILLS
TWO FLUTE END MILLS
SINGLE FLUTE END MILLS
SPECIAL TOOLS

FRESAL

UTENSILI

We produce reliable and innovative tools through the use of high technology. With commitment and passion.

The range of tools in this catalog is the result of our experience and listening to the needs of our customers.

Many of the items that are now part of our standard production are the result of specific solutions.

Because it is important for us to realize excellent tools and offer the best service in a logic of wider collaboration.

maXcuT
is a new generation AlTiN coating.
Allows the use of
medium cutting speed
for a wide range of materials
to be machined.

SpeedcuT
is a multilayer coating
based TiSiN.
Allows use of
high speed cutting
with low lubrication or dry.
Especially recommended
for hard and abrasive
materials.

DiacuT
is a coating
with low roughness
and low coefficient
of friction.
It's therefore
especially recommended
in the machining of
soft materials that have a
strong tendency to
adhesion phenomena.

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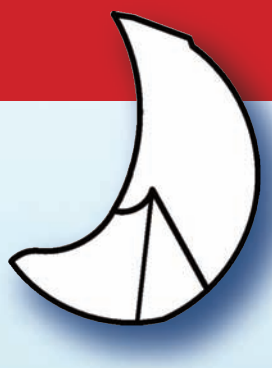
SINGLE FLUTE END MILLS
TWO FLUTE END MILLS

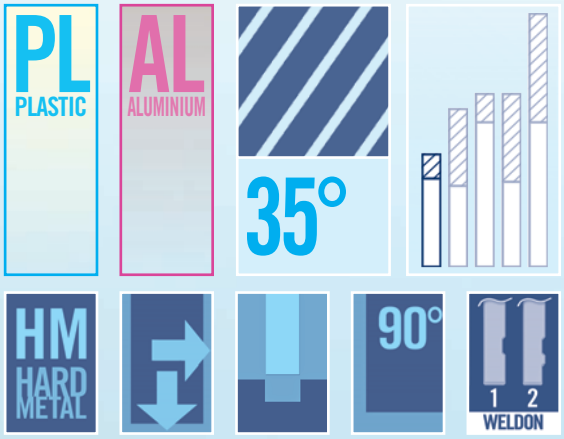
SINGLE FLUTE END MILLS

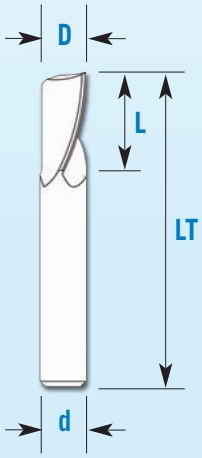
POLISHED CUTTING EDGE



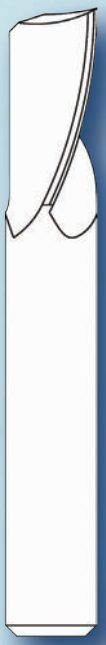
FRESAL UTENSILI

HM110 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10			h6
2	◎	◉	HM110D02	...DT	2	10	40	2
3	◎	◉	HM110D03	...DT	3	12	40	3
4	◎	◉	HM110D04	...DT	4	15	50	4
5	◎	◉	HM110D05	...DT	5	16	50	5
6	◎	◉	HM110D06	...DT	6	20	57	6
8	◎	◉	HM110D08	...DT	8	22	63	8
10	◎	◉	HM110D10	...DT	10	25	72	10
12	◎	◉	HM110D12	...DT	12	30	83	12
14	◎	◉	HM110D14	...DT	14	30	83	14
16	◎	◉	HM110D16	...DT	16	35	92	16
18	◎	◉	HM110D18	...DT	18	35	92	18
20	◎	◉	HM110D20	...DT	20	40	104	20



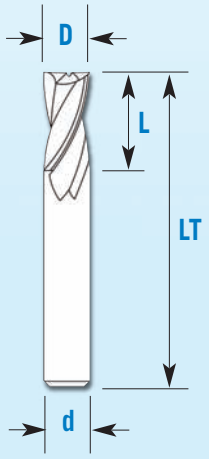
The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.

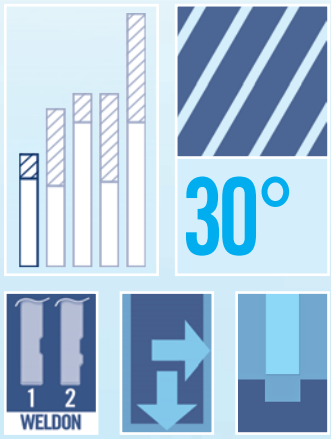
DT DIACUT

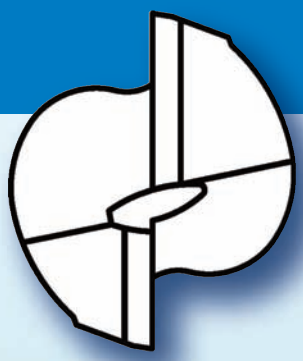
DIACUT is a coating with low roughness and low coefficient of friction. It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

TWO FLUTE END MILLS

HM210 is recommended for milling of medium and medium-high tensile strength materials.







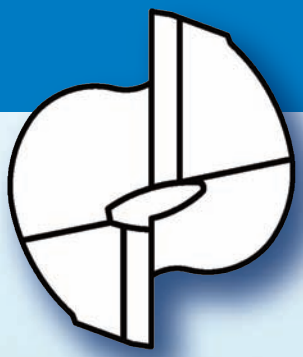
FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM210D02	...XT	...ST	2	6	40	2
2,5	◎	◉	◉	HM210D025	...XT	...ST	2,5	8	40	2,5
3	◎	◉	◉	HM210D03	...XT	...ST	3	8	40	3
3,5	◎	◉	◉	HM210D035	...XT	...ST	3,5	11	50	3,5
4	◎	◉	◉	HM210D04	...XT	...ST	4	11	50	4
4,5	◎	◉	◉	HM210D045	...XT	...ST	4,5	13	50	4,5
5	◎	◉	◉	HM210D05	...XT	...ST	5	13	50	5
5,5	◎	◉	◉	HM210D055	...XT	...ST	5,5	16	57	5,5
6	◎	◉	◉	HM210D06	...XT	...ST	6	16	57	6
6,5	◎	◉	◉	HM210D065	...XT	...ST	6,5	16	60	6,5
7	◎	◉	◉	HM210D07	...XT	...ST	7	16	60	7
7,5	◎	◉	◉	HM210D075	...XT	...ST	7,5	19	63	7,5
8	◎	◉	◉	HM210D08	...XT	...ST	8	19	63	8
8,5	◎	◉	◉	HM210D085	...XT	...ST	8,5	19	67	8,5
9	◎	◉	◉	HM210D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HM210D10	...XT	...ST	10	22	72	10
11	◎	◉	◉	HM210D11	...XT	...ST	11	26	83	11
12	◎	◉	◉	HM210D12	...XT	...ST	12	26	83	12
13	◎	◉	◉	HM210D13	...XT	...ST	13	26	83	13
14	◎	◉	◉	HM210D14	...XT	...ST	14	26	83	14
15	◎	◉	◉	HM210D15	...XT	...ST	15	32	92	15
16	◎	◉	◉	HM210D16	...XT	...ST	16	32	92	16
17	◎	◉	◉	HM210D17	...XT	...ST	17	32	92	17
18	◎	◉	◉	HM210D18	...XT	...ST	18	32	92	18
19	◎	◉	◉	HM210D19	...XT	...ST	19	38	104	19
20	◎	◉	◉	HM210D20	...XT	...ST	20	38	104	20
22	◎	◉	◉	HM210D22	...XT	...ST	22	38	104	22
25	◎	◉	◉	HM210D25	...XT	...ST	25	45	121	25

XT MAXCUT

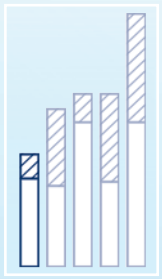
MAXCUT is a new generation AlTiN coating. Allows the use of medium cutting speed for a wide range of materials to be machined. *Available in stock.*

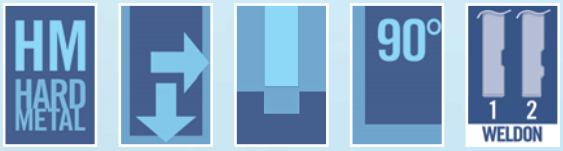
The constructive geometry of these end mills allows its use in a wide range of applications.

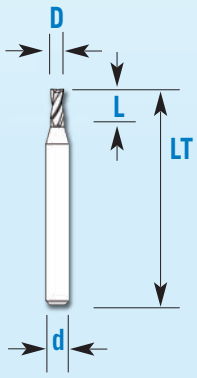
TWO FLUTE END MILLS



HM211 is recommended
for milling of medium and medium-high
tensile strength materials.







FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM211D02	...XT	...ST	2	6	57	6
2,5	◎	◉	◉	HM211D025	...XT	...ST	2,5	8	57	6
3	◎	◉	◉	HM211D03	...XT	...ST	3	8	57	6
3,5	◎	◉	◉	HM211D035	...XT	...ST	3,5	11	57	6
4	◎	◉	◉	HM211D04	...XT	...ST	4	11	57	6
4,5	◎	◉	◉	HM211D045	...XT	...ST	4,5	13	57	6
5	◎	◉	◉	HM211D05	...XT	...ST	5	13	57	6
5,5	◎	◉	◉	HM211D055	...XT	...ST	5,5	16	57	6
6,5	◎	◉	◉	HM211D065	...XT	...ST	6,5	16	63	8
7	◎	◉	◉	HM211D07	...XT	...ST	7	16	63	8
7,5	◎	◉	◉	HM211D075	...XT	...ST	7,5	19	63	8
8,5	◎	◉	◉	HM211D085	...XT	...ST	8,5	19	72	10
9	◎	◉	◉	HM211D09	...XT	...ST	9	19	72	10
9,5	◎	◉	◉	HM211D095	...XT	...ST	9,5	22	72	10

The constructive geometry of these end mills allows its use in a wide range of applications

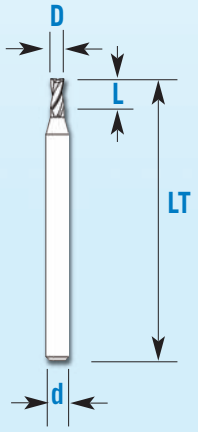
XT MAXCUT ST SPEEDCUT

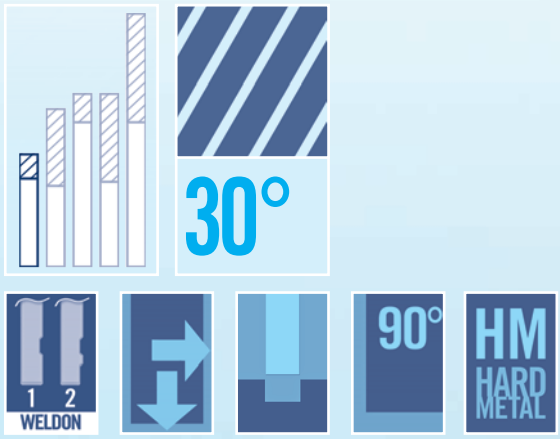
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

TWO FLUTE END MILLS *micro*

HM211m is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
0,5	◎	◉	◉	HM211mD05	...XT	...ST	0,5	1,5	38	3
0,6	◎	◉	◉	HM211mD06	...XT	...ST	0,6	1,5	38	3
0,7	◎	◉	◉	HM211mD07	...XT	...ST	0,7	2	38	3
0,8	◎	◉	◉	HM211mD08	...XT	...ST	0,8	2	38	3
0,9	◎	◉	◉	HM211mD09	...XT	...ST	0,9	3	38	3
1,0	◎	◉	◉	HM211mD10	...XT	...ST	1,0	3	38	3
1,1	◎	◉	◉	HM211mD11	...XT	...ST	1,1	3	38	3
1,2	◎	◉	◉	HM211mD12	...XT	...ST	1,2	4	38	3
1,3	◎	◉	◉	HM211mD13	...XT	...ST	1,3	4	38	3
1,4	◎	◉	◉	HM211mD14	...XT	...ST	1,4	4	38	3
1,5	◎	◉	◉	HM211mD15	...XT	...ST	1,5	4	38	3
1,6	◎	◉	◉	HM211mD16	...XT	...ST	1,6	5	38	3
1,8	◎	◉	◉	HM211mD18	...XT	...ST	1,8	5	38	3
2,0	◎	◉	◉	HM211mD20	...XT	...ST	2,0	5	38	3
2,5	◎	◉	◉	HM211mD25	...XT	...ST	2,5	6	38	3

XT MAXCUT

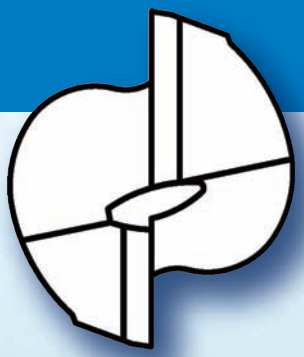
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

The constructive geometry of these end mills allows its use in a wide range of applications

TWO FLUTE END MILLS



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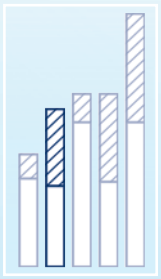
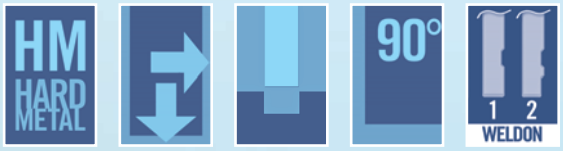
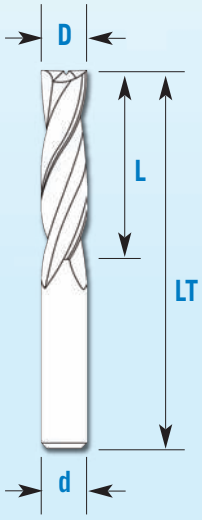
HM220 is recommended
for milling of medium and medium-high
tensile strength materials.







FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM220D02	...XT	...ST	2	10	50	2
3	◎	◉	◉	HM220D03	...XT	...ST	3	12	50	3
4	◎	◉	◉	HM220D04	...XT	...ST	4	16	55	4
5	◎	◉	◉	HM220D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HM220D06	...XT	...ST	6	24	65	6
7	◎	◉	◉	HM220D07	...XT	...ST	7	30	75	7
8	◎	◉	◉	HM220D08	...XT	...ST	8	32	80	8
9	◎	◉	◉	HM220D09	...XT	...ST	9	32	80	9
10	◎	◉	◉	HM220D10	...XT	...ST	10	32	80	10
11	◎	◉	◉	HM220D11	...XT	...ST	11	50	100	11
12	◎	◉	◉	HM220D12	...XT	...ST	12	50	100	12
13	◎	◉	◉	HM220D13	...XT	...ST	13	55	115	13
14	◎	◉	◉	HM220D14	...XT	...ST	14	55	115	14
15	◎	◉	◉	HM220D15	...XT	...ST	15	60	120	15
16	◎	◉	◉	HM220D16	...XT	...ST	16	60	120	16
17	◎	◉	◉	HM220D17	...XT	...ST	17	60	120	17
18	◎	◉	◉	HM220D18	...XT	...ST	18	60	120	18
19	◎	◉	◉	HM220D19	...XT	...ST	19	60	120	19
20	◎	◉	◉	HM220D20	...XT	...ST	20	60	130	20
22	◎	◉	◉	HM220D22	...XT	...ST	22	60	130	22
25	◎	◉	◉	HM220D25	...XT	...ST	25	75	160	25

The constructive geometry of these end mills allows its use in a wide range of applications

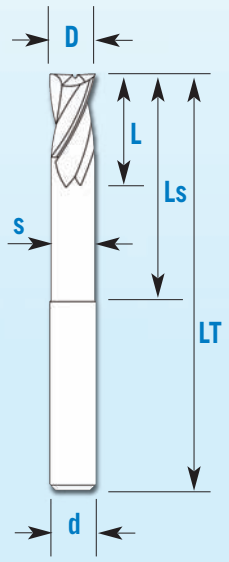
XT MAXCUT ST SPEEDCUT

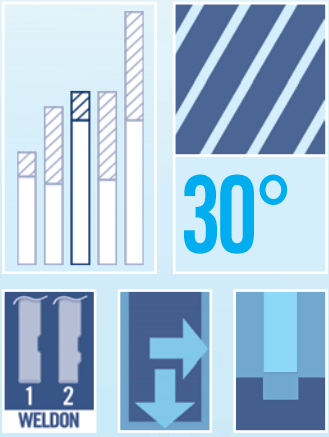
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

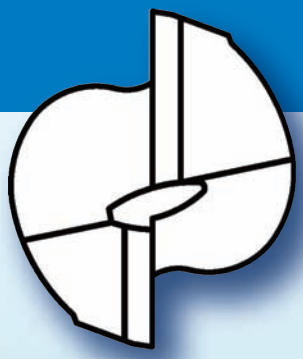
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

TWO FLUTE END MILLS

HM230 is recommended for milling of medium and medium-high tensile strength materials.







FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
2	◎	◉	◉	HM230D02	...XT	...ST	2	6	60	-	-	2
3	◎	◉	◉	HM230D03	...XT	...ST	3	8	60	30	2,9	3
4	◎	◉	◉	HM230D04	...XT	...ST	4	8	60	30	3,8	4
5	◎	◉	◉	HM230D05	...XT	...ST	5	10	70	35	4,8	5
6	◎	◉	◉	HM230D06	...XT	...ST	6	12	80	40	5,8	6
8	◎	◉	◉	HM230D08	...XT	...ST	8	14	90	50	7,7	8
10	◎	◉	◉	HM230D10	...XT	...ST	10	18	100	55	9,7	10
12	◎	◉	◉	HM230D12	...XT	...ST	12	22	110	60	11,7	12
14	◎	◉	◉	HM230D14	...XT	...ST	14	26	120	70	13,6	14
16	◎	◉	◉	HM230D16	...XT	...ST	16	30	140	80	15,6	16
18	◎	◉	◉	HM230D18	...XT	...ST	18	34	140	80	17,6	18
20	◎	◉	◉	HM230D20	...XT	...ST	20	38	160	95	19,5	20

XT MAXCUT

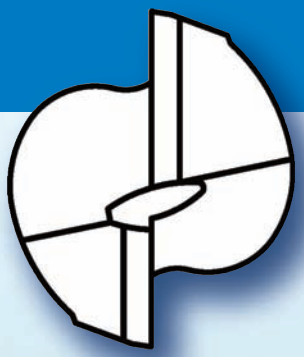
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

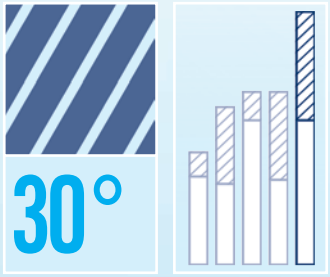
The constructive geometry of these end mills allows its use in a wide range of applications

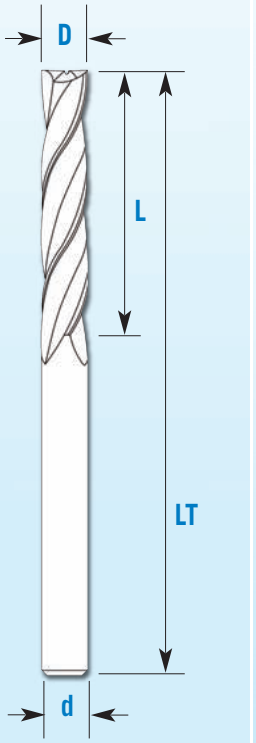
TWO FLUTE END MILLS



FRESAL UTENSILI

HM240 is recommended
for milling of medium and medium-high
tensile strength materials.





FRESAL ∅	COATINGS UNCOATED	COATINGS MAXCUT	COATINGS SPEEDCUT	CODES UNCOATED	CODES XT	CODES ST	D h10	L	LT	d h6
3	◎	◉	◉	HM240D03	...XT	...ST	3	25	75	3
4	◎	◉	◉	HM240D04	...XT	...ST	4	30	75	4
5	◎	◉	◉	HM240D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HM240D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HM240D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HM240D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HM240D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HM240D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HM240D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HM240D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HM240D20	...XT	...ST	20	80	160	20

The constructive geometry of these end mills allows its use in a wide range of applications

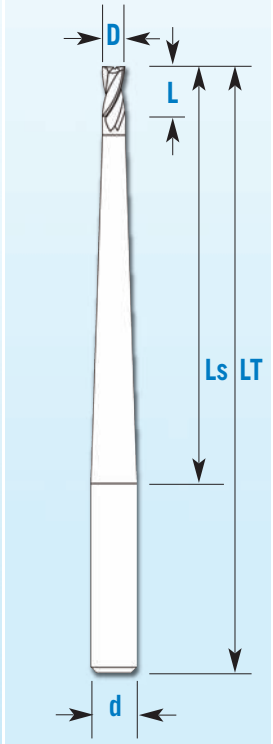
XT MAXCUT

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

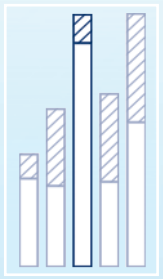
ST SPEEDCUT

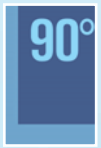
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

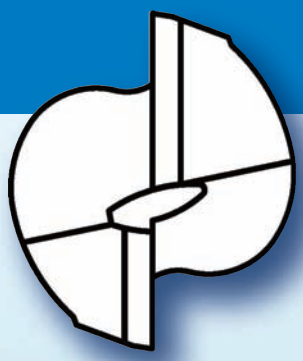
TWO FLUTE END MILLS



HM252 is recommended for milling of medium and medium-high tensile strength materials.







FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
2	◎	◉	◉	HM252D02.100	...XT	...ST	2	3	100	60	-	6
3	◎	◉	◉	HM252D03.100	...XT	...ST	3	4	100	60	-	6
4	◎	◉	◉	HM252D04.100	...XT	...ST	4	5	100	60	-	6
5	◎	◉	◉	HM252D05.100	...XT	...ST	5	6	100	60	-	6
6	◎	◉	◉	HM252D06.100	...XT	...ST	6	8	100	55	-	8
6	◎	◉	◉	HM252D06.160	...XT	...ST	6	8	160	115	-	8
8	◎	◉	◉	HM252D08.100	...XT	...ST	8	10	100	50	-	10
8	◎	◉	◉	HM252D08.160	...XT	...ST	8	10	160	110	-	10
10	◎	◉	◉	HM252D10.160	...XT	...ST	10	12	160	110	-	12
12	◎	◉	◉	HM252D12.160	...XT	...ST	12	14	160	105	-	16

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

SPEEDCUT
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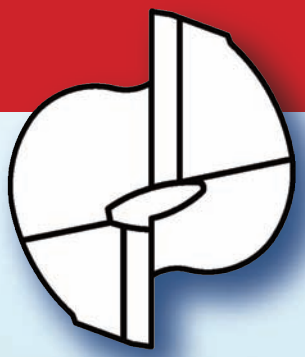
Especially recommended for hard and abrasive materials.
Available in 3 days.

The constructive geometry of these end mills allows its use in a wide range of applications

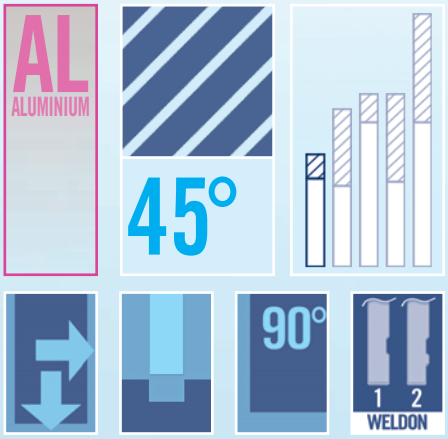
TWO FLUTE END MILLS

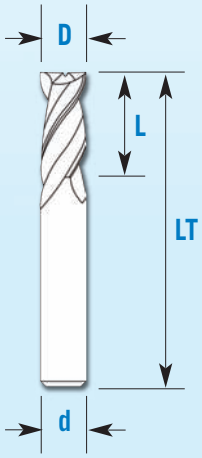
POLISHED CUTTING EDGE



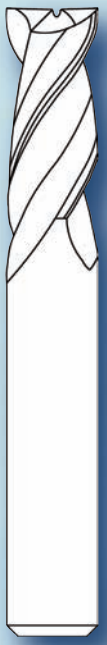
FRESAL UTENSILI

HM210.45 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10			h6
3	◎	◉	HM210.45D03	...DT	3	8	40	3
4	◎	◉	HM210.45D04	...DT	4	11	50	4
5	◎	◉	HM210.45D05	...DT	5	13	50	5
6	◎	◉	HM210.45D06	...DT	6	16	57	6
7	◎	◉	HM210.45D07	...DT	7	16	60	7
8	◎	◉	HM210.45D08	...DT	8	19	63	8
10	◎	◉	HM210.45D10	...DT	10	22	72	10
12	◎	◉	HM210.45D12	...DT	12	26	83	12
14	◎	◉	HM210.45D14	...DT	14	26	83	14
16	◎	◉	HM210.45D16	...DT	16	32	92	16
18	◎	◉	HM210.45D18	...DT	18	32	92	18
20	◎	◉	HM210.45D20	...DT	20	38	104	20



The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.

DT DIACUT

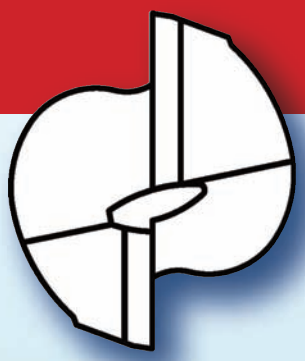
DIACUT is a coating with low roughness and low coefficient of friction.

It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.

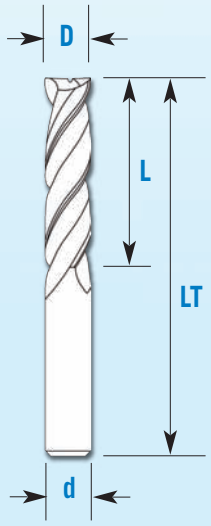
Available in 10 days.

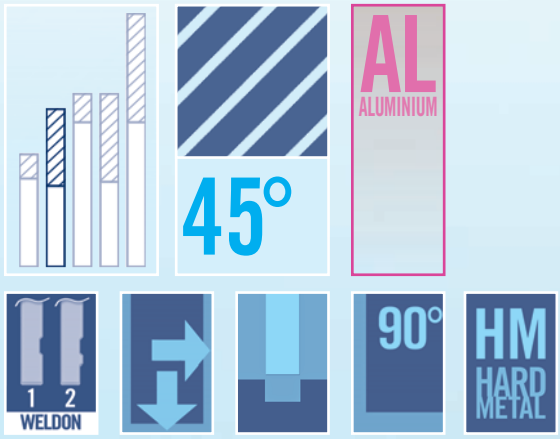
TWO FLUTE END MILLS

POLISHED CUTTING EDGE



HM220.45 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10			h6
4	◎	◉	HM220.45D04	...DT	4	16	55	4
5	◎	◉	HM220.45D05	...DT	5	20	60	5
6	◎	◉	HM220.45D06	...DT	6	24	65	6
8	◎	◉	HM220.45D08	...DT	8	32	80	8
10	◎	◉	HM220.45D10	...DT	10	32	80	10
12	◎	◉	HM220.45D12	...DT	12	50	100	12
14	◎	◉	HM220.45D14	...DT	14	55	115	14
16	◎	◉	HM220.45D16	...DT	16	60	120	16
18	◎	◉	HM220.45D18	...DT	18	60	120	18
20	◎	◉	HM220.45D20	...DT	20	60	130	20

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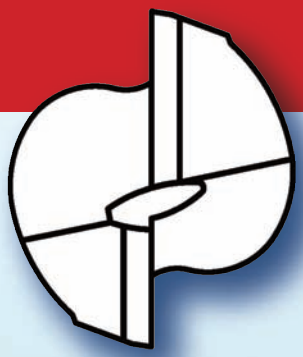
Available in 10 days.

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.

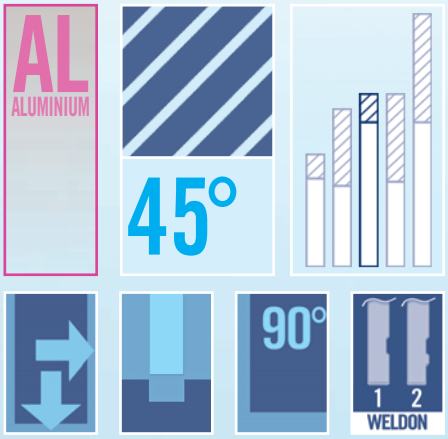
TWO FLUTE END MILLS

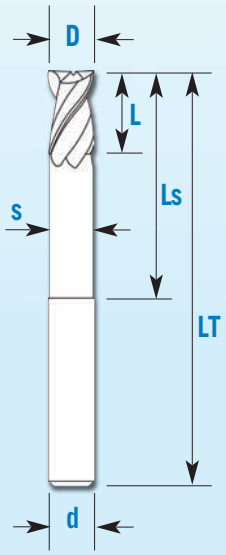
POLISHED CUTTING EDGE



FRESAL UTENSILI

HM230.45 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	L	LT	Ls	s	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10					h6
6	◎	◉	HM230.45D06	...DT	6	12	80	40	5,8	6
8	◎	◉	HM230.45D08	...DT	8	14	90	50	7,7	8
10	◎	◉	HM230.45D10	...DT	10	18	100	55	9,7	10
12	◎	◉	HM230.45D12	...DT	12	22	110	60	11,7	12
16	◎	◉	HM230.45D16	...DT	16	30	140	80	15,6	16
20	◎	◉	HM230.45D20	...DT	20	38	160	95	19,5	20

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.

DT DIACUT

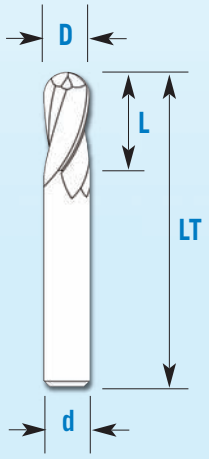
DIACUT is a coating with low roughness and low coefficient of friction.

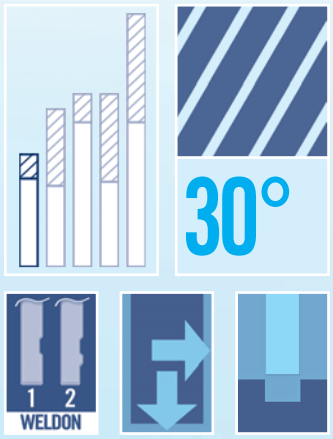
It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.

Available in 10 days.

TWO FLUTE END MILLS
ball nose

HMS210 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HMS210D02	...XT	...ST	2	6	40	2
3	◎	◉	◉	HMS210D03	...XT	...ST	3	8	40	3
4	◎	◉	◉	HMS210D04	...XT	...ST	4	11	50	4
5	◎	◉	◉	HMS210D05	...XT	...ST	5	13	50	5
6	◎	◉	◉	HMS210D06	...XT	...ST	6	16	57	6
7	◎	◉	◉	HMS210D07	...XT	...ST	7	16	60	7
8	◎	◉	◉	HMS210D08	...XT	...ST	8	19	63	8
9	◎	◉	◉	HMS210D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HMS210D10	...XT	...ST	10	22	72	10
11	◎	◉	◉	HMS210D11	...XT	...ST	11	26	83	11
12	◎	◉	◉	HMS210D12	...XT	...ST	12	26	83	12
13	◎	◉	◉	HMS210D13	...XT	...ST	13	26	83	13
14	◎	◉	◉	HMS210D14	...XT	...ST	14	26	83	14
15	◎	◉	◉	HMS210D15	...XT	...ST	15	32	92	15
16	◎	◉	◉	HMS210D16	...XT	...ST	16	32	92	16
17	◎	◉	◉	HMS210D17	...XT	...ST	17	32	92	17
18	◎	◉	◉	HMS210D18	...XT	...ST	18	32	92	18
19	◎	◉	◉	HMS210D19	...XT	...ST	19	38	104	19
20	◎	◉	◉	HMS210D20	...XT	...ST	20	38	104	20

XT MAXCUT

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Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
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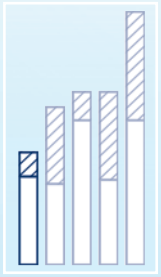
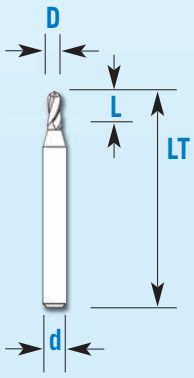
Especially recommended for hard and abrasive materials.
Available in 3 days.

The constructive geometry of these end mills allows its use in a wide range of applications

TWO FLUTE END MILLS
ball nose

HMS211 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HMS211D02	...XT	...ST	2	6	57	6
2,5	◎	◉	◉	HMS211D025	...XT	...ST	2,5	8	57	6
3	◎	◉	◉	HMS211D03	...XT	...ST	3	8	57	6
3,5	◎	◉	◉	HMS211D035	...XT	...ST	3,5	11	57	6
4	◎	◉	◉	HMS211D04	...XT	...ST	4	11	57	6
4,5	◎	◉	◉	HMS211D045	...XT	...ST	4,5	13	57	6
5	◎	◉	◉	HMS211D05	...XT	...ST	5	13	57	6
5,5	◎	◉	◉	HMS211D055	...XT	...ST	5,5	16	57	6
7	◎	◉	◉	HMS211D07	...XT	...ST	7	16	63	8
9	◎	◉	◉	HMS211D09	...XT	...ST	9	19	72	10

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XT MAXCUT ST SPEEDCUT

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SPEEDCUT
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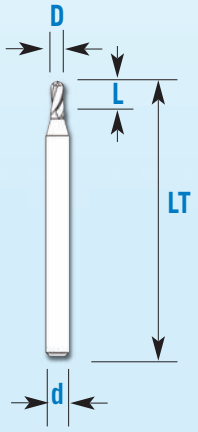
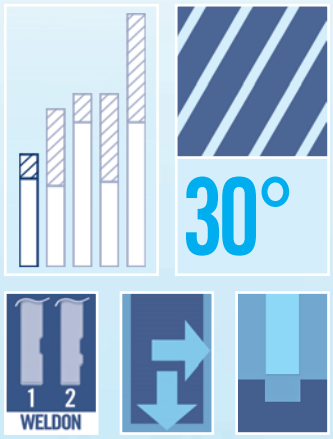
Available in 3 days.

TWO FLUTE END MILLS
ball nose micro

HMS211m is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
0,5	◎	◉	◉	HMS211mD05	...XT	...ST	0,5	1,5	38	3
0,6	◎	◉	◉	HMS211mD06	...XT	...ST	0,6	1,5	38	3
0,7	◎	◉	◉	HMS211mD07	...XT	...ST	0,7	2	38	3
0,8	◎	◉	◉	HMS211mD08	...XT	...ST	0,8	2	38	3
0,9	◎	◉	◉	HMS211mD09	...XT	...ST	0,9	3	38	3
1,0	◎	◉	◉	HMS211mD10	...XT	...ST	1,0	3	38	3
1,1	◎	◉	◉	HMS211mD11	...XT	...ST	1,1	3	38	3
1,2	◎	◉	◉	HMS211mD12	...XT	...ST	1,2	4	38	3
1,3	◎	◉	◉	HMS211mD13	...XT	...ST	1,3	4	38	3
1,4	◎	◉	◉	HMS211mD14	...XT	...ST	1,4	4	38	3
1,5	◎	◉	◉	HMS211mD15	...XT	...ST	1,5	4	38	3
1,6	◎	◉	◉	HMS211mD16	...XT	...ST	1,6	5	38	3
1,8	◎	◉	◉	HMS211mD18	...XT	...ST	1,8	5	38	3
2,0	◎	◉	◉	HMS211mD20	...XT	...ST	2,0	5	38	3
2,5	◎	◉	◉	HMS211mD25	...XT	...ST	2,5	6	38	3

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ST SPEEDCUT

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Available in 3 days.

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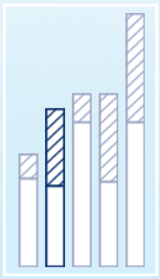
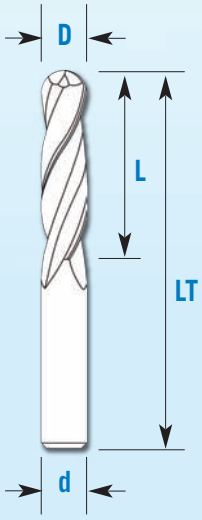
TWO FLUTE END MILLS
ball nose

HMS220 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS220D03	...XT	...ST	3	12	50	3
4	◎	◉	◉	HMS220D04	...XT	...ST	4	16	55	4
5	◎	◉	◉	HMS220D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HMS220D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HMS220D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HMS220D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HMS220D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HMS220D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HMS220D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HMS220D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HMS220D20	...XT	...ST	20	60	130	20

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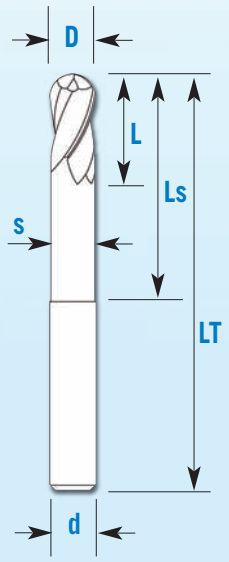
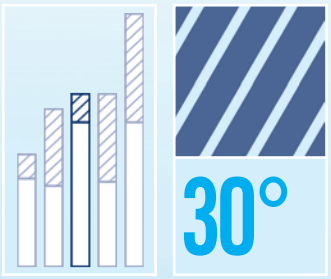
Especially recommended for hard and abrasive materials.
Available in 3 days.

TWO FLUTE END MILLS
ball nose

FRESAL UTENSILI

HMS230 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
2	◎	◉	◉	HMS230D02	...XT	...ST	2	6	60	-	-	2
3	◎	◉	◉	HMS230D03	...XT	...ST	3	8	60	30	2,9	3
4	◎	◉	◉	HMS230D04	...XT	...ST	4	8	60	30	3,8	4
5	◎	◉	◉	HMS230D05	...XT	...ST	5	10	70	35	4,8	5
6	◎	◉	◉	HMS230D06	...XT	...ST	6	12	80	40	5,8	6
8	◎	◉	◉	HMS230D08	...XT	...ST	8	14	90	50	7,7	8
10	◎	◉	◉	HMS230D10	...XT	...ST	10	18	100	55	9,7	10
12	◎	◉	◉	HMS230D12	...XT	...ST	12	22	110	60	11,7	12
14	◎	◉	◉	HMS230D14	...XT	...ST	14	26	120	70	13,6	14
16	◎	◉	◉	HMS230D16	...XT	...ST	16	30	140	80	15,6	16
18	◎	◉	◉	HMS230D18	...XT	...ST	18	34	140	80	17,6	18
20	◎	◉	◉	HMS230D20	...XT	...ST	20	38	160	95	19,5	20

XT MAXCUT

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

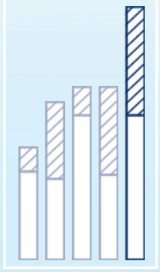
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

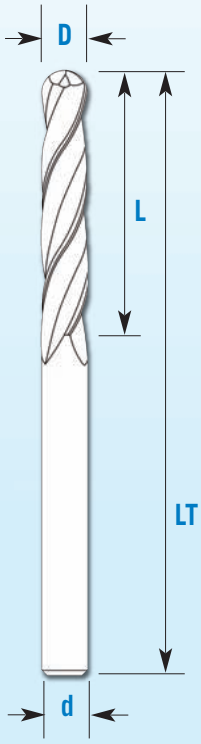
The constructive geometry of these end mills allows its use in a wide range of applications

TWO FLUTE END MILLS
ball nose

FRESAL UTENSILI

HMS240 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS240D03	...XT	...ST	3	25	75	3
4	◎	◉	◉	HMS240D04	...XT	...ST	4	30	75	4
5	◎	◉	◉	HMS240D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HMS240D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HMS240D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HMS240D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HMS240D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HMS240D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HMS240D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HMS240D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HMS240D20	...XT	...ST	20	80	160	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT ST SPEEDCUT

MAXCUT
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Available in stock.

SPEEDCUT
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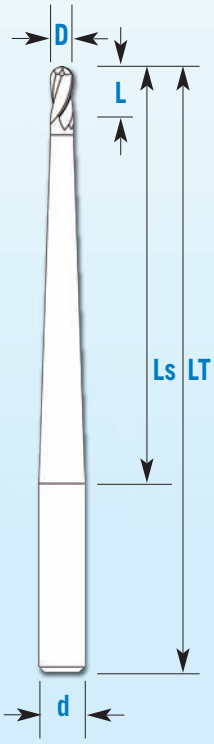
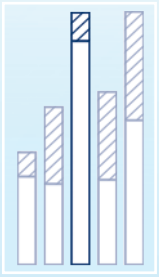
Especially recommended for hard and abrasive materials.
Available in 3 days.

TWO FLUTE END MILLS
ball nose



HMS252 is recommended for milling of medium and medium-high tensile strength materials.



FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
2	◎	◉	◉	HMS252D02.100	...XT	...ST	2	3	100	60	-	6
3	◎	◉	◉	HMS252D03.100	...XT	...ST	3	4	100	60	-	6
4	◎	◉	◉	HMS252D04.100	...XT	...ST	4	5	100	60	-	6
5	◎	◉	◉	HMS252D05.100	...XT	...ST	5	6	100	60	-	6
6	◎	◉	◉	HMS252D06.100	...XT	...ST	6	8	100	55	-	8
6	◎	◉	◉	HMS252D06.160	...XT	...ST	6	8	160	115	-	8
8	◎	◉	◉	HMS252D08.100	...XT	...ST	8	10	100	50	-	10
8	◎	◉	◉	HMS252D08.160	...XT	...ST	8	10	160	110	-	10
10	◎	◉	◉	HMS252D10.160	...XT	...ST	10	12	160	110	-	12
12	◎	◉	◉	HMS252D12.160	...XT	...ST	12	14	160	105	-	16

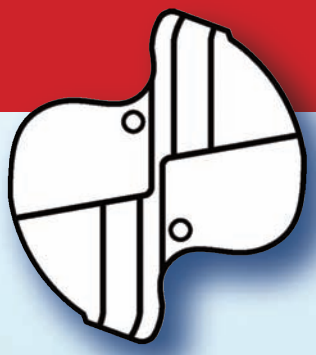
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

The constructive geometry of these end mills allows its use in a wide range of applications

TWO FLUTE END MILLS

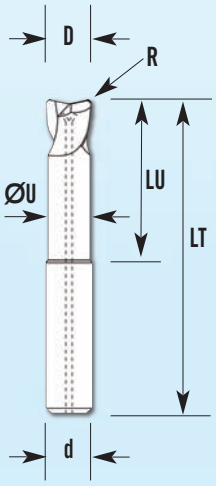
POLISHED CUTTING EDGE



FRESAL UTENSILI

HMUGV-F with internal coolant holes,
HMUGV without internal coolant holes.
Recommended for high-speed cutting of aluminum.

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.



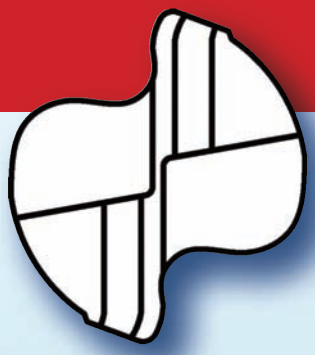
HMUGV-F WITH INTERNAL COOLANT HOLES

Ø	LC	LU	ØU	LT	Q	R	Codes
8	8	34	7,4	69	8	0,3	UGV-FD08.034R03
8	8	34	7,4	69	8	2,5	UGV-FD08.034R25
8	8	34	7,4	69	8	4	UGV-FD08.034R40
8	8	46	7,4	81	8	0,3	UGV-FD08.046R03
8	8	46	7,4	81	8	2,5	UGV-FD08.046R25
8	8	46	7,4	81	8	4	UGV-FD08.046R40
8	8	52	7,4	87	8	0,3	UGV-FD08.052R03
8	8	52	7,4	87	8	2,5	UGV-FD08.052R25
8	8	52	7,4	87	8	4	UGV-FD08.052R40
8	8	58	7,4	93	8	0,3	UGV-FD08.058R03
8	8	58	7,4	93	8	2,5	UGV-FD08.058R25
8	8	58	7,4	93	8	4	UGV-FD08.058R40
8	8	70	7,4	105	8	0,3	UGV-FD08.070R03
8	8	70	7,4	105	8	2,5	UGV-FD08.070R25
8	8	70	7,4	105	8	4	UGV-FD08.070R40
12	12	35	11,1	72	12	0,3	UGV-FD12.035R03
12	12	35	11,1	72	12	2,5	UGV-FD12.035R25
12	12	35	11,1	72	12	4	UGV-FD12.035R40
12	12	35	11,1	72	12	6	UGV-FD12.035R60
12	12	44	11,1	81	12	0,3	UGV-FD12.044R03
12	12	44	11,1	81	12	2,5	UGV-FD12.044R25
12	12	44	11,1	81	12	4	UGV-FD12.044R40
12	12	44	11,1	81	12	6	UGV-FD12.044R60
12	12	53	11,1	90	12	0,3	UGV-FD12.053R03
12	12	53	11,1	90	12	2,5	UGV-FD12.053R25
12	12	53	11,1	90	12	4	UGV-FD12.053R40
12	12	53	11,1	90	12	6	UGV-FD12.053R60
12	12	62	11,1	99	12	0,3	UGV-FD12.062R03
12	12	62	11,1	99	12	2,5	UGV-FD12.062R25
12	12	62	11,1	99	12	4	UGV-FD12.062R40
12	12	62	11,1	99	12	6	UGV-FD12.062R60
12	12	71	11,1	108	12	0,3	UGV-FD12.071R03
12	12	71	11,1	108	12	2,5	UGV-FD12.071R25
12	12	71	11,1	108	12	4	UGV-FD12.071R40
12	12	71	11,1	108	12	6	UGV-FD12.071R60
12	12	80	11,1	117	12	0,3	UGV-FD12.080R03
12	12	80	11,1	117	12	2,5	UGV-FD12.080R25
12	12	80	11,1	117	12	4	UGV-FD12.080R40
12	12	80	11,1	117	12	6	UGV-FD12.080R60

Ø	LC	LU	ØU	LT	Q	R	Codes
12	12	89	11,1	126	12	0,3	UGV-FD12.089R03
12	12	89	11,1	126	12	2,5	UGV-FD12.089R25
12	12	89	11,1	126	12	4	UGV-FD12.089R40
12	12	89	11,1	126	12	6	UGV-FD12.089R60
16	16	40	14,8	80	16	0,3	UGV-FD16.040R03
16	16	40	14,8	80	16	2,5	UGV-FD16.040R25
16	16	40	14,8	80	16	4	UGV-FD16.040R40
16	16	40	14,8	80	16	6	UGV-FD16.040R60
16	16	40	14,8	80	16	8	UGV-FD16.040R80
16	16	52	14,8	92	16	0,3	UGV-FD16.052R03
16	16	52	14,8	92	16	2,5	UGV-FD16.052R25
16	16	52	14,8	92	16	4	UGV-FD16.052R40
16	16	52	14,8	92	16	6	UGV-FD16.052R60
16	16	52	14,8	92	16	8	UGV-FD16.052R80
16	16	64	14,8	104	16	0,3	UGV-FD16.064R03
16	16	64	14,8	104	16	2,5	UGV-FD16.064R25
16	16	64	14,8	104	16	4	UGV-FD16.064R40
16	16	64	14,8	104	16	6	UGV-FD16.064R60
16	16	64	14,8	104	16	8	UGV-FD16.064R80
16	16	76	14,8	116	16	0,3	UGV-FD16.076R03
16	16	76	14,8	116	16	2,5	UGV-FD16.076R25
16	16	76	14,8	116	16	4	UGV-FD16.076R40
16	16	76	14,8	116	16	6	UGV-FD16.076R60
16	16	76	14,8	116	16	8	UGV-FD16.076R80
16	16	88	14,8	128	16	0,3	UGV-FD16.088R03
16	16	88	14,8	128	16	2,5	UGV-FD16.088R25
16	16	88	14,8	128	16	4	UGV-FD16.088R40
16	16	88	14,8	128	16	6	UGV-FD16.088R60
16	16	88	14,8	128	16	8	UGV-FD16.088R80
16	16	100	14,8	140	16	0,3	UGV-FD16.100R03
16	16	100	14,8	140	16	2,5	UGV-FD16.100R25
16	16	100	14,8	140	16	4	UGV-FD16.100R40
16	16	100	14,8	140	16	6	UGV-FD16.100R60
16	16	100	14,8	140	16	8	UGV-FD16.100R80
16	16	112	14,8	152	16	0,3	UGV-FD16.112R03
16	16	112	14,8	152	16	2,5	UGV-FD16.112R25
16	16	112	14,8	152	16	4	UGV-FD16.112R40
16	16	112	14,8	152	16	6	UGV-FD16.112R60
16	16	112	14,8	152	16	8	UGV-FD16.112R80

TWO FLUTE END MILLS

POLISHED CUTTING EDGE

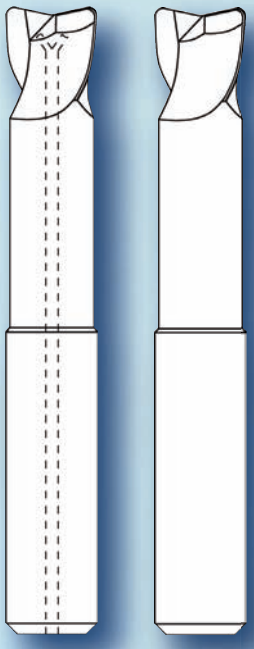


HMUGV-F WITH INTERNAL COOLANT HOLES

Ø	LC	LU	ØU	LT	Q	R	Codes
20	20	58	18,5	101	20	0	UGV-FD20.058R00
20	20	58	18,5	101	20	2,5	UGV-FD20.058R25
20	20	58	18,5	101	20	4	UGV-FD20.058R40
20	20	58	18,5	101	20	6	UGV-FD20.058R60
20	20	58	18,5	101	20	8	UGV-FD20.058R80
20	20	58	18,5	101	20	10	UGV-FD20.058R100
20	20	73	18,5	116	20	0	UGV-FD20.073R00
20	20	73	18,5	116	20	2,5	UGV-FD20.073R25
20	20	73	18,5	116	20	4	UGV-FD20.073R40
20	20	73	18,5	116	20	6	UGV-FD20.073R60
20	20	73	18,5	116	20	8	UGV-FD20.073R80
20	20	73	18,5	116	20	10	UGV-FD20.073R100
20	20	88	18,5	131	20	0	UGV-FD20.088R00
20	20	88	18,5	131	20	2,5	UGV-FD20.088R25
20	20	88	18,5	131	20	4	UGV-FD20.088R40
20	20	88	18,5	131	20	6	UGV-FD20.088R60
20	20	88	18,5	131	20	8	UGV-FD20.088R80
20	20	88	18,5	131	20	9	UGV-FD20.088R90
20	20	88	18,5	131	20	10	UGV-FD20.088R100
20	14	103	18,5	146	20	0	UGV-FD20.103R00
20	14	103	18,5	146	20	2,5	UGV-FD20.103R25
20	14	103	18,5	146	20	4	UGV-FD20.103R40
20	14	103	18,5	146	20	6	UGV-FD20.103R60
20	14	103	18,5	146	20	8	UGV-FD20.103R80
20	14	103	18,5	146	20	10	UGV-FD20.103R100
20	14	118	18,5	161	20	0	UGV-FD20.118R00
20	14	118	18,5	161	20	2,5	UGV-FD20.118R25
20	14	118	18,5	161	20	4	UGV-FD20.118R40
20	14	118	18,5	161	20	6	UGV-FD20.118R60
20	14	118	18,5	161	20	8	UGV-FD20.118R80
20	14	118	18,5	161	20	10	UGV-FD20.118R100
20	14	133	18,5	176	20	0	UGV-FD20.133R00
20	14	133	18,5	176	20	2,5	UGV-FD20.133R25
20	14	133	18,5	176	20	4	UGV-FD20.133R40
20	14	133	18,5	176	20	6	UGV-FD20.133R60
20	14	133	18,5	176	20	8	UGV-FD20.133R80
20	14	133	18,5	176	20	10	UGV-FD20.133R100
20	14	148	18,5	191	20	0	UGV-FD20.148R00
20	14	148	18,5	191	20	2,5	UGV-FD20.148R25
20	14	148	18,5	191	20	4	UGV-FD20.148R40
20	14	148	18,5	191	20	6	UGV-FD20.148R60
20	14	148	18,5	191	20	8	UGV-FD20.148R80
20	14	148	18,5	191	20	10	UGV-FD20.148R100
25	20	75	22,8	120	25	0	UGV-FD25.075R00
25	20	75	22,8	120	25	2,5	UGV-FD25.075R25
25	20	75	22,8	120	25	4	UGV-FD25.075R40
25	20	75	22,8	120	25	6	UGV-FD25.075R60
25	20	75	22,8	120	25	8	UGV-FD25.075R80
25	20	75	22,8	120	25	10	UGV-FD25.075R100
25	20	75	22,8	120	25	12,5	UGV-FD25.075R125
25	20	105	22,8	150	25	0	UGV-FD25.105R00
25	20	105	22,8	150	25	2,5	UGV-FD25.105R25
25	20	105	22,8	150	25	4	UGV-FD25.105R40
25	20	105	22,8	150	25	6	UGV-FD25.105R60
25	20	105	22,8	150	25	8	UGV-FD25.105R80
25	20	105	22,8	150	25	10	UGV-FD25.105R100
25	20	105	22,8	150	25	12,5	UGV-FD25.105R125

HMUGV WITHOUT INTERNAL COOLANT HOLES

Ø	LC	LU	ØU	LT	Q	R	Codes
8	8	40	7,4	70	8	0,2	UGV-D08.040R02
8	8	40	7,4	70	8	2,5	UGV-D08.040R25
8	8	40	7,4	70	8	4	UGV-D08.040R40
10	10	30	9,2	62	10	0,2	UGV-D10.030R02
10	10	30	9,2	62	10	2,5	UGV-D10.030R25
10	10	30	9,2	62	10	4	UGV-D10.030R40
10	10	40	9,2	72	10	4	UGV-D10.040R40
10	10	50	9,2	82	10	0,2	UGV-D10.050R02
10	10	50	9,2	82	10	2,5	UGV-D10.050R25
10	10	50	9,2	82	10	4	UGV-D10.050R40
12	12	45	11,1	80	12	0,2	UGV-D12.045R02
12	12	45	11,1	80	12	2,5	UGV-D12.045R25
12	12	45	11,1	80	12	4	UGV-D12.045R40
12	12	65	11,1	100	12	0,3	UGV-D12.065R03
12	12	65	11,1	100	12	2,5	UGV-D12.065R25
12	12	65	11,1	100	12	4	UGV-D12.065R40
12	12	65	11,1	100	12	6	UGV-D12.065R60
12	12	85	11,1	120	12	4	UGV-D12.085R40
16	16	45	14,8	83	16	0,2	UGV-D16.045R02
16	16	45	14,8	83	16	2,5	UGV-D16.045R25
16	16	45	14,8	83	16	4	UGV-D16.045R40
16	16	45	14,8	83	16	6	UGV-D16.045R60
16	16	65	14,8	103	16	0,2	UGV-D16.065R02
16	16	65	14,8	103	16	2,5	UGV-D16.065R25
16	16	65	14,8	103	16	4	UGV-D16.065R40
16	16	65	14,8	103	16	6	UGV-D16.065R60
16	16	85	14,8	123	16	4	UGV-D16.085R40
20	20	45	18,5	85	20	0,2	UGV-D20.045R02
20	20	45	18,5	85	20	2,5	UGV-D20.045R25
20	20	45	18,5	85	20	4	UGV-D20.045R40
20	20	45	18,5	85	20	5	UGV-D20.045R50
20	20	65	18,5	105	20	0,2	UGV-D20.065R02
20	20	65	18,5	105	20	2,5	UGV-D20.065R25
20	20	65	18,5	105	20	4	UGV-D20.065R40
20	20	65	18,5	105	20	5	UGV-D20.065R50
20	20	65	18,5	105	20	6	UGV-D20.065R60
20	20	95	18,5	135	20	4	UGV-D20.095R40
20	20	95	18,5	135	20	6	UGV-D20.095R60
20	20	95	18,5	135	20	8	UGV-D20.095R80
25	20	45	22,8	85	25	0,2	UGV-D25.045R02
25	20	45	22,8	85	25	2,5	UGV-D25.045R25
25	20	45	22,8	85	25	4	UGV-D25.045R40
25	20	45	22,8	85	25	5	UGV-D25.045R50
25	20	65	22,8	105	25	0,2	UGV-D25.065R02
25	20	65	22,8	105	25	2,5	UGV-D25.065R25
25	20	65	22,8	105	25	4	UGV-D25.065R40
25	20	65	22,8	105	25	5	UGV-D25.065R50
25	20	65	22,8	105	25	6	UGV-D25.065R60
25	20	65	22,8	105	25	10	UGV-D25.065R100
25	20	95	22,8	135	25	0,2	UGV-D25.095R02
25	20	95	22,8	135	25	2,5	UGV-D25.095R25
25	20	95	22,8	135	25	4	UGV-D25.095R40
25	20	95	22,8	135	25	8	UGV-D25.095R80



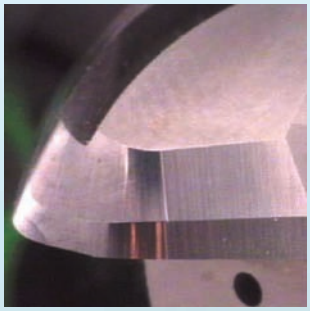
DT DIACUT

DIACUT is a coating with low roughness and low coefficient of friction. It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.

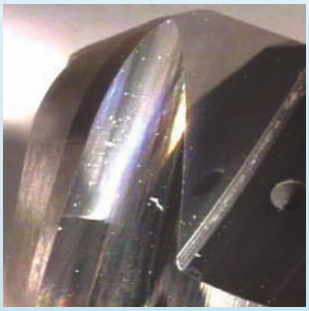
Available in 10 days.

FRESAL UTENSILI

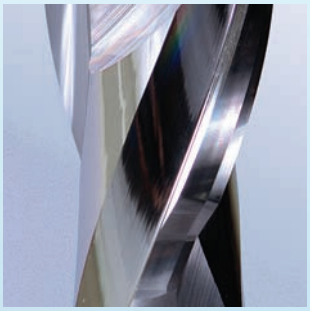
With Fresal UGV end mills, decreases the consumption of energy and increases the duration of optimal use of the tool.



Excellent regularity of sharpening.
The choice of the grinding wheel and it's cutting parameters in sharpening operations help to prevent overheating and possible traces of micro-chippings;



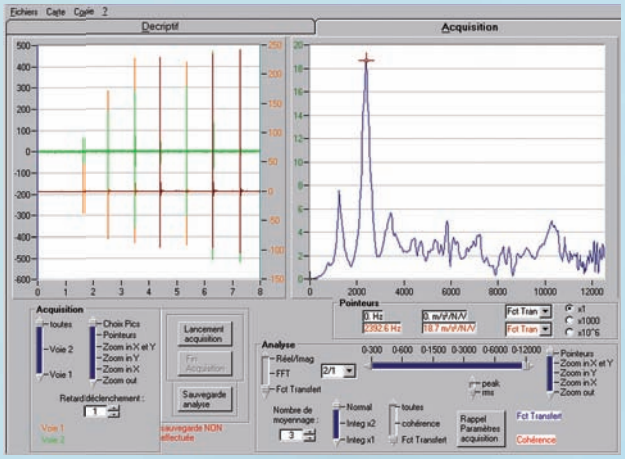
Mirror effect due to the quality of lapping.
The tooth is naturally reflected on the incision and vice versa;



Polished flute.
Allows to reduce the typical adhesion phenomena at the cutting edge;

Rounded joint at the bottom of the flute.
Allows to finish deep walls, eliminating the marks of the various passes.

TEST WITH FRESAL END MILLS UGV-F ∅20 R=4 LU=58



01) DYNAMIC IMPUSE
With the aid of an accelerometer we have researched the vibration frequency of the whole tool-spindle attack.
With this information we have obtained the optimal rotation speed for the testing machine (Meteor 10).
n= 23600 r/min

02) TESTS AND RESULTS
The objective of our test was **to search the maximum chips volume** with a pass depth (ap_{max}) of 15mm.
→ Maximum rate of chip volume (Q_{max}) in the order of **3700 cm³/min.**

The energy modeling of cutting energy (W) as a function of chip thickness (h) shows an extremely low value of the specific cutting energy (**Wcref=9,8**).

This highlights the potential of the superior quality of sharpening.

Ecology is saving!

FRESAL

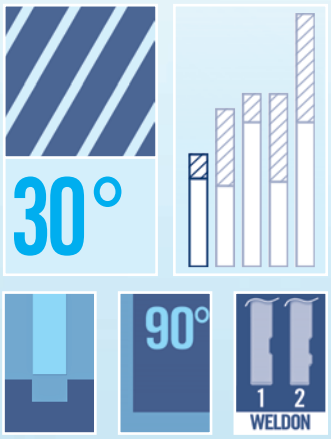
UTENSILI

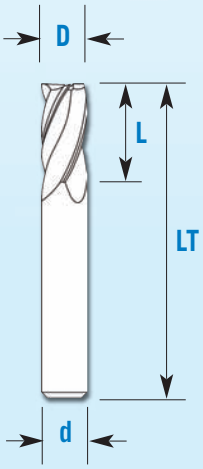
THREE FLUTE END MILLS

THREE FLUTE END MILLS

FRESAL UTENSILI

HM310.30 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM310.30D02	...XT	...ST	2	6	40	2
2,5	◎	◉	◉	HM310.30D025	...XT	...ST	2,5	8	40	2,5
3	◎	◉	◉	HM310.30D03	...XT	...ST	3	8	40	3
3,5	◎	◉	◉	HM310.30D035	...XT	...ST	3,5	11	50	3,5
4	◎	◉	◉	HM310.30D04	...XT	...ST	4	11	50	4
4,5	◎	◉	◉	HM310.30D045	...XT	...ST	4,5	13	50	4,5
5	◎	◉	◉	HM310.30D05	...XT	...ST	5	13	50	5
5,5	◎	◉	◉	HM310.30D055	...XT	...ST	5,5	16	57	5,5
6	◎	◉	◉	HM310.30D06	...XT	...ST	6	16	57	6
6,5	◎	◉	◉	HM310.30D065	...XT	...ST	6,5	16	60	6,5
7	◎	◉	◉	HM310.30D07	...XT	...ST	7	16	60	7
7,5	◎	◉	◉	HM310.30D075	...XT	...ST	7,5	19	63	7,5
8	◎	◉	◉	HM310.30D008	...XT	...ST	8	19	63	8
8,5	◎	◉	◉	HM310.30D085	...XT	...ST	8,5	19	67	8,5
9	◎	◉	◉	HM310.30D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HM310.30D010	...XT	...ST	10	22	72	10
11	◎	◉	◉	HM310.30D011	...XT	...ST	11	26	83	11
12	◎	◉	◉	HM310.30D012	...XT	...ST	12	26	83	12
13	◎	◉	◉	HM310.30D013	...XT	...ST	13	26	83	13
14	◎	◉	◉	HM310.30D014	...XT	...ST	14	26	83	14
15	◎	◉	◉	HM310.30D015	...XT	...ST	15	32	92	15
16	◎	◉	◉	HM310.30D016	...XT	...ST	16	32	92	16
17	◎	◉	◉	HM310.30D017	...XT	...ST	17	32	92	17
18	◎	◉	◉	HM310.30D018	...XT	...ST	18	32	92	18
19	◎	◉	◉	HM310.30D019	...XT	...ST	19	38	104	19
20	◎	◉	◉	HM310.30D020	...XT	...ST	20	38	104	20
22	◎	◉	◉	HM310.30D022	...XT	...ST	22	38	104	22
25	◎	◉	◉	HM310.30D025	...XT	...ST	25	45	121	25

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

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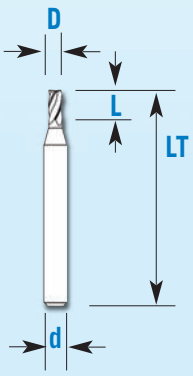
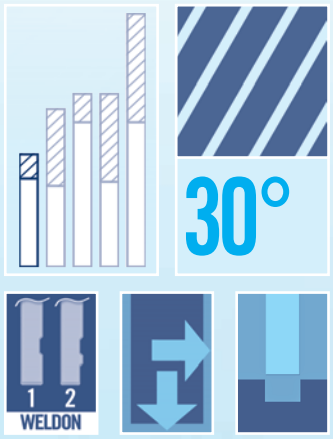
THREE FLUTE END MILLS

HM311.30 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM311.30D02	...XT	...ST	2	6	57	6
2,5	◎	◉	◉	HM311.30D25	...XT	...ST	2,5	8	57	6
3	◎	◉	◉	HM311.30D03	...XT	...ST	3	8	57	6
3,5	◎	◉	◉	HM311.30D35	...XT	...ST	3,5	11	57	6
4	◎	◉	◉	HM311.30D04	...XT	...ST	4	11	57	6
4,5	◎	◉	◉	HM311.30D45	...XT	...ST	4,5	13	57	6
5	◎	◉	◉	HM311.30D05	...XT	...ST	5	13	57	6
5,5	◎	◉	◉	HM311.30D55	...XT	...ST	5,5	16	57	6
7	◎	◉	◉	HM311.30D07	...XT	...ST	7	16	63	8
9	◎	◉	◉	HM311.30D09	...XT	...ST	9	19	72	10

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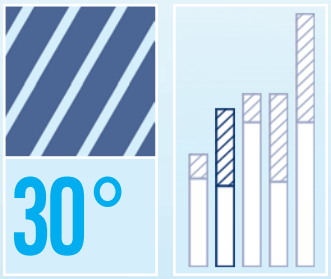
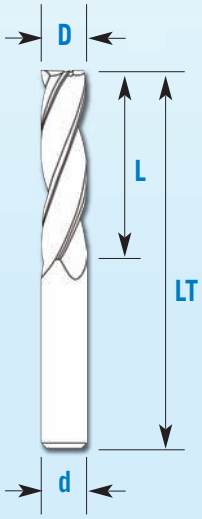
The constructive geometry of these end mills allows its use in a wide range of applications

THREE FLUTE END MILLS

FRESAL UTENSILI

HM320.30 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL ∅	COATINGS UNCOATED	COATINGS MAXCUT	COATINGS SPEEDCUT	CODES UNCOATED	CODES XT	CODES ST	D h10	L	LT	d h6
3	◎	◉	◉	HM320.30D03	...XT	...ST	3	12	50	3
4	◎	◉	◉	HM320.30D04	...XT	...ST	4	16	55	4
5	◎	◉	◉	HM320.30D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HM320.30D06	...XT	...ST	6	24	65	6
7	◎	◉	◉	HM320.30D07	...XT	...ST	7	30	75	7
8	◎	◉	◉	HM320.30D08	...XT	...ST	8	32	80	8
9	◎	◉	◉	HM320.30D09	...XT	...ST	9	32	80	9
10	◎	◉	◉	HM320.30D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HM320.30D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HM320.30D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HM320.30D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HM320.30D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HM320.30D20	...XT	...ST	20	60	130	20
22	◎	◉	◉	HM320.30D22	...XT	...ST	22	60	130	22
25	◎	◉	◉	HM320.30D25	...XT	...ST	25	75	160	25

The constructive geometry of these end mills allows its use in a wide range of applications

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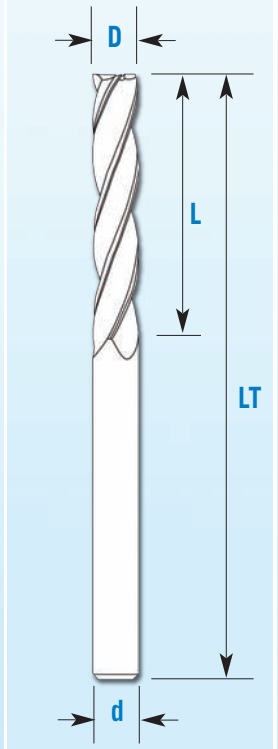
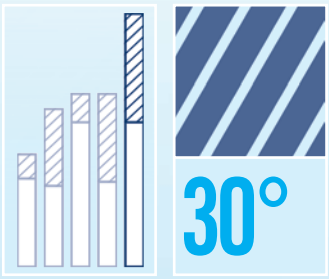
Available in 3 days.

THREE FLUTE END MILLS



HM340.30 is recommended for milling of medium and medium-high tensile strength materials.



FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HM340.30D03	...XT	...ST	3	25	75	3
4	◎	◉	◉	HM340.30D04	...XT	...ST	4	30	75	4
5	◎	◉	◉	HM340.30D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HM340.30D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HM340.30D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HM340.30D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HM340.30D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HM340.30D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HM340.30D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HM340.30D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HM340.30D20	...XT	...ST	20	80	160	20

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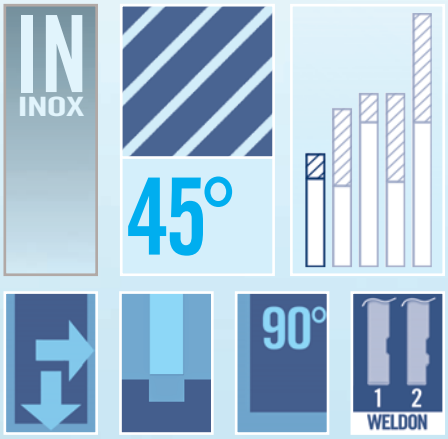
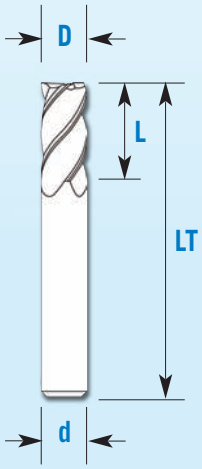
The constructive geometry of these end mills allows its use in a wide range of applications

THREE FLUTE END MILLS

FRESAL UTENSILI

HM310.45 is particularly recommended for milling stainless steel and medium-high tensile strength steels.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HM310.45D03	...XT	...ST	3	8	40	3
4	◎	◉	◉	HM310.45D04	...XT	...ST	4	11	50	4
5	◎	◉	◉	HM310.45D05	...XT	...ST	5	13	50	5
6	◎	◉	◉	HM310.45D06	...XT	...ST	6	16	57	6
7	◎	◉	◉	HM310.45D07	...XT	...ST	7	16	60	7
8	◎	◉	◉	HM310.45D08	...XT	...ST	8	19	63	8
9	◎	◉	◉	HM310.45D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HM310.45D10	...XT	...ST	10	22	72	10
11	◎	◉	◉	HM310.45D11	...XT	...ST	11	26	83	11
12	◎	◉	◉	HM310.45D12	...XT	...ST	12	26	83	12
13	◎	◉	◉	HM310.45D13	...XT	...ST	13	26	83	13
14	◎	◉	◉	HM310.45D14	...XT	...ST	14	26	83	14
15	◎	◉	◉	HM310.45D15	...XT	...ST	15	32	92	15
16	◎	◉	◉	HM310.45D16	...XT	...ST	16	32	92	16
17	◎	◉	◉	HM310.45D17	...XT	...ST	17	32	92	17
18	◎	◉	◉	HM310.45D18	...XT	...ST	18	32	92	18
19	◎	◉	◉	HM310.45D19	...XT	...ST	19	38	104	19
20	◎	◉	◉	HM310.45D20	...XT	...ST	20	38	104	20

High performance end mills with low tendency to vibration

XT MAXCUT ST SPEEDCUT

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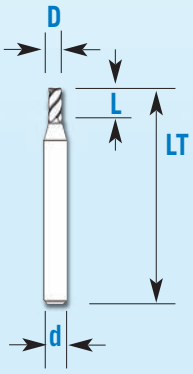
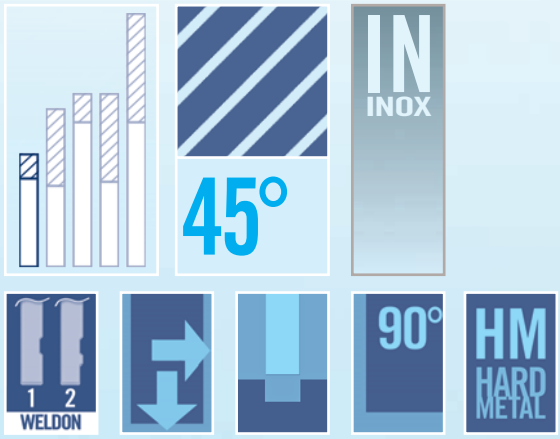
Available in 3 days.

THREE FLUTE END MILLS

HM311.45 is particularly recommended for milling stainless steel and medium-high tensile strength steels.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM311.45D02	...XT	...ST	2	6	57	6
3	◎	◉	◉	HM311.45D03	...XT	...ST	3	8	57	6
4	◎	◉	◉	HM311.45D04	...XT	...ST	4	11	57	6
5	◎	◉	◉	HM311.45D05	...XT	...ST	5	13	57	6
7	◎	◉	◉	HM311.45D07	...XT	...ST	7	16	63	8
9	◎	◉	◉	HM311.45D09	...XT	...ST	9	19	72	10

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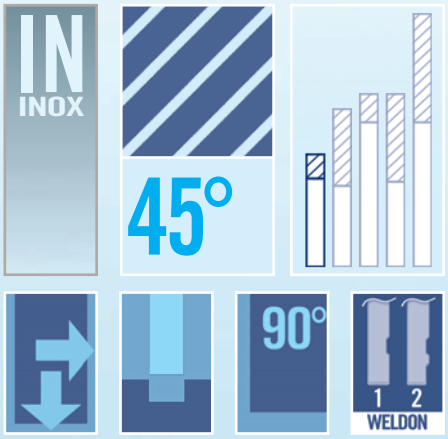
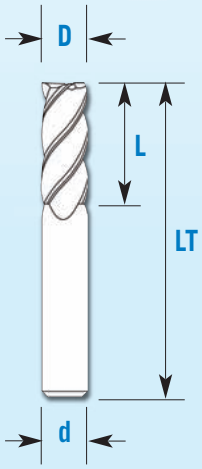
High performance end mills with low tendency to vibration

THREE FLUTE END MILLS

FRESAL UTENSILI

HM315.45 is particularly recommended for milling stainless steel and medium-high tensile strength steels.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
8	◎	◉	◉	HM315.45D08	...XT	...ST	8	25	63	8
10	◎	◉	◉	HM315.45D10	...XT	...ST	10	28	72	10
12	◎	◉	◉	HM315.45D12	...XT	...ST	12	32	83	12
14	◎	◉	◉	HM315.45D14	...XT	...ST	14	32	83	14
16	◎	◉	◉	HM315.45D16	...XT	...ST	16	36	92	16
18	◎	◉	◉	HM315.45D18	...XT	...ST	18	40	92	18
20	◎	◉	◉	HM315.45D20	...XT	...ST	20	45	104	20
22	◎	◉	◉	HM315.45D22	...XT	...ST	22	45	104	22
25	◎	◉	◉	HM315.45D25	...XT	...ST	25	52	121	25

High performance end mills with low tendency to vibration

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THREE FLUTE END MILLS

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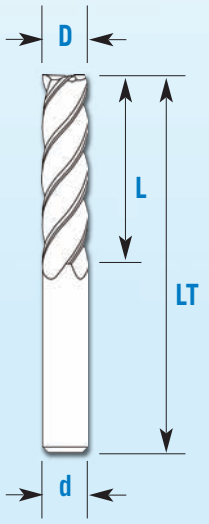
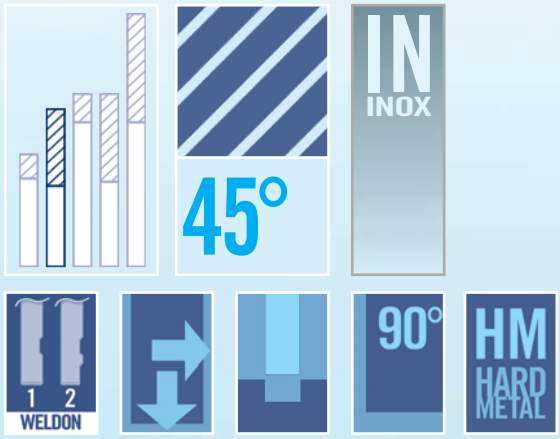




FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
5	◎	◉	◉	HM320.45D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HM320.45D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HM320.45D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HM320.45D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HM320.45D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HM320.45D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HM320.45D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HM320.45D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HM320.45D20	...XT	...ST	20	60	130	20

XT MAXCUT

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

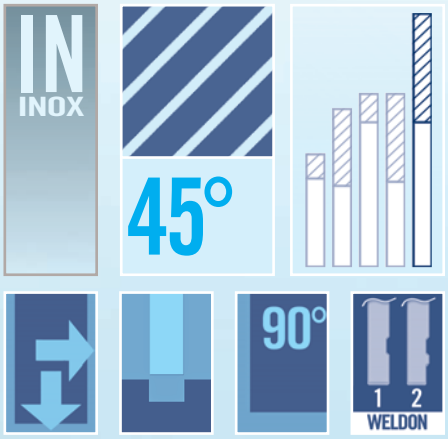
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

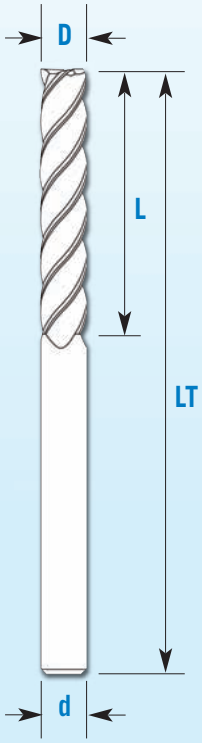
High performance end mills with low tendency to vibration

THREE FLUTE END MILLS

FRESAL UTENSILI

HM340.45 is particularly recommended for milling stainless steel and medium-high tensile strength steels





FRESAL ∅	COATINGS UNCOATED	COATINGS MAXCUT	COATINGS SPEEDCUT	CODES UNCOATED	CODES XT	CODES ST	D h10	L	LT	d h6
5	◎	◉	◉	HM340.45D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HM340.45D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HM340.45D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HM340.45D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HM340.45D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HM340.45D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HM340.45D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HM340.45D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HM340.45D20	...XT	...ST	20	80	160	20

High performance end mills with low tendency to vibration

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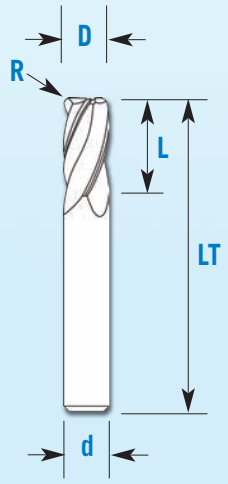
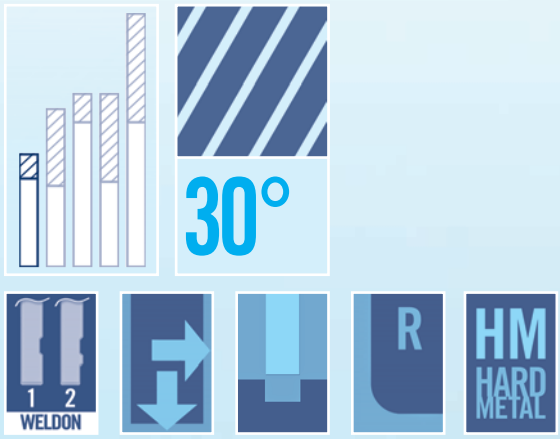
FRESAL UTENSILI

THREE FLUTE END MILLS *corner radius*

HMR310.30 is particularly recommended for milling stainless steel and medium-high tensile strength steels.





FRESAL	COATINGS			CODES			D	R	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10				h6
3	◎	◉	◉	HMR310.30D03.04	...XT	...ST	3	0,4	8	40	3
4	◎	◉	◉	HMR310.30D04.02	...XT	...ST	4	0,2	11	50	4
4	◎	◉	◉	HMR310.30D04.05	...XT	...ST	4	0,5	11	50	4
4	◎	◉	◉	HMR310.30D04.10	...XT	...ST	4	1,0	11	50	4
5	◎	◉	◉	HMR310.30D05.02	...XT	...ST	5	0,2	13	50	5
5	◎	◉	◉	HMR310.30D05.10	...XT	...ST	5	1,0	13	50	5
6	◎	◉	◉	HMR310.30D06.04	...XT	...ST	6	0,4	16	57	6
6	◎	◉	◉	HMR310.30D06.06	...XT	...ST	6	0,6	16	57	6
6	◎	◉	◉	HMR310.30D06.08	...XT	...ST	6	0,8	16	57	6
6	◎	◉	◉	HMR310.30D06.10	...XT	...ST	6	1,0	16	57	6
8	◎	◉	◉	HMR310.30D08.04	...XT	...ST	8	0,4	19	63	8
8	◎	◉	◉	HMR310.30D08.06	...XT	...ST	8	0,6	19	63	8
8	◎	◉	◉	HMR310.30D08.08	...XT	...ST	8	0,8	19	63	8
8	◎	◉	◉	HMR310.30D08.10	...XT	...ST	8	1,0	19	63	8
8	◎	◉	◉	HMR310.30D08.20	...XT	...ST	8	2,0	19	63	8
8	◎	◉	◉	HMR310.30D08.30	...XT	...ST	8	3,0	19	63	8
10	◎	◉	◉	HMR310.30D10.05	...XT	...ST	10	0,5	22	72	10
10	◎	◉	◉	HMR310.30D10.08	...XT	...ST	10	0,8	22	72	10
10	◎	◉	◉	HMR310.30D10.10	...XT	...ST	10	1,0	22	72	10
10	◎	◉	◉	HMR310.30D10.20	...XT	...ST	10	2,0	22	72	10
10	◎	◉	◉	HMR310.30D10.30	...XT	...ST	10	3,0	22	72	10
12	◎	◉	◉	HMR310.30D12.05	...XT	...ST	12	0,5	26	83	12
14	◎	◉	◉	HMR310.30D14.02	...XT	...ST	14	0,2	26	83	14
14	◎	◉	◉	HMR310.30D14.10	...XT	...ST	14	1,0	26	83	14
16	◎	◉	◉	HMR310.30D16.30	...XT	...ST	16	3,0	32	92	16
16	◎	◉	◉	HMR310.30D16.40	...XT	...ST	16	4,0	32	92	16

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Available in stock.

ST SPEEDCUT

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Available in 3 days.

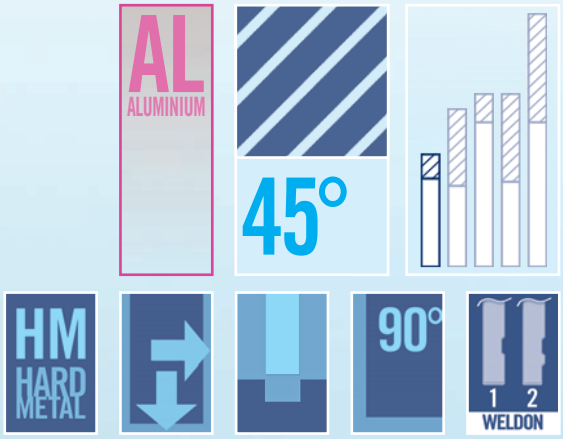
The constructive geometry of these end mills allows its use in a wide range of applications

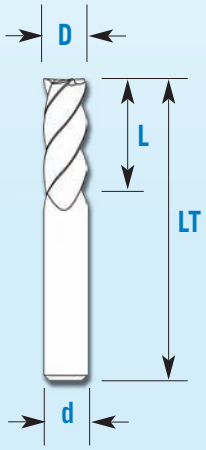
THREE FLUTE END MILLS

POLISHED CUTTING EDGE

FRESAL UTENSILI

HM315.43 is particularly recommended for milling aluminum and plastics.





NEW

FRESAL	COATINGS		CODES		D	R	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10				h6
3	◎	◉	HM315.43D03	...DT	3	-	8	57	6
4	◎	◉	HM315.43D04	...DT	4	-	11	57	6
5	◎	◉	HM315.43D05	...DT	5	-	13	57	6
6	◎	◉	HM315.43D06	...DT	6	-	18	57	6
8	◎	◉	HM315.43D08	...DT	8	-	25	63	8
10	◎	◉	HM315.43D10	...DT	10	-	28	72	10
12	◎	◉	HM315.43D12	...DT	12	-	32	83	12
14	◎	◉	HM315.43D14	...DT	14	-	32	83	14
16	◎	◉	HM315.43D16	...DT	16	-	36	92	16
18	◎	◉	HM315.43D18	...DT	18	-	40	92	18
20	◎	◉	HM315.43D20	...DT	20	-	45	104	20
25	◎	◉	HM315.43D25	...DT	25	-	52	121	25

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machinings.

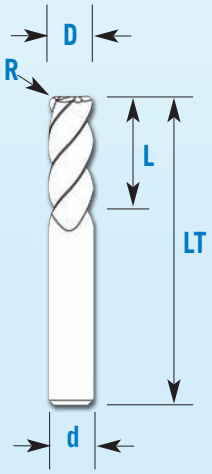
DT DIACUT

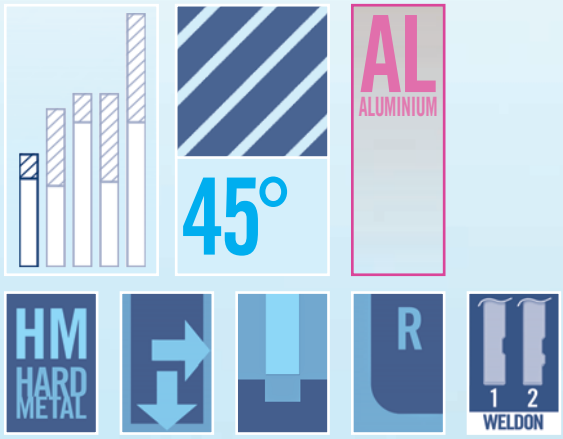
DIACUT
is a coating with low roughness and low coefficient of friction. It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

FRESAL UTENSILI

THREE FLUTE END MILLS
corner radius
POLISHED CUTTING EDGE

HMR315.43 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS	CODES		D	R	L	LT	d
∅	UNCOATED / DIACUT	UNCOATED	DT	h10				h6
6	◎ / ◉	HMR315.43D06.05	...DT	6	0,5	18	57	6
6	◎ / ◉	HMR315.43D06.10	...DT	6	1	18	57	6
6	◎ / ◉	HMR315.43D06.15	...DT	6	1,5	18	57	6
6	◎ / ◉	HMR315.43D06.20	...DT	6	2	18	57	6
8	◎ / ◉	HMR315.43D08.10	...DT	8	1	25	63	8
8	◎ / ◉	HMR315.43D08.15	...DT	8	1,5	25	63	8
8	◎ / ◉	HMR315.43D08.20	...DT	8	2	25	63	8
8	◎ / ◉	HMR315.43D08.25	...DT	8	2,5	25	63	8
10	◎ / ◉	HMR315.43D10.10	...DT	10	1	28	72	10
10	◎ / ◉	HMR315.43D10.15	...DT	10	1,5	28	72	10
10	◎ / ◉	HMR315.43D10.20	...DT	10	2	28	72	10
10	◎ / ◉	HMR315.43D10.25	...DT	10	2,5	28	72	10
10	◎ / ◉	HMR315.43D10.30	...DT	10	3	28	72	10
12	◎ / ◉	HMR315.43D12.10	...DT	12	1	32	83	12
12	◎ / ◉	HMR315.43D12.15	...DT	12	1,5	32	83	12
12	◎ / ◉	HMR315.43D12.20	...DT	12	2	32	83	12
12	◎ / ◉	HMR315.43D12.25	...DT	12	2,5	32	83	12
12	◎ / ◉	HMR315.43D12.30	...DT	12	3	32	83	12
16	◎ / ◉	HMR315.43D16.10	...DT	16	1	36	92	16
16	◎ / ◉	HMR315.43D16.15	...DT	16	1,5	36	92	16
16	◎ / ◉	HMR315.43D16.20	...DT	16	2	36	92	16
16	◎ / ◉	HMR315.43D16.25	...DT	16	2,5	36	92	16
16	◎ / ◉	HMR315.43D16.30	...DT	16	3	36	92	16
20	◎ / ◉	HMR315.43D20.10	...DT	20	1	45	104	20
20	◎ / ◉	HMR315.43D20.15	...DT	20	1,5	45	104	20
20	◎ / ◉	HMR315.43D20.20	...DT	20	2	45	104	20
20	◎ / ◉	HMR315.43D20.25	...DT	20	2,5	45	104	20
20	◎ / ◉	HMR315.43D20.30	...DT	20	3	45	104	20
20	◎ / ◉	HMR315.43D20.40	...DT	20	4	45	104	20

NEW

DT DIACUT

DIACUT
is a coating with low roughness and low coefficient of friction. It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

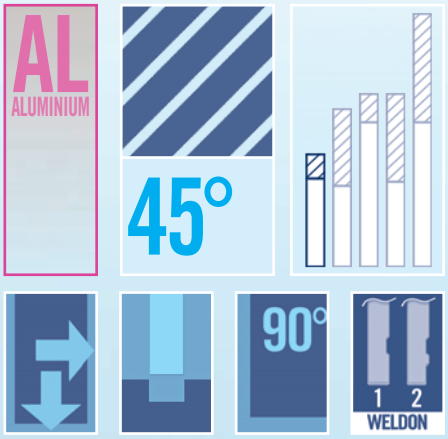
The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machinings.

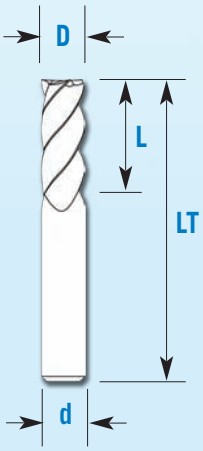
THREE FLUTE END MILLS

POLISHED CUTTING EDGE

FRESAL UTENSILI

HMF315.43 with coolant holes
is particularly recommended
for milling aluminium
and plastics.





NEW

FRESAL ∅	COATINGS UNCOATED	COATINGS DIACUT	CODES UNCOATED	CODES DT	D h10	R	L	LT	d h6
10	◎	◉	HMF315.43D10	...DT	10	-	28	72	10
12	◎	◉	HMF315.43D12	...DT	12	-	32	83	12
16	◎	◉	HMF315.43D16	...DT	16	-	36	92	16
20	◎	◉	HMF315.43D20	...DT	20	-	45	104	20
25	◎	◉	HMF315.43D25	...DT	25	-	52	121	25

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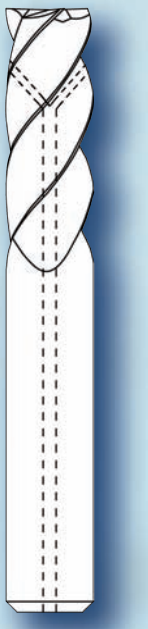

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THREE FLUTE END MILLS
corner radius
POLISHED CUTTING EDGE

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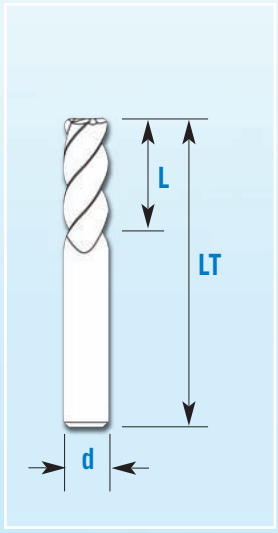
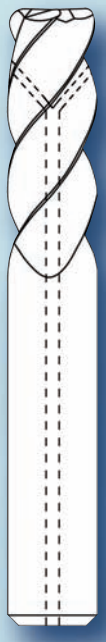


FRESAL	COATINGS		CODES		D	R	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10				h6
10	◎	◉	HMFR315.43D10.10	...DT	10	1	28	72	10
10	◎	◉	HMFR315.43D10.15	...DT	10	1,5	28	72	10
10	◎	◉	HMFR315.43D10.20	...DT	10	2	28	72	10
10	◎	◉	HMFR315.43D10.25	...DT	10	2,5	28	72	10
10	◎	◉	HMFR315.43D10.30	...DT	10	3	28	72	10
12	◎	◉	HMFR315.43D12.10	...DT	12	1	32	83	12
12	◎	◉	HMFR315.43D12.15	...DT	12	1,5	32	83	12
12	◎	◉	HMFR315.43D12.20	...DT	12	2	32	83	12
12	◎	◉	HMFR315.43D12.25	...DT	12	2,5	32	83	12
12	◎	◉	HMFR315.43D12.30	...DT	12	3	32	83	12
16	◎	◉	HMFR315.43D16.10	...DT	16	1	36	92	16
16	◎	◉	HMFR315.43D16.15	...DT	16	1,5	36	92	16
16	◎	◉	HMFR315.43D16.20	...DT	16	2	36	92	16
16	◎	◉	HMFR315.43D16.25	...DT	16	2,5	36	92	16
16	◎	◉	HMFR315.43D16.30	...DT	16	3	36	92	16
20	◎	◉	HMFR315.43D20.10	...DT	20	1	45	104	20
20	◎	◉	HMFR315.43D20.15	...DT	20	1,5	45	104	20
20	◎	◉	HMFR315.43D20.20	...DT	20	2	45	104	20
20	◎	◉	HMFR315.43D20.25	...DT	20	2,5	45	104	20
20	◎	◉	HMFR315.43D20.30	...DT	20	3	45	104	20
20	◎	◉	HMFR315.43D20.40	...DT	20	4	45	104	20

NEW



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Available in
10 days.

The polished
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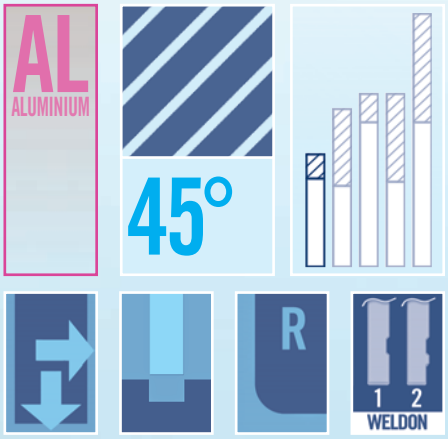
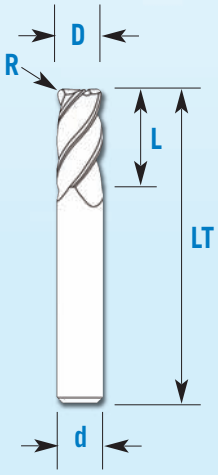
of the chip,
as well as a significant
reduction in adhesion
phenomena typical
of light alloys

THREE FLUTE END MILLS
corner radius
POLISHED CUTTING EDGE

FRESAL UTENSILI

HMR310.45 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	R	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10				h6
3	◎	◉	HMR310.45D03.02	...DT	3	0,2	8	40	3
4	◎	◉	HMR310.45D04.02	...DT	4	0,2	11	50	4
5	◎	◉	HMR310.45D05.02	...DT	5	0,2	13	50	5
6	◎	◉	HMR310.45D06.03	...DT	6	0,3	16	57	6
6	◎	◉	HMR310.45D06.05	...DT	6	0,5	16	57	6
8	◎	◉	HMR310.45D08.05	...DT	8	0,5	19	63	8
8	◎	◉	HMR310.45D08.10	...DT	8	1,0	19	63	8
10	◎	◉	HMR310.45D10.05	...DT	10	0,5	22	72	10
10	◎	◉	HMR310.45D10.10	...DT	10	1,0	22	72	10
12	◎	◉	HMR310.45D12.10	...DT	12	1,0	26	83	12
12	◎	◉	HMR310.45D12.15	...DT	12	1,5	26	83	12

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is a coating with low roughness and low coefficient of friction.

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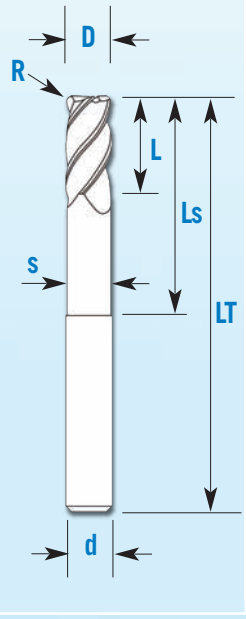
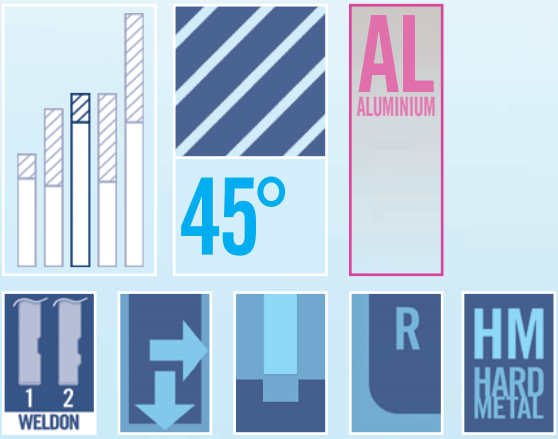
Available in 10 days.

THREE FLUTE END MILLS
corner radius
POLISHED CUTTING EDGE

HMR330.45 is particularly recommended for milling aluminum and plastics.





FRESAL	COATINGS		CODES		D	R	L	LT	Ls	s	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10						h6
3	◎	◉	HMR330.45D03.02	...DT	3	0,2	8	60	30	2,9	3
4	◎	◉	HMR330.45D04.03	...DT	4	0,3	10	100	60	3,8	4
5	◎	◉	HMR330.45D05.05	...DT	5	0,5	12	100	60	4,8	5
6	◎	◉	HMR330.45D06.05	...DT	6	0,5	14	100	60	5,8	6
8	◎	◉	HMR330.45D08.05	...DT	8	0,5	16	120	75	7,7	8
10	◎	◉	HMR330.45D10.05	...DT	10	0,5	25	150	100	9,7	10
12	◎	◉	HMR330.45D12.05	...DT	12	0,5	25	150	100	11,7	12

DT DIACUT

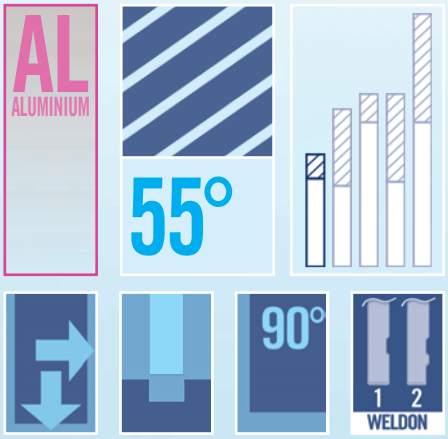
DIACUT
is a coating with low roughness and low coefficient of friction.

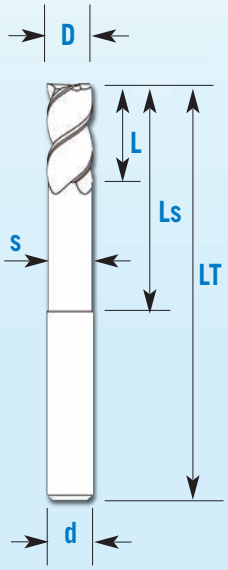
It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machinings.

THREE FLUTE END MILLS

HM330.55 is specific for milling aluminum and its alloys.





FRESAL	COATINGS		CODES		D	L	LT	Ls	s	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10					h6
10	◎	◉	HM330.55D10	...DT	10	22	100	50	9,7	10
12	◎	◉	HM330.55D12	...DT	12	26	110	60	11,7	12
16	◎	◉	HM330.55D16	...DT	16	32	125	65	15,6	16
20	◎	◉	HM330.55D20	...DT	20	38	130	70	19,6	20

The special constructive geometry allows the use at high cutting speed.

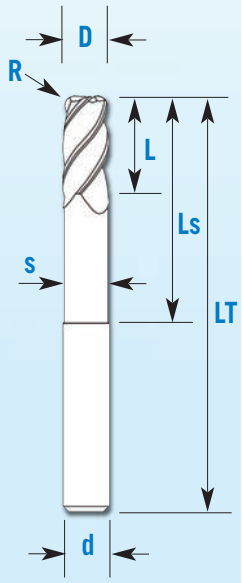
DT DIACUT

DIACUT is a coating with low roughness and low coefficient of friction.

It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

THREE FLUTE END MILLS
corner radius

HMR330.55 is specific for milling aluminum and its alloys.



FRESAL	COATINGS		CODES		D	R	L	LT	Ls	s	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10						h6
10	◎	◉	HMR330.55D10.15	...DT	10	1,5	22	100	50	9,7	10
12	◎	◉	HMR330.55D12.25	...DT	12	2,5	26	110	60	11,7	12
12	◎	◉	HMR330.55D12.40	...DT	12	4,0	26	110	60	11,7	12
16	◎	◉	HMR330.55D16.25	...DT	16	2,5	32	125	65	15,6	16
16	◎	◉	HMR330.55D16.40	...DT	16	4,0	32	125	65	15,6	16
20	◎	◉	HMR330.55D20.25	...DT	20	2,5	38	130	70	19,6	20
20	◎	◉	HMR330.55D20.40	...DT	20	4,0	38	130	70	19,6	20

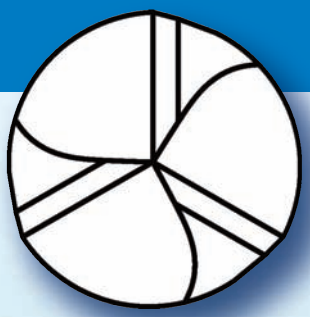
DT DIACUT

DIACUT
is a coating with low roughness and low coefficient of friction.

It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

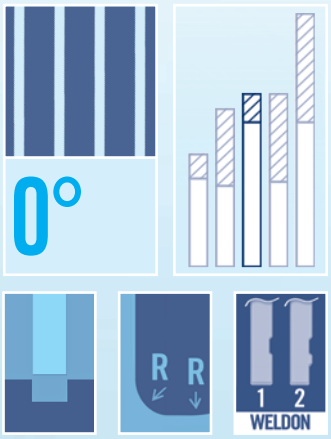
The special constructive geometry allows the use at high cutting speed.

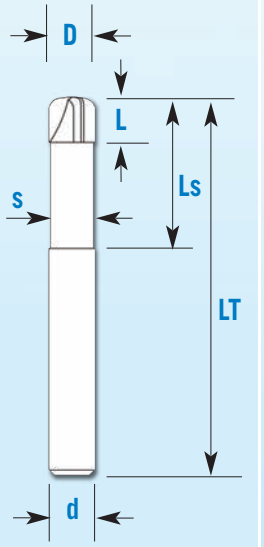
THREE FLUTE END MILLS
double radius



FRESAL UTENSILI

HMRR300 is ideal for high-feed milling of all types of steels.





FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
8	◎	◉	◉	HMRR300D08.080	...XT	...ST	8	8	80	25	7,5	8
8	◎	◉	◉	HMRR300D08.120	...XT	...ST	8	8	120	45	7,5	8
10	◎	◉	◉	HMRR300D10.100	...XT	...ST	10	10	100	35	9,2	10
10	◎	◉	◉	HMRR300D10.150	...XT	...ST	10	10	150	55	9,2	10
12	◎	◉	◉	HMRR300D12.100	...XT	...ST	12	12	100	40	11,2	12
12	◎	◉	◉	HMRR300D12.150	...XT	...ST	12	12	150	60	11,2	12

The constructive geometry of these end mills allows its use for copying and 3D milling of pockets.

XT MAXCUT

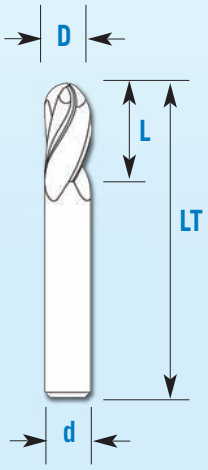
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

THREE FLUTE END MILLS
ball nose

HMS310.30 is recommended for milling of medium and medium-high tensile strength materials.



FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS310.30D03	...XT	...ST	3	8	40	3
4	◎	◉	◉	HMS310.30D04	...XT	...ST	4	11	50	4
5	◎	◉	◉	HMS310.30D05	...XT	...ST	5	13	50	5
6	◎	◉	◉	HMS310.30D06	...XT	...ST	6	16	57	6
7	◎	◉	◉	HMS310.30D07	...XT	...ST	7	16	60	7
8	◎	◉	◉	HMS310.30D08	...XT	...ST	8	19	63	8
9	◎	◉	◉	HMS310.30D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HMS310.30D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HMS310.30D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMS310.30D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMS310.30D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMS310.30D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMS310.30D20	...XT	...ST	20	38	104	20

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Available in stock.

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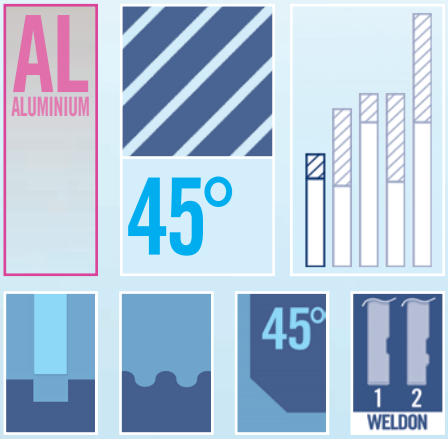
Especially recommended for hard and abrasive materials.
Available in 3 days.

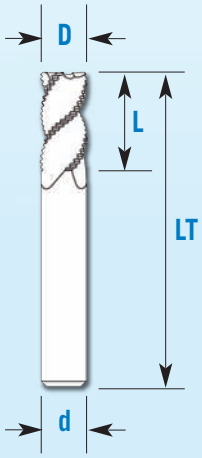
The constructive geometry of these end mills allows its use in a wide range of applications

THREE FLUTE END MILLS
for roughing
POLISHED CUTTING EDGE

FRESAL UTENSILI

HMSG310.45 is particularly recommended for milling aluminum and aluminum-alloys.





FRESAL	COATINGS		CODES		D	L	LT	d
∅	UNCOATED	DIACUT	UNCOATED	DT	h10			h6
6	◎	◉	HMSG310.45D06	...DT	6	16	57	6
8	◎	◉	HMSG310.45D08	...DT	8	18	63	8
10	◎	◉	HMSG310.45D10	...DT	10	22	72	10
12	◎	◉	HMSG310.45D12	...DT	12	26	83	12
16	◎	◉	HMSG310.45D16	...DT	16	32	92	16
20	◎	◉	HMSG310.45D20	...DT	20	38	104	20

The polished cutting edge allows a significant facilitation in the evacuation of the chip, as well as a significant reduction in adhesion phenomena typical of light alloys machining.

DT DIACUT

DIACUT
is a coating with low roughness and low coefficient of friction.

It's therefore especially recommended in the machining of soft materials that have a strong tendency to adhesion phenomena.
Available in 10 days.

FRESAL

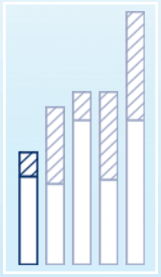
UTENSILI

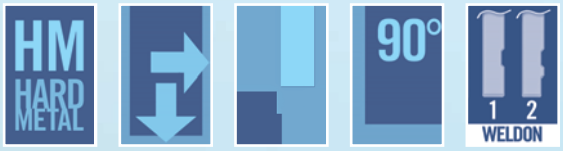
FOUR FLUTE END MILLS

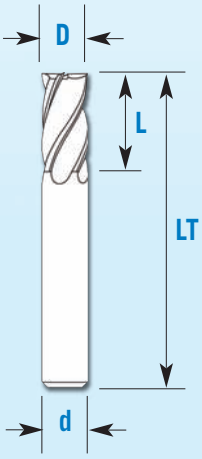
FOUR FLUTE END MILLS

FRESAL UTENSILI

HM410 is recommended for milling of medium and medium-high tensile strength materials.







FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM410D02	...XT	...ST	2	6	40	2
2,5	◎	◉	◉	HM410D025	...XT	...ST	2,5	8	40	2,5
3	◎	◉	◉	HM410D03	...XT	...ST	3	8	40	3
3,5	◎	◉	◉	HM410D035	...XT	...ST	3,5	11	50	3,5
4	◎	◉	◉	HM410D04	...XT	...ST	4	11	50	4
4,5	◎	◉	◉	HM410D045	...XT	...ST	4,5	13	50	4,5
5	◎	◉	◉	HM410D05	...XT	...ST	5	13	50	5
5,5	◎	◉	◉	HM410D055	...XT	...ST	5,5	16	57	5,5
6	◎	◉	◉	HM410D06	...XT	...ST	6	16	57	6
6,5	◎	◉	◉	HM410D065	...XT	...ST	6,5	16	60	6,5
7	◎	◉	◉	HM410D07	...XT	...ST	7	16	60	7
7,5	◎	◉	◉	HM410D075	...XT	...ST	7,5	19	63	7,5
8	◎	◉	◉	HM410D08	...XT	...ST	8	19	63	8
8,5	◎	◉	◉	HM410D085	...XT	...ST	8,5	19	67	8,5
9	◎	◉	◉	HM410D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HM410D10	...XT	...ST	10	22	72	10
11	◎	◉	◉	HM410D11	...XT	...ST	11	26	83	11
12	◎	◉	◉	HM410D12	...XT	...ST	12	26	83	12
13	◎	◉	◉	HM410D13	...XT	...ST	13	26	83	13
14	◎	◉	◉	HM410D14	...XT	...ST	14	26	83	14
15	◎	◉	◉	HM410D15	...XT	...ST	15	32	92	15
16	◎	◉	◉	HM410D16	...XT	...ST	16	32	92	16
17	◎	◉	◉	HM410D17	...XT	...ST	17	32	92	17
18	◎	◉	◉	HM410D18	...XT	...ST	18	32	92	18
19	◎	◉	◉	HM410D19	...XT	...ST	19	38	104	19
20	◎	◉	◉	HM410D20	...XT	...ST	20	38	104	20
22	◎	◉	◉	HM410D22	...XT	...ST	22	38	104	22
25	◎	◉	◉	HM410D25	...XT	...ST	25	45	121	25

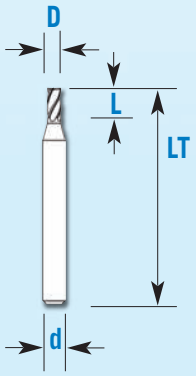
The constructive geometry of these end mills allows its use in a wide range of applications

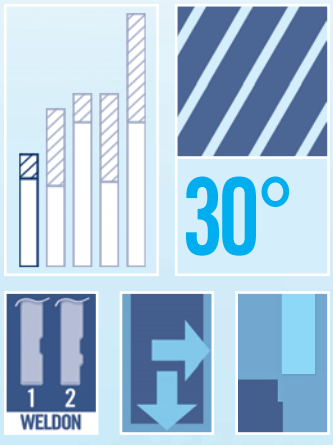
XT MAXCUT

MAXCUT is a new generation AlTiN coating. Allows the use of medium cutting speed for a wide range of materials to be machined. ***Available in stock.***

FOUR FLUTE END MILLS

HM411 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HM411D02	...XT	...ST	2	6	57	6
2,5	◎	◉	◉	HM411D025	...XT	...ST	2,5	8	57	6
3	◎	◉	◉	HM411D03	...XT	...ST	3	8	57	6
3,5	◎	◉	◉	HM411D035	...XT	...ST	3,5	11	57	6
4	◎	◉	◉	HM411D04	...XT	...ST	4	11	57	6
4,5	◎	◉	◉	HM411D045	...XT	...ST	4,5	13	57	6
5	◎	◉	◉	HM411D05	...XT	...ST	5	13	57	6
5,5	◎	◉	◉	HM411D055	...XT	...ST	5,5	16	57	6
6,5	◎	◉	◉	HM411D065	...XT	...ST	6,5	16	63	8
7	◎	◉	◉	HM411D07	...XT	...ST	7	16	63	8
7,5	◎	◉	◉	HM411D075	...XT	...ST	7,5	19	63	8
8,5	◎	◉	◉	HM411D085	...XT	...ST	8,5	19	72	10
9	◎	◉	◉	HM411D09	...XT	...ST	9	19	72	10
9,5	◎	◉	◉	HM411D095	...XT	...ST	9,5	22	72	10

XT MAXCUT

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Available in stock.

ST SPEEDCUT

SPEEDCUT
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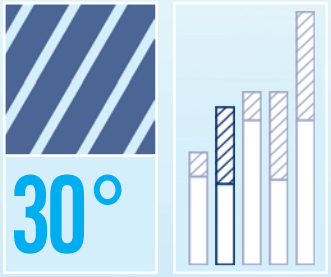
Especially recommended for hard and abrasive materials.
Available in 3 days.

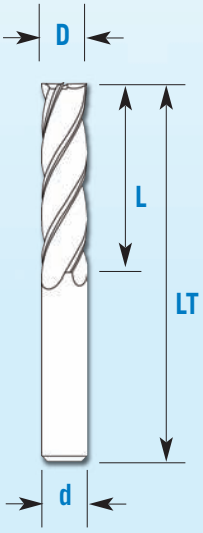
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS

FRESAL UTENSILI

HM420 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HM420D03	...XT	...ST	3	12	50	3
4	◎	◉	◉	HM420D04	...XT	...ST	4	16	55	4
5	◎	◉	◉	HM420D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HM420D06	...XT	...ST	6	24	65	6
7	◎	◉	◉	HM420D07	...XT	...ST	7	30	75	7
8	◎	◉	◉	HM420D08	...XT	...ST	8	32	80	8
9	◎	◉	◉	HM420D09	...XT	...ST	9	32	80	9
10	◎	◉	◉	HM420D10	...XT	...ST	10	32	80	10
11	◎	◉	◉	HM420D11	...XT	...ST	11	50	100	11
12	◎	◉	◉	HM420D12	...XT	...ST	12	50	100	12
13	◎	◉	◉	HM420D13	...XT	...ST	13	55	115	13
14	◎	◉	◉	HM420D14	...XT	...ST	14	55	115	14
15	◎	◉	◉	HM420D15	...XT	...ST	15	60	120	15
16	◎	◉	◉	HM420D16	...XT	...ST	16	60	120	16
17	◎	◉	◉	HM420D17	...XT	...ST	17	60	120	17
18	◎	◉	◉	HM420D18	...XT	...ST	18	60	120	18
19	◎	◉	◉	HM420D19	...XT	...ST	19	60	120	19
20	◎	◉	◉	HM420D20	...XT	...ST	20	60	130	20
22	◎	◉	◉	HM420D22	...XT	...ST	22	60	130	22
25	◎	◉	◉	HM420D25	...XT	...ST	25	75	160	25

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

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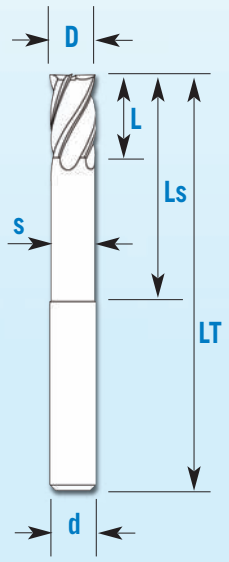
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

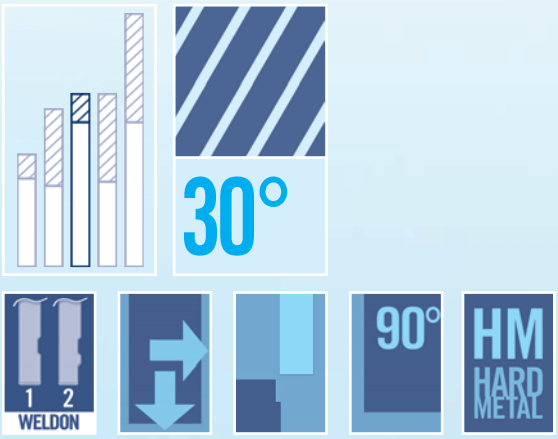
ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS

HM430 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					
3	◎	◉	◉	HM430D03	...XT	...ST	3	8	60	30	2,9	3
4	◎	◉	◉	HM430D04	...XT	...ST	4	8	60	30	3,8	4
5	◎	◉	◉	HM430D05	...XT	...ST	5	10	70	35	4,8	5
6	◎	◉	◉	HM430D06	...XT	...ST	6	12	80	40	5,8	6
8	◎	◉	◉	HM430D08	...XT	...ST	8	14	90	50	7,7	8
10	◎	◉	◉	HM430D10	...XT	...ST	10	18	100	55	9,7	10
12	◎	◉	◉	HM430D12	...XT	...ST	12	22	110	60	11,7	12
14	◎	◉	◉	HM430D14	...XT	...ST	14	26	120	70	13,6	14
16	◎	◉	◉	HM430D16	...XT	...ST	16	30	140	80	15,6	16
18	◎	◉	◉	HM430D20	...XT	...ST	18	34	140	80	17,6	18
20	◎	◉	◉	HM430D22	...XT	...ST	20	38	160	95	19,5	20

MAXCUT
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Available in stock.

SPEEDCUT
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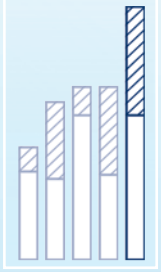
Especially recommended for hard and abrasive materials.
Available in 3 days.

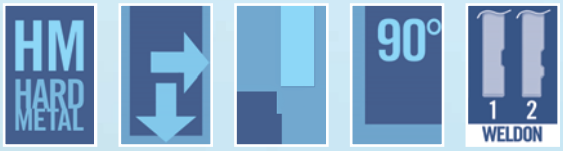
The constructive geometry of these end mills allows its use in a wide range of applications

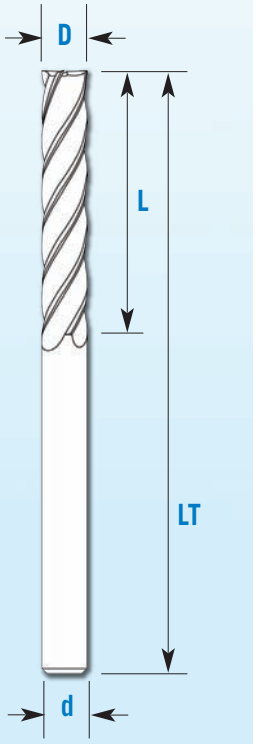
FOUR FLUTE END MILLS

FRESAL UTENSILI

HM440 is recommended for milling of medium and medium-high tensile strength materials.







FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HM440D03	...XT	...ST	3	25	75	3
4	◎	◉	◉	HM440D04	...XT	...ST	4	30	75	4
5	◎	◉	◉	HM440D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HM440D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HM440D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HM440D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HM440D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HM440D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HM440D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HM440D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HM440D20	...XT	...ST	20	80	160	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

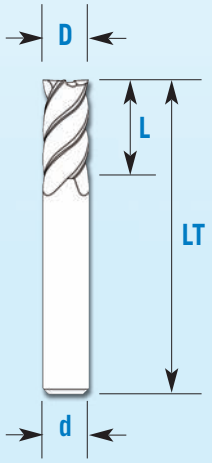
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

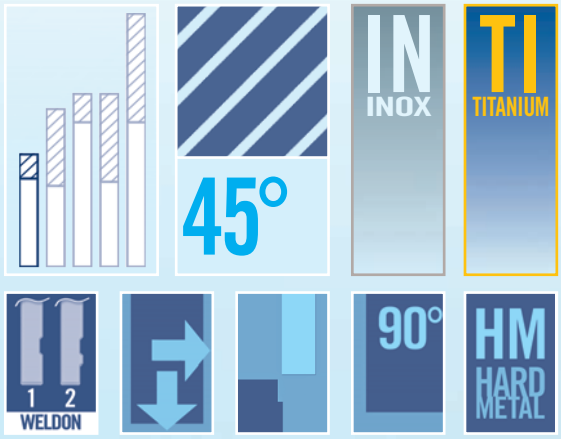
ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS

HM410.45 is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM410.45D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HM410.45D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HM410.45D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HM410.45D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HM410.45D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HM410.45D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HM410.45D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HM410.45D20	...XT	...ST	20	38	104	20

XT MAXCUT

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

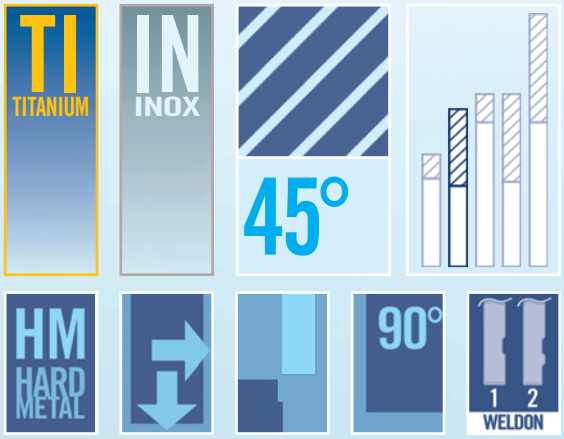
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

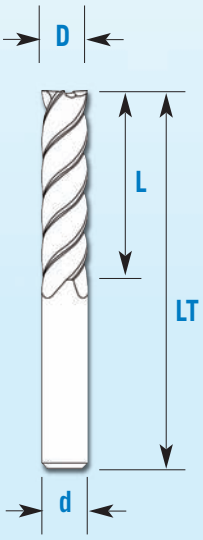
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS

FRESAL UTENSILI

HM420.45 is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM420.45D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HM420.45D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HM420.45D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HM420.45D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HM420.45D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HM420.45D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HM420.45D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HM420.45D20	...XT	...ST	20	60	130	20

The constructive geometry of these end mills allows its use in a wide range of applications

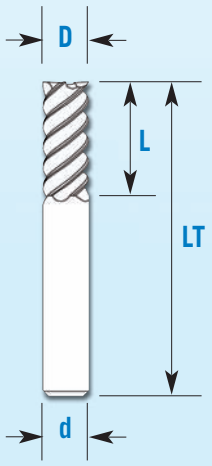
XT MAXCUT ST SPEEDCUT

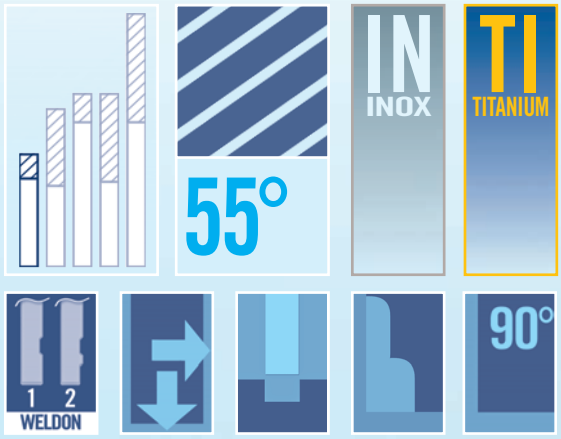
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS *double depth*

HM410.55 is a high performance end mill particularly recommended for milling high tensile strength materials, stainless steel and Titanium alloys.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	maXcuT	SpeedcuT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM410.55D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HM410.55D08	...XT	...ST	8	25	63	8
10	◎	◉	◉	HM410.55D10	...XT	...ST	10	28	72	10
12	◎	◉	◉	HM410.55D12	...XT	...ST	12	32	83	12
16	◎	◉	◉	HM410.55D16	...XT	...ST	16	36	92	16
20	◎	◉	◉	HM410.55D20	...XT	...ST	20	45	104	20

XT maXcuT

maXcuT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SpeedcuT

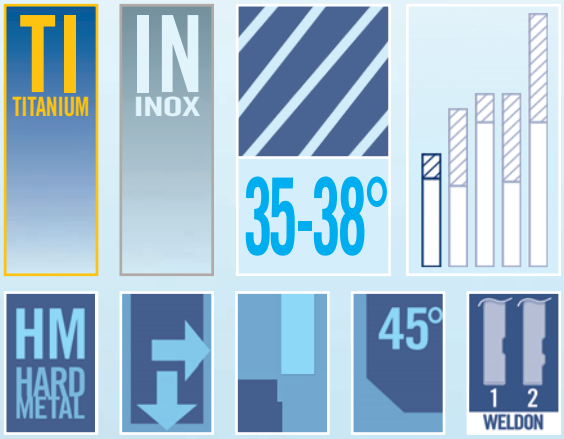
SpeedcuT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

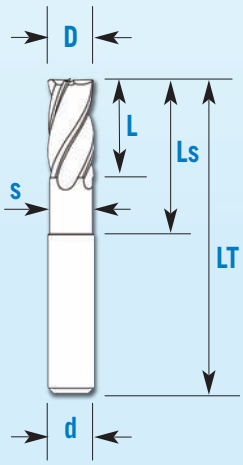
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS
different helix angle

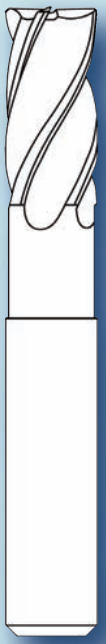
FRESAL UTENSILI

HM460 is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
6	◎	◉	◉	HM460D06	...XT	...ST	6	16	57	33	5,6	6
8	◎	◉	◉	HM460D08	...XT	...ST	8	19	63	34	7,5	8
10	◎	◉	◉	HM460D10	...XT	...ST	10	22	72	37	9,2	10
12	◎	◉	◉	HM460D12	...XT	...ST	12	26	83	41	11,2	12
14	◎	◉	◉	HM460D14	...XT	...ST	14	26	83	41	13,2	14
16	◎	◉	◉	HM460D16	...XT	...ST	16	32	92	47	15	16
18	◎	◉	◉	HM460D18	...XT	...ST	18	32	92	47	17	18
20	◎	◉	◉	HM460D20	...XT	...ST	20	38	104	53	19	20
25	◎	◉	◉	HM460D25	...XT	...ST	25	45	121	60	23,8	25



Different spiral angles effect smooth, vibrationless feed and excellent surface, with high cutting performance.

XT MAXCUT ST SPEEDCUT

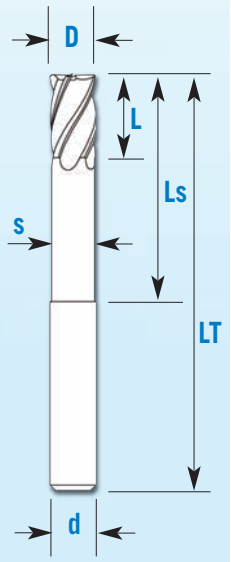
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

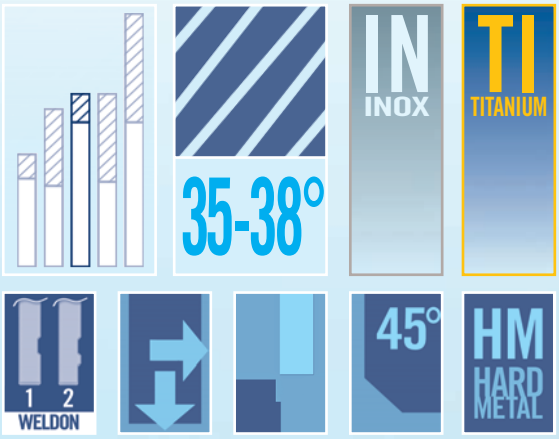
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

FOUR FLUTE END MILLS
different helix angle

FRESAL UTENSILI

HM490 is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
6	◎	◉	◉	HM490D06	...XT	...ST	6	12	80	40	5,6	6
8	◎	◉	◉	HM490D08	...XT	...ST	8	14	90	50	7,5	8
10	◎	◉	◉	HM490D10	...XT	...ST	10	18	100	55	9,2	10
12	◎	◉	◉	HM490D12	...XT	...ST	12	22	110	60	11,2	12
16	◎	◉	◉	HM490D16	...XT	...ST	16	30	140	80	15	16
20	◎	◉	◉	HM490D20	...XT	...ST	20	38	160	95	19	20

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Available in 3 days.

ST SPEEDCUT

SPEEDCUT
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Especially recommended for hard and abrasive materials.
Available in stock.

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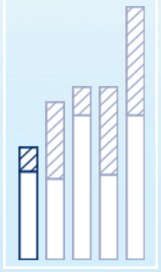
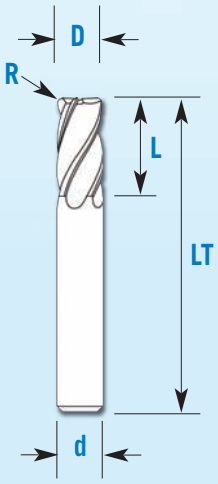
FOUR FLUTE END MILLS
corner radius

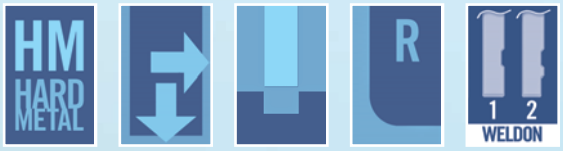
FRESAL UTENSILI

HMR410 is recommended for milling of medium and medium-high tensile strength materials.





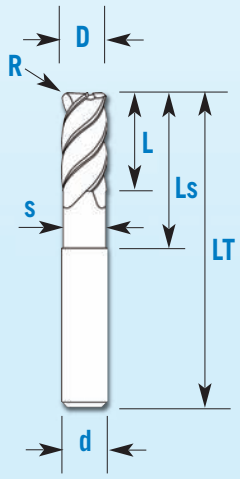
The constructive geometry of these end mills allows its use in a wide range of applications.

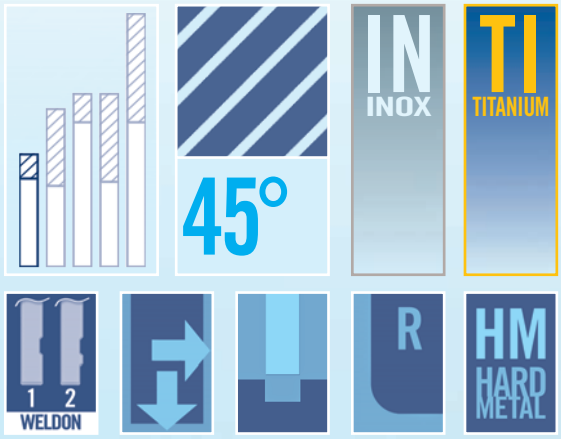


FRESAL	COATINGS			CODES			D	R	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10				h6
3	◎	◉	◉	HMR410D03.02	...XT	...ST	3	0,2	8	40	3
4	◎	◉	◉	HMR410D04.02	...XT	...ST	4	0,2	11	50	4
4	◎	◉	◉	HMR410D04.05	...XT	...ST	4	0,5	11	50	4
5	◎	◉	◉	HMR410D05.05	...XT	...ST	5	0,5	13	50	5
6	◎	◉	◉	HMR410D06.05	...XT	...ST	6	0,5	16	57	6
6	◎	◉	◉	HMR410D06.10	...XT	...ST	6	1,0	16	57	6
6	◎	◉	◉	HMR410D06.15	...XT	...ST	6	1,5	16	57	6
6	◎	◉	◉	HMR410D06.20	...XT	...ST	6	2,0	16	57	6
6	◎	◉	◉	HMR410D06.25	...XT	...ST	6	2,5	16	57	6
8	◎	◉	◉	HMR410D08.05	...XT	...ST	8	0,5	19	63	8
8	◎	◉	◉	HMR410D08.10	...XT	...ST	8	1,0	19	63	8
8	◎	◉	◉	HMR410D08.15	...XT	...ST	8	1,5	19	63	8
8	◎	◉	◉	HMR410D08.20	...XT	...ST	8	2,0	19	63	8
10	◎	◉	◉	HMR410D10.10	...XT	...ST	10	1,0	22	72	10
10	◎	◉	◉	HMR410D10.15	...XT	...ST	10	1,5	22	72	10
10	◎	◉	◉	HMR410D10.20	...XT	...ST	10	2,0	22	72	10
10	◎	◉	◉	HMR410D10.25	...XT	...ST	10	2,5	22	72	10
12	◎	◉	◉	HMR410D12.10	...XT	...ST	12	1,0	26	83	12
12	◎	◉	◉	HMR410D12.15	...XT	...ST	12	1,5	26	83	12
12	◎	◉	◉	HMR410D12.20	...XT	...ST	12	2,0	26	83	12
12	◎	◉	◉	HMR410D12.25	...XT	...ST	12	2,5	26	83	12
12	◎	◉	◉	HMR410D12.30	...XT	...ST	12	3,0	26	83	12
14	◎	◉	◉	HMR410D14.20	...XT	...ST	14	2,0	26	83	14
14	◎	◉	◉	HMR410D14.25	...XT	...ST	14	2,5	26	83	14
14	◎	◉	◉	HMR410D14.30	...XT	...ST	14	3,0	26	83	14
16	◎	◉	◉	HMR410D16.15	...XT	...ST	16	1,5	32	92	16
16	◎	◉	◉	HMR410D16.20	...XT	...ST	16	2,0	32	92	16
16	◎	◉	◉	HMR410D16.25	...XT	...ST	16	2,5	32	92	16
16	◎	◉	◉	HMR410D16.40	...XT	...ST	16	4,0	32	92	16
20	◎	◉	◉	HMR410D20.20	...XT	...ST	20	2,0	38	104	20
20	◎	◉	◉	HMR410D20.25	...XT	...ST	20	2,5	38	104	20
20	◎	◉	◉	HMR410D20.40	...XT	...ST	20	4,0	38	104	20

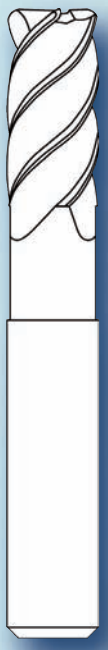
FOUR FLUTE END MILLS *corner radius*

HMR410.45 is particularly recommended for milling of medium tensile strength steels, stainless steels and Titanium alloys.





FRESAL	COATINGS			CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
6	◎	◉	◉	HMR410.45D06.10	...XT	...ST	6	1	16	57	33	5,6	6
6	◎	◉	◉	HMR410.45D06.15	...XT	...ST	6	1,5	16	57	33	5,6	6
6	◎	◉	◉	HMR410.45D06.20	...XT	...ST	6	2	16	57	33	5,6	6
8	◎	◉	◉	HMR410.45D08.10	...XT	...ST	8	1	19	63	34	7,5	8
8	◎	◉	◉	HMR410.45D08.15	...XT	...ST	8	1,5	19	63	34	7,5	8
8	◎	◉	◉	HMR410.45D08.20	...XT	...ST	8	2	19	63	34	7,5	8
8	◎	◉	◉	HMR410.45D08.25	...XT	...ST	8	2,5	19	63	34	7,5	8
10	◎	◉	◉	HMR410.45D10.10	...XT	...ST	10	1	22	72	37	9,2	10
10	◎	◉	◉	HMR410.45D10.15	...XT	...ST	10	1,5	22	72	37	9,2	10
10	◎	◉	◉	HMR410.45D10.20	...XT	...ST	10	2	22	72	37	9,2	10
10	◎	◉	◉	HMR410.45D10.25	...XT	...ST	10	2,5	22	72	37	9,2	10
12	◎	◉	◉	HMR410.45D12.10	...XT	...ST	12	1	26	83	41	11,2	12
12	◎	◉	◉	HMR410.45D12.15	...XT	...ST	12	1,5	26	83	41	11,2	12
12	◎	◉	◉	HMR410.45D12.20	...XT	...ST	12	2	26	83	41	11,2	12
12	◎	◉	◉	HMR410.45D12.25	...XT	...ST	12	2,5	26	83	41	11,2	12
12	◎	◉	◉	HMR410.45D12.40	...XT	...ST	12	4	26	83	41	11,2	12
16	◎	◉	◉	HMR410.45D16.10	...XT	...ST	16	1	32	92	47	15	16
16	◎	◉	◉	HMR410.45D16.15	...XT	...ST	16	1,5	32	92	47	15	16
16	◎	◉	◉	HMR410.45D16.20	...XT	...ST	16	2	32	92	47	15	16
16	◎	◉	◉	HMR410.45D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMR410.45D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMR410.45D20.10	...XT	...ST	20	1	38	104	53	19	20
20	◎	◉	◉	HMR410.45D20.15	...XT	...ST	20	1,5	38	104	53	19	20
20	◎	◉	◉	HMR410.45D20.20	...XT	...ST	20	2	38	104	53	19	20
20	◎	◉	◉	HMR410.45D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMR410.45D20.40	...XT	...ST	20	4	38	104	53	19	20



XT MAXCUT

MAXCUT
is a new generation AlTiN coating.

Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

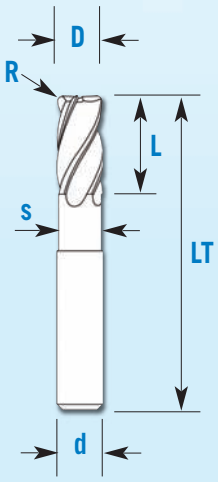
High performance end mills with low tendency to vibration

FOUR FLUTE END MILLS
different helix angle - corner radius

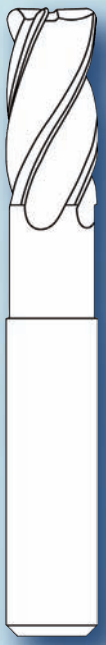
FRESAL UTENSILI

HMR460 is particularly recommended for milling stainless steel and Titanium alloys.

Different spiral angles effect smooth, vibrationless feed and excellent surface, with high cutting performance.



FRESAL	COATINGS			CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
6	◎	◉	◉	HMR460D06.10	...XT	...ST	6	1	16	57	33	5,6	6
6	◎	◉	◉	HMR460D06.15	...XT	...ST	6	1,5	16	57	33	5,6	6
6	◎	◉	◉	HMR460D06.20	...XT	...ST	6	2	16	57	33	5,6	6
8	◎	◉	◉	HMR460D08.10	...XT	...ST	8	1	19	63	34	7,5	8
8	◎	◉	◉	HMR460D08.15	...XT	...ST	8	1,5	19	63	34	7,5	8
8	◎	◉	◉	HMR460D08.20	...XT	...ST	8	2	19	63	34	7,5	8
8	◎	◉	◉	HMR460D08.25	...XT	...ST	8	2,5	19	63	34	7,5	8
10	◎	◉	◉	HMR460D10.10	...XT	...ST	10	1	22	72	37	9,2	10
10	◎	◉	◉	HMR460D10.15	...XT	...ST	10	1,5	22	72	37	9,2	10
10	◎	◉	◉	HMR460D10.20	...XT	...ST	10	2	22	72	37	9,2	10
10	◎	◉	◉	HMR460D10.25	...XT	...ST	10	2,5	22	72	37	9,2	10
12	◎	◉	◉	HMR460D12.10	...XT	...ST	12	1	26	83	41	11,2	12
12	◎	◉	◉	HMR460D12.15	...XT	...ST	12	1,5	26	83	41	11,2	12
12	◎	◉	◉	HMR460D12.20	...XT	...ST	12	2	26	83	41	11,2	12
12	◎	◉	◉	HMR460D12.25	...XT	...ST	12	2,5	26	83	41	11,2	12
12	◎	◉	◉	HMR460D12.40	...XT	...ST	12	4	26	83	41	11,2	12
16	◎	◉	◉	HMR460D16.10	...XT	...ST	16	1	32	92	47	15	16
16	◎	◉	◉	HMR460D16.15	...XT	...ST	16	1,5	32	92	47	15	16
16	◎	◉	◉	HMR460D16.20	...XT	...ST	16	2	32	92	47	15	16
16	◎	◉	◉	HMR460D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMR460D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMR460D20.10	...XT	...ST	20	1	38	104	53	19	20
20	◎	◉	◉	HMR460D20.15	...XT	...ST	20	1,5	38	104	53	19	20
20	◎	◉	◉	HMR460D20.20	...XT	...ST	20	2	38	104	53	19	20
20	◎	◉	◉	HMR460D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMR460D20.40	...XT	...ST	20	4	38	104	53	19	20
25	◎	◉	◉	HMR460D25.10	...XT	...ST	25	1	45	121	60	23,8	25



XT MAXCUT

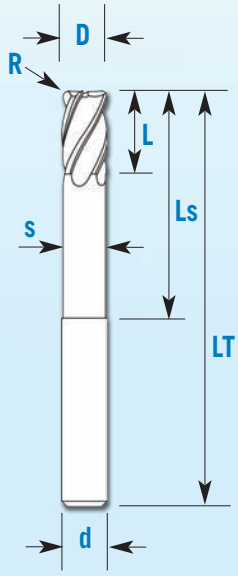
ST SPEEDCUT

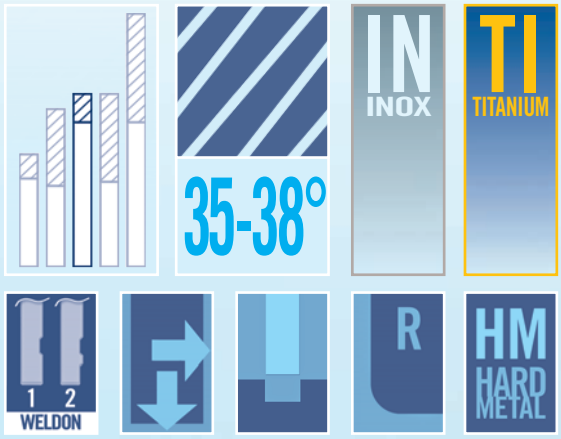
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

SPEEDCUT
is a multilayer coating based TiSiN.
Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

FOUR FLUTE END MILLS
different helix angle - corner radius

HMR490 is particularly recommended for milling stainless steel and Titanium alloys.





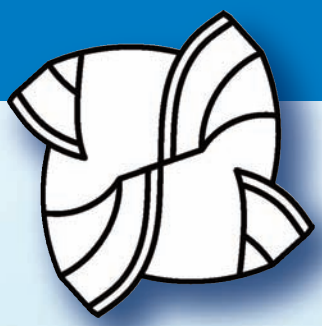
FRESAL	COATINGS		CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
6	◎	◉	◉	HMR490D06.10	...XT	...ST	6	1	12	80	40	5,6	6
6	◎	◉	◉	HMR490D06.20	...XT	...ST	6	2	12	80	40	5,6	6
8	◎	◉	◉	HMR490D08.10	...XT	...ST	8	1	14	90	50	7,5	8
8	◎	◉	◉	HMR490D08.20	...XT	...ST	8	2	14	90	50	7,5	8
10	◎	◉	◉	HMR490D10.20	...XT	...ST	10	2	18	100	55	9,2	10
10	◎	◉	◉	HMR490D10.25	...XT	...ST	10	2,5	18	100	55	9,2	10
12	◎	◉	◉	HMR490D12.25	...XT	...ST	12	2,5	22	110	60	11,2	12
12	◎	◉	◉	HMR490D12.30	...XT	...ST	12	3	22	110	60	11,2	12
16	◎	◉	◉	HMR490D16.20	...XT	...ST	16	2	30	140	80	15	16
16	◎	◉	◉	HMR490D16.25	...XT	...ST	16	2,5	30	140	80	15	16
16	◎	◉	◉	HMR490D16.40	...XT	...ST	16	4	30	140	80	15	16
20	◎	◉	◉	HMR490D20.25	...XT	...ST	20	2,5	38	160	95	19	20
20	◎	◉	◉	HMR490D20.40	...XT	...ST	20	4	38	160	95	19	20

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

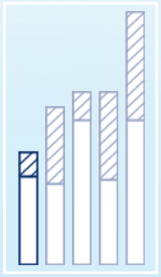
Different spiral angles effect smooth, vibrationless feed and excellent surface, with high cutting performance.

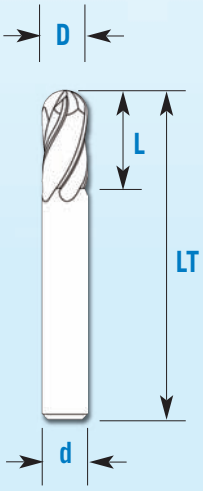
FOUR FLUTE END MILLS
ball nose



FRESAL UTENSILI

HMS410 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS410D03	...XT	...ST	3	8	40	3
4	◎	◉	◉	HMS410D04	...XT	...ST	4	11	50	4
5	◎	◉	◉	HMS410D05	...XT	...ST	5	13	50	5
6	◎	◉	◉	HMS410D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HMS410D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HMS410D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HMS410D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMS410D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMS410D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMS410D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMS410D20	...XT	...ST	20	38	104	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

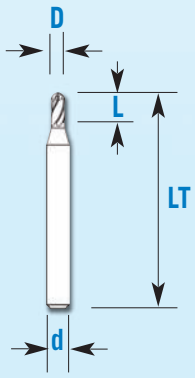
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS *ball nose*

HMS411 is recommended for milling of medium and medium-high tensile strength materials.



FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2	◎	◉	◉	HMS411D02	...XT	...ST	2	6	57	6
2,5	◎	◉	◉	HMS411D025	...XT	...ST	2,5	8	57	6
3	◎	◉	◉	HMS411D03	...XT	...ST	3	8	57	6
3,5	◎	◉	◉	HMS411D035	...XT	...ST	3,5	11	57	6
4	◎	◉	◉	HMS411D04	...XT	...ST	4	11	57	6
4,5	◎	◉	◉	HMS411D045	...XT	...ST	4,5	13	57	6
5	◎	◉	◉	HMS411D05	...XT	...ST	5	13	57	6
5,5	◎	◉	◉	HMS411D055	...XT	...ST	5,5	16	57	6
6,5	◎	◉	◉	HMS411D065	...XT	...ST	6,5	16	63	8
7	◎	◉	◉	HMS411D07	...XT	...ST	7	16	63	8
7,5	◎	◉	◉	HMS411D075	...XT	...ST	7,5	19	63	8
8,5	◎	◉	◉	HMS411D085	...XT	...ST	8,5	19	72	10
9	◎	◉	◉	HMS411D09	...XT	...ST	9	19	72	10
9,5	◎	◉	◉	HMS411D095	...XT	...ST	9,5	22	72	10

XT MAXCUT

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Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

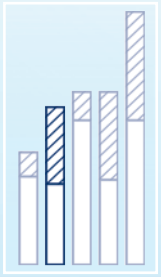
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

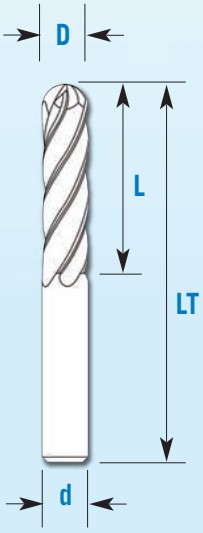
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS
ball nose

FRESAL UTENSILI

HMS420 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS420D03	...XT	...ST	3	12	50	3
4	◎	◉	◉	HMS420D04	...XT	...ST	4	16	55	4
5	◎	◉	◉	HMS420D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HMS420D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HMS420D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HMS420D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HMS420D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HMS420D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HMS420D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HMS420D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HMS420D20	...XT	...ST	20	60	130	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

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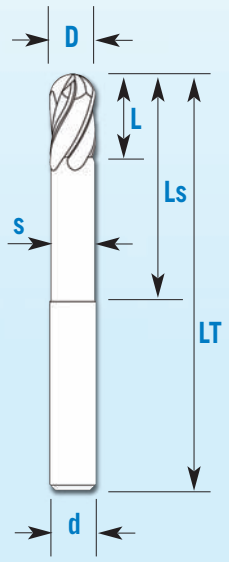
Available in stock.

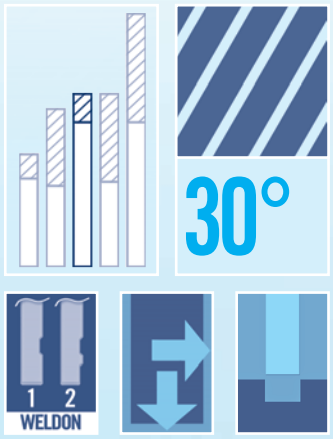
ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS
ball nose

HMS430 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
6	◎	◉	◉	HMS430D06	...XT	...ST	6	12	80	40	5,8	6
8	◎	◉	◉	HMS430D08	...XT	...ST	8	14	90	50	7,7	8
10	◎	◉	◉	HMS430D10	...XT	...ST	10	18	100	55	9,7	10
12	◎	◉	◉	HMS430D12	...XT	...ST	12	22	110	60	11,7	12
14	◎	◉	◉	HMS430D14	...XT	...ST	14	26	120	70	13,6	14
16	◎	◉	◉	HMS430D16	...XT	...ST	16	30	140	80	15,6	16
18	◎	◉	◉	HMS430D18	...XT	...ST	18	34	140	80	17,6	18
20	◎	◉	◉	HMS430D20	...XT	...ST	20	38	160	95	19,5	20

XT MAXCUT

MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

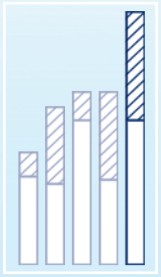
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

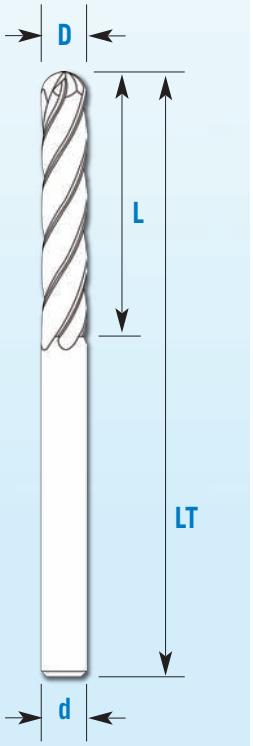
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS
ball nose

FRESAL UTENSILI

HMS440 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
3	◎	◉	◉	HMS440D03	...XT	...ST	3	25	75	3
4	◎	◉	◉	HMS440D04	...XT	...ST	4	30	75	4
5	◎	◉	◉	HMS440D05	...XT	...ST	5	35	75	5
6	◎	◉	◉	HMS440D06	...XT	...ST	6	40	100	6
8	◎	◉	◉	HMS440D08	...XT	...ST	8	50	100	8
10	◎	◉	◉	HMS440D10	...XT	...ST	10	50	100	10
12	◎	◉	◉	HMS440D12	...XT	...ST	12	70	160	12
14	◎	◉	◉	HMS440D14	...XT	...ST	14	80	160	14
16	◎	◉	◉	HMS440D16	...XT	...ST	16	80	160	16
18	◎	◉	◉	HMS440D18	...XT	...ST	18	80	160	18
20	◎	◉	◉	HMS440D20	...XT	...ST	20	80	160	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

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Available in stock.

ST SPEEDCUT

SPEEDCUT
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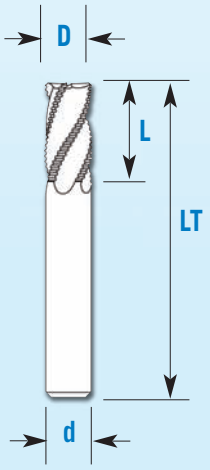
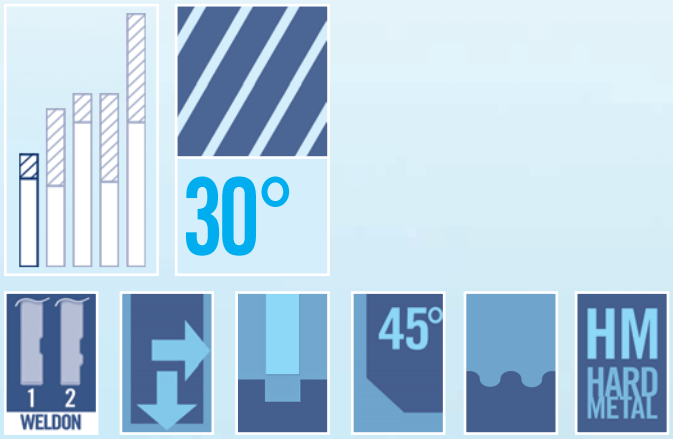
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS *roughing*

HMSG410 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
5	◎	◉	◉	HMSG410D05	...XT	...ST	5	13	50	5
6	◎	◉	◉	HMSG410D06	...XT	...ST	6	16	57	6
7	◎	◉	◉	HMSG410D07	...XT	...ST	7	16	60	7
8	◎	◉	◉	HMSG410D08	...XT	...ST	8	19	63	8
9	◎	◉	◉	HMSG410D09	...XT	...ST	9	19	67	9
10	◎	◉	◉	HMSG410D10	...XT	...ST	10	22	72	10
11	◎	◉	◉	HMSG410D11	...XT	...ST	11	26	83	11
12	◎	◉	◉	HMSG410D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMSG410D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMSG410D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMSG410D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMSG410D20	...XT	...ST	20	38	104	20

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Available in stock.

ST SPEEDCUT

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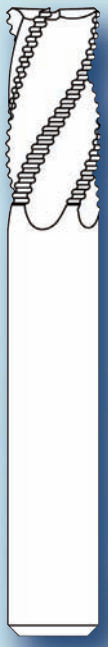
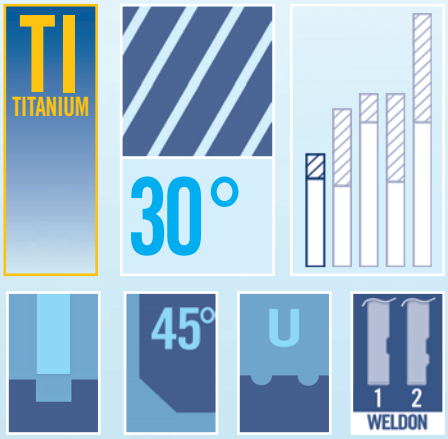
The constructive geometry of these end mills allows its use in a wide range of applications

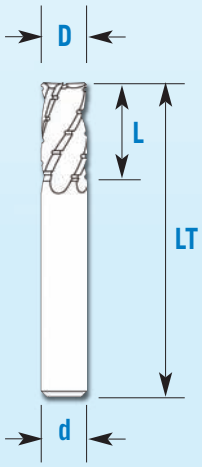


FOUR FLUTE END MILLS
roughing

FRESAL UTENSILI

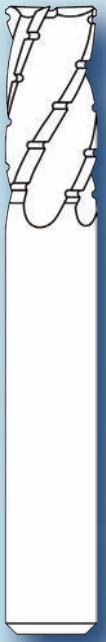
HMSGU410 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HMSGU410D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HMSGU410D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HMSGU410D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HMSGU410D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMSGU410D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMSGU410D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMSGU410D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMSGU410D20	...XT	...ST	20	38	104	20

The constructive geometry of these end mills allows its use in a wide range of applications



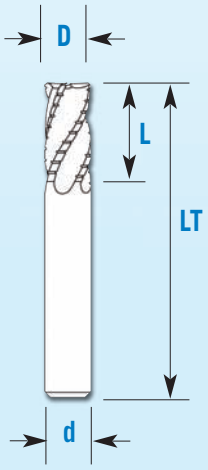
XT MAXCUT ST SPEEDCUT

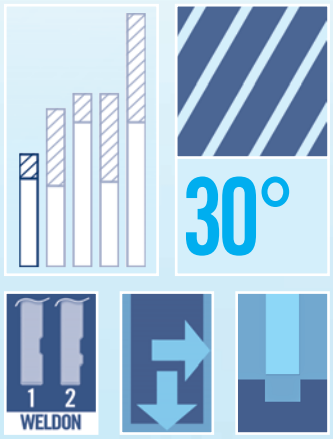
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS *roughing*

HMSGV410 is particularly recommended for milling of medium tensile strength steels and stainless steels.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HMSGV410D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HMSGV410D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HMSGV410D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HMSGV410D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMSGV410D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMSGV410D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMSGV410D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMSGV410D20	...XT	...ST	20	38	104	20

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Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

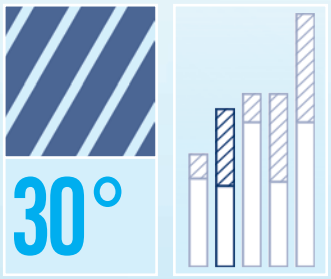
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

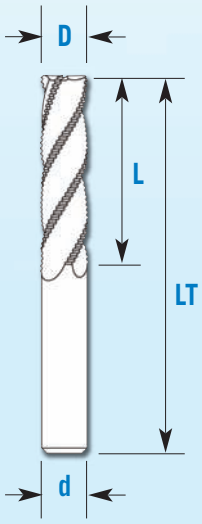
The constructive geometry of these end mills allows its use in a wide range of applications

FOUR FLUTE END MILLS
roughing

FRESAL UTENSILI

HMSG420 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL ∅	COATINGS UNCOATED	COATINGS MAXCUT	COATINGS SPEEDCUT	CODES UNCOATED	CODES XT	CODES ST	D h10	L	LT	d h6
5	◎	◉	◉	HMSG420D05	...XT	...ST	5	20	60	5
6	◎	◉	◉	HMSG420D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HMSG420D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HMSG420D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HMSG420D12	...XT	...ST	12	50	100	12
14	◎	◉	◉	HMSG420D14	...XT	...ST	14	55	115	14
16	◎	◉	◉	HMSG420D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HMSG420D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HMSG420D20	...XT	...ST	20	60	130	20

The constructive geometry of these end mills allows its use in a wide range of applications

XT MAXCUT

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Available in stock.

ST SPEEDCUT

SPEEDCUT
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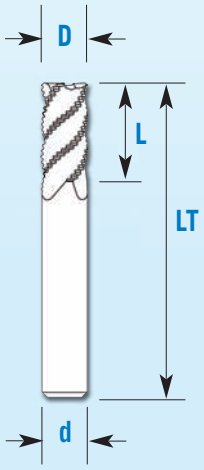
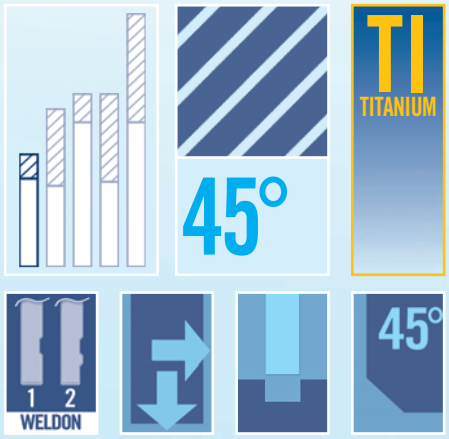
Especially recommended for hard and abrasive materials.
Available in 3 days.

FOUR FLUTE END MILLS *roughing*

HMSG410.45 is particularly recommended for milling stainless steel, cast iron and Titanium alloys.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HMSG410.45D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HMSG410.45D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HMSG410.45D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HMSG410.45D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HMSG410.45D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HMSG410.45D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HMSG410.45D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HMSG410.45D20	...XT	...ST	20	38	104	20

XT MAXCUT

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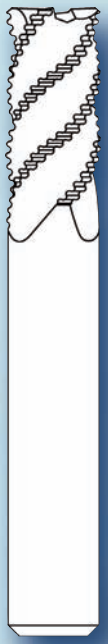
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in 3 days.

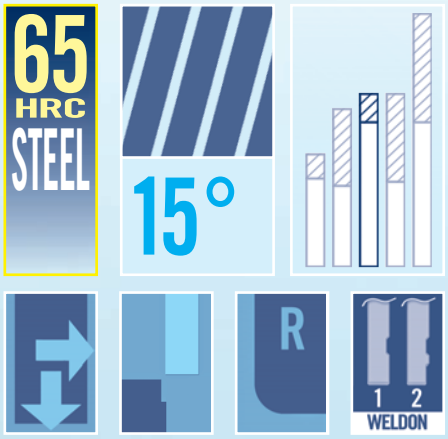
High performance end mills with low tendency to vibration

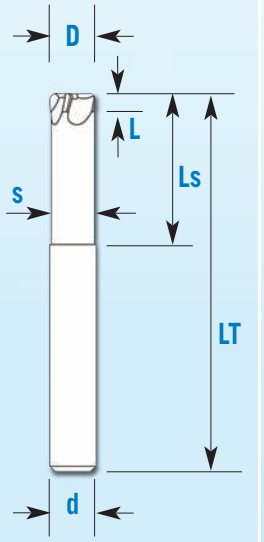


FOUR FLUTE END MILLS
corner radius

FRESAL UTENSILI

HMR400 is ideal for milling hardened steels.





FRESAL	COATINGS			CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
2	◎	◉	◉	HMR400D02.05	...XT	...ST	2	0,5	2	50	9	1,9	4
3	◎	◉	◉	HMR400D03.05	...XT	...ST	3	0,5	2	50	12	2,8	4
4	◎	◉	◉	HMR400D04.05	...XT	...ST	4	0,5	3	60	15	3,7	6
5	◎	◉	◉	HMR400D05.05	...XT	...ST	5	0,5	4	60	20	4,6	6
6	◎	◉	◉	HMR400D06.05	...XT	...ST	6	0,5	4	60	20	5,5	6
8	◎	◉	◉	HMR400D08.10	...XT	...ST	8	1,0	5	75	30	7,5	8
10	◎	◉	◉	HMR400D10.10	...XT	...ST	10	1,0	5	80	35	9,2	10
12	◎	◉	◉	HMR400D12.10	...XT	...ST	12	1,0	5	90	40	11,2	12

XT MAXCUT

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Available in 3 days.

ST SPEEDCUT

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Especially recommended for hard and abrasive materials.
Available in stock.

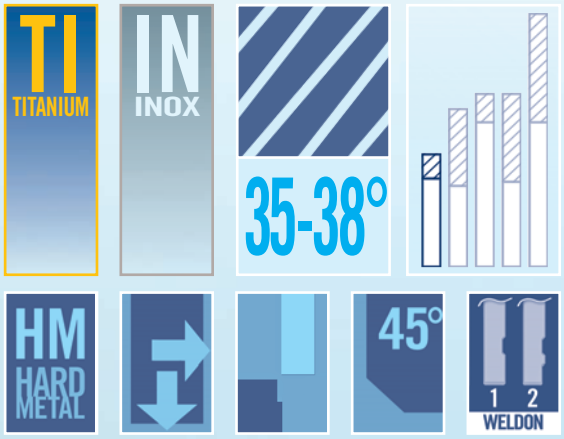
FRESAL UTENSILI

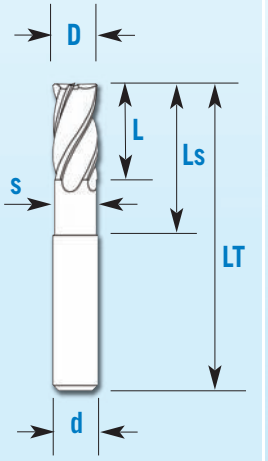
MULTI FLUTE END MILLS FOR FINISHING

FIVE FLUTES ENDMILLS
different helix angle

FRESAL UTENSILI

HM560 is particularly recommended for milling stainless steel and Titanium alloys.





NEW

FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
6	◎	◉	◉	HM560D06	...XT	...ST	6	16	57	33	5,6	6
8	◎	◉	◉	HM560D08	...XT	...ST	8	19	63	34	7,5	8
10	◎	◉	◉	HM560D10	...XT	...ST	10	22	72	37	9,2	10
12	◎	◉	◉	HM560D12	...XT	...ST	12	26	83	41	11,2	12
14	◎	◉	◉	HM560D14	...XT	...ST	14	26	83	41	13,2	14
16	◎	◉	◉	HM560D16	...XT	...ST	16	32	92	47	15	16
20	◎	◉	◉	HM560D20	...XT	...ST	20	38	104	53	19	20
25	◎	◉	◉	HM560D25	...XT	...ST	25	45	121	60	23,8	25

The different angle of the helix allows a high-performance process, totally freeof vibrations.

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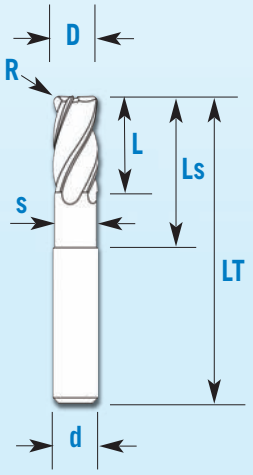
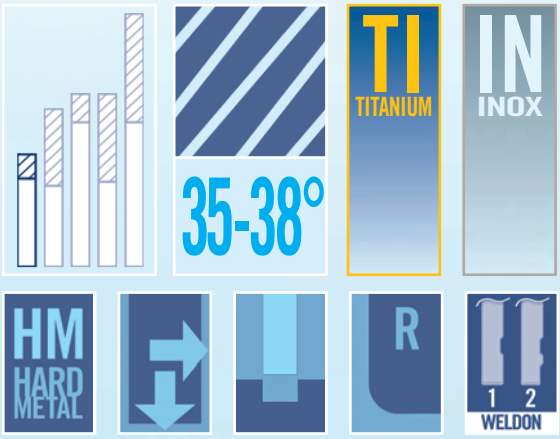
FRESAL UTENSILI

FIVE FLUTES ENDMILLS
different helix angle corner radius

HMR560 is particularly recommended for milling stainless steel and Titanium alloys.





NEW

FRESAL	COATINGS		CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
6	◎	◉	◉	HMR560D06.05	...XT	...ST	6	0,5	16	57	33	5,6	6
6	◎	◉	◉	HMR560D06.10	...XT	...ST	6	1	16	57	33	5,6	6
8	◎	◉	◉	HMR560D08.05	...XT	...ST	8	0,5	19	63	34	7,5	8
8	◎	◉	◉	HMR560D08.10	...XT	...ST	8	1	19	63	34	7,5	8
10	◎	◉	◉	HMR560D10.10	...XT	...ST	10	1	22	72	37	9,2	10
10	◎	◉	◉	HMR560D10.20	...XT	...ST	10	2	22	72	37	9,2	10
12	◎	◉	◉	HMR560D12.20	...XT	...ST	12	2	26	83	41	11	12
12	◎	◉	◉	HMR560D12.25	...XT	...ST	12	2,5	26	83	41	11	12
12	◎	◉	◉	HMR560D12.40	...XT	...ST	12	4	26	83	41	11	12
16	◎	◉	◉	HMR560D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMR560D16.30	...XT	...ST	16	3	32	92	47	15	16
16	◎	◉	◉	HMR560D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMR560D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMR560D20.30	...XT	...ST	20	3	38	104	53	19	20
20	◎	◉	◉	HMR560D20.40	...XT	...ST	20	4	38	104	53	19	20
25	◎	◉	◉	HMR560D25.25	...XT	...ST	25	2,5	45	121	60	23,8	25
25	◎	◉	◉	HMR560D25.40	...XT	...ST	25	4	45	121	60	23,8	25
25	◎	◉	◉	HMR560D25.60	...XT	...ST	25	6	45	121	60	23,8	25

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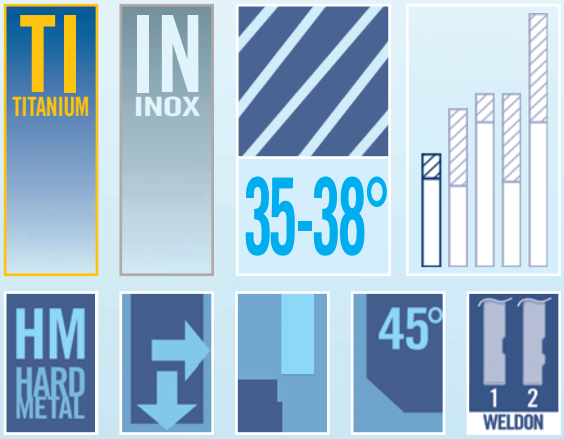
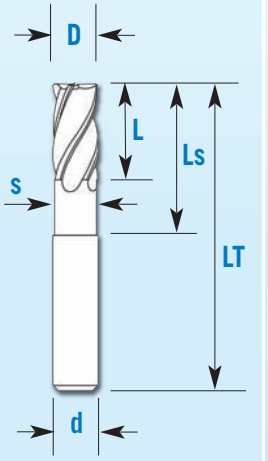
The different angle of the helix allows a high-performance process, totally free of vibrations.

FIVE FLUTES ENDMILLS
different helix angle

FRESAL UTENSILI

HMF560 with coolant holes
is particularly recommended
for milling stainless steel
and Titanium alloys.

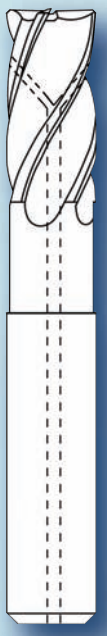




NEW

FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
6	◎	◉	◉	HMF560D06	...XT	...ST	6	16	57	33	5,6	6
8	◎	◉	◉	HMF560D08	...XT	...ST	8	19	63	34	7,5	8
10	◎	◉	◉	HMF560D10	...XT	...ST	10	22	72	37	9,2	10
12	◎	◉	◉	HMF560D12	...XT	...ST	12	26	83	41	11,2	12
16	◎	◉	◉	HMF560D16	...XT	...ST	16	32	92	47	15	16
20	◎	◉	◉	HMF560D20	...XT	...ST	20	38	104	53	19	20
25	◎	◉	◉	HMF560D25	...XT	...ST	25	45	121	60	23,8	25

The different angle of the helix allows a high-performance process, totally free of vibrations.



XT MAXCUT ST SPEEDCUT

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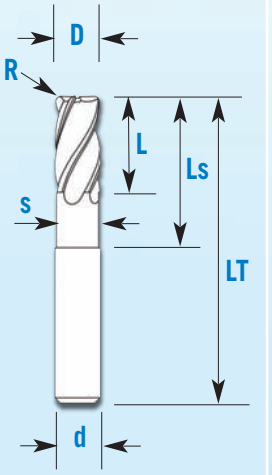
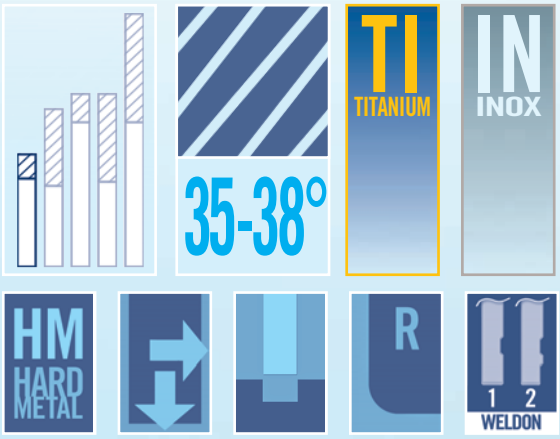
Available in stock.

FIVE FLUTES ENDMILLS
different helix angle corner radius

HMFR560 with coolant holes is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS			CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
6	◎	◉	◉	HMFR560D06.05	...XT	...ST	6	0,5	16	57	33	5,6	6
6	◎	◉	◉	HMFR560D06.10	...XT	...ST	6	1	16	57	33	5,6	6
8	◎	◉	◉	HMFR560D08.05	...XT	...ST	8	0,5	19	63	34	7,5	8
8	◎	◉	◉	HMFR560D08.10	...XT	...ST	8	1	19	63	34	7,5	8
10	◎	◉	◉	HMFR560D10.10	...XT	...ST	10	1	22	72	37	9,2	10
10	◎	◉	◉	HMFR560D10.20	...XT	...ST	10	2	22	72	37	9,2	10
12	◎	◉	◉	HMFR560D12.20	...XT	...ST	12	2	26	83	41	11	12
12	◎	◉	◉	HMFR560D12.25	...XT	...ST	12	2,5	26	83	41	11	12
12	◎	◉	◉	HMFR560D12.40	...XT	...ST	12	4	26	83	41	11	12
16	◎	◉	◉	HMFR560D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMFR560D16.30	...XT	...ST	16	3	32	92	47	15	16
16	◎	◉	◉	HMFR560D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMFR560D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMFR560D20.30	...XT	...ST	20	3	38	104	53	19	20
20	◎	◉	◉	HMFR560D20.40	...XT	...ST	20	4	38	104	53	19	20
25	◎	◉	◉	HMFR560D25.25	...XT	...ST	25	2,5	45	121	60	23,8	25
25	◎	◉	◉	HMFR560D25.40	...XT	...ST	25	4	45	121	60	23,8	25
25	◎	◉	◉	HMFR560D25.60	...XT	...ST	25	6	45	121	60	23,8	25

NEW

XT MAXCUT

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ST SPEEDCUT

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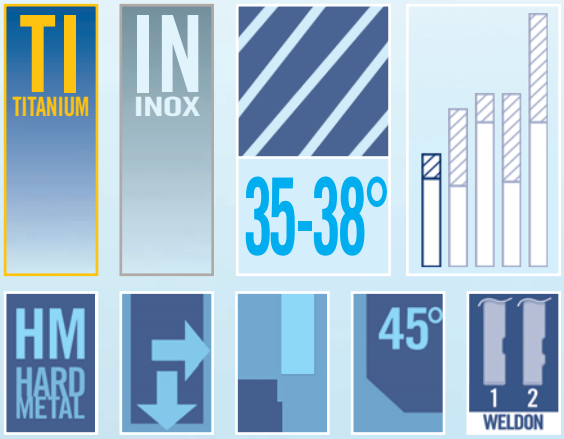
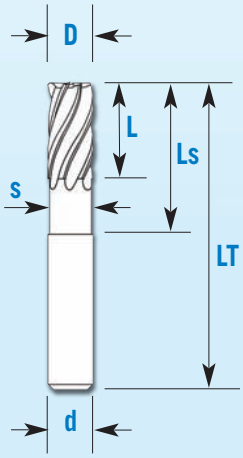
The different angle of the helix allows a high-performance process, totally free of vibrations.

SEVEN FLUTE ENDMILLS
different helix angle

FRESAL UTENSILI

HM760 is particularly recommended for milling stainless steel and Titanium alloys.





NEW

FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
12	⊙	◉	◉	HM760D12	...XT	...ST	12	26	83	41	11	12
16	⊙	◉	◉	HM760D16	...XT	...ST	16	32	92	47	15	16
20	⊙	◉	◉	HM760D20	...XT	...ST	20	38	104	53	19	20
25	⊙	◉	◉	HM760D25	...XT	...ST	25	45	121	60	23,8	25

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XT MAXCUT

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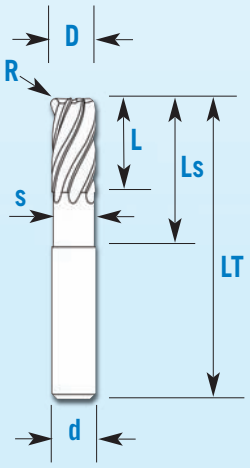
Available in 3 days.

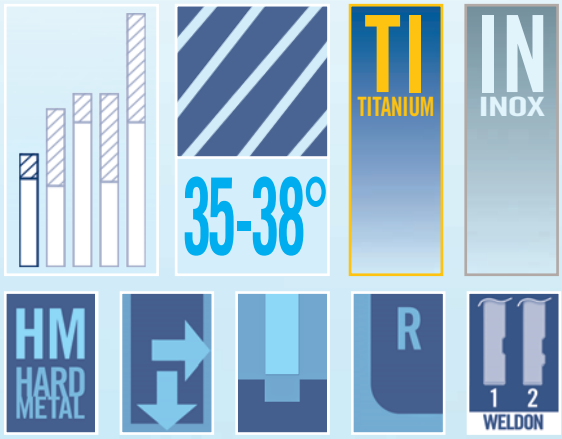
ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

SEVEN FLUTE ENDMILLS
different helix angle corner radius

HMR760 is particularly recommended for milling stainless steel and Titanium alloys.





FRESAL	COATINGS		CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
12	◎	◉	◉	HMR760D12.25	...XT	...ST	12	2,5	26	83	41	11	12
12	◎	◉	◉	HMR760D12.30	...XT	...ST	12	3	26	83	41	11	12
12	◎	◉	◉	HMR760D12.40	...XT	...ST	12	4	26	83	41	11	12
16	◎	◉	◉	HMR760D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMR760D16.30	...XT	...ST	16	3	32	92	47	15	16
16	◎	◉	◉	HMR760D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMR760D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMR760D20.30	...XT	...ST	20	3	38	104	53	19	20
20	◎	◉	◉	HMR760D20.40	...XT	...ST	20	4	38	104	53	19	20
25	◎	◉	◉	HMR760D25.25	...XT	...ST	25	2,5	45	121	60	23,8	25
25	◎	◉	◉	HMR760D25.40	...XT	...ST	25	4	45	121	60	23,8	25
25	◎	◉	◉	HMR760D25.60	...XT	...ST	25	6	45	121	60	23,8	25

NEW

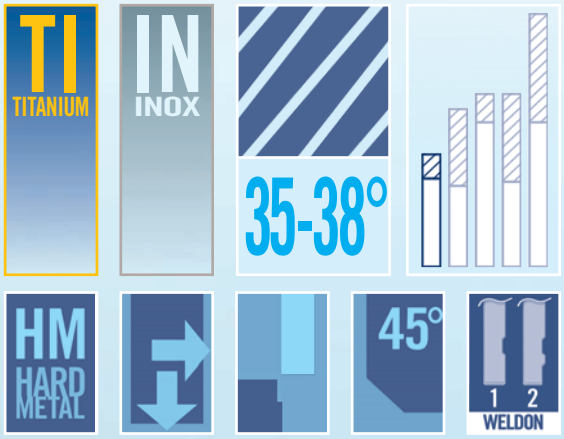
MAXCUT
is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

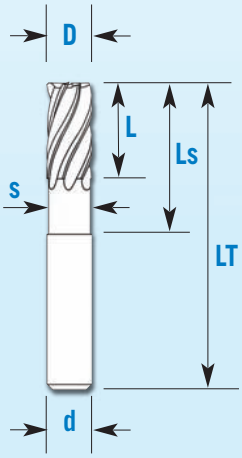
SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

The different angle of the helix allows a high-performance process, totally free of vibrations.

SEVEN FLUTE ENDMILLS
different helix angle

HMF760 with coolant holes
is particularly recommended
for milling stainless steel
and Titanium alloys.

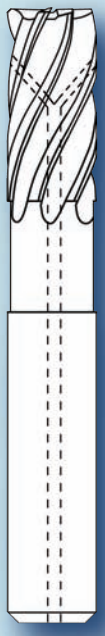




NEW

FRESAL	COATINGS			CODES			D	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10					h6
12	◎	◉	◉	HMF760D12	...XT	...ST	12	26	83	41	11	12
16	◎	◉	◉	HMF760D16	...XT	...ST	16	32	92	47	15	16
20	◎	◉	◉	HMF760D20	...XT	...ST	20	38	104	53	19	20
25	◎	◉	◉	HMF760D25	...XT	...ST	25	45	121	60	23,8	25

The different angle of the helix allows a high-performance process, totally free of vibrations.



XT MAXCUT ST SPEEDCUT

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different helix angle corner radius

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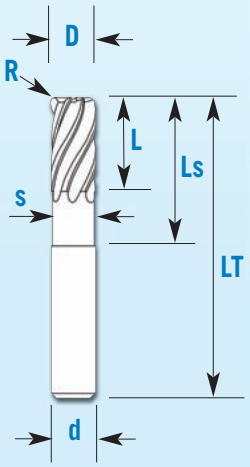
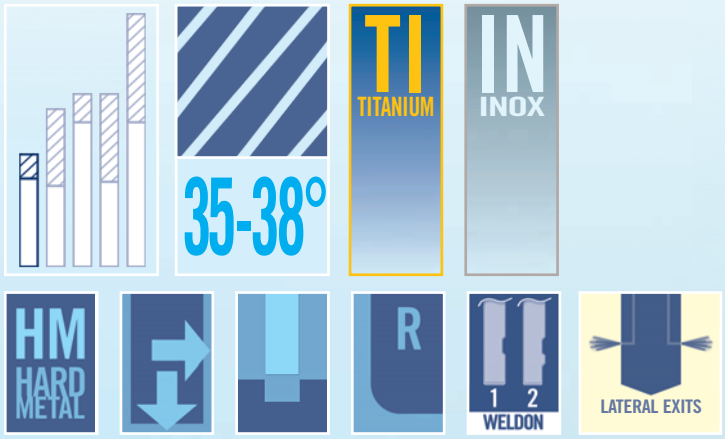
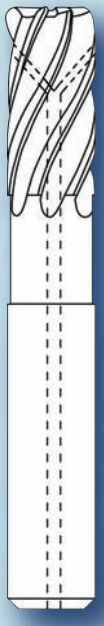




FRESAL	COATINGS		CODES			D	R	L	LT	Ls	s	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10						h6
12	◎	◉	◉	HMFR760D12.25	...XT	...ST	12	2,5	26	83	41	11	12
12	◎	◉	◉	HMFR760D12.30	...XT	...ST	12	3	26	83	41	11	12
12	◎	◉	◉	HMFR760D12.40	...XT	...ST	12	4	26	83	41	11	12
16	◎	◉	◉	HMFR760D16.25	...XT	...ST	16	2,5	32	92	47	15	16
16	◎	◉	◉	HMFR760D16.30	...XT	...ST	16	3	32	92	47	15	16
16	◎	◉	◉	HMFR760D16.40	...XT	...ST	16	4	32	92	47	15	16
20	◎	◉	◉	HMFR760D20.25	...XT	...ST	20	2,5	38	104	53	19	20
20	◎	◉	◉	HMFR760D20.30	...XT	...ST	20	3	38	104	53	19	20
20	◎	◉	◉	HMFR760D20.40	...XT	...ST	20	4	38	104	53	19	20
25	◎	◉	◉	HMFR760D25.25	...XT	...ST	25	2,5	45	121	60	23,8	25
25	◎	◉	◉	HMFR760D25.40	...XT	...ST	25	4	45	121	60	23,8	25
25	◎	◉	◉	HMFR760D25.60	...XT	...ST	25	6	45	121	60	23,8	25

NEW



XT MAXCUT

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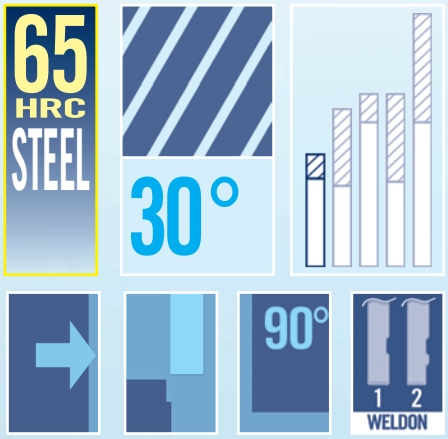
Especially recommended
for hard and abrasive
materials.
Available in
stock.

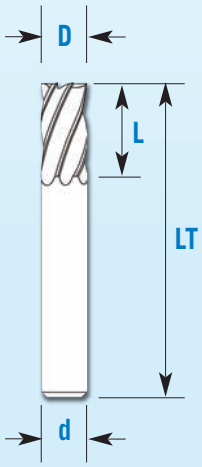
The different
angle of the helix allows
a high-performance process,
totally free of vibrations.

SIX FLUTE END MILLS *for finishing*

FRESAL UTENSILI

HM610.30 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM610.30D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HM610.30D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HM610.30D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HM610.30D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HM610.30D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HM610.30D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HM610.30D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HM610.30D20	...XT	...ST	20	38	104	20

High performance end mills with high stiffness, for excellent contouring finishing

XT MAXCUT ST SPEEDCUT

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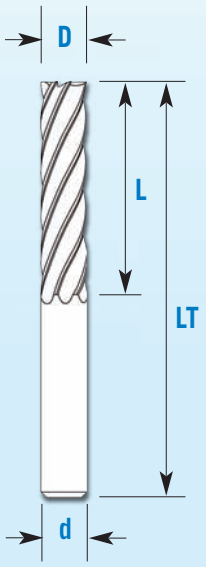
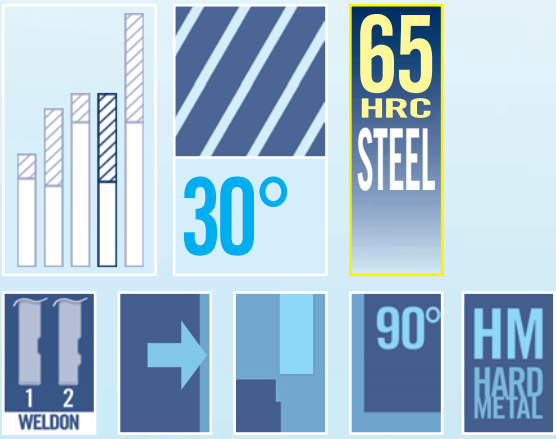
SIX FLUTE END MILLS *for finishing*

FRESAL UTENSILI

HM640.30 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS		CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM640.30D06	...XT	...ST	6	26	80	6
8	◎	◉	◉	HM640.30D08	...XT	...ST	8	36	90	8
10	◎	◉	◉	HM640.30D10	...XT	...ST	10	46	100	10
12	◎	◉	◉	HM640.30D12	...XT	...ST	12	56	110	12
14	◎	◉	◉	HM640.30D14	...XT	...ST	14	60	120	14
16	◎	◉	◉	HM640.30D16	...XT	...ST	16	66	140	16
18	◎	◉	◉	HM640.30D18	...XT	...ST	18	66	140	18
20	◎	◉	◉	HM640.30D20	...XT	...ST	20	76	160	20

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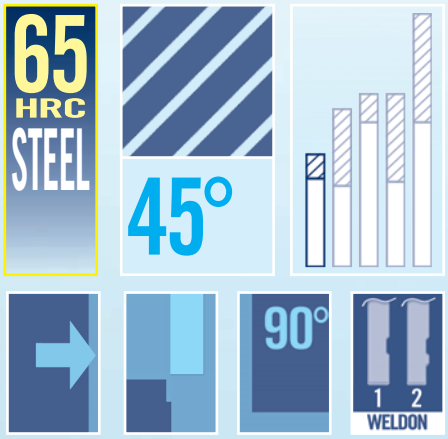
Available in stock.

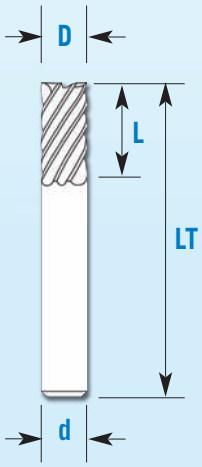
High performance end mills with high stiffness, for excellent contouring finishing

SIX FLUTE END MILLS *for finishing*

FRESAL UTENSILI

HM610.45 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM610.45D06	...XT	...ST	6	16	57	6
8	◎	◉	◉	HM610.45D08	...XT	...ST	8	19	63	8
10	◎	◉	◉	HM610.45D10	...XT	...ST	10	22	72	10
12	◎	◉	◉	HM610.45D12	...XT	...ST	12	26	83	12
14	◎	◉	◉	HM610.45D14	...XT	...ST	14	26	83	14
16	◎	◉	◉	HM610.45D16	...XT	...ST	16	32	92	16
18	◎	◉	◉	HM610.45D18	...XT	...ST	18	32	92	18
20	◎	◉	◉	HM610.45D20	...XT	...ST	20	38	104	20

High performance end mills with high stiffness, for excellent contouring finishing

XT MAXCUT

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ST SPEEDCUT

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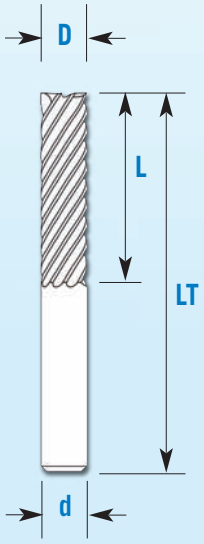
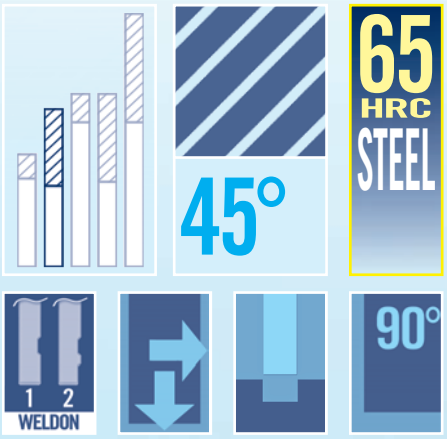
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

SIX FLUTE END MILLS *for finishing*

HM620.45 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM620.45D06	...XT	...ST	6	24	65	6
8	◎	◉	◉	HM620.45D08	...XT	...ST	8	32	80	8
10	◎	◉	◉	HM620.45D10	...XT	...ST	10	32	80	10
12	◎	◉	◉	HM620.45D12	...XT	...ST	12	50	100	12
16	◎	◉	◉	HM620.45D16	...XT	...ST	16	60	120	16
18	◎	◉	◉	HM620.45D18	...XT	...ST	18	60	120	18
20	◎	◉	◉	HM620.45D20	...XT	...ST	20	60	130	20

XT MAXCUT

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Available in 3 days.

ST SPEEDCUT

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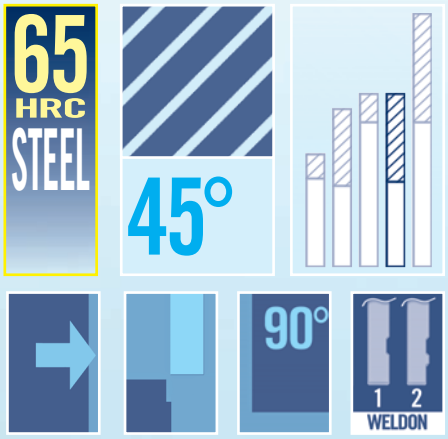
Especially recommended for hard and abrasive materials.
Available in stock.

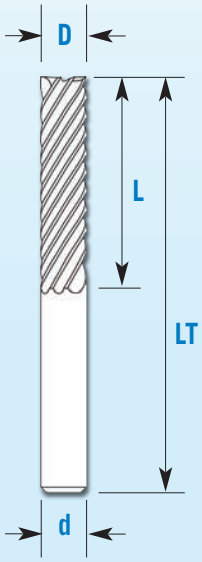
High performance end mills with high stiffness, for excellent contouring finishing

SIX FLUTE END MILLS *for finishing*

FRESAL UTENSILI

HM640.45 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
6	◎	◉	◉	HM640.45D06	...XT	...ST	6	26	80	6
8	◎	◉	◉	HM640.45D08	...XT	...ST	8	36	90	8
10	◎	◉	◉	HM640.45D10	...XT	...ST	10	46	100	10
12	◎	◉	◉	HM640.45D12	...XT	...ST	12	56	110	12
14	◎	◉	◉	HM640.45D14	...XT	...ST	14	60	120	14
16	◎	◉	◉	HM640.45D16	...XT	...ST	16	66	140	16
18	◎	◉	◉	HM640.45D18	...XT	...ST	18	66	140	18
20	◎	◉	◉	HM640.45D20	...XT	...ST	20	76	160	20

High performance end mills with high stiffness, for excellent contouring finishing

XT MAXCUT ST SPEEDCUT

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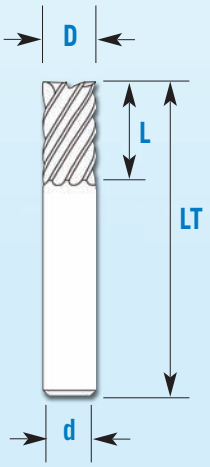
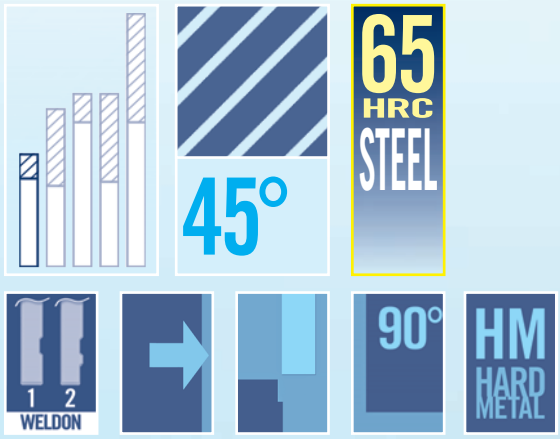
Available in stock.

MULTI FLUTE END MILLS *for finishing*

HM810.45 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d	z
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6	
14	◎	◉	◉	HM810.45D14	...XT	...ST	14	26	83	14	8
16	◎	◉	◉	HM810.45D16	...XT	...ST	16	32	92	16	8
18	◎	◉	◉	HM810.45D18	...XT	...ST	18	32	92	18	10
20	◎	◉	◉	HM810.45D20	...XT	...ST	20	38	104	20	10
25	◎	◉	◉	HM810.45D25	...XT	...ST	25	45	121	25	12

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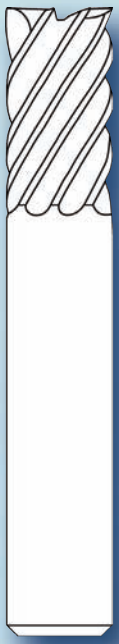
Available in stock.

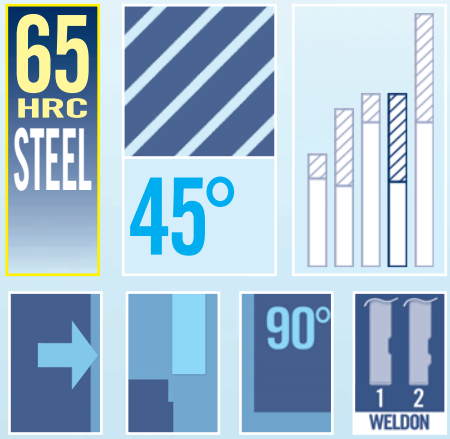
High performance end mills with high stiffness, for excellent contouring finishing

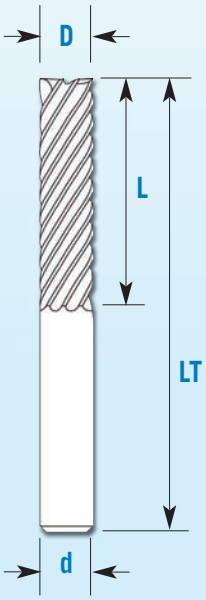


MULTI FLUTE END MILLS *for finishing*

FRESAL UTENSILI

HM840.45 is used for machining high-strength steels and hardened steels with HRC<65.





FRESAL	COATINGS			CODES			D	L	LT	d	z
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6	
14	◎	◉	◉	HM840.45D14	...XT	...ST	14	60	120	14	8
16	◎	◉	◉	HM840.45D16	...XT	...ST	16	66	140	16	8
18	◎	◉	◉	HM840.45D18	...XT	...ST	18	66	140	18	10
20	◎	◉	◉	HM840.45D20	...XT	...ST	20	76	160	20	10

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ST SPEEDCUT

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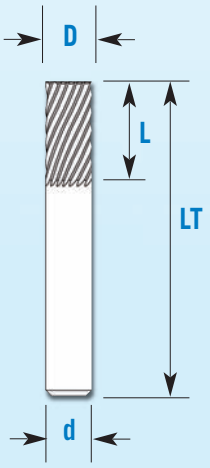
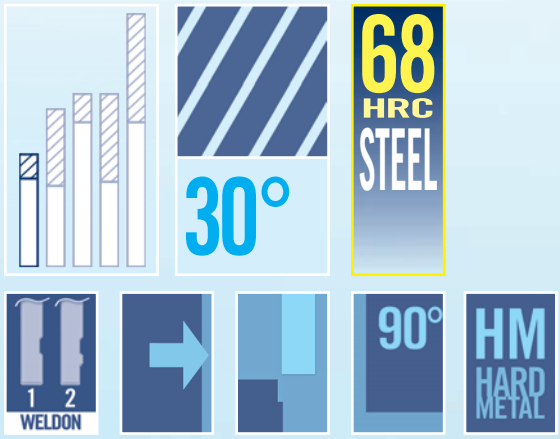
Available in stock.

MULTI FLUTE END MILLS *for finishing*

HM910.30 is used for machining high-strength steels and hardened steels with HRC<68.





FRESAL	COATINGS			CODES			D	L	LT	d	z
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6	
6	◎	◉	◉	HM910.30D06	...XT	...ST	6	16	57	6	6
8	◎	◉	◉	HM910.30D08	...XT	...ST	8	19	63	8	8
10	◎	◉	◉	HM910.30D10	...XT	...ST	10	22	72	10	10
12	◎	◉	◉	HM910.30D12	...XT	...ST	12	26	83	12	12
16	◎	◉	◉	HM910.30D16	...XT	...ST	16	32	92	16	16
20	◎	◉	◉	HM910.30D20	...XT	...ST	20	38	104	20	16

XT MAXCUT

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Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

ST SPEEDCUT

SPEEDCUT
is a multilayer coating based TiSiN. Allows use of high speed cutting with low lubrication or dry.
Especially recommended for hard and abrasive materials.
Available in stock.

High performance end mills with high stiffness, for excellent contouring finishing

SPECIAL TOOLS

In this section we have placed some tool types for which we wanted to give immediate stock availability.

In fact, the special projects that we are able to produce are considerably larger.

We can offer the best solution starting from the design of the detail that you need to produce, or to realize the tool according to your indications, optimizing angles and geometries depending on the material to be machined.

In the design phase, we use 3D simulation software to find the best solution in the shortest time!

We conduct strict quality checks on all tools so that they reach the end user free of defects and satisfy all geometric and performances requirements.

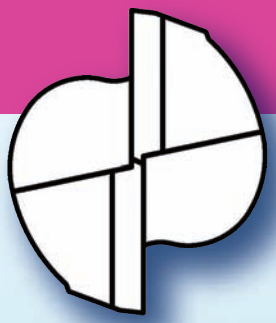
All this with exceptionally short lead times.

FRESAL

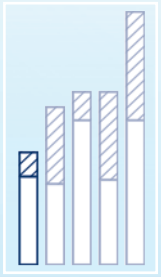
UTENSILI

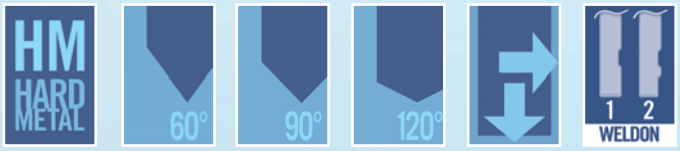
SPECIAL TOOLS

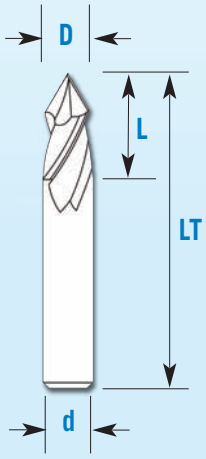
TWO FLUTE MULTIFUNCTION END MILLS



HMP2 is available in three versions:
with point angle **60°/ 90°/ 120°**.







FRESAL Ø	COATINGS UNCOATED	COATINGS MAXCUT	CODES UNCOATED	CODES XT	D h10	L	LT	d h6
3	◎	◉	HMP2.60D03	...XT	3	8	57	6
4	◎	◉	HMP2.60D04	...XT	4	11	57	6
5	◎	◉	HMP2.60D05	...XT	5	13	57	6
6	◎	◉	HMP2.60D06	...XT	6	16	57	6
8	◎	◉	HMP2.60D08	...XT	8	19	63	8
10	◎	◉	HMP2.60D10	...XT	10	22	72	10
12	◎	◉	HMP2.60D12	...XT	12	26	83	12
16	◎	◉	HMP2.60D16	...XT	16	32	92	16
20	◎	◉	HMP2.60D20	...XT	20	38	104	20

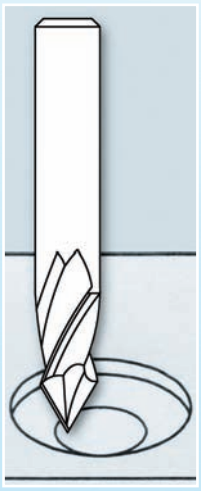
FRESAL Ø	COATINGS UNCOATED	COATINGS MAXCUT	CODES UNCOATED	CODES XT	D h10	L	LT	d h6
3	◎	◉	HMP2.90D03	...XT	3	8	57	6
4	◎	◉	HMP2.90D04	...XT	4	11	57	6
5	◎	◉	HMP2.90D05	...XT	5	13	57	6
6	◎	◉	HMP2.90D06	...XT	6	16	57	6
8	◎	◉	HMP2.90D08	...XT	8	19	63	8
10	◎	◉	HMP2.90D10	...XT	10	22	72	10
12	◎	◉	HMP2.90D12	...XT	12	26	83	12
16	◎	◉	HMP2.90D16	...XT	16	32	92	16
20	◎	◉	HMP2.90D20	...XT	20	38	104	20

FRESAL Ø	COATINGS UNCOATED	COATINGS MAXCUT	CODES UNCOATED	CODES XT	D h10	L	LT	d h6
3	◎	◉	HMP2.120D03	...XT	3	8	57	6
4	◎	◉	HMP2.120D04	...XT	4	11	57	6
5	◎	◉	HMP2.120D05	...XT	5	13	57	6
6	◎	◉	HMP2.120D06	...XT	6	16	57	6
8	◎	◉	HMP2.120D08	...XT	8	19	63	8
10	◎	◉	HMP2.120D10	...XT	10	22	72	10
12	◎	◉	HMP2.120D12	...XT	12	26	83	12
16	◎	◉	HMP2.120D16	...XT	16	32	92	16
20	◎	◉	HMP2.120D20	...XT	20	38	104	20

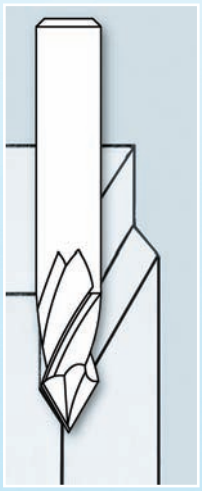
What does it mean multifunction end mills

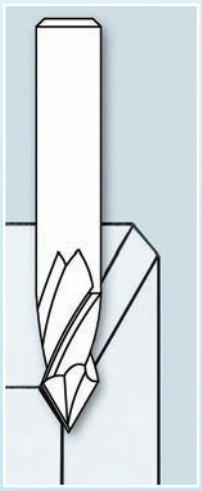
The multifunction end mills allow to produce multiple machining process.

Working by
INTERPOLATION

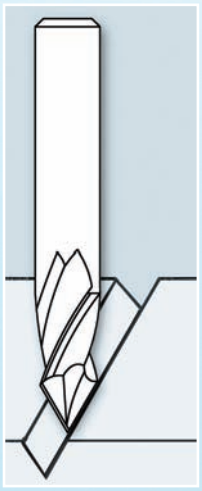


Working by
LONGITUDINAL CHAMFERING

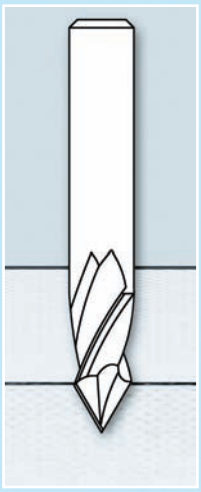




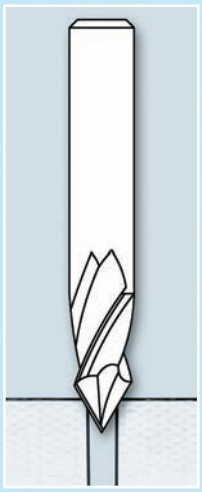
"V" GROOVING



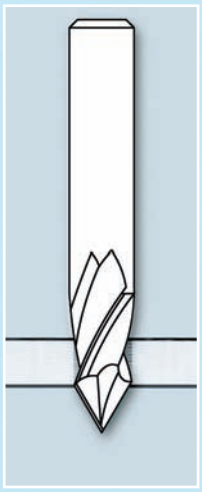
Working by
CENTERING



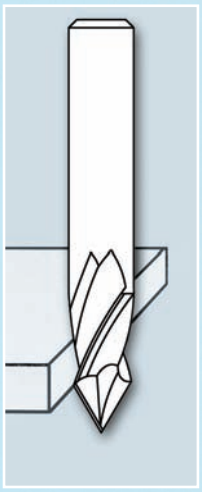
Working by
COUNTERSINKING



Working by
DRILLING

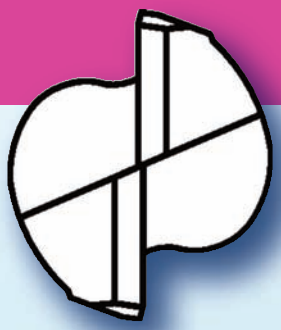


CONTOURING

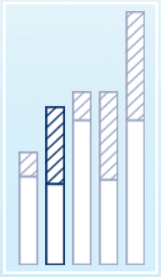


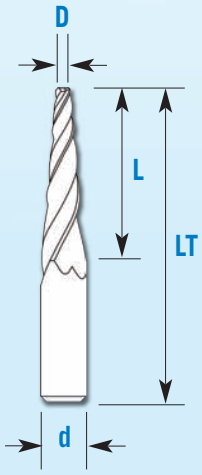
ADVANTAGES WITH MULTIFUNCTION END MILLS:
reduction of machine set-up time and work cycle.

TWO FLUTE 5° CONICAL END MILLS

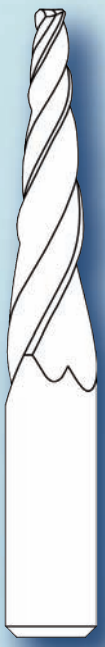


HMC2-5 is recommended for milling of medium and medium-high tensile strength materials.





FRESAL	COATINGS			CODES			D	L	LT	d
∅	UNCOATED	MAXCUT	SPEEDCUT	UNCOATED	XT	ST	h10			h6
2,5	◎	◉	◉	HMC2-5D02530	...XT	...ST	2,5	30	63	8
2,5	◎	◉	◉	HMC2-5D02540	...XT	...ST	2,5	40	80	10
2,5	◎	◉	◉	HMC2-5D02550	...XT	...ST	2,5	50	100	12
3	◎	◉	◉	HMC2-5D03030	...XT	...ST	3	30	72	10
3	◎	◉	◉	HMC2-5D03040	...XT	...ST	3	40	83	12
3	◎	◉	◉	HMC2-5D03050	...XT	...ST	3	50	100	10
3,5	◎	◉	◉	HMC2-5D03530	...XT	...ST	3,5	30	72	12
3,5	◎	◉	◉	HMC2-5D03540	...XT	...ST	3,5	40	83	12
3,5	◎	◉	◉	HMC2-5D03550	...XT	...ST	3,5	50	100	12
4	◎	◉	◉	HMC2-5D04030	...XT	...ST	4	30	72	10
4	◎	◉	◉	HMC2-5D04040	...XT	...ST	4	40	83	12
4	◎	◉	◉	HMC2-5D04050	...XT	...ST	4	50	115	14
4,5	◎	◉	◉	HMC2-5D04530	...XT	...ST	4,5	30	72	10
4,5	◎	◉	◉	HMC2-5D04540	...XT	...ST	4,5	40	83	12
4,5	◎	◉	◉	HMC2-5D04550	...XT	...ST	4,5	50	115	14
5	◎	◉	◉	HMC2-5D05030	...XT	...ST	5	30	83	12
5	◎	◉	◉	HMC2-5D05040	...XT	...ST	5	40	83	12
5	◎	◉	◉	HMC2-5D05050	...XT	...ST	5	50	115	14
6	◎	◉	◉	HMC2-5D06030	...XT	...ST	6	30	83	12
6	◎	◉	◉	HMC2-5D06040	...XT	...ST	6	40	83	14
6	◎	◉	◉	HMC2-5D06050	...XT	...ST	6	50	120	16



The constructive geometry of these cutters is specific for dies.

XT MAXCUT

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is a new generation AlTiN coating.
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

ST SPEEDCUT

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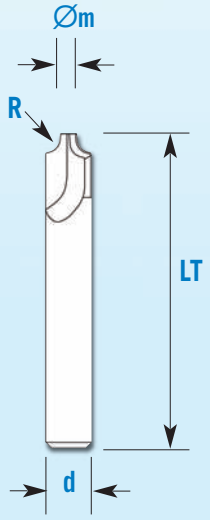
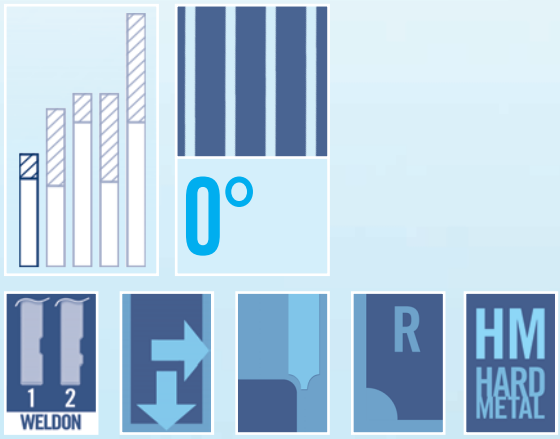
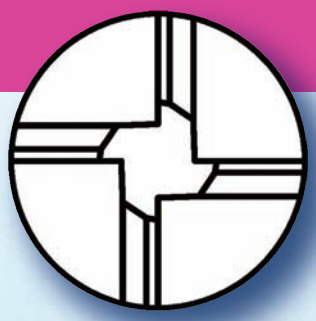
Especially recommended for hard and abrasive materials.
Available in 3 days.

QUARTER CIRCLE CUTTERS

HMQR410 is recommended for milling of all types of steel up to R=1100N/mm².







FRESAL	COATINGS		CODES		R	Øm	LT	d
R	UNCOATED	MAXCUT	UNCOATED	XT				h6
0,5	◎	◉	HMQR410R05	...XT	0,5	5	57	6
1,0	◎	◉	HMQR410R10	...XT	1,0	4	57	6
1,5	◎	◉	HMQR410R15	...XT	1,5	3	57	6
2,0	◎	◉	HMQR410R20	...XT	2,0	4	63	8
2,5	◎	◉	HMQR410R25	...XT	2,5	3	63	8
3,0	◎	◉	HMQR410R30	...XT	3,0	4	72	10
3,5	◎	◉	HMQR410R35	...XT	3,5	5	83	12
4,0	◎	◉	HMQR410R40	...XT	4,0	4	83	12
5,0	◎	◉	HMQR410R50	...XT	5,0	6	92	16
6,0	◎	◉	HMQR410R60	...XT	6,0	4	92	16

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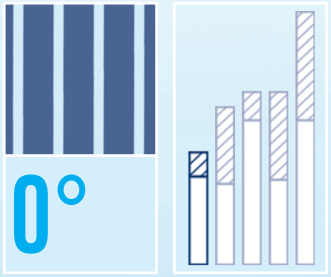
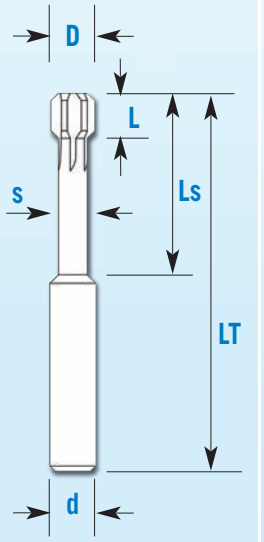
Available in 3 days.

End mills with high stiffness, for excellent contouring finishing.

FRESAL UTENSILI

HMSM630 is indicated in interpolation chamfering.





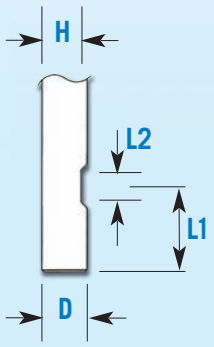
FRESAL	COATINGS		CODES		D	L	LT	Ls	s	d	Z
∅	UNCOATED	MAXCUT	UNCOATED	XT	h10					h6	
M4	◎	◉	HMSM630M04	...XT	3,1	3	57	14	1,7	6	4
M5	◎	◉	HMSM630M05	...XT	3,9	4	57	16	2,2	6	4
M6	◎	◉	HMSM630M06	...XT	4,7	5	57	18	2,6	6	4
M8	◎	◉	HMSM630M08	...XT	6,4	6	63	26	3,9	8	4
M10	◎	◉	HMSM630M10	...XT	8,1	8	80	36	4,8	10	6
M12	◎	◉	HMSM630M12	...XT	9,7	10	80	40	5,9	10	6
M14	◎	◉	HMSM630M14	...XT	11,5	12	100	48	7,5	12	6
M16	◎	◉	HMSM630M16	...XT	13,5	14	115	56	9,5	14	6

The back chamfer allows the creation of pulled interpolated chamfering.

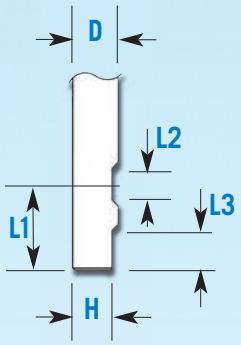
XT MAXCUT

MAXCUT is a new generation AlTiN coating. Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in stock.

HMW are lateral attack plans made on the cylindrical shank according to DIN 6535 - Form HB.



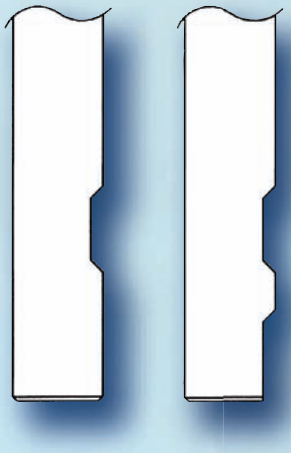
1



2

FRESAL	WELDON			D	L1	L2	L3	H
∅	WELDON 1	WELDON 2	CODES	h6	+0,0 −1,0	+0,05 −0	+1,0 −0	h11
6	◎	-	HMWD06	6	18	4,2	-	4,8
8	◎	-	HMWD08	8	18	5,5	-	6,6
10	◎	-	HMWD10	10	20	7	-	8,4
12	◎	-	HMWD12	12	22,5	8	-	10,2
14	◎	-	HMWD14	14	24	10	-	14,2
16	◎	-	HMWD16	16	24	10	-	14,2
18	◎	-	HMWD18	18	25	11	-	18,2
20	◎	-	HMWD20	20	25	11	-	18,2
25	-	◎	HMWD25	25	32	12	17	23

The Weldon attachement is an economical solution for heavy duty milling, in cases where there are no specific needs in terms of run-out of the tool.

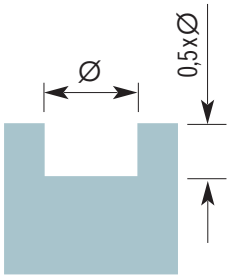


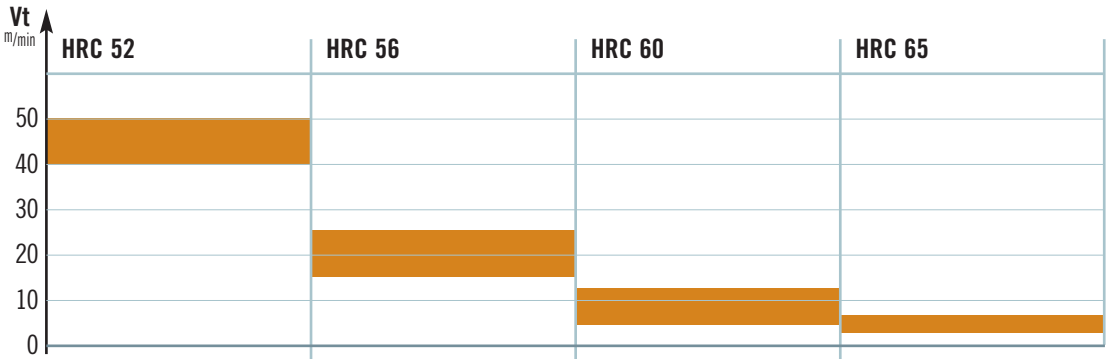
FRESAL UTENSILI

The technical tables provide indicative machining parameters. According to the machined material and the operation that has to be carried out, in order to optimize energy, time and tool performance.

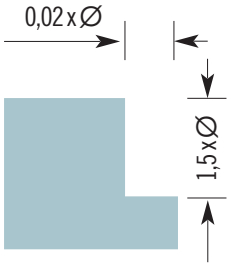
Machining parameters for hardened material.
End mills coated SpeedcuT.

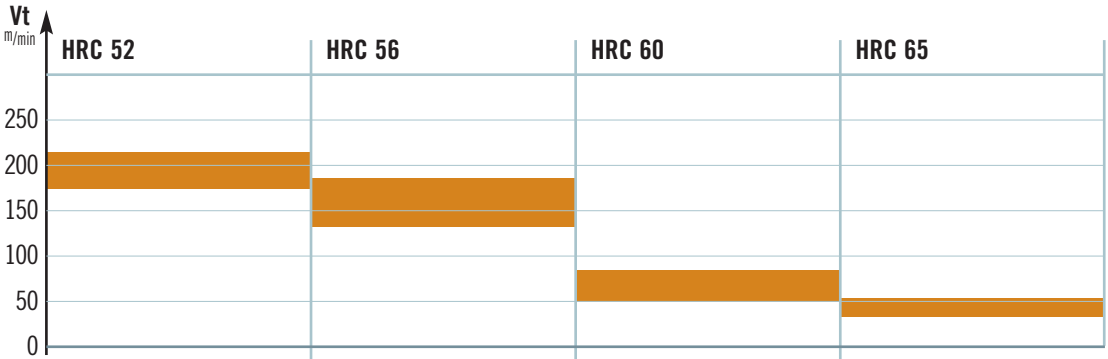
ST SPEEDCUT



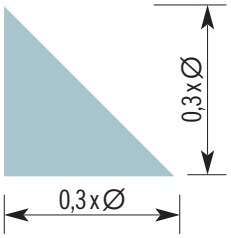


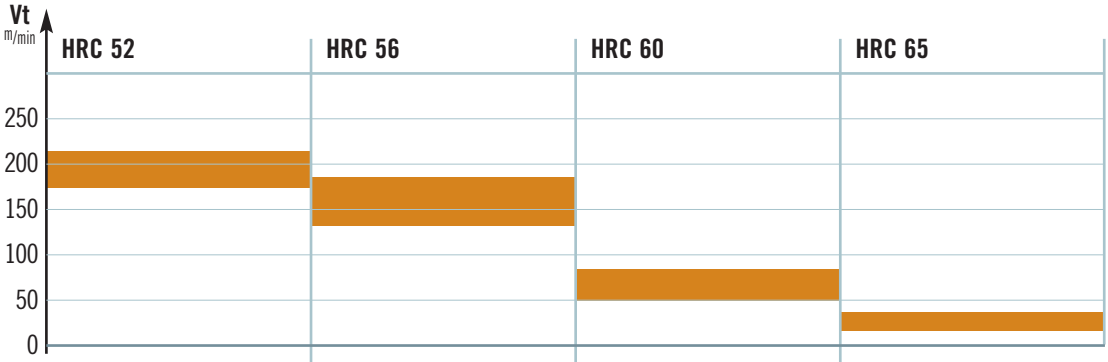
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,022	6	0,016	6	0,010	6	0,006
12	0,052	12	0,044	12	0,040	12	0,030
20	0,070	20	0,064	20	0,058	20	0,045

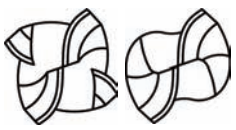




Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,030	6	0,020	6	0,015	6	0,010
12	0,055	12	0,050	12	0,044	12	0,033
20	0,080	20	0,070	20	0,060	20	0,048



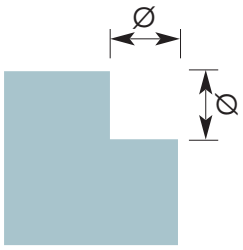


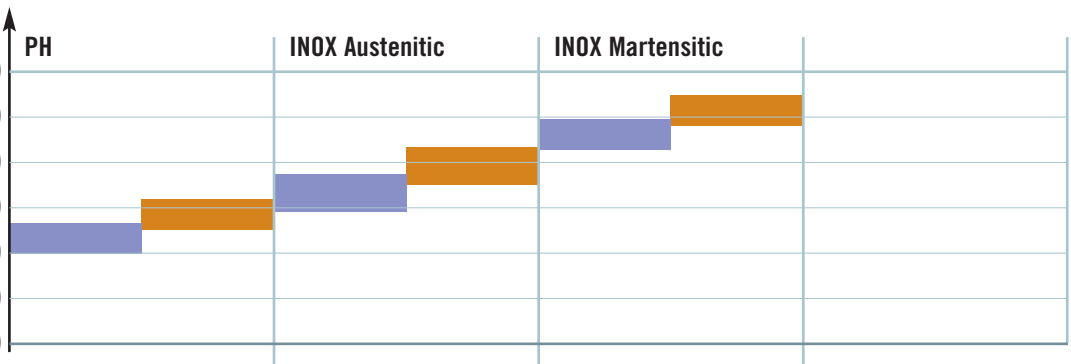


Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,060	6	0,040	6	0,030	6	0,020
12	0,090	12	0,070	12	0,060	12	0,048
20	0,110	20	0,095	20	0,080	20	0,066

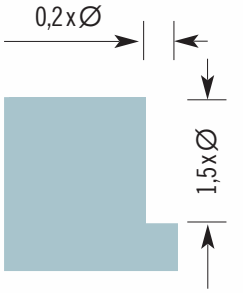
Machining parameters for stainless steel.
End mills coated SpeedcuT.

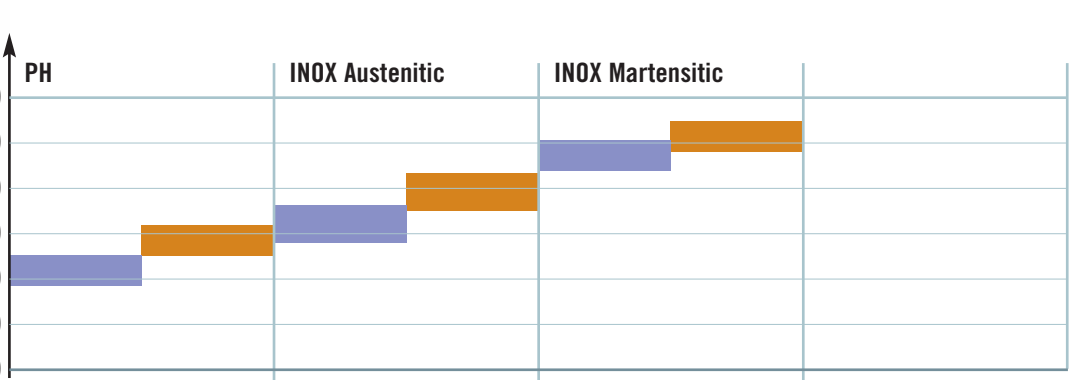
XT MAXCUT ST SPEEDCUT

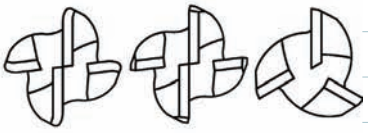




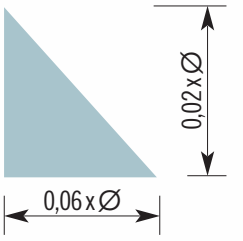
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,016	6	0,015	6	0,020
12	0,040	12	0,050	12	0,055
20	0,050	20	0,070	20	0,075

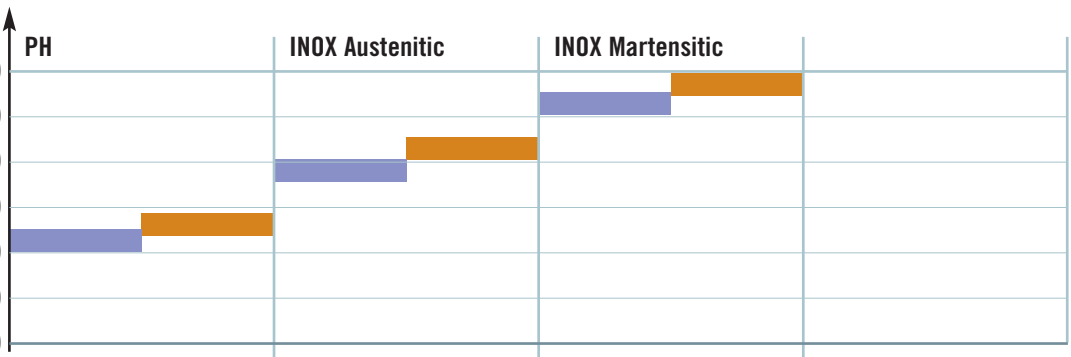


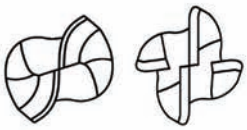




Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,015	6	0,020	6	0,025
12	0,040	12	0,055	12	0,060
20	0,050	20	0,075	20	0,080



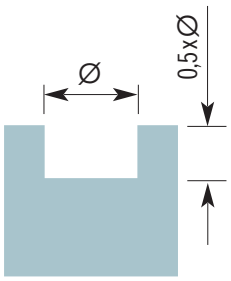


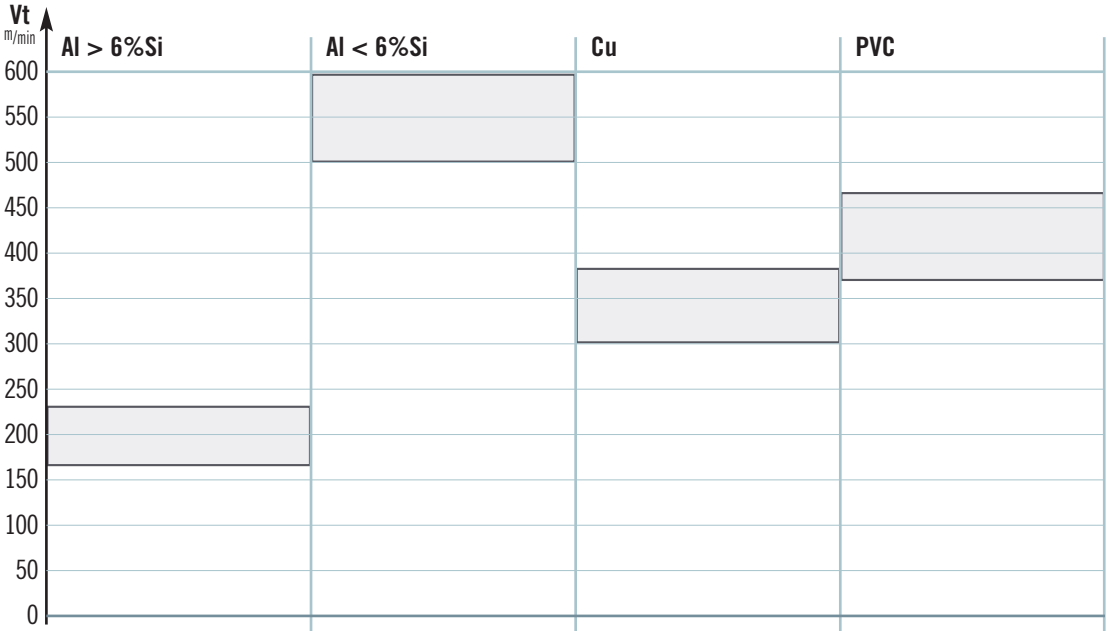


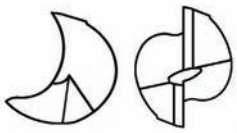
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,200	6	0,230	6	0,250
12	0,350	12	0,370	12	0,400
20	0,480	20	0,520	20	0,550

Machining parameters for aluminum and light alloys. Uncoated end mills.

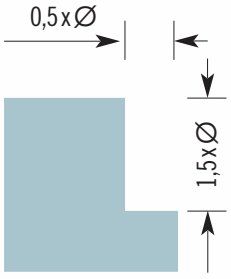
UNCOATED

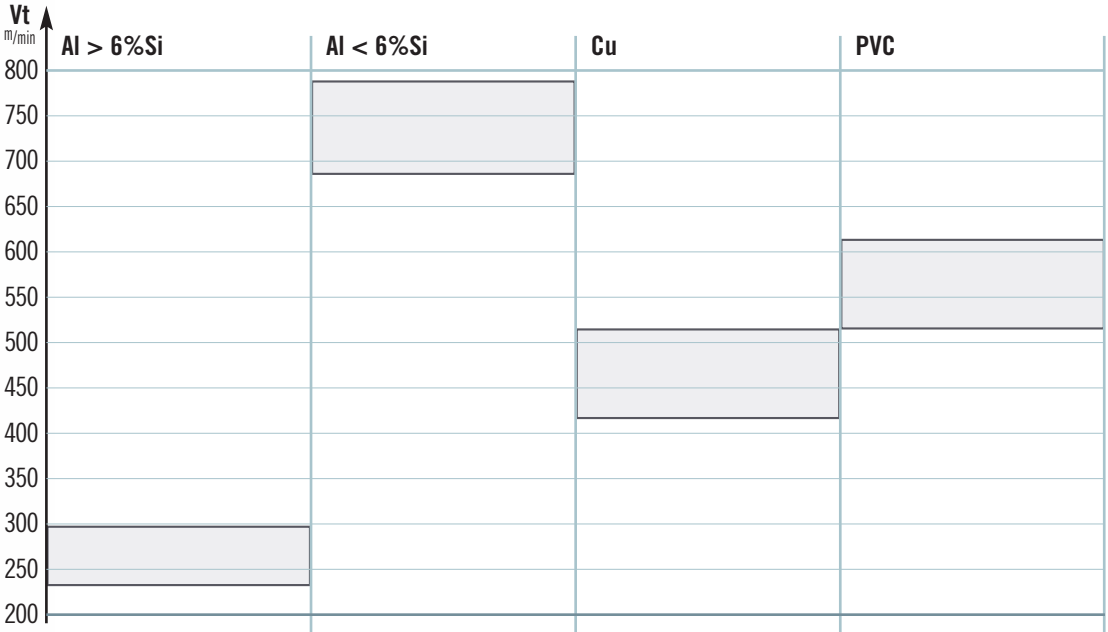


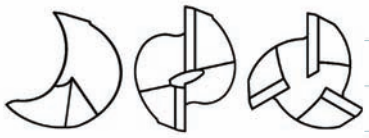




Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,050	6	0,050	6	0,050	6	0,050
12	0,125	12	0,125	12	0,125	12	0,125
20	0,170	20	0,170	20	0,170	20	0,170



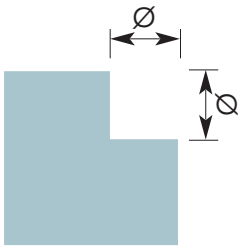


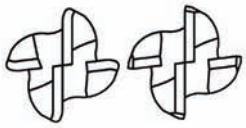


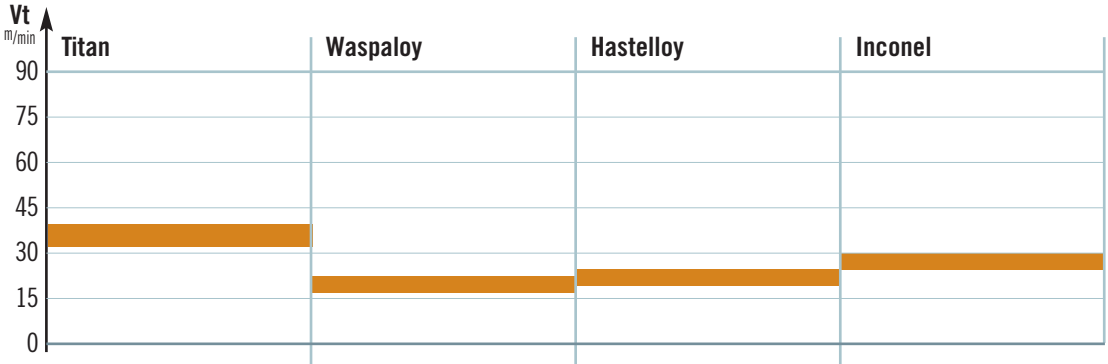
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,060	6	0,060	6	0,060	6	0,060
12	0,125	12	0,125	12	0,125	12	0,125
20	0,165	20	0,165	20	0,165	20	0,165

Machining parameters for Titanium and Super-alloys.
End mills coated SpeedcuT.

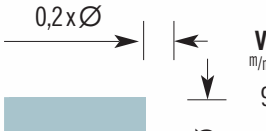
ST SPEEDCUT

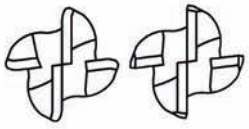


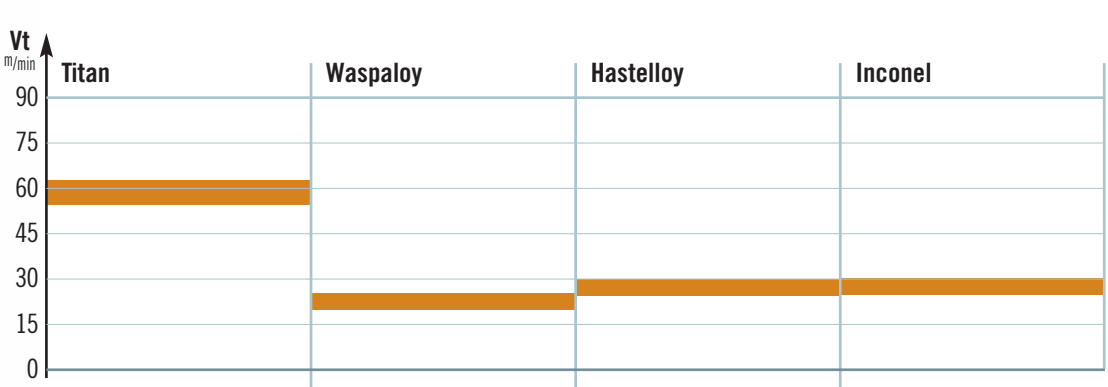




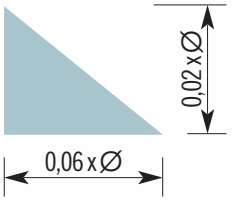
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,015	6	0,012	6	0,012	6	0,018
12	0,040	12	0,030	12	0,030	12	0,045
20	0,070	20	0,040	20	0,040	20	0,060

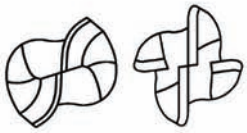






Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,015	6	0,013	6	0,013	6	0,020
12	0,045	12	0,033	12	0,033	12	0,050
20	0,075	20	0,044	20	0,044	20	0,068

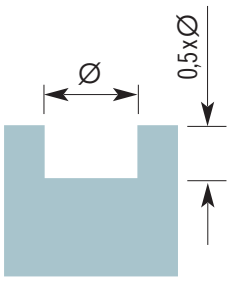


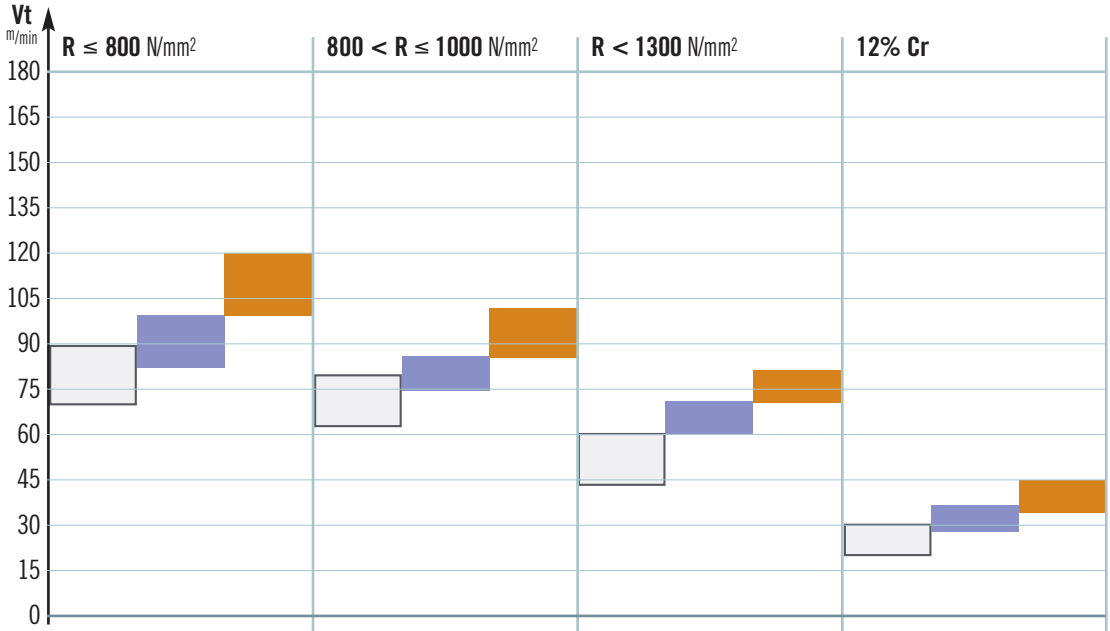


Ø	Fz (mm)
6	0,200
12	0,320
20	0,450

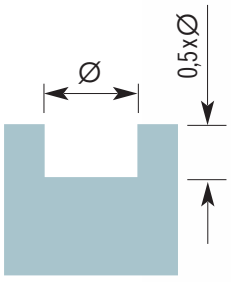
Machining parameters for steels. Uncoated end mills, coated maXcuT, coated SpeedcuT.

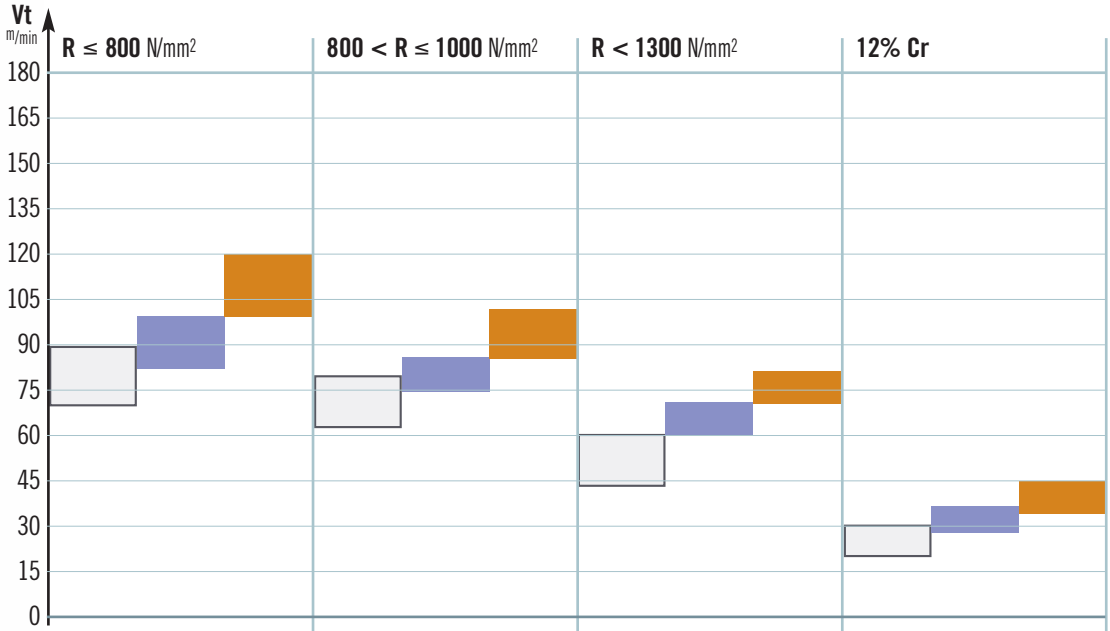
UNCOATED | XT maXcuT | ST SpeedcuT





R ≤ 800 N/mm²		800 < R ≤ 1000 N/mm²		R < 1300 N/mm²		12% Cr	
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,010	6	0,009	6	0,008	6	0,007
12	0,025	12	0,025	12	0,025	12	0,023
20	0,040	20	0,039	20	0,038	20	0,037

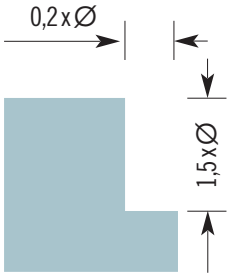


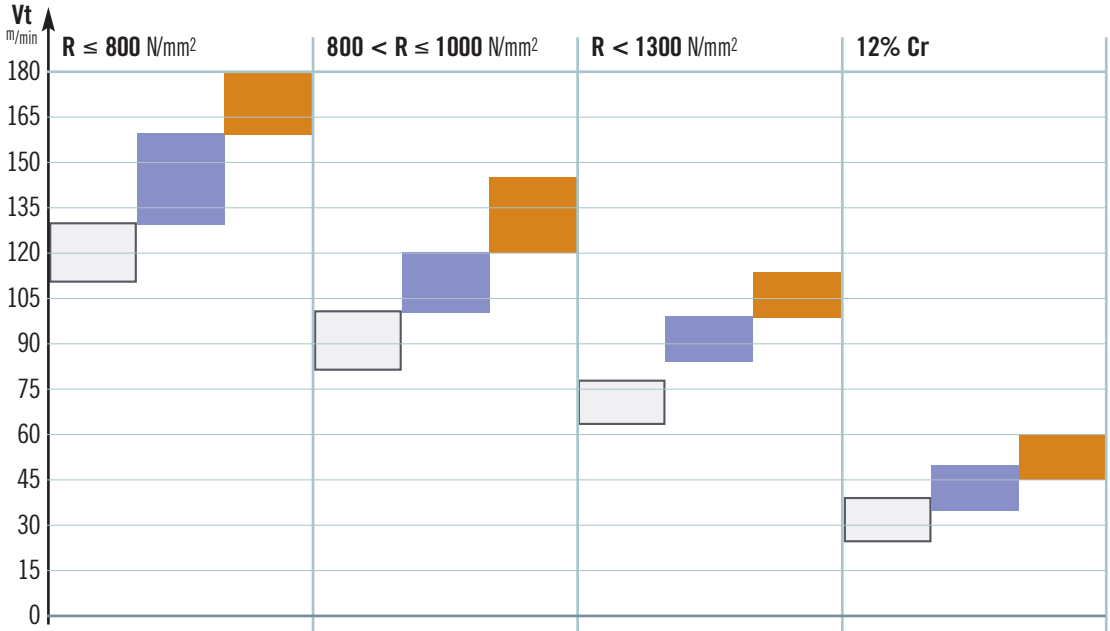


R ≤ 800 N/mm²		800 < R ≤ 1000 N/mm²		R < 1300 N/mm²		12% Cr	
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,016	6	0,014	6	0,013	6	0,013
12	0,033	12	0,032	12	0,030	12	0,029
20	0,046	20	0,044	20	0,043	20	0,042

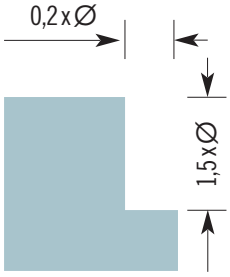
Machining parameters for steels. Uncoated end mills, coated maXcuT, coated SpeedcuT.

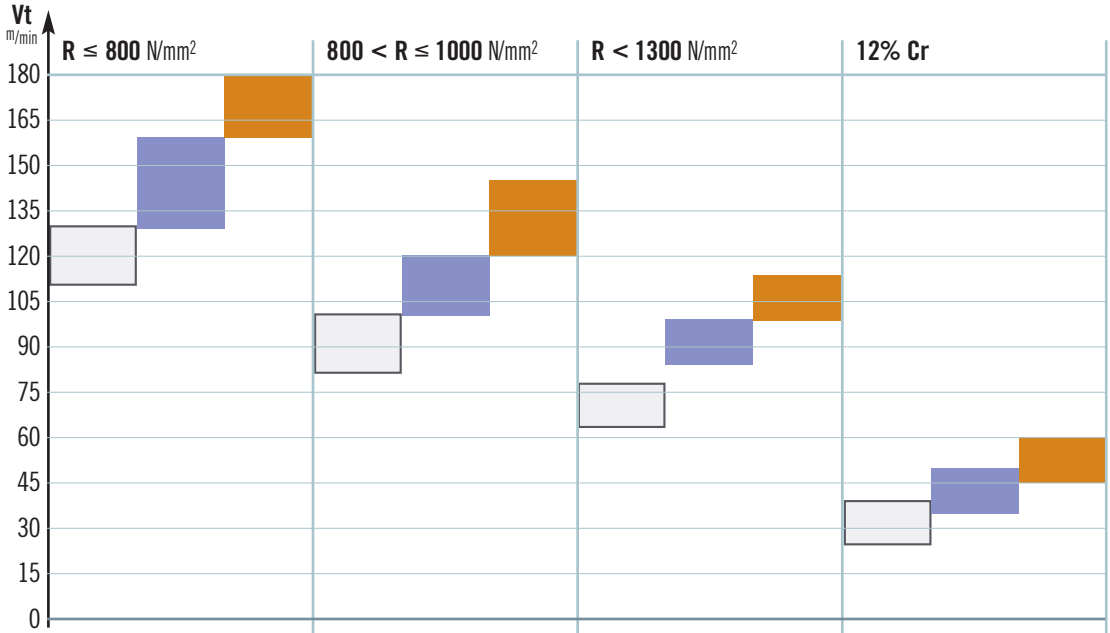
UNCOATED | XT maXcuT | ST SpeedcuT





Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,019	6	0,018	6	0,012	6	0,011
12	0,035	12	0,033	12	0,032	12	0,032
20	0,048	20	0,046	20	0,045	20	0,044

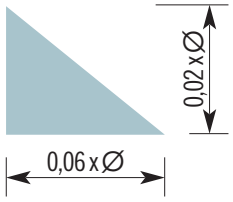


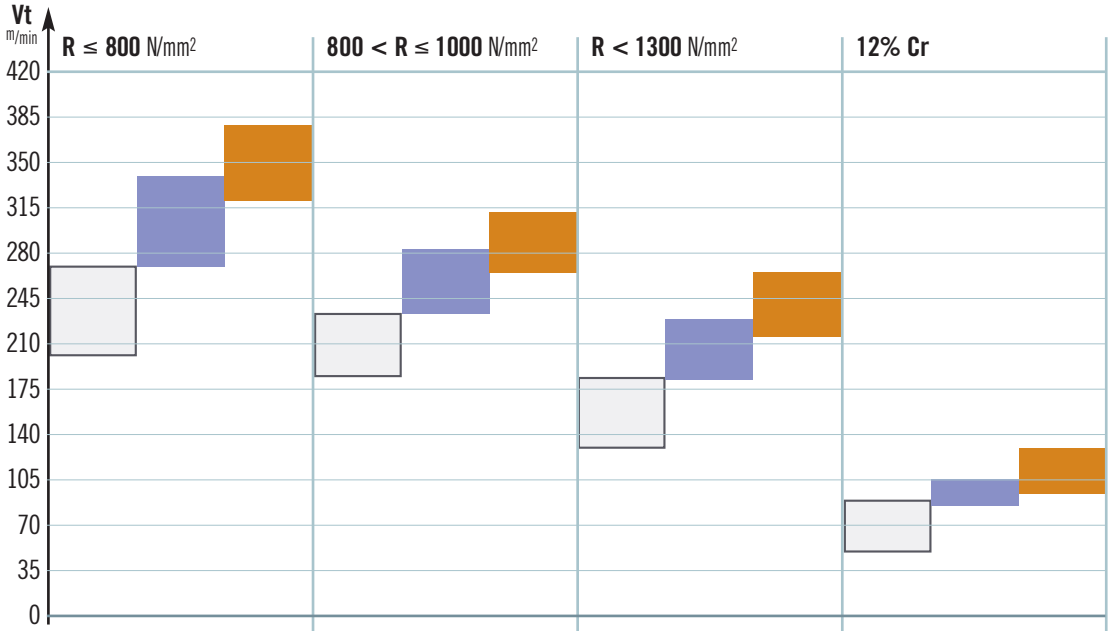


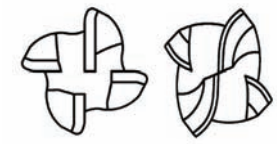
Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,024	6	0,022	6	0,020	6	0,020
12	0,041	12	0,039	12	0,037	12	0,037
20	0,054	20	0,052	20	0,050	20	0,049

Machining parameters for steels. Uncoated end mills, coated maXcuT, coated SpeedcuT.

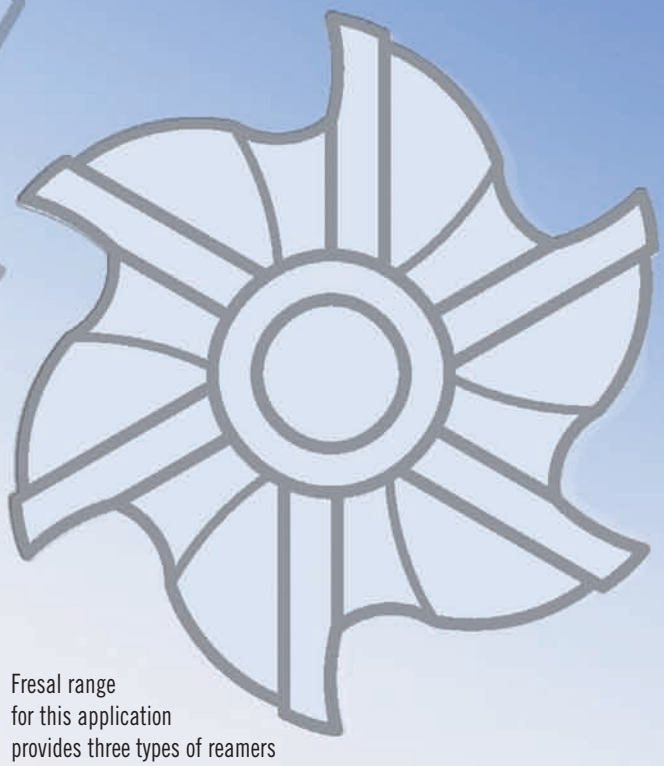
UNCOATED | XT maXcuT | ST SpeedcuT







Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)	Ø	Fz (mm)
6	0,220	6	0,210	6	0,180	6	0,180
12	0,360	12	0,340	12	0,320	12	0,300
20	0,450	20	0,430	20	0,410	20	0,400



Reaming is a finishing operation performed to obtain holes of high accuracy.

It's necessary to seek the best working conditions *(cutting speed, adequate allowance, a suitable lubrication, etc.)* to get the best hole quality in terms of surface finishing, roundness of the hole and tight tolerances.

In most processes are produced through holes, for which it is recommended the use of reamers with left helical grooves.

Fresal range for this application provides three types of reamers complying with the standards DIN212B/D *(HMAL20)*, DIN 8089 *(HMAL30)* and an **extra-long series** realized according to internal standard *(HMAL27)*.

These three «families» are built to obtain holes with **H7 tolerance** and **centesimal progression**.

For the production of Blind Holes in H7 tolerance, we recommend the use of reamers HMALD20 with right helical grooves according to DIN212D.

Service: any diameter not immediately available will be provided within 24 hours.

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FRESAL — Catalogue SOLID CARBIDE DRILLS
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