MILLING

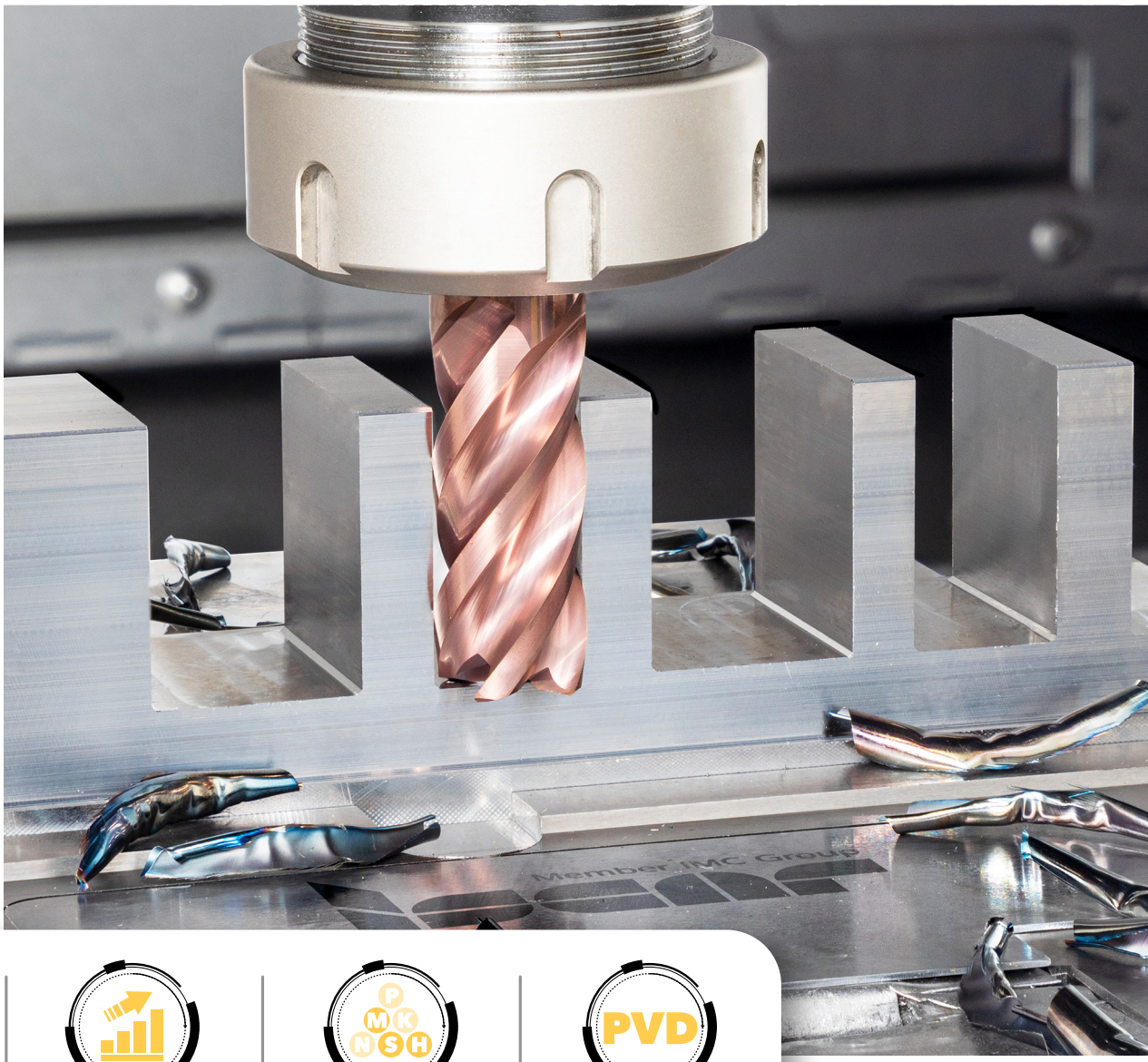
04-2023

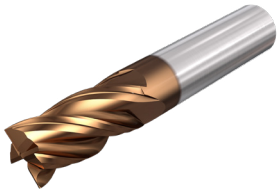
FEBRUARY 2023

METRIC

NPA

New Product Announcement





Higher Productivity

ISO M, S, H

PVD Coating

Member IMC Group

ISCAR

CHATTERFREE

MULTI-MASTER LINE

New EC-E4M 4 Flute Endmills Coated with IC608

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CHATTERFREE
MULTI-MASTER LINE

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Highlights

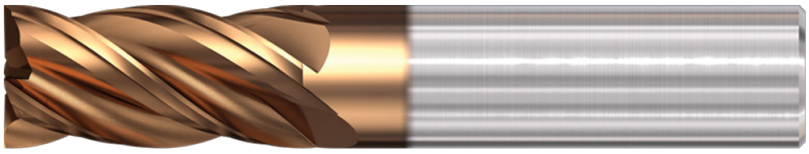
New CHATTERFREE Four-Flute Solid Carbide Endmills EC-E4M-CF in a Diameter Range of 6, 8, 10, 12, and 16mm for Machining ISO S, M and H Material Groups with Depths of Cut of Up to Two Endmill Diameters

ISCAR expands the advantageous CHATTERFREE products with new four-flute EC-E4M endmills that feature a variable-pitch-design for chatter dampening. The new endmills ensure a maximum depth of cut of 2xD, and made of the IC608 carbide grade.

The new endmills are much like EC-E4L cutters, known to be highly efficient and very popular. When compared to the EC-E4L, the new endmills have less neck length which improves performance in shoulder applications with shorter tool overhangs.

The hard-submicron-substrate PVD coated bronze-colored IC608 carbide grade, which high resistance to abrasive and oxidation wear and a first-choice grade for machining ISO S, M and H material groups.

Applications:
Milling Stainless steel at moderate to high cutting speeds.
Milling hardened steel (45-60HRc) at moderate to high cutting speeds.
Milling alloy steel at moderate to high cutting speeds.



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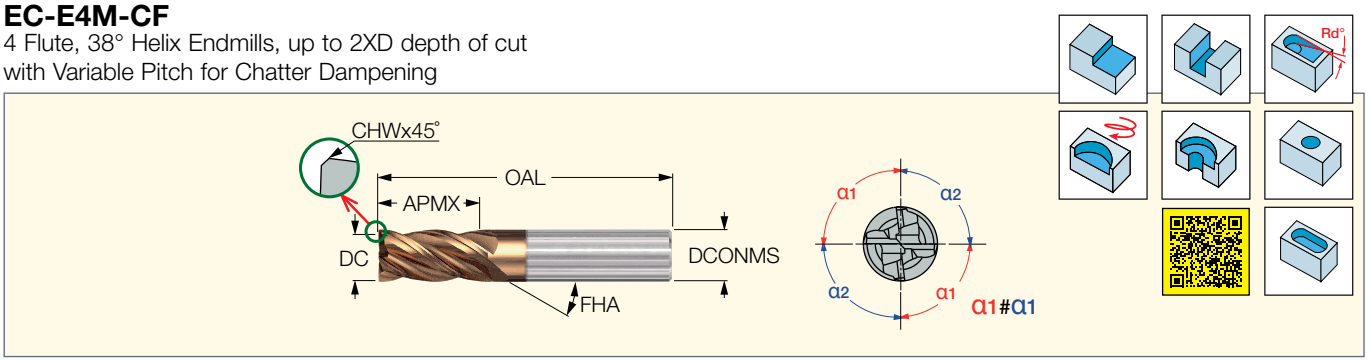
CHATTERFREE
MULTI-MASTER LINE

EC-E4M-CF

4 Flute, 38° Helix Endmills, up to 2XD depth of cut
with Variable Pitch for Chatter Dampening



Designation	Dimensions										IC608	Recommended Machining Data
	DC	DCONMS	APMX	OAL	NOF[1]	FHA	RMPX°[2]	Shank	CHW	KCH		f_z (mm/t)
EC-E4M 06-12C06CF-57	6.00	6.00	12.00	50.00	4	38.0	5.0	C	0.25	45.0	●	0.03-0.07
EC-E4M 08-16C08CF-63	8.00	8.00	16.00	63.00	4	38.0	5.0	C	0.30	45.0	●	0.03-0.09
EC-E4M 10-20C10CF-72	10.00	10.00	20.00	72.00	4	38.0	5.0	C	0.40	45.0	●	0.03-0.10
EC-E4M 12-24C12CF-83	12.00	12.00	24.00	83.00	4	38.0	5.0	C	0.50	45.0	●	0.04-0.11
EC-E4M 12-24W12CF-83	12.00	12.00	24.00	83.00	4	38.0	5.0	W	0.50	45.0	●	0.04-0.11
EC-E4M 16-32C16CF-100	16.00	16.00	32.00	100.00	4	38.0	5.0	C	0.60	45.0	●	0.05-0.13
EC-E4M 16-32W16CF-100	16.00	16.00	32.00	100.00	4	38.0	5.0	W	0.60	45.0	●	0.05-0.13

(1) Number of flutes
(2) Maximum ramping angle

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CHATTERFREE
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Machining Data for Solid Carbide Endmills

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed (m/min)
							IC608
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	250-270
		≥0.25% C	annealed	650	190	2	200-230
		<0.55% C	quenched and tempered	850	250	3	160-220
		≥0.55% C	annealed	750	220	4	160-220
			quenched and tempered	1000	300	5	140-180
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	160-220
			quenched and tempered	930	275	7	120-180
				1000	300	8	130-180
				1200	350	9	140-180
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	130-180
			quenched and tempered	1100	325	11	70-120
	stainless steel and cast steel		ferritic / martensitic	680	200	12	80-160
			martensitic	820	240	13	60-150
M	Stainless steel and cast steel		austenitic, duplex	600	180	14	60-120
K	gray cast iron (GG)		ferritic / pearlitic		180	15	80-250
			pearlitic / martensitic		260	16	130-240
	nodular cast iron (GGG)		ferritic		160	17	150-270
			pearlitic		250	18	150-270
	malleable cast iron		ferritic		130	19	150-270
			pearlitic		230	20	140-240
N	aluminum-wrought alloys		not hardenable		60	21	
			hardenable		100	22	
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	
			hardenable		90	24	
		>12% Si	high temperature		130	25	
	copper alloys	>1% Pb	free cutting		110	26	
			brass		90	27	
			electrolytic copper		100	28	
	non metallic		duroplastics, fiber plastics			29	
			hard rubber			30	
S	high temperature alloys	Fe based	annealed		200	31	20-40
			hardened		280	32	20-30
		Ni or Co based	annealed		250	33	20-30
			hardened		350	34	20-30
			cast		320	35	30-30
	titanium alloys		pure	RM 400		36	30-80
			alpha+beta alloys, hardened	RM 1050		37	30-80
H	hardened steel		hardened		55 HRC	38	30-50
			hardened		60 HRC	39	30-40
	chilled cast iron		cast		400	40	60-80
	cast iron		hardened		55 HRC	41	30-50