New Product Information

CTCS245 – New grade for milling heat-resistant nickel-based alloys

2018-02

An additional grade for the ISO S range

Components of the aerospace industry were made because of their extraordinary burden out the most modern materials.

Especially materials like nickel-based alloys are considered to be difficult to machine.

Thanks to the innovative high performance insert grade CTCS245, this challenges can be accomplished process reliable.

General information:

- CVD-coated carbide grade
- For milling applications in nickel-based alloys like: Inconel, Nimonic, Rene,…
- CTCS245 is an additional grade for the ISO S range and won‘t replace any existing grade
- Standard grade for the Aerospace industry

Advantages:

- Process reliable and tough high performance grade
- Tremendously increased tool life in milling heat resistant super alloys (HRSA)

CTCS245	HC-S40 / HC-S45	•
	Composition: 12,0 % binder; WC balance | Grain size: 2 µm | Hardness 1330 HV_{30} | Coating specification: CVD TiN-TiB_2	

CUTTING SOLUTIONS BY CERATIZIT

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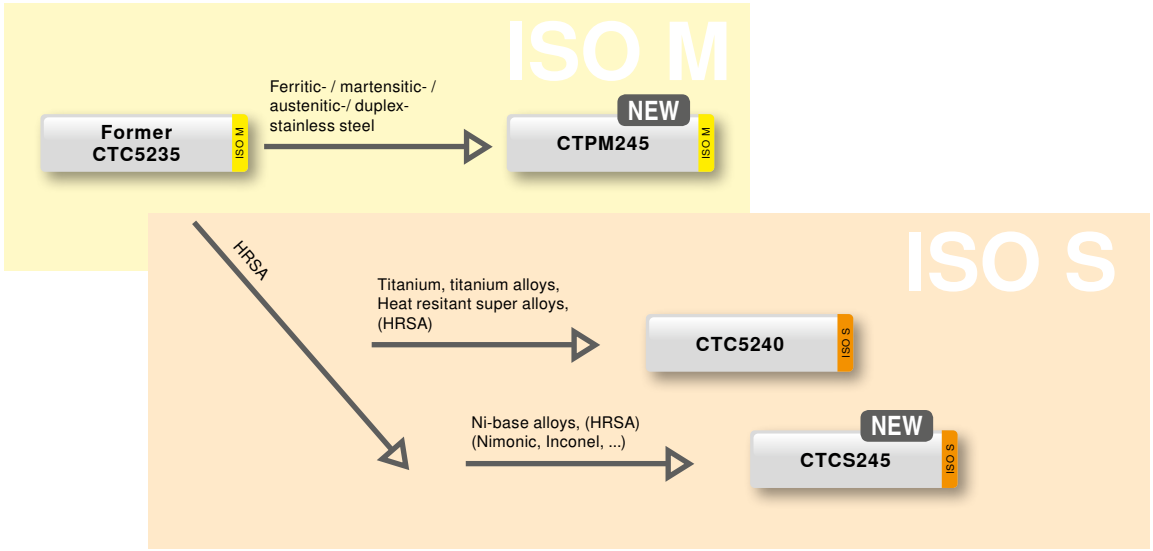
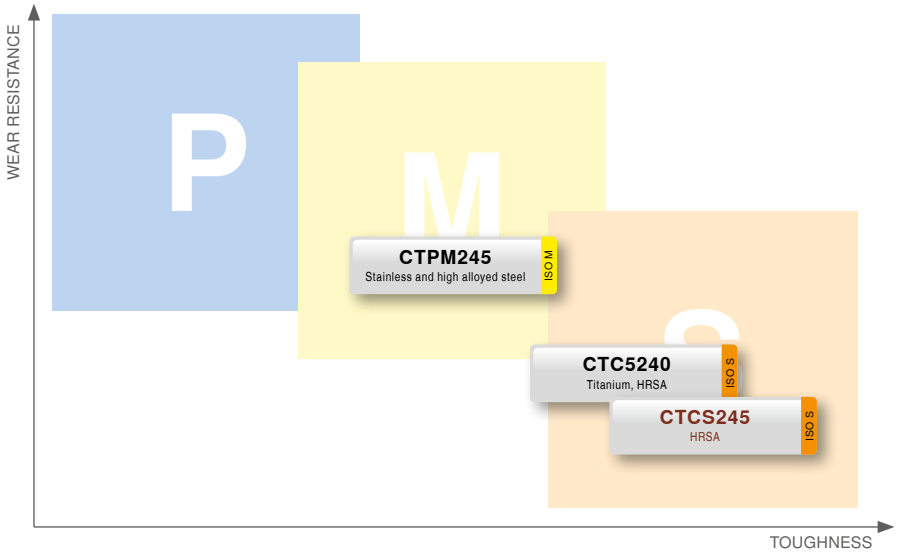
Application:

Grade designation	Standard designation:		Cutting material	Application:	P	M	K	N	S	H
	ISO	ANSI		01 05 10 15 20 25 30 35 40 45 50	Steel	Stainless	Cast iron	Non-ferrous metals	Heat-resistant	Hardened materials
CTCS245	HC-S45	-	C						●	
				01 05 10 15 20 25 30 35 40 45 50	● Main application ○ Extended application					

Customer who used CTC5235 in the past for machining HRSA, have now beneath the titanium milling grade CTC5240 a further solution with the new CTCS245 grade.





Material	First choice grade/ Main Application	Second choice/ Alternative
Ferritic-/ martensitic-stainless steel	CTPM245	CTPP235 / CTCM235
Austenitic-/ duplex-stainless steel	CTPM245	CTPP235 / CTPM225
Titanium, titanium alloys	**CTC5240**	-
HRSA (Ni-base alloys), Inconel, Rene, Nimonic, ...	**CTCS245**	**CTC5240**

Product range:

The assortment of products is currently confined on the requirements of the aerospace customers. Further articles on demand.

Overview of standard articles in the new grade CTCS245:

Material no.	Designation	available from stock	
12273304	RDHX 0802MOEN-F50 CTCS245	✓	
12241481	RPHX 10T3M4SN-F50 CTCS245	✓	
12273305	RPHX 10T3M8SN-F50 CTCS245	-	March 2018
12241461	RPHX 1204M4SN-F50 CTCS245	✓	
12270087	RPHX 1204M8SN-F50 CTCS245	✓	
12280702	XDKT 070308ER-F40 CTCS245	✓	
12241487	XDKT 11T308ER-F40 CTCS245	✓	
12280699	XDKT 11T312ER-F40 CTCS245	-	February 2018
12241466	XDKT 11T316ER-F40 CTCS245	✓	
12280178	XDKT 11T320ER-F40 CTCS245	-	February 2018
12247042	XDKT 11T332ER-F40 CTCS245	-	February 2018
12241492	XDKT 150508ER-F40 CTCS245	✓	
12294550	XDLX 09T308ER-F40 CTCS245	-	March 2018
12241500	XOLX 120410ER-F40 CTCS245	✓	
12298734	SAKU 1706ABSR-F50 CTCS245	-	March 2018
12241497	OFHT 040305SN-F50 CTCS245	✓	
12241472	RPNX 2006M8SN-F50 CTCS245	✓	

Cutting data:

The following chart includes rough guidelines for milling nickel-based alloys.
Depending on application, work piece, clamping, machine conditions and further influence factors they can vary and should be adapted.

Material no.	Designation	V_c [m/min]	a_p min [mm]	a_p max [mm]	f min [mm/z]	f max [mm/z]
12273304	RDHX 0802MOEN-F50 CTCS245	30 - 50	0,5	1,3	0,05	0,15
12241481	RPHX 10T3M4SN-F50 CTCS245	30 - 50	0,5	2,5	0,08	0,25
12273305	RPHX 10T3M8SN-F50 CTCS245	30 - 60	0,5	2,5	0,08	0,25
12241461	RPHX 1204M4SN-F50 CTCS245	30 - 50	0,5	3	0,1	0,3
12270087	RPHX 1204M8SN-F50 CTCS245	30 - 50	0,5	3	0,1	0,3
12280702	XDKT 070308ER-F40 CTCS245	30 - 50	0,8	4	0,03	0,08
12241487	XDKT 11T308ER-F40 CTCS245	30 - 50	0,8	6	0,08	0,15
12280699	XDKT 11T312ER-F40 CTCS245	30 - 50	1,2	6	0,08	0,15
12241466	XDKT 11T316ER-F40 CTCS245	30 - 50	1,6	6	0,08	0,15
12280178	XDKT 11T320ER-F40 CTCS245	30 - 50	2	6	0,08	0,15
12247042	XDKT 11T332ER-F40 CTCS245	30 - 50	3,2	6	0,08	0,15
12241492	XDKT 150508ER-F40 CTCS245	30 - 50	0,8	10	0,1	0,25
12294550	XDLX 09T308ER-F40 CTCS245	30 - 50	0,25	1	0,25	1,15
12241500	XOLX 120410ER-F40 CTCS245	30 - 50	0,25	2	0,25	1,2
12280170	XDHT 150560ER-F40 CTCS245	30 - 50	6	10	0,1	0,25
12241497	OFHT 040305SN-F50 CTCS245	30 - 50	0,25	2,5	0,1	0,18
12241472	RPNX 2006M8SN-F50 CTCS245	30 - 50	0,5	5	0,15	0,5

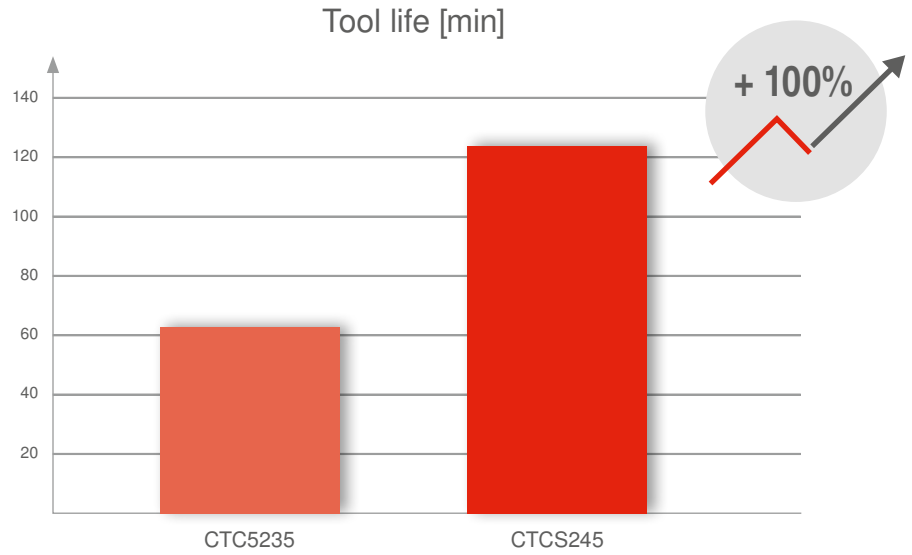
Success stories:

1. Turbine blade machining

Customer:	Machine laboratory (University)
Material:	Nimonic 80A
Tool:	A251.40.R.04-12-RS
Test 1:	RPHX 1204M4SN-F50 CTC5235
Test 2:	RPHX 1204M4SN-F50 CTCS245

Cutting data:

V_c	=	45 m/min
f_z	=	0,25 mm/z
V_f	=	360 mm/min
a_p	=	2,0 mm
a_e	=	24,0 mm



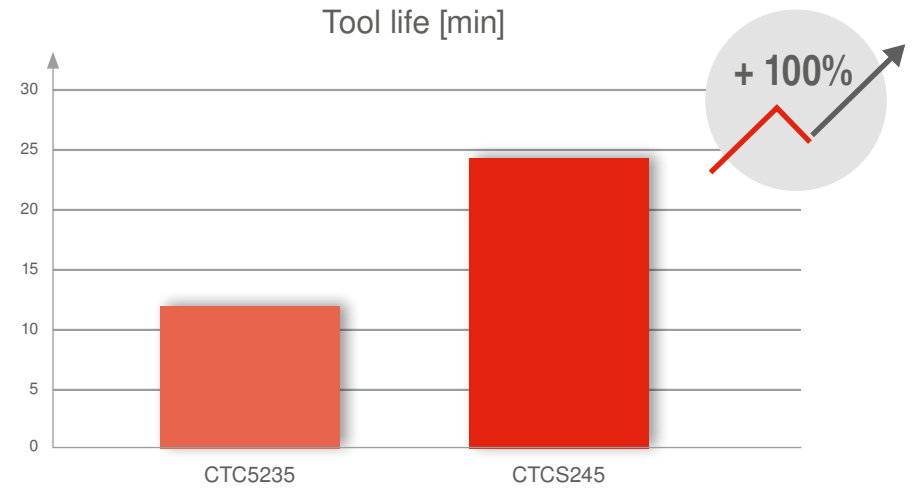
With the new CTCS245 grade the tool life could be doubled from 62 up to 124 minutes.

2. Engine Component Manufacturer

Customer:	Engine Component Manufacturer
Material:	Rene 44
Workpiece:	Bolt cover
Tool:	C211.25.R.04-11
Test 1:	XDKT 11T332EN-F40 CTC5235
Test 2:	XDKT 11T332EN-F40 CTCS245

Cutting data:

V_c	=	22 m/min
f_z	=	0,07 mm/z
V_f	=	78 mm/min
a_p	=	2,0 mm
a_e	=	20,0 mm



By using grade CTCS245, it was possible to double the tool life from 2 to 4 parts.

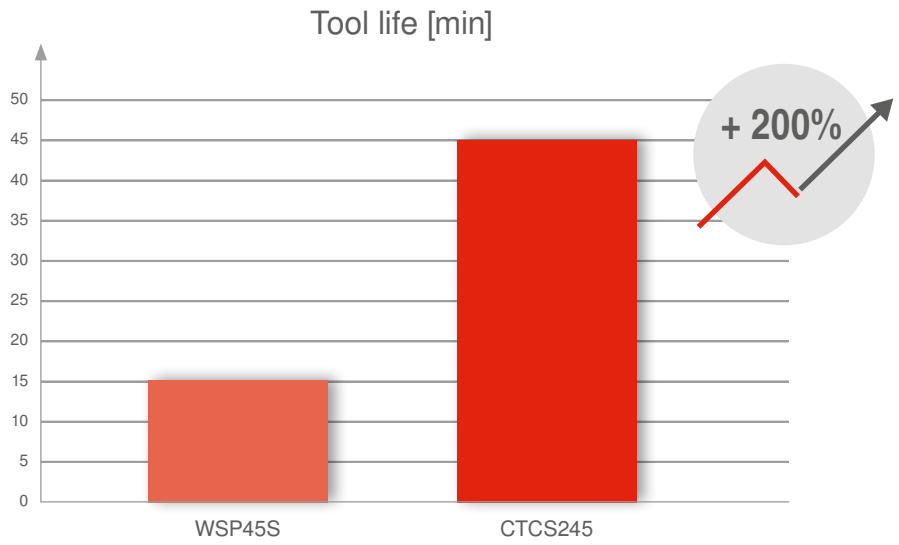
Note: Due to the labil work piece clamping an increase of the parameter was not possible.

3. Turbine blade machining

Customer:	Blade manufacturer
Material:	Inconel 625
Tool:	A251.66.R.07-12-RS
Test 1:	RPHX 1204M8SN-F50 CTCS245
Test 2:	RPMX 1204MO-F67 WSP45S

Cutting data:

V_c = 43,0 m/min
f_z = 0,29 mm/z
V_f = 400 mm/min
a_p = 2,0 mm
a_e = 0-70 %
a_e = 40,0 mm



3-times more tool life from 15 to 45 minutes at 38% higher cutting data compared to the competitor!