

# NPN

New Product News



**CERAMICSFEED**  
HARDPART & EXOTIC MATERIALS

## Ceramic End Mill Line for Difficult-to-Cut Materials



## KEY POINT

**TaeguTec has released the CERAMIC-SFEED, a new high productivity ceramic end mill line for nickel based super alloys machining.**

The new ceramic end mill including the **TC3030** grade is optimally suited for machining of nickel based super alloys such as Inconel.

The new ceramic end mills get superior productivity compared to carbide end mills since it can be applied to high-speed and high feed machining due to its features such as unequal spacing of cutting edges, a high helix cutting angle and optimized edge geometry with cutting edge after-treatment.

The ceramic end mill line is available in both 4 flutes, 6 flutes corner radius types, as well as a high feed 4 flutes type. Please refer to the "Recommended cutting conditions" on page 8.

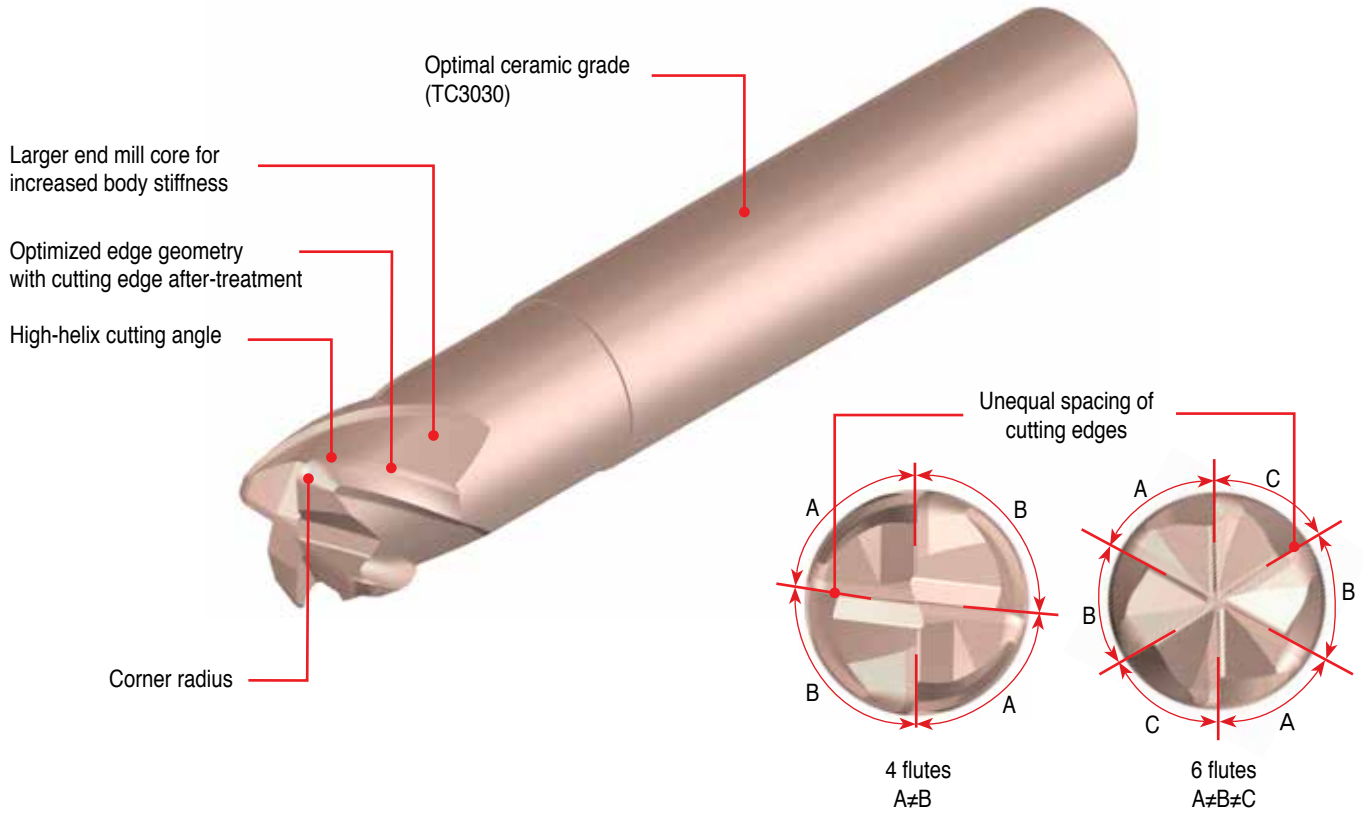
For further technical questions, please contact TaeguTec's product manager.

### Features

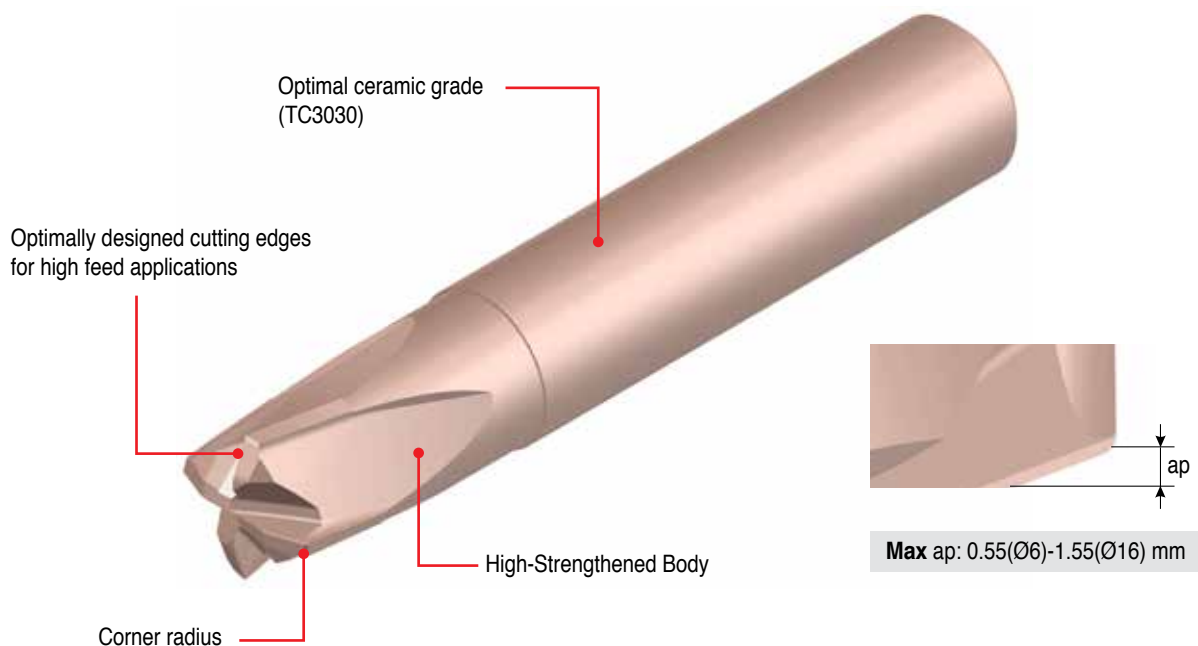
- Optimal cutting edges for nickel based super alloys
- End mill line uses ceramic (SiAlON) series TC3030 grade
- High-speed, high feed end mill line increases productivity
- 4 flutes corner radius type: suitable for shouldering, slotting and ramping applications
- 6 flutes corner radius type: suitable for shouldering, facing and ramping applications
- 4 flutes high feed type: suitable for facing, ramping applications



## CRF 4/6 flutes end mill types

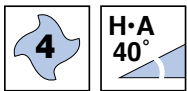
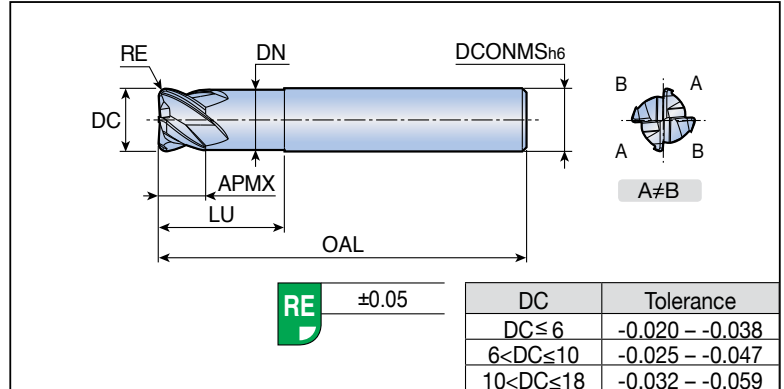


## CRH High feed 4 flutes end mill type



## CRF 4

4 flute, Ceramic end mills



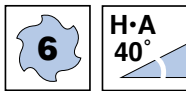
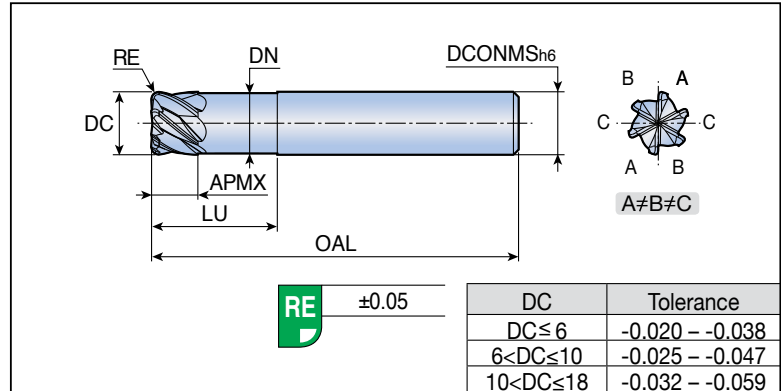
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRF 4060 050 120</b>	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
<b>4080 100 160</b>	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
<b>4100 100 200</b>	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
<b>4120 150 240</b>	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
<b>4160 200 320</b>	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

●: Standard items



## CRF 6

6 flute, Ceramic end mills



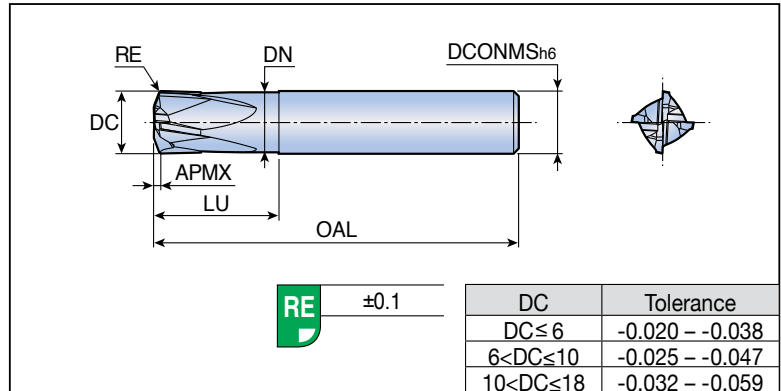
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRF 6060 050 120</b>	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
<b>6080 100 160</b>	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
<b>6100 100 200</b>	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
<b>6120 150 240</b>	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
<b>6160 200 320</b>	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

●: Standard items

## CRH 4



4 flute, Ceramic end mills for high feed milling



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRH 4060</b>	0.1-0.15	6	0.7	50	0.55	12	5.8	6	•
<b>4080</b>	0.1-0.2	8	0.9	57	0.75	16	7.7	8	•
<b>4100</b>	0.1-0.2	10	1.0	63	0.85	20	9.6	10	•
<b>4120</b>	0.1-0.3	12	1.4	70	1.15	24	11.5	12	•
<b>4160</b>	0.1-0.3	16	1.8	83	1.55	32	15.5	16	•

• RE: Program corner R ●: Standard items

## Recommended cutting conditions

### CRF 4 teeth & 6 teeth

(Unit: mm)

Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering		Slotting (CRF 4 teeth)
			ap	ae	ae
Ø6	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø8	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø10	300-1000	0.02-0.04	-0.6xD	-0.1xD	-0.05xD
Ø12	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD
Ø16	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD

• ae must not exceed a maximum 1 mm

• Apply a 30% reduction in feed during slotting, ramping (less 2.5°)

ap: axial direction DOC    ae: radial direction DOC

### CRH 4 teeth

(Unit: mm)

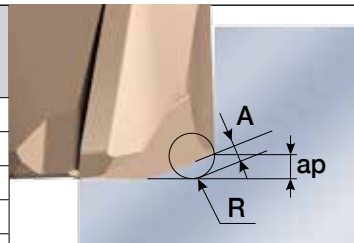
Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering	
			ap	ae
Ø6	300-1000	0.1-0.15	-0.05xD	-0.6xD
Ø8	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø10	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø12	300-1000	0.1-0.3	-0.05xD	-0.6xD
Ø16	300-1000	0.1-0.3	-0.05xD	-0.6xD

• Apply a 30% reduction in feed during ramping (less 2.5°)

ap: axial direction DOC    ae: radial direction DOC

### Programming tip

Diameter (CRH 4 teeth)	R Program	A Un-machined material thickness
Ø6	0.7	0.35
Ø8	0.9	0.47
Ø10	1.0	0.50
Ø12	1.4	0.70
Ø16	1.8	0.95



## Optimal conditions for TaeguTec ceramic end mills

Recommendations	Details	Remarks
Down cutting	Down cutting is highly recommended Up cutting can lead to rapid wear of the cutting edge and the possibility of the workpiece material's hardened surface	Finish margin: over 0.3 mm
High cutting speed	By maintaining a high cutting speed, the cutting tool minimizes wear and damage by generating the heat needed to soften the material	
Do not use coolant	To prevent the occurrence of thermal crack, it is recommended not to use coolant or air blowing	Air blowing is only recommended for use when good chip evacuation is required
Tool holder	Recommendation for tool holding is a hydraulic chuck or a precision milling chuck for stable machining	Heating chuck is disabled
Do not remove built-up-edges	Do not manually remove any built-up-edge as this may cause damage to the insert's cutting edge	