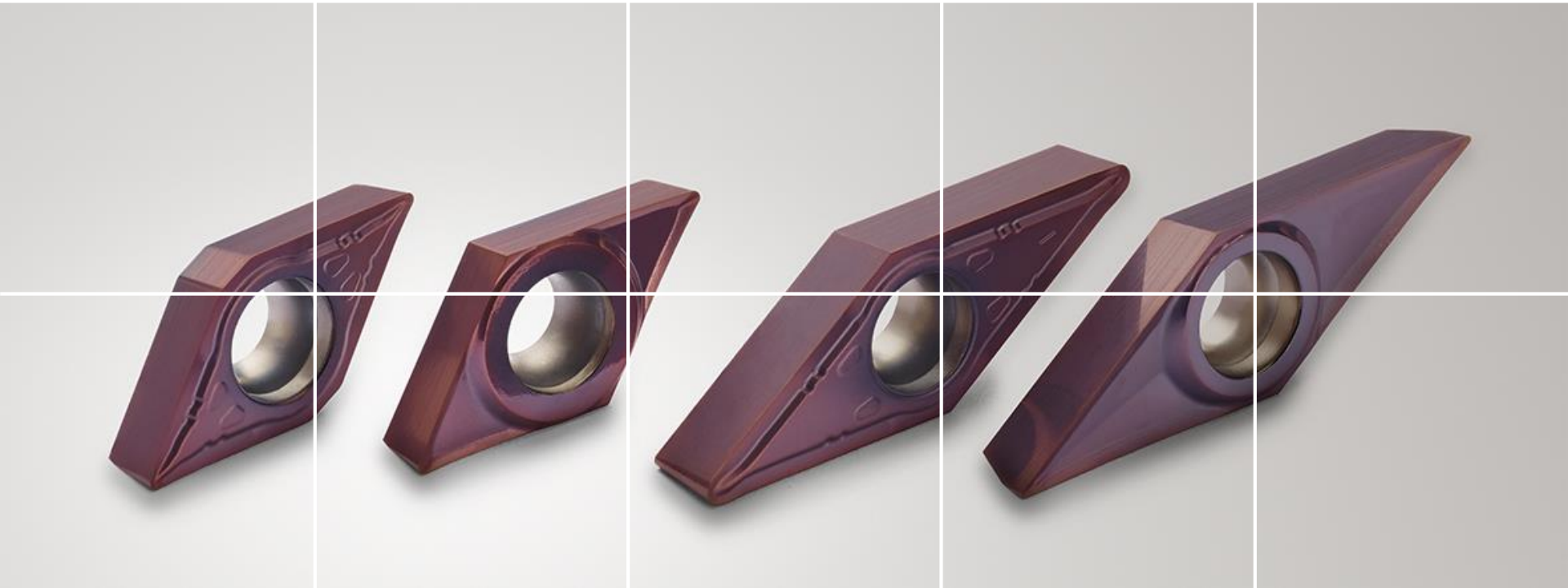
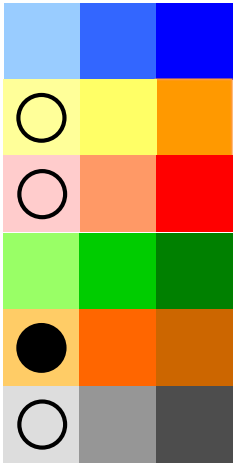
TS2050 – TURNING GRADE FOR EXOTIC MATERIALS



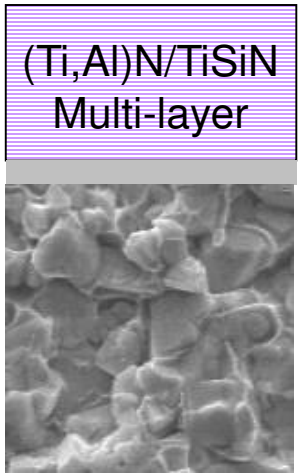
TS2050 in Brief

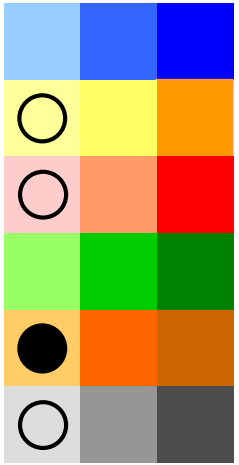
- Finish-turning grade for exotic materials, ISO-S
- Proven high performance in medical parts
- Excels in CoCr-alloys



TS2050 – Grade Description

- Very hard, superfine submicron grade
- Proven nanolaminate TiAlSiN coating
- Highly wear resistant for ISO S materials
- Edge toughness enough for sharp edges
- Provides best balance between reliability and productivity requirements

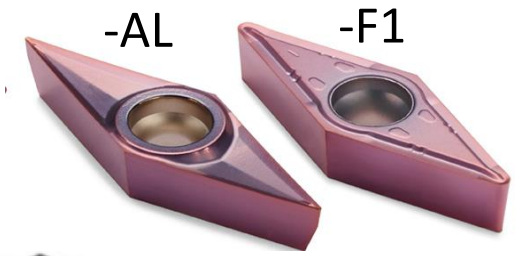


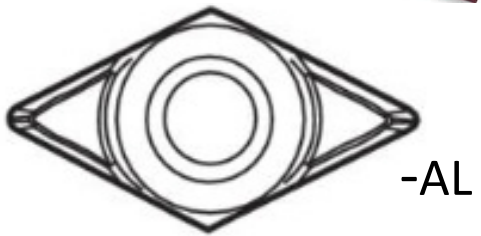


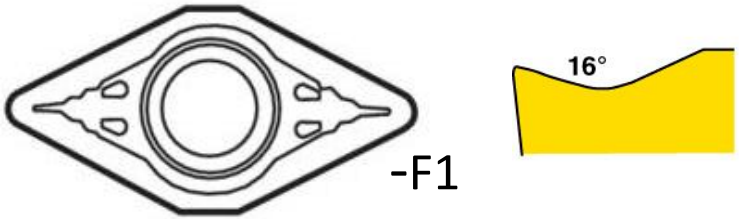
TS2050

TS2050 – Chipbreaker Design

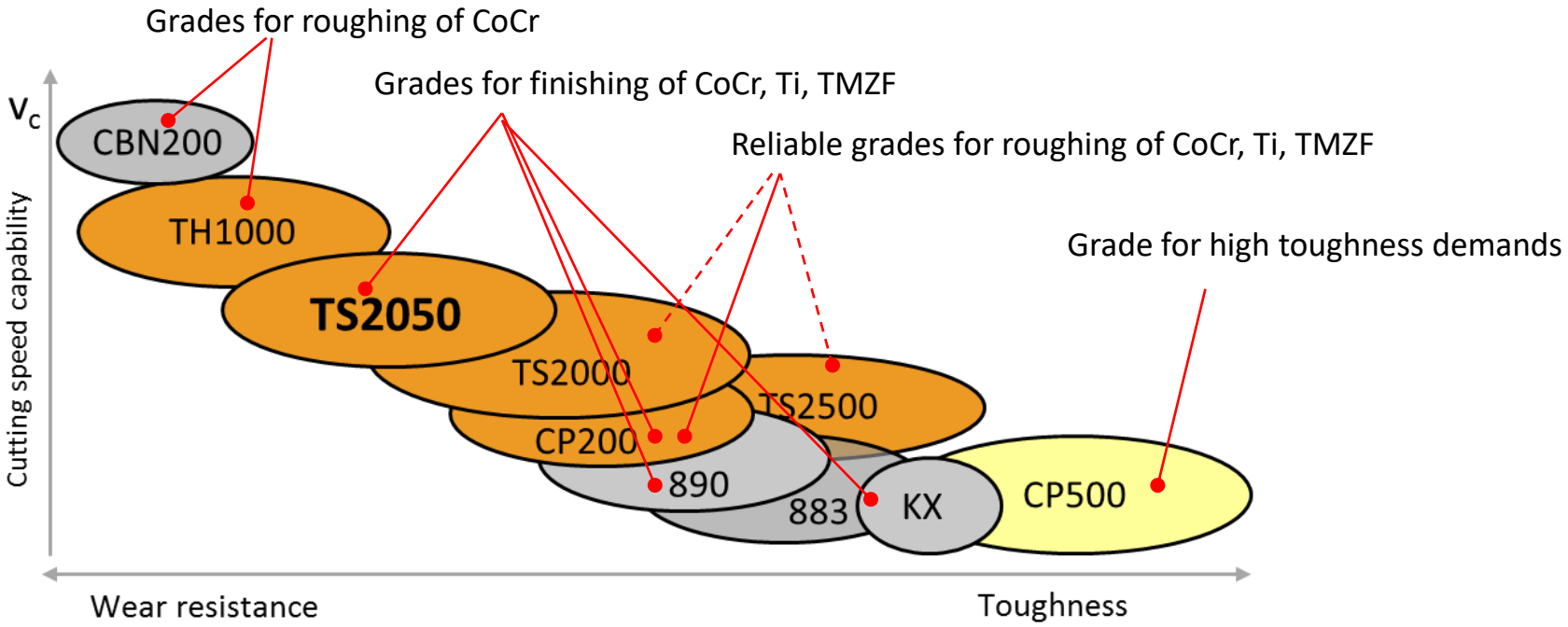
- AL chipbreaker – first choice
  - General use in medical components
  - Preferred in smaller-size components (< Ø70 mm)
  - Advantages:
    - Extremely light-cutting design
    - Resistant to built-up edge
    - Provides long tool life
- F1 chipbreaker – reliable choice
  - Well-suited when stronger edge required
  - Better choice for large diameter components (> Ø70 mm)
  - Advantages:
    - Well-known finishing chipbreaker design
    - Reliable edge toughness and better chip control







Medical Components – Application of Grades in Short

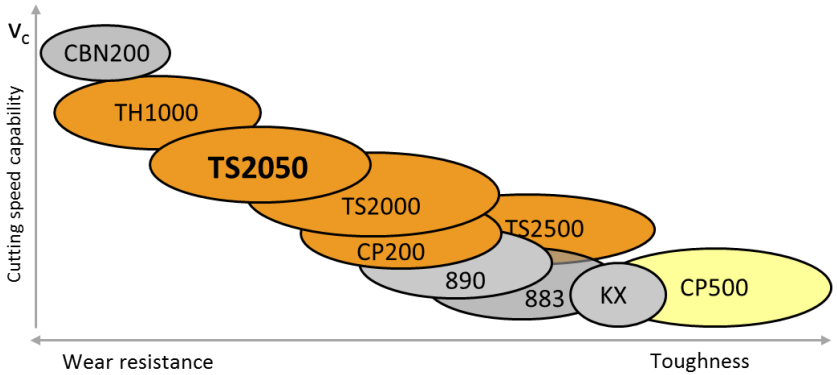


Medical Components – Application of TS2050

TS2050 – first choice in finishing

The grade excels in semi-finishing and finishing.
Hip parts in CoCr-alloys are efficiently and safely machined by the TS2050 inserts.
A typical working range would be:
a_p = 0.02-1.0 mm, f = 0.02-0.17 mm/rev.

A high-performance alternative in TMZF and many titanium alloys.

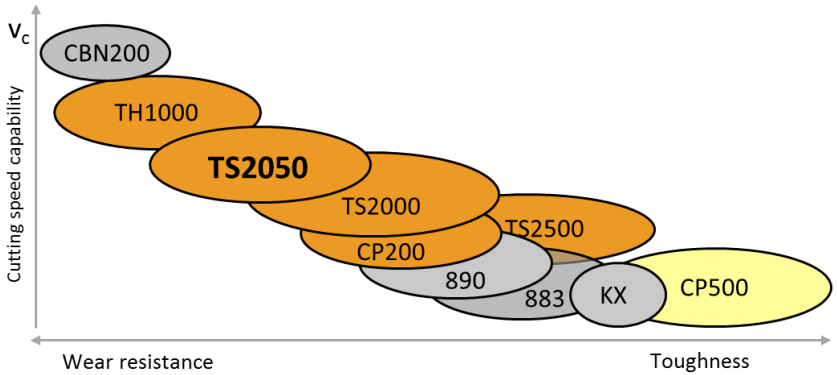


Medical Components – Application of Alternative Grades

TH1000 – high performance roughing

This high-performance grade is often used in WNMG/CNMG/DNMG shapes and –MF2 chipbreaker. It is well-suited in roughing of medical components, especially in CoCr.

A typical working range would be:
a_p = 1-2.5 mm, f = 0.08-0.25 mm/rev.



CP200 – secure coated performance

This well-known grade is the safe choice in both roughing and finishing and can handle a variety of materials.

Medical Components – Application of Alternative Grades

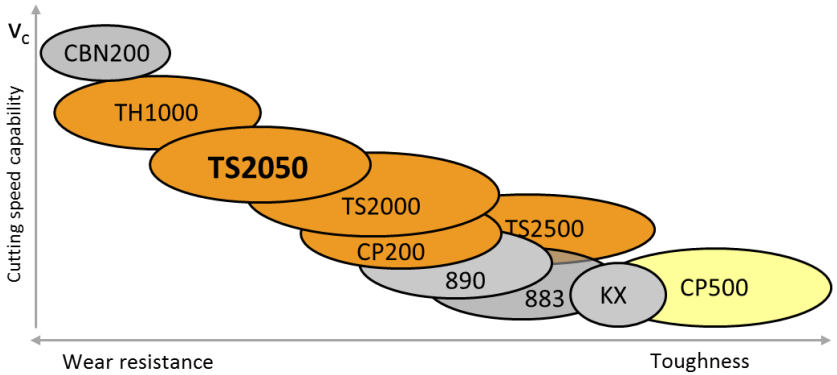
KX – uncoated first choice

This uncoated grade with –AL chipbreaker excels in finishing of medical parts. It generates smooth surface finishes in a variety of materials, such as CoCr, TMZF and titanium alloys.

This is the grade and geometry combination with the highest resistance to built-up edge (BUE).

This is the first choice in finishing when uncoated inserts must be used. A typical working range would be:

a_p = 0.02-1.0 mm, f = 0.02-0.17 mm/rev.



890 – uncoated reliable choice

The uncoated grade with –F1 is an alternative in finishing of a variety of materials, such as CoCr, TMZF, and titanium alloys. The geometry provides a stronger edge and the harder curling of the chip improves chip evacuation in some cases.

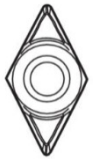
Medical Components – Jetstream Tooling in Brief

- Directing and focusing the cutting oils to the cutting edge
- Boost tool life or productivity by 25% - 100%
- Contributes to chip evacuation and improves surface quality

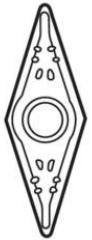
Insert Programme – start range

Stock standard insert geometries

DCGT11T302F-AL TS2050
DCGT11T304F-AL TS2050
DCGT11T304-F1 TS2050
DCGT11T308-F1 TS2050

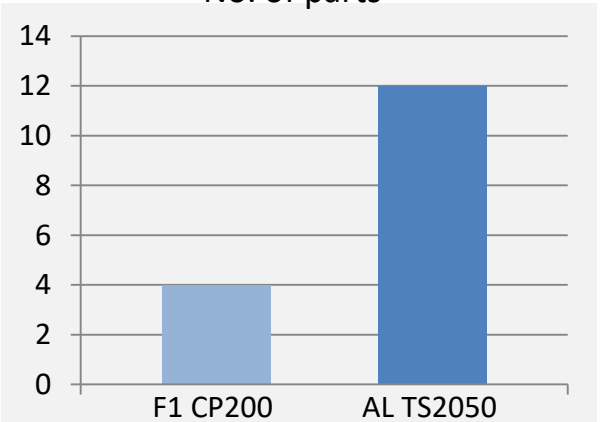


VCGT160402F-AL TS2050
VCGT160404F-AL TS2050
VBGT160404-F1 TS2050
VBGT160408-F1 TS2050



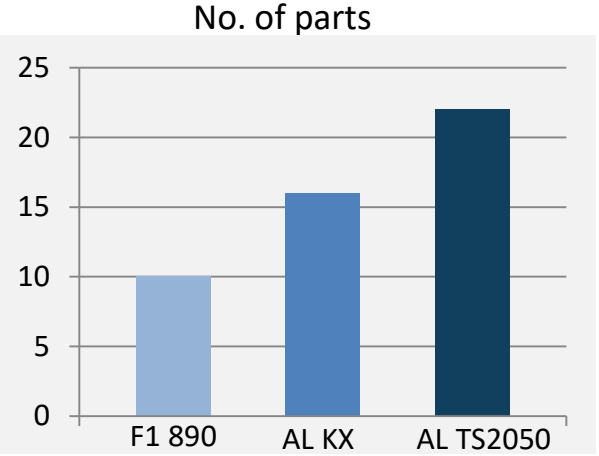
Case Study #1

Component:	Intermediate cup (hip implant)
Material:	Cobalt Chrome, forging. Very low machinability
Toolholder:	Shank 2525
Lubrication:	Oil, 2 bar, flood
Insert, previous solution:	DCMT11T304-F1, CP200
Insert, new solution:	DCGT11T304F-AL, TS2050
Cutting data:	v_c = 92 m/min f = 0.08 mm/rev a_p = 0.15-0.2 mm
Edge indexing criterion:	Surface finish
Machined parts per edge:	CP200 4 parts TS2050 12 parts
Comment:	High-pressure jet was tested, but reduced tool life to 8 parts with TS2050 and resulted in poorer surface finish. Probably due to chiphammering, BUE and chipping.



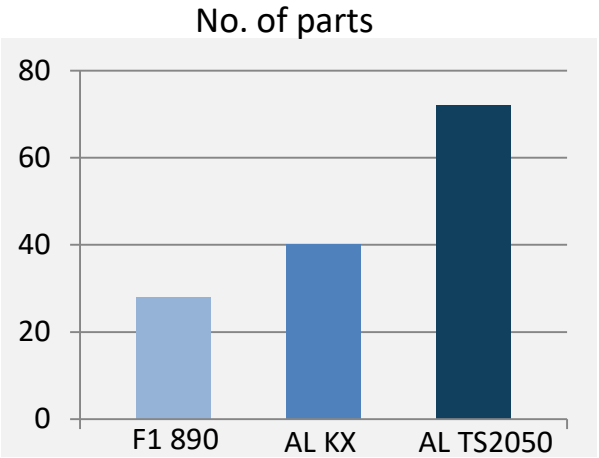
Case Study #2

Component:	Ball, stem (hip implant)
Material:	Titanium
Toolholder:	Shank 2525
Lubrication:	Oil, 2 bar, flood
Insert, previous solutions:	DCMT11T304-F1, 890 (1st) DCGT11T304F-AL, KX (2nd)
Insert, new solution:	DCGT11T304F-AL, TS2050 (3rd)
Cutting data:	v_c = 50 m/min f = 0.08 mm/rev a_p = 0.15-0.2 mm
Edge indexing criterion:	Surface finish



Case Study #3

Component:	Stem (hip implant)
Material:	TMZF
Operation:	Finishing
Toolholder:	SVJBL2525
Insert, previous solutions:	VBMT160404-F1, 890 (1st) VCGT160404-AL, KX (2nd)
Insert, new solution:	VCGT160404-AL, TS2050 (3rd)
Lubrication:	Oil, 2 bar, flood
Cutting data:	v_c = 37 m/min f = 0.051 mm/rev a_p = 0.15 mm
Edge indexing criterion:	Visual judgement of part quality




SECO