

Tungaloy Technical Articles **Tung**TECH

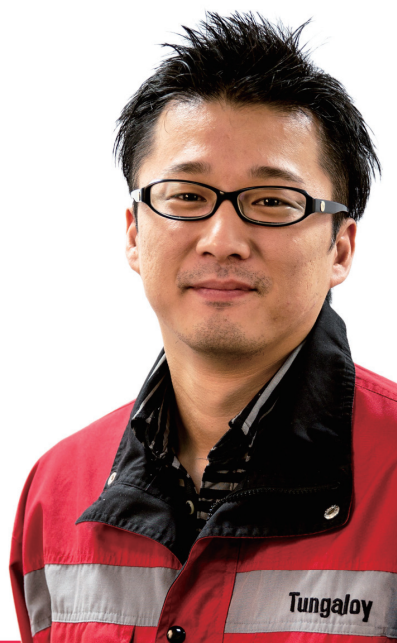
TurnLine

T515

TUNGALOY

The New CVD Coated Grade for Cast Iron Turning

by Yota Mukainakano (Turning ISO & Chipbreaker Product Manager)



Cast iron machining market is seeking higher performance in machining gray cast iron and ductile cast iron (spheroidal graphite cast iron). Unpredictable tool failures and shorter tool life, however, are rising issues in machining interrupted and unstable cast surface, challenging us to seamlessly endeavor for improvements in machining stability. With the introduction of new materials like compacted graphite iron (CGI) and austempered ductile iron (ADI) in the market, machinists are further requiring a progress in machining performance and stability.

"Tungaloy has a solution to these demands: T515, our new CVD-coated grade for cast iron turning."

This multi-purpose grade is a mix of a dedicated carbide substrate, a new coating technology, and Tungaloy's own PremiumTec post surface treatment technology, allowing it to cover a wide range of cast iron turning. T515 performs best particularly in turning cast iron at high speed, exhibiting excellent stability and performance.



TungTech "T515: The New CVD Coated Grade for Cast Iron Turning"

Member IMC Group
Tungaloy

MADE FOR HIGH-SPEED

T515 has an alumina (Al_2O_3) layer twice the thickness of conventional grades. This provides improved wear resistance during turning even in a high speed range of up to 400 m/min, exhibiting excellent turning performance. T515 is unmatched in the conventional low to medium speed range as well, with the wear resistance and stability beyond competition!

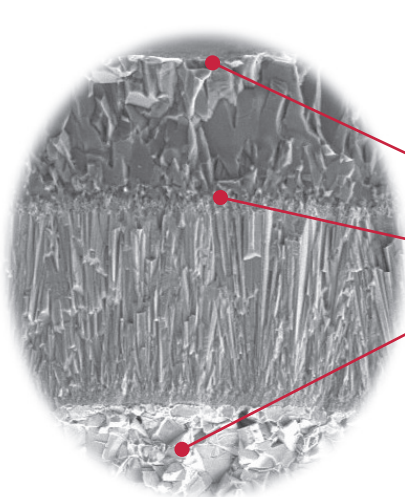
"A thick alumina (Al_2O_3) layer for superb wear resistance in high speed machining."



ONE STEP FURTHER IN COATING TECHNOLOGY

Combined with a dedicated carbide substrate and new coating technology, T515 has improved the adhesion strength between the substrate and coating layers. PremiumTec, Tungaloy's original technology enhanced the smoothness on the coating surface in tandem. With its outstanding chipping and peel-off resistances, T515 is a first-rate solution for a vast range of cast iron turning applications, covering low to high speed ranges and continuous to interrupted cuts.

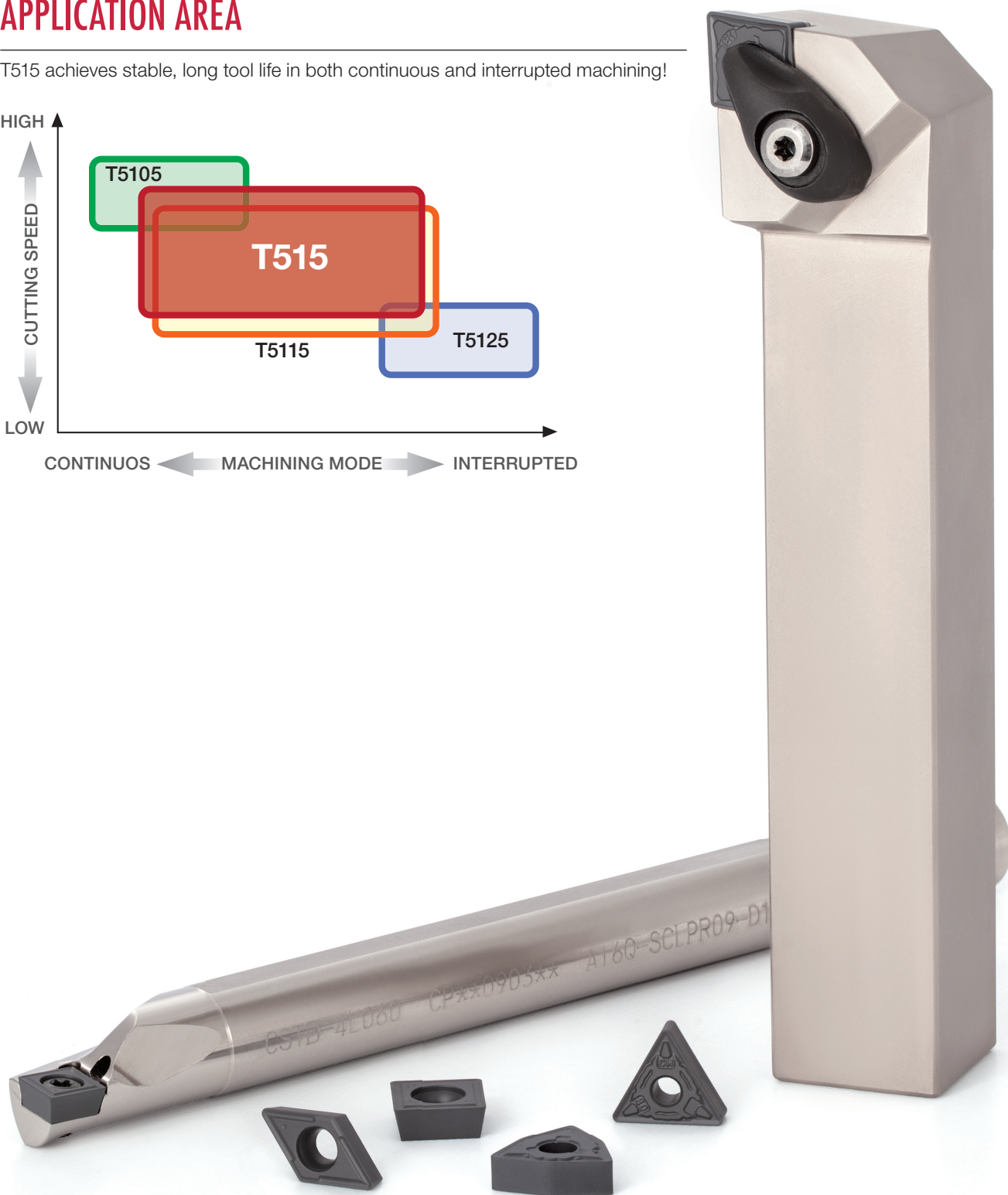
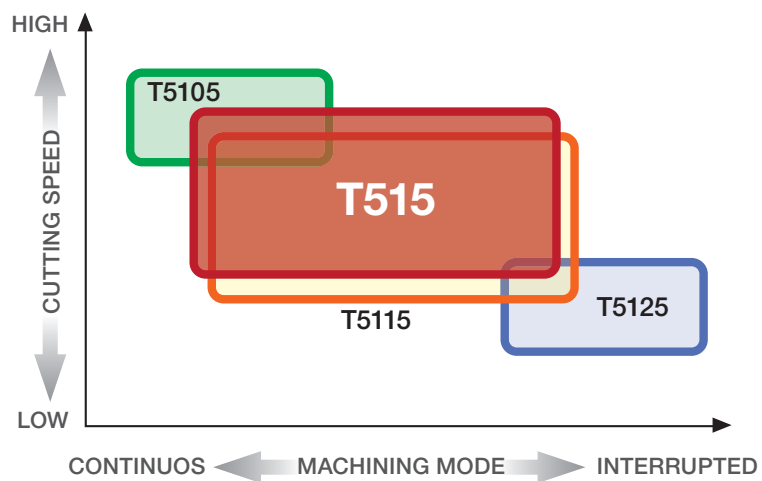
"PremiumTec: the post surface treatment technology to improve chipping and peel-off resistance for high machining stability!"



- **Smooth surface reduces chipping and build-up edge!**
PremiumTec technology improves surface quality
- **Excellent wear resistance in high-speed cutting!**
 Al_2O_3 layer is 1.7 thicker than the conventional coatings
- **Incredible chipping and fracture resistance!**
Enhanced adhesion between coating and substrate for maximum toughness

APPLICATION AREA

T515 achieves stable, long tool life in both continuous and interrupted machining!



CASE STORY: AUTOMOTIVE INDUSTRY

The customer was experiencing short tool life and unexpected tool failures caused by chipping during high speed machining of ductile cast iron components, resulting in increased machine downtime and a pile of scraps. Tungaloy, in response to the customer's request for stability and productivity increase, suggested T515 for this solution.

Part name: Disc-plate

Material: Ductile cast iron

T515:

Toolholder: AWLNL2525M08-A

Insert: WNMG080408 T515

Cutting conditions:

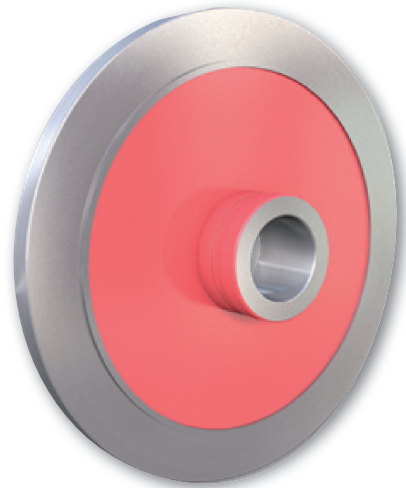
$V_c = 330 \text{ m/min (1.083 sfm)}$

$f = 0.4 \text{ mm/rev (0.016 ipr)}$

$doc = 0.5 \text{ mm (0.020")}$

Machine: Horizontal MC

Coolant: Wet



Result: T515 offers a stable machining even in the high speed range of 330 m/min and has extended the tool life by 2.5 times of a conventional grade, in which chipping often led to tool fractures resulting in short life. Tool replacements have also decreased due to longer tool life, improving the customer's economy.

"T515 is Tungaloy's new CVD grade for high speed machining cast iron. A high reliability solution for boosting productivity."

TYPICAL PARTS:

