

Press Information

Kyocera launches new CVD coated carbide grades CA115P and CA125P for steel turning

New technology provides 1.5X better wear resistance through industry-leading uniformity in alumina crystal orientation.

Kyoto/Neuss, 29. June 2023. Kyocera Corporation has introduced new CVD coating materials, CA115P and CA125P, for turning insert grades used in automotive and industrial steel machining. The new coating technologies achieve a high level of wear and fracture resistance, resulting in a long tool life. The CA125P was released in late March of this year, and the CA115P will be available starting in June. In addition, Kyocera introduced a PMG chipbreaker, which covers a wide range of machining applications, in late March of this year, along with the new insert grades.



Turning insert with new grades "CA115P/CA125P"

Newly developed coating and carbide substrate

The new CA115P and CA125P insert grades — the main grades for external and internal turning for steel machining — have a newly developed coating and carbide substrate. The new coating achieves the industry's highest level¹ of uniformity in alumina crystal orientation through Kyocera's proprietary crystal forming technology during the CVD (Chemical Vapor Deposition) process, which helps to ensure outstanding wear resistance. By combining this ultra-uniform alumina layer with a unique TiCN layer and new carbide substrate with greater high-temperature strength, the insert grades achieve higher wear resistance and fracture resistance, as well as long tool life and stable machining. In addition, the PMG chipbreaker supports various machining

¹ Research by Kyocera as of March 2023.



conditions, from medium machining to roughing, making it possible to consolidate tools and contribute to productivity improvement.

Kyocera will continue helping customers to improve productivity by supplying products that provide better performance, cost efficiency, and functionality.

Product overview

| Product name | CA115P | CA125P |
|------------------------|--|------------|
| No. of models | 502 models | 502 models |
| Launch date | Scheduled for August 2023 | March 2023 |
| Price | Please contact our sales representatives | |
| Processing type | Turning (external and internal turning) | |
| Applications | Automotive, construction machinery, general industrial machinery, etc. | |
| Recommended workpieces | Carbon steel, alloy steel, alloy tool steel | |

Features of the new CA115P and CA125P insert grades

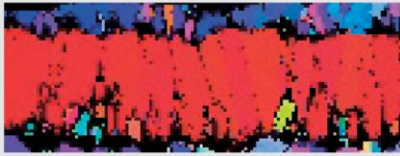
1. Newly developed proprietary coatings achieve higher wear and fracture resistance

The newly developed CVD coating has a highly uniform alumina layer with outstanding wear resistance, and a TiCN layer with excellent fracture resistance, which provide significant benefits in steel machining. In particular, Kyocera's proprietary crystal forming technology to ensure a highly uniform alumina layer during the CVD (Chemical Vapor Deposition) process has successfully raised the uniformity of alumina crystal orientation to the highest level in the industry, resulting in approximately 1.5 times² higher wear resistance compared to conventional products. It also reduces crater wear on the rake face due to chip scraping, which provides long tool life and stable machining.

² Comparison data gathered by Kyocera as of February 2023.

Crystal orientation analysis (EBSD pattern) A higher percentage of red indicates a more uniform growth pattern.

CA125P



Uniform crystal direction

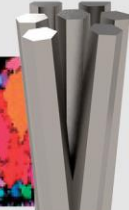


(CG image)

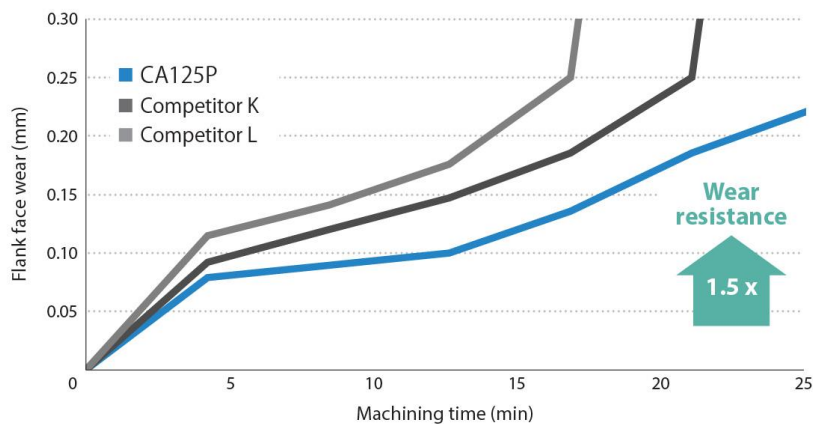
Conventional A



Nonuniform crystal orientation



(CG image)



Cutting conditions: $V_c = 300$ m/min, $a_p = 1.5$ mm, $f = 0.3$ mm/rev, wet
Workpiece: SCM435

Wear resistance comparison (Kyocera comparison)

2. Improving productivity in a wide range of machining conditions

CA125P grades support a wide range of machining conditions, from continuous to heavy interrupted machining, and are highly versatile main grades. CA115P grades are for high-efficiency machining in continuous to light-interrupted machining, contributing to productivity improvement through long tool life and stable machining.

About Kyocera's PMG chipbreaker for steel machining

A chipbreaker is a groove or protrusion in the rake face of a tool insert to divide and control chips generated when turning. There are different types of chipbreakers for various machining applications and conditions. Kyocera's new PMG chipbreaker has a design developed using Kyocera's proprietary expertise to achieve smooth chip evacuation in medium-roughing. In addition, the low-cutting-force design of the cutting edge suppresses crater wear on the rake face, which enables lasting chip evacuation, further contributing to longer tool life and stable machining.

- PP**
For finishing
Low resistance



- PQ**
For finishing-medium
Sharpness and strength



- PMG** NEW
For medium-roughing
Covers a wide range of machining areas



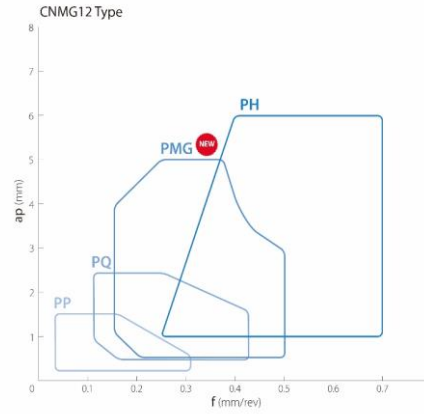
- PG**
For medium-roughing
Stability-oriented



- PH**
For roughing
Tough edge design



Applicable Chipbreaker Range (ap indicates radius)



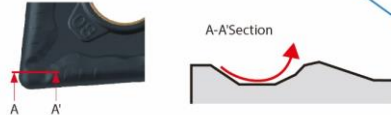
Lineup and scope of chipbreakers for steel machining

Step breaker structure

Suppresses chip entanglement during large D.O.C. machining with a gently rising surface

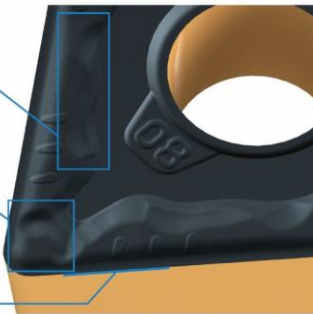
Circle Dot

Control chips during small D.O.C. machining



High Rake Perimeter

Low resistance design suppresses rake face temperature rise
Reduces chipbreakers wear and chip shape changes



PMG breaker (CG)



For more information on Kyocera: www.kyocera.co.uk

About Kyocera

Kyocera has been successful in Europe for over 50 years. From its European headquarters in Esslingen am Neckar, KYOCERA Europe GmbH operates 26 sites including manufacturing facilities, with products ranging from fine ceramics, electronics, automotive, semiconductor and optical components to industrial tools, LCDs, touch solutions, industrial printing components, solar systems and consumer goods such as kitchen and office products.

KYOCERA Europe GmbH is a company of the KYOCERA Corporation headquartered in Kyoto/Japan, a world leader in semiconductor, industrial and automotive components as well as electronic components, printing and multifunction systems, and communications technology. The technology group is one of the world's most experienced manufacturers of smart energy systems, with more than 45 years of industry expertise. The Kyocera Group comprises 297 subsidiaries (31 March 2023). In England, Kyocera has a subsidiary in Frimley, KYOCERA Fineceramics Ltd. With around 81,000 employees, Kyocera generated net annual sales of around EUR 13.87 billion in the 2022/2023 fiscal year.

Kyocera is ranked 671 on *Forbes* magazine's 'Global 2000' list for 2023, and ranked as 'The 100 Most Sustainably Managed Companies in the World' according to the *Wall Street Journal*. For the second year in a row, Kyocera qualified for the Dow Jones Sustainability Index (Asia-Pacific) and acknowledged as a 'Top 100 Global Innovator 2023', being one of the world's leading innovators, for the seventh time by Clarivate.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (equivalent to approximately €685,000 per prize category).

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