

INSERT GRADE INFORMATION

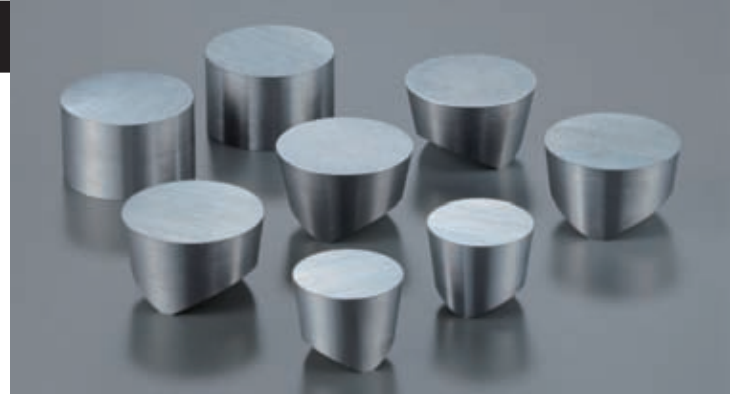
BIDEMICS SERIES

JX1 NEW

JX1 is a proprietary grade of "BIDEMICS" - an advanced composite cutting tool material developed for machining HRSA materials. JX1 is potentially capable of running at speeds 2X greater than whisker ceramics. JX1 excels in notching resistance and wear resistance leading to significantly longer tool life. Also, JX1 produces superior surface finishes vs. whisker ceramics.

Applications

Semi-finish & finish turning of HRSA materials
Roughing (No scale) of HRSA materials

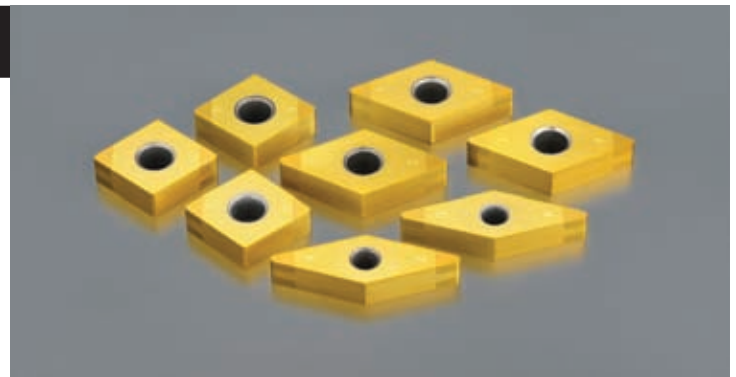


JP2 NEW

JP2 is a proprietary grade of "BIDEMICS" - an advanced composite cutting tool material developed for machining HRSA materials. JP2 is brazed onto carbide for maximum strength. JP2 is designed for finishing at speeds up to 1700 SFM. This translates into 10-15 times faster cutting speeds than typical coated carbide in finishing applications. JP2 excels in notching resistance and wear resistance vs. carbide or CBN. As an added benefit, JP2 produces superior surface finishes vs. carbide or CBN.

Applications

Finish turning of HRSA materials



CERAMIC-SILICON NITRIDE SERIES

SX6, SP9 Si₃N₄ Type

SX6 & SP9 make high-speed machining productive and profitable. SX6 has the highest silicon nitride content on the market. SX6 excels in rough turning or milling of gray cast iron. CVD coated SP9 has a unique combination of wear resistance and toughness which enables the use of smaller T-lands. Sharper edges reduce tool pressure. This feature makes SP9 the best choice for finishing gray cast iron and rough turning and milling of ductile cast irons.

Applications

Rough and finish turning / milling of gray cast iron (SX6)
Rough and finish turning / milling of ductile cast iron (SP9)

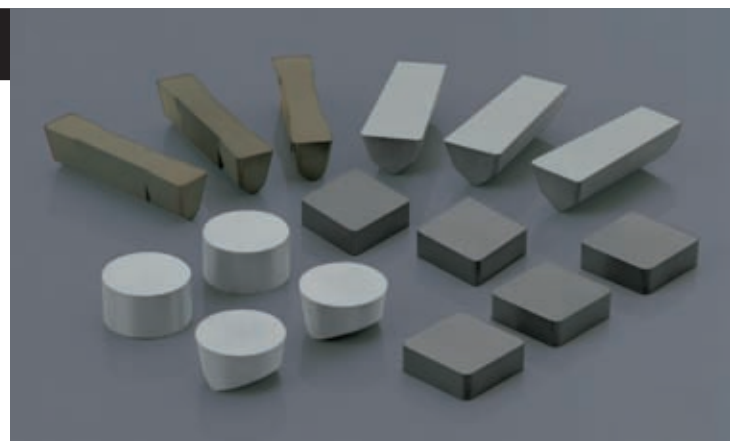


SX5, SX7, SX9 SiAlON Type

SX5, SX7 & SX9 are SiAlON ceramics used for high-speed machining of nickel-based alloys. SiAlON ceramics offer better notching resistance and are tougher than whisker based ceramics. SX5 is the toughest grade for machining through scale or interruptions. SX9 has added wear resistance needed for turning or milling of HNBA. SX7 has the highest combined wear resistance and toughness of all the SiAlON's.

Applications

Rough and finish turning HRSA materials
Grooving HRSA materials
Milling of HRSA materials



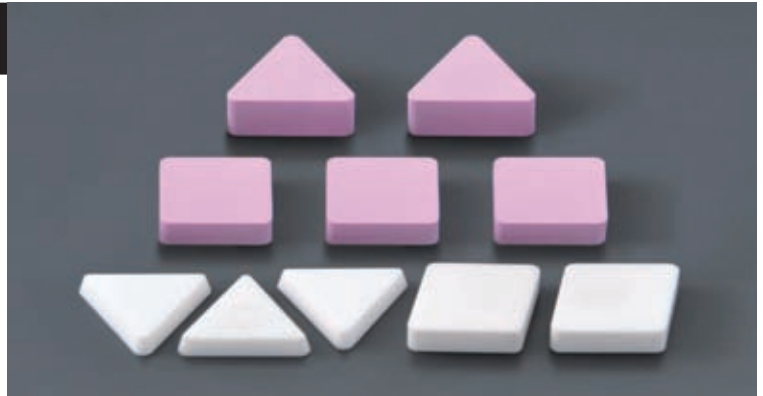
CERAMIC-ALUMINA SERIES

HC1, HW2 Al_2O_3 Type

■ HC1 is a pure (Al_2O_3) alumina white ceramic. It's highly dense and fine grain structure improves wear resistance, tool life and toughness. HW2 is similar to HC1, but much tougher. Both grades are best suited for high cutting speeds with no coolant.

Applications

Finish turning and boring of gray cast iron (~3000 SFM)
Semi-rough and finished cylinder liner materials
Tube scarfing

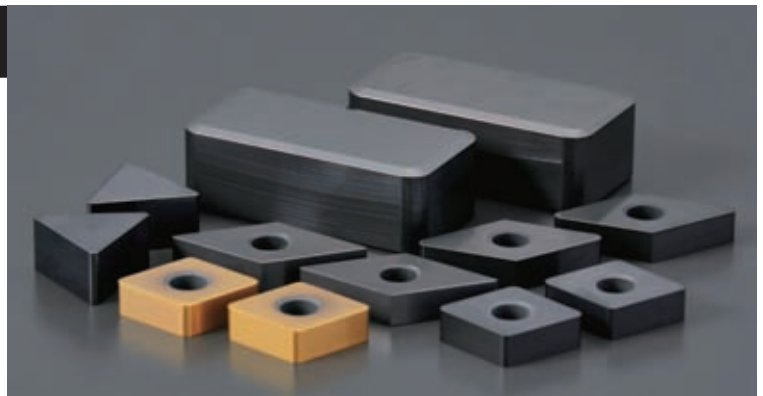


HC2, HC5, HC7, ZC4, ZC7 Al_2O_3 TiC Type

■ These grades of ceramic consist of properly proportioned aluminum oxide and titanium carbide (Al_2O_3+TiC) sintered under pressure. The resulting products are stable over a vast range of machining conditions. HC2 is a general purpose ceramic. HC7 (ZC7-TiN coated version) is a premium grade for hard turning in steel rolls. (TiN) coated ZC4 has the finest grain structure which is best suited for hard turning steel applications. (HRC 50-65) vs CBN.

Applications

Finish turning and boring of gray cast iron
Turning of hard materials (HRC 40-65)

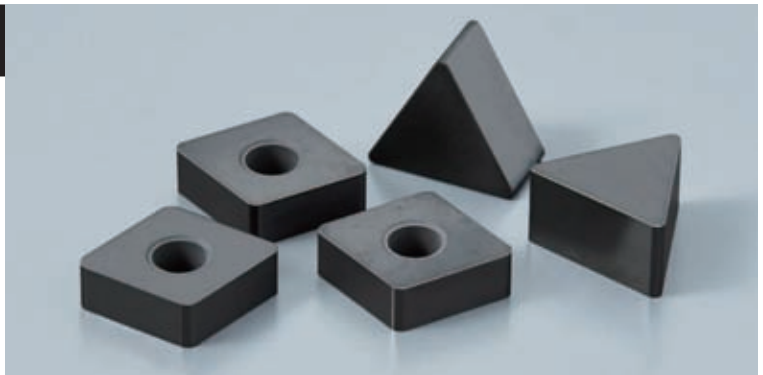


HC6 TiC Type

■ HC6 is a unique (TiC) ceramic composite material. This grade is specifically designed to machine ductile cast iron. HC6 demonstrates superior wear resistance at high speeds. As an added benefit, this ceramic produces excellent surface finishes. HC6 toughness and thermal shock resistance surpass (Al_2O_3+TiC) ceramics. HC6 can be run with or without coolant.

Applications

Semi-finish and finish turning of ductile cast iron
High speed cutting of gray cast iron



WA1 Al_2O_3-TiC Type

■ WA1 is a whisker-reinforced ceramic material with Silicon-Carbide (SiC) whiskers added to alumina. WA1 machines HRSA at high cutting speeds and hardened steels with interruptions. WA1 has a higher (SiC) content than other competitor's whisker-reinforced ceramics. The resulting material, WA1, shows increased productivity and extended reliability in applications where both toughness and notching resistance are needed.

Applications

Rough and finish turning HRSA
Milling of HRSA
Turning of hard materials with interruptions
Milling of hard steels (HRC 50-62)



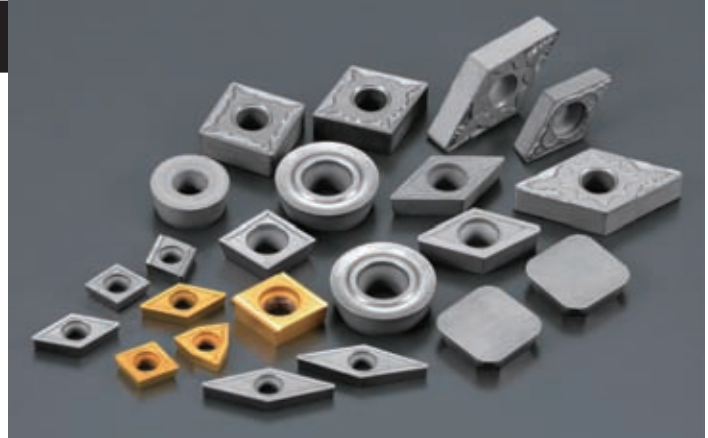
CERMET SERIES

C7X, C7Z, XT3, Q15, XN4

All the cermet grades are composed of different combinations of (TiC) and (TiN). Cermets are solid composite materials with ground or molded chipbreakers in various geometries. All grades are suitable for a wide range of finish and semi-finish applications. XT3 is a general purpose cermet with the widest selection of chipbreakers. C7X and C7Z (TiN coated version) has the best fracture toughness, comparable to some carbides on the market.

Applications

Semi-finish & finish of cast iron, steel and stainless steel
Form inserts for bearing industry
(C7X) milling of steel and stainless steel



CBN SERIES

CBN

B23, B30, B36, B40, B52 grades are composite CBN (Cubic Boron Nitride) materials. They exhibit high hardness characteristics, the same as ceramics, allowing high speed cutting with maximum efficiency. These five CBN grades cover a variety of applications from turning hardened steels to high speed machining of cast irons. Many geometries have multiple cutting edges.

NEW

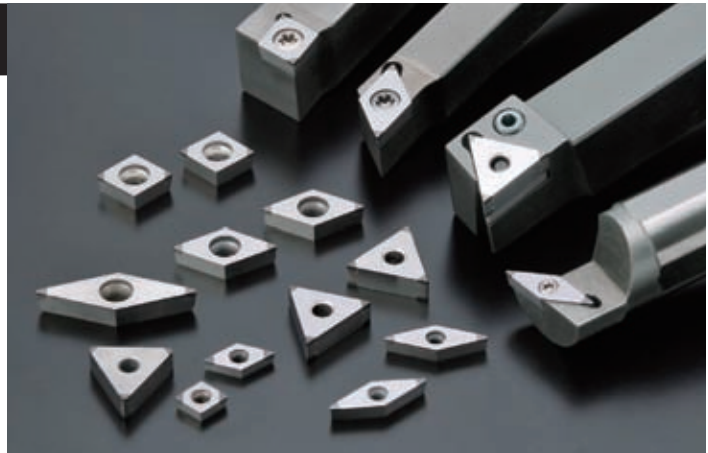
B5K, B6K grades are composite CBN materials with a TiCN coating. This coating makes edge wear easily detectable.

NEW

B99 grade is a solid CBN material. Ideal for harder mill roll machining.

Applications

Turning of steels (HRC60)
Turning of gray cast iron
Finish milling of gray cast iron
Rough turning of steel mill rolls



PCD SERIES

PD1, PD2

PD1 is a fine grain (10µm) PCD (Polycrystalline Diamond) grade designed for turning and milling of aluminum and nonferrous materials. PD1 enables high precision and stable machining by controlling built-up edge. **PD1 photo not shown.**

NEW

PD2 is a super fine grain (1µm) PCD grade designed with sharp cutting edges and increased chipping resistance. PD2 has ground in chipbreakers that provide excellent chip control on aluminum and nonferrous materials.

Applications

Turning and milling of aluminum
Turning and milling of nonferrous material
Various Swiss Tooling geometries



MICROGRAIN CARBIDE SERIES


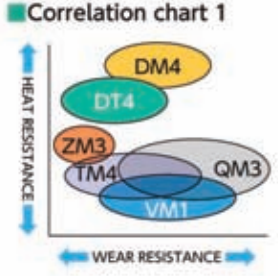
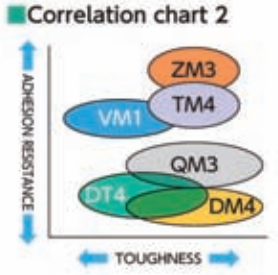
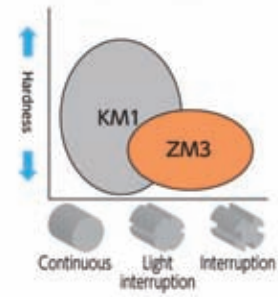





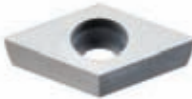

Micrograin Carbide

NTK's micrograined carbide has been developed by reducing the size of WC hard grains, which is the main component of cemented carbide, to about 1µm. This process results in added toughness and hardness which is needed to maintain sharp cutting edges. Various compositions and coatings have been developed to handle all the demanding applications involved in making small parts on Swiss lathes.



Applications

Rough and finish turning, cut-off, grooving, threading, boring and milling of all materials.

GRADE NAME	COATING TYPE	RECOMMENDED APPLICATIONS	APPLICATIONS MAP
QM3	 Micrograin carbide + Thick TiCN coat	Excellent toughness and wear resistance. For stainless, steel, high-nickel alloys and abrasive materials. Demanding applications (such as grooving and interrupted cuts). 1st recommendation for most Swiss machining applications.	<p>Correlation chart 1</p>  <p>Correlation chart 2</p>  <p>Aluminum / Brass</p> 
DT4	 Micrograin carbide + Thin TiN-TiCN-TiAlN coat	Excellent oxidation and heat resistance with sharp cutting edges. For high-speed turning of titanium alloys, stainless, steel, high-nickel alloys and hardened materials	
DM4	 Micrograin carbide + Thick TiN-TiCN-TiAlN coat	Best oxidation and heat resistance combined with toughness. For high-speed turning of stainless steels, high-nickel alloys and hardened materials.	
TM4	 Micrograin carbide + Thin TiN-TiCN-TiN coat	Exceptionally smooth coating surface to minimize adhesion. Well-balanced combination of wear resistance, toughness and sharp cutting edges. For titanium, nonferrous materials (including plastic), stainless and steel.	
VM1	 Micrograin carbide + Thin TiCN coat	Excellent wear resistance and sharp cutting edges. For titanium, nonferrous materials (including plastic), stainless, steel, rare metals (including platinum) and small parts applications.	
ZM3	 Micrograin carbide + Thick TiN coat	Best selling PVD TiN coated grade with exceptional versatility and smooth coating layer.	
KM1	 Micrograin carbide	Precision ground and polished to mirror-finish and with extremely sharp cutting edge. For aluminum and nonferrous materials.	
CP1	 Carbide + Thick film Al ₂ O ₃ -TiCN coat	Good balance of wear resistance and toughness for cast iron machining.	

NTK TOOLING SYSTEM FOR SWISS LATHES



Front Turning



Grooving



Back Turning



Threading



Cut-Off



ID Tooling

Key Features of Swiss Tooling:

- Unique tooling for all Swiss applications
- Precision ground inserts with sharp cutting edges to reduce tool pressure and maximize tool life
- Extensive selection of chip control designs
- Strong stable clamping system for maximum rigidity
- Variety of micrograin carbide grades specifically designed for high precision applications

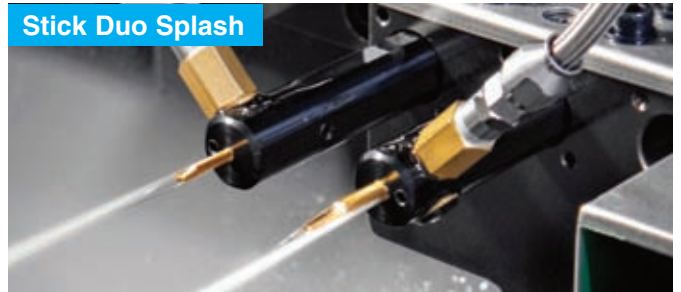
For more information, please consult our catalog.

NEW SWISS TOOLING PRODUCTS

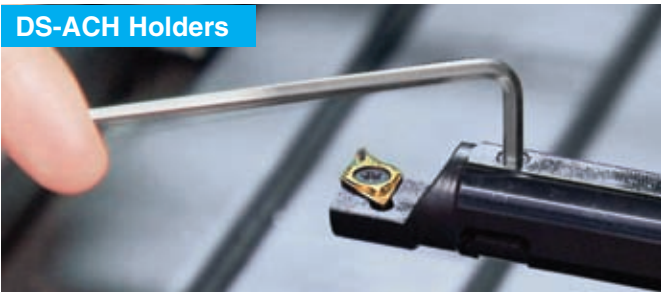
Splash Series



Stick Duo Splash



DS-ACH Holders



Thread Whirling



NTK CUTTING TOOLS

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