
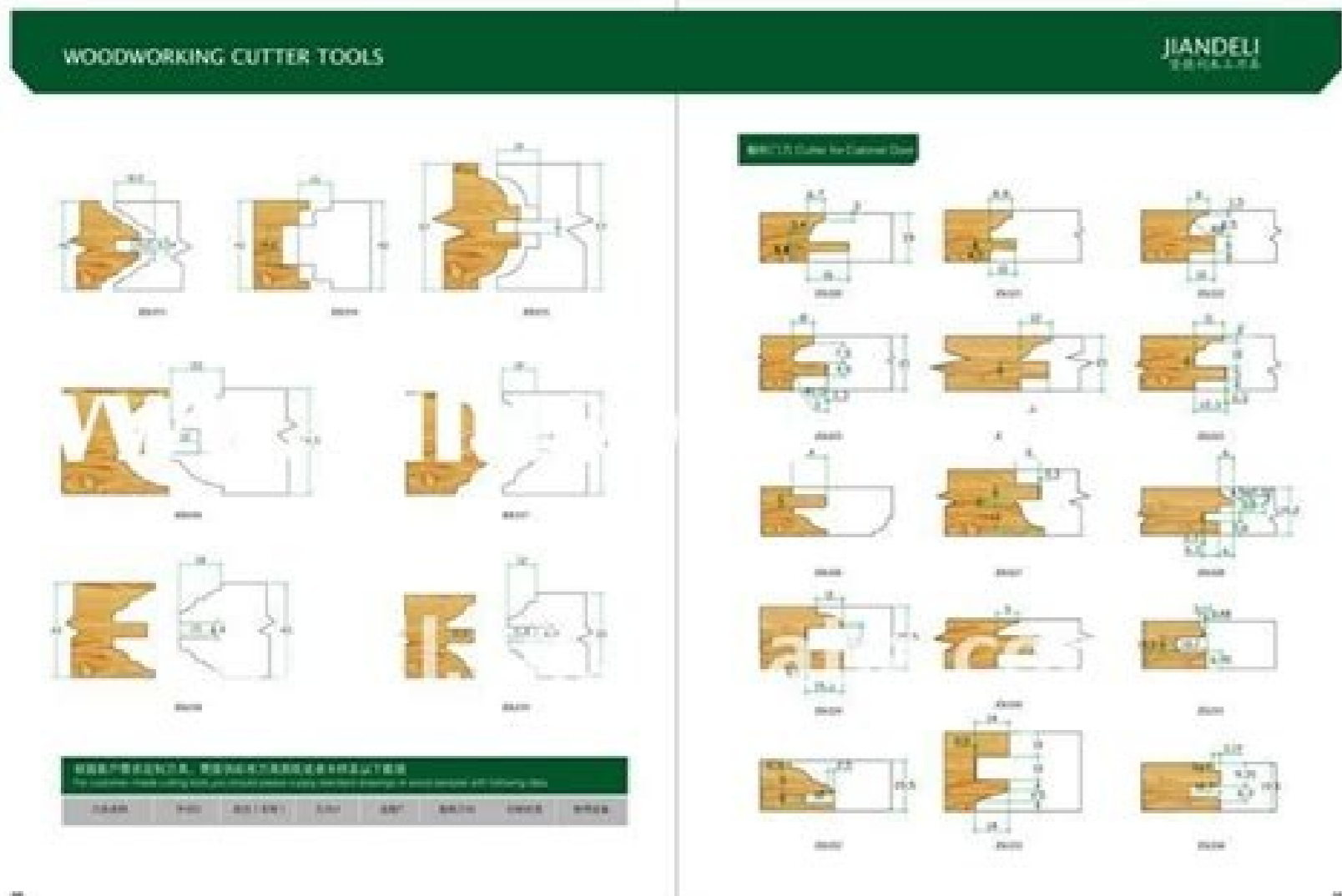


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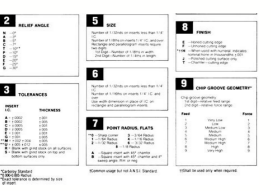
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# Carbide insert identification chart pdf



Speeds & Feeds  
OVER 07000 TN LT 20

Material	Tool	Speed (m/min)	Feed (mm/min)
Aluminum	...	...	...
Steel	...	...	...
Inconel	...	...	...



Manufacturer's Grade Carbide Insert Cross Reference Chart

ISO CLASS	INTERSTATE	HERTEL	KENAMETAL	SECO	WALTER	ISCAR	KENAMETAL	SANDVIK	MTWORMA	TOHIBA	SUMITOMO
P10-P15	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P20-P25	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P30-P35	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P40-P45	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P50-P55	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P60-P65	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P70-P75	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P80-P85	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
P90-P95	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M10-M15	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M20-M25	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M30-M35	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M40-M45	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M50-M55	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M60-M65	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M70-M75	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M80-M85	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
M90-M95	TC908	HC308	KC9100	TP900	VP900	IC908	KCP40	GC918	---	---	AC900
K10-K15	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K20-K25	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K30-K35	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K40-K45	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K50-K55	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K60-K65	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K70-K75	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K80-K85	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)
K90-K95	IC902	HC302	KC9020	TP900	VP900	IC902	KCP20	---	---	---	AC7000(3)

Carbide insert identification chart pdf. How to identify carbide inserts.

One of the commonly used indexable inserts for general turning is CNMG 432. For more information, call (561) 369-4063, or email: edmundisakov9701@comcast.net. The earlier editions of the standard are: ANSI B212.12-1991, Indexable Screw-On Inserts with Partly Cylindrical Fixing Holes ANSI B212.12-1991, Turning Tools - Commonly Used Indexable Inserts (ANSI - American National Standard Institute) According to ANSI B212.4-2002 standard, identification of the indexable insert includes 10 positions denoted by a capital letter. Figure 5: Kennametal Inc. Tolerances on dimensions ( $\pm$  from nominal) are denoted by letters A, B and T. Size The fifth position is a significant one- or two-digit number indicating the size of the inscribed circle (I.C.) for all inserts having a true I.C. such as Round, Square, Triangle, Trigon, Pentagon, Hexagon, Octagon, and Diamond. Insert Identification System (Metric Mode). Image courtesy of Edmund Isakov. See also: Indexable inserts available at LittleMachinesShop.com ANSI Turning Tool Designations ANSI Boring Bar Designations Printable ANSI Insert Designations Chart The first digit (fifth character) of the ANSI designation is the size, described by the inscribed circle. It is a one-digit number when the number of sixteenths of an inch in the thickness is a whole number: 1 - 1/16"; 2 - 1/8"; 3 - 3/16"; 4 - 1/4"; 5 - 5/16"; 6 - 3/8"; 7 - 7/16"; 8 - 1/2"; 9 - 9/16"; 10 - 5/8". Figure 3: Kennametal Inc. Type The fourth position is a capital letter denoting differences in design of insert, such as the existence of fixing holes, countersinks and special features on rake surfaces. Cutting-point configuration The seventh position indicates the cutting point configuration: a radius or a facet. Example identification chart of the indexable insert (Inch Mode). Image courtesy of Edmund Isakov. Figure 6: Kennametal Inc. ANSI B212.4-2002 standard added one more capital letter O, which denotes other relief angles for new designs of indexable inserts. Figure 4: Kennametal Inc. These angles are the difference from 90° measured in a plane normal to the cutting edge generated by the angle between the flank and top surface of the insert. Dimension A is the nominal inscribed circle (I.C.) of the insert. It is a two-digit number carried to one decimal place when it is not a whole number: 1.2 - 5/64"; 1.5 - 3/32"; 2.5 - 5/32"; 3.5 - 7/32". This illustration shows what that means. It will be a significant number representing the nominal sixty-fourths of an inch in length of the primary facet: 1 - 1/64"; 2 - 1/32"; 3 - 3/64"; 4 - 1/16"; 5 - 5/64"; 6 - 3/32"; 7 - 7/64"; 8 - 1/8"; 9 - 9/64"; 10 - 5/32". The inscribed circle (IC) is not something you can readily measure on a triangular insert. radius); 0.2 - 0.004"; 0.5 - 0.008"; 1 - 1/64"; 2 - 1/32"; 3 - 3/64"; 4 - 1/16"; 5 - 5/64"; 6 - 3/32"; 7 - 7/64"; 8 - 1/8"; 9 - 9/64"; 10 - 5/32". The inscribed circle (IC) is not something you can readily measure on a triangular insert. Dimension T is the thickness of the insert. (Figure 4 and Figure 5 also show Kennametal Inc. In case of a facet, two letters are used. Figure 2: Kennametal Inc. insert identification system and chip breaker identification system respectively.) Table 1: Negative indexable inserts. Image courtesy of Edmund Isakov. Edge preparation The eighth position is a capital letter that defines edge treatment and surface finish as follows: A - Honed from 0.0005 to less than 0.003 inch B - Honed from 0.003 to less than 0.005 inch C - Honed from 0.005 to less than 0.007 inch E - Rounded Cutting Edge F - Sharp Cutting Edge J - Polished to 4 micro inch finish AA (arithmetic average) on Rake face only K - Double Chamfered Cutting Edge P - Double Chamfered and Rounded Cutting Edge S - Chamfered and Rounded Cutting Edge T - Chamfered Cutting Edge on Rake face only 9. These tables don't cover all Kennametal chip breakers. Clearances (relief angles) Nine relief angle values have been described in ANSI B212.12-1991 standard. 5. 8. So if you measure the height of an insert to be 0.374 (the radius on the point makes it a little less than the true height), the calculated inscribed circle is 0.249, or 1/4". Don't get hung up with spaces and hyphenation in insert designations. Chip Breaker Identification System. Image courtesy of Edmund Isakov. 10. This position designates the number of eighths of an inch in the nominal size of the I.C. It will be a one-digit number when the number of eighths of an inch in the I.C. is a whole number: 1 - 1/8"; 2 - 1/4"; 3 - 3/8"; 4 - 1/2"; 5 - 5/8"; 6 - 3/4"; 7 - 7/8"; 8 - 1"; 10 - 1 1/4". Table 2: Positive indexable inserts. Image courtesy of Edmund Isakov. 2. For more information, call (724) 539-5321, or email: Shi.Chen@Kennametal.com Because many inserts are made in other countries, the ISO system is used frequently. For all other polygons, dimension B is the distance, measured along the bisector of the rounded off corner angle and a gage roll of nominal I.C. size tangent to the two sides opposite the corner (Figure 2). There are 15 standard types in design as follows (Figure 3): A - With hole, without chip grooves; B - With hole, without chip grooves, and one countersink (70°-90°); C - With hole, without chip grooves, and two countersinks (70°-90°); F - Without hole with chip grooves on two rake faces; G - With hole and chip grooves on two rake faces; H - With hole, one countersink (70°-90°) and chip groove on one rake face; J - With hole, two countersinks (70°-90°) and chip groove on two rake faces; M - With hole and chip groove on one rake face; N - Without hole, without chip grooves; Q - With hole, without chip grooves, and two countersinks (40°-60°); R - Without hole with chip groove on one rake face; T - With hole, one countersink (40°-60°) and chip groove on one rake face; U - With hole, two countersinks (40°-60°) and chip grooves on two rake faces; W - With hole, without chip grooves, and one countersink (40°-60°); X - With dimensions or details requiring detailed explanation, a sketch or additional specifications. The first letter designates the facet angle: A - 45°; D - 60°; E - 75°; G - 87°; P - 90°; Z - Any other facet angle. But the height (H) is easy to measure (a flat against one jaw of your caliper and a point against the other), 7. 3. Each relief angle is denoted by a capital letter as follows: A - 3°; B - 5°; C - 7°; D - 15°; E - 20°; F - 25°; G - 30°; N - 0°; and P - 11°. These tables show the ANSI and ISO insert designations for indexable inserts for turning. Figure 1: Kennametal Inc. The second letter designates the facet clearance angle: A - 3°; B - 5°; C - 7°; D - 15°; E - 20°; F - 25°; G - 30°; N - 0°; P - 11°; Z - Any other facet clearance angle. Facet size The 10th position is only used if there are letters in the seventh position. 1. Each class is denoted by a capital letter. In the case of a radius, the number indicates how many of 1/64 of an inch in the radius: 0 - sharp corner (0.002" max. About the Authors: Edmund Isakov, Ph.D., is a consultant, writer, and frequent CTE contributor. Shi 'Steve' Chen is Manager Product Engineering Turning at Kennametal Inc. Letters for tolerances are A, B, C, D, E, F, G, H, J, K, L, M, U and N. They are sometimes included for clarity, but there is little consistency among vendors. The diameter of the inscribed circle is 2/3 of that measurement. The first digit indicates the number of eighths of an inch in the width and the second digit indicates the number of fourths of an inch in the length of the insert. Image courtesy of Edmund Isakov. 4. Notice on the other two shapes that there is a way to directly measure the diameter of the inscribed circle. Tolerance Identification System. Image courtesy of Edmund Isakov. A given insert can be specified in either ANSI (American) or ISO (metric) designations. Shape There are 16 standard shapes of indexable inserts, and each shape is identified by a capital letter as follows (Figure 1): A - Parallelogram 85°; B - Parallelogram 82°; C - Diamond 80° (Rhombic); D - Diamond 55° (Rhombic); E - Diamond 75° (Rhombic); H - Hexagon 120°; K - Parallelogram 55°; L - Rectangle 90°; M - Diamond 86° (Rhombic); O - Octagon 135°; P - Pentagon 108°; R - Round; S - Square 90°; T - Triangle 60°; V - Diamond 35° (Rhombic); W - Trigon 80°. He is the author of four books "Mechanical Properties of Work Materials" (Modern Machine Shop Publications, 2000); "Engineering Formulas for Metalcutting" (Industrial Press, 2004); "Cutting Data for Turning of Steel" (Industrial Press, 2009); "International System of Units (SI)" the CD-ROM (Industrial Press, 2013); and the software "Advanced Metalcutting Calculators" (Industrial Press, 2005). Insert Type Identification. Image courtesy of Edmund Isakov. On rectangular and parallelogram inserts, the width and length dimensions are used in place of the I.C. A two-digit number designates the sizes of these inserts. Due to the magazine's space limitations, the authors provide the following tables showing most popular Kennametal's indexable inserts only for general turning of steel, cast iron, and nonferrous alloys. Insert Shape Identification System. Image courtesy of Edmund Isakov. Tolerance class There are 14 tolerance classes that control the indexability of the inserts. 6. For example, if a tolerance letter is H, tolerances on dimensions ( $\pm$  from nominal) are: 0.0005" on dimension A, 0.0005" on dimension B and 0.001" on dimension T. Thickness The sixth position is a significant one- or two-digit number indicating the number of sixteenths of an inch in the thickness of the insert. Negative and Positive Inserts. Hand The ninth position is a capital letter indicating the hand of an insert: R - Right Hand; L - Left Hand; N - Neutral. Each position (from 1 to 10) defines a characteristic of the insert in the following order: - Shape; - Clearance; - Tolerance class; - Type; - Size; - Thickness; - Cutting-point configuration; - Edge preparation; - Hand; - Facet size.

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