

SECO NEWS  
SUMMARY  
2015-1



**THE PRODUCTIVITY YOU  
NEED & EXPERTISE YOU  
RELY ON**

**SECO** 

In 2007, Seco introduced the world to Duratomic® technology. This revolutionary approach to creating insert coatings incorporated Seco's pioneering advances in nanoscience and engineering techniques to manipulate coating materials at an atomic level.



This year, we're raising the bar to a new level. Prepare to redefine your productivity with a new era of insert coatings.

# INTRODUCING THE NEW BLACK

# COMMITTED TO YOUR SUCCESS

For over 80 years, Seco has provided the cutting tools, processes and services that manufacturers from all metalworking segments rely on for maximum productivity and profitability. In fact, every new solution we introduce has an industry need in mind.

Our significant investments in R&D and global partnerships enable us to monitor trends and identify challenges so that we can continuously offer advanced products for today’s materials and machining processes.

You’ll find this latest Seco News Summary to be a perfect representation of our customer-centric approach, as we introduce several new, highly versatile products that bring unmatched performance to modern milling, turning and threading operations.

Overall, we have one of the industry’s broadest selections of cutting tool products, with more than 30,000 standard and custom solutions. So no matter your operations or industry, we are committed to your success – today, tomorrow and well into the future.

## MILLING

- Highfeed 2 & 4..... 4
- Square T4-08 Helical ..... 6
- Minimaster®Plus ..... 8
- Jabro® JPD & JC Composite End Mills..... 10
- Double Octomill™ ..... 10
- Cassette ..... 12
- Turbo 10 PCD..... 14
- MS2050 Milling Grade..... 15

## THREADING

- Thread Chaser Holder ..... 16
- TM4000..... 18

## TURNING

- X4 PCBN Grooving..... 20
- CBN600..... 21
- X4 Expansion ..... 22
- SMG V2 ..... 24

# MILLING



## YOUR SECO BENEFIT:

- Insert indexability with small diameter cutters for economical performance, especially in long reach applications
- Optimised number of inserts per cutting diameter for higher speeds and feeds
- Reduced vibration
- Smoother, stable cutting for higher productivity
- Efficient chip evacuation

For further information please see catalogue / Machining Navigator Milling pages 387-420.

## MORE TEETH PER TOOL BOOSTS PERFORMANCE & PRODUCTIVITY

# HIGHFEED 2 & 4

Seco's Highfeed milling cutters permit up to three times faster machining than conventional methods. Shallow depths of cut paired with high feed per tooth rates provide greater metal removal rates for intensely high levels of productivity. Now, Seco introduces two new families into its Highfeed line up, including Highfeed 2, which is the world's smallest high feed milling cutter with indexable inserts.

Highfeed 2 and Highfeed 4 both incorporate new close-pitch and normal pitch designs, together with new inserts – LP05 and LO06 – that allow for more teeth/insert pockets per cutter diameter, as compared to the existing Highfeed range. With more teeth, they excel in high-velocity, high-speed cutting of hard and tough-to-machine materials – especially when using smaller machines with high-rpm/low torque spindles. Performance results of the new cutters in terms of speed and efficiency far exceed those using larger, higher horsepower machines and taking slower heavier cuts.

## NEW! HIGHFEED 2 LP05 INSERTS

The inserts feature two cutting edges for indexable technology in cutter diameters down to 12 mm (.5"). Seco engineered the Highfeed 2 inserts specifically to handle sticky materials such as stainless steels, titanium and superalloys. Most importantly, the positive LP inserts provide a first choice for applications requiring a higher ramping angle or superior plunging performance.

## NEW! HIGHFEED 4 LO06 INSERTS

These double-sided inserts provide four cutting edges for cost-effective machining. With high performance in larger diameters, the cutters are extremely efficient in the machining of most common workpiece materials.

### PRODUCT OVERVIEW:

- Indexable insert technology applied to small cutter diameters with LP05 inserts
- Additional cutting teeth per cutter diameter
- Highfeed 2 is world's smallest high feed milling cutter with indexable inserts
- Special close-pitch and negative-pocket cutter designs and reinforced insert cross sections with LO06 inserts
- Various insert grades and geometries
- Dedicated insert cutting edges for hard materials up to 62 HRC
- Optimised cutter body flutes

### RANGE OVERVIEW:

#### HIGHFEED 2:

- Single-sided LP05 inserts for 12 mm (.5") to 20-mm-diameter (.75") cutter bodies
- ME, M and MD insert geometries
- Includes Combimaster™ heads and cylindrical shanks

#### HIGHFEED 4:

- Double-sided LO06 inserts for 20 mm (.75") to 63-mm-diameter (2.5") cutter bodies
- ME, M, MD and D insert geometries
- Includes Combimaster, cylindrical shank and shell end types

### HIGHFEED 2 LP05 CASE STUDY CUTTING DATA:

Material: INCONEL 625 (UNS N06022) SMG S3

Tool: R217.21-0612.RE-LP05.2A

Overhang: 155 mm

Inserts: LPKT05T210TR

Geometry: M05

Grade: F40M

$v_c$ : 35 m/min (114.8 sfm)

$n$ : 928 rpm

$f_z$ : 0.4 mm (.016")

$f_c$ : 0.8 mm (.031")

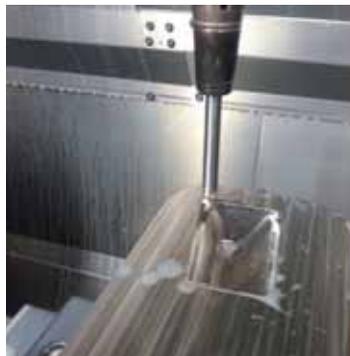
$v_f$ : 743 mm/min (29.25"/min)

$a_p$ : 0.15 mm (.006")

$a_e$ : 6 mm (.236")

Cut time: 75 min

Coolant: internal coolant



# MILLING



## YOUR SECO BENEFIT:

- Cost-effective operation
- Improved part quality
- Longer tool life compared to similar competing products
- Stable, reliable machining
- Versatility

For further information please see catalogue / Machining Navigator Milling pages 102-107.

## NEW INSERT MOUNTING SYSTEM BOOSTS CUTTER STRENGTH & STABILITY

### SQUARE T4-08 HELICAL

These helical milling cutters feature a new, innovative insert mounting style for specially designed inserts with four cutting edge capability. As a result, the new Helical T4-08 delivers longer tool life, strength, stability and rigid axial insert support for roughing and semi finishing difficult-to-machine materials.

Seco engineered the cutter's pocket seats so that inserts mount tangentially. Thus, the seats require less room, so more core material remains on the cutter bodies. This extra mass boosts their vibration dampening qualities and, in turn, allows them to run more aggressively and generate smoother surface finishes.

Along with exceptional insert support, tangential mounting effectively counteracts cutting forces for secure, reliable machining while contributing to longer tool life. These qualities make the Helical T4-08 a perfect complement to Seco's Helical Turbo range and a first choice for 2D directional contour milling applications.

Helical T4-08 inserts offer four-cutting edges for high cost effectiveness and make the cutter a first choice for contouring with full effective cutting length. The inserts provide versatility through two basic geometry styles, together with a range of available radii and milling grades. Wiper flats on both geometry styles ensure good quality part surface finishes, while positive rake angles deliver smooth cutting action and help further increase tool life.

Ideal applications for the Helical T4-08 include slot, shoulder, circular interpolation and trochoidal milling operations in steel, stainless steel and cast iron, as well as gummy, highly abrasive materials such as superalloys. Seco also offers the new cutter in two pitch variations – normal and close. Normal applies to slotting and contouring operations, while close pitch works well for only contouring.

#### PRODUCT OVERVIEW:

- New innovative tangential style insert mounting
- Inserts with four cutting edges
- Cutter bodies with more core material
- Optimised flute design
- Minimised wall mismatch
- Directed through coolant capability

#### RANGE OVERVIEW:

- Normal and close pitches
- Diameters from 25 mm (1") to 54 mm (2")
- Depths of cut from 22 mm (1.4") to 64 mm (2.52")
- Available shanks – Seco-Weldon, Seco Combimaster, Seco-Capto™, and arbor style
- M08 and MD08 insert geometries
- 0.4 mm (.016"), 0.8 mm (.031"), 1.2 mm (.047") and 1.6-mm (.063") insert radii
- F40M, MP3000, MK2050 and (New) MS2050 insert grades

#### CASE STUDY CUTTING DATA:

Material: Steel SMG S6

Tool: R220.94-00050-057-08.5A

$z_c$ : 5

$v_c$ : 150 m/min (492 sfm)

n: 955 rpm

$f_z$ : 0.16 - 0.42 mm (.006" - .016")

$v_f$ : 785 - 2,000 mm/min (30.91" - 78.74"/min)

$a_p$ : 47 mm (1.85")

$a_e$ : 2.1 - 13.5 mm (.08" - .53")

MRR: 198 - 500 cm<sup>3</sup>/min (7.79 - 19.7 in<sup>3</sup>/min)

Cut time: 140 min

Coolant: internal coolant



# MILLING



## YOUR SECO BENEFIT:

- Higher cutting force capability
- Stability in demanding applications
- Increased metal removal rates
- Reduced cutting vibrations
- Cost-effective modularity

For further information please see catalogue / Machining Navigator Milling pages 421-559.

## NEW FIRST-CHOICE SHORTER LENGTHS BOOST STABILITY FOR DEMANDING APPLICATIONS

# MINIMASTER® PLUS

Seco continues to build upon its industry leading Minimaster Plus family with the development of new shorter flute lengths – the first of many planned product line additions. As part of the popular replaceable cutting head tool system, the new Minimaster Plus cutting heads with shorter flutes will handle higher cutting forces and, in turn, deliver increased metal removal rates in roughing and semi-finishing operations.

The new cutters incorporate all of the same design features and benefits as existing Minimaster Plus cutting heads, only in shorter flute lengths. Existing flute lengths are  $1.2 \times D$ , while the new additions are  $0.7 \times D$ , which significantly boosts their stability.

Added stability makes the shorter lengths especially well suited for aggressive material removal in demanding applications and 5-axis machining where cutter ends are used more frequently than the entire flute lengths. Ideal machining conditions for the new cutters are those where radial engagement is much greater than axial engagement, as compared to the opposite conditions where longer flutes would be used.

The shorter cutting heads are available with the same corner radii and geometries, as well as in the same coatings and grades, as existing Minimaster Plus cutting heads. They also work with the entire existing shank range. Industry segments that will benefit the most from the new lengths include aerospace, mould & die, and general contract machining.

**PRODUCT OVERVIEW:**

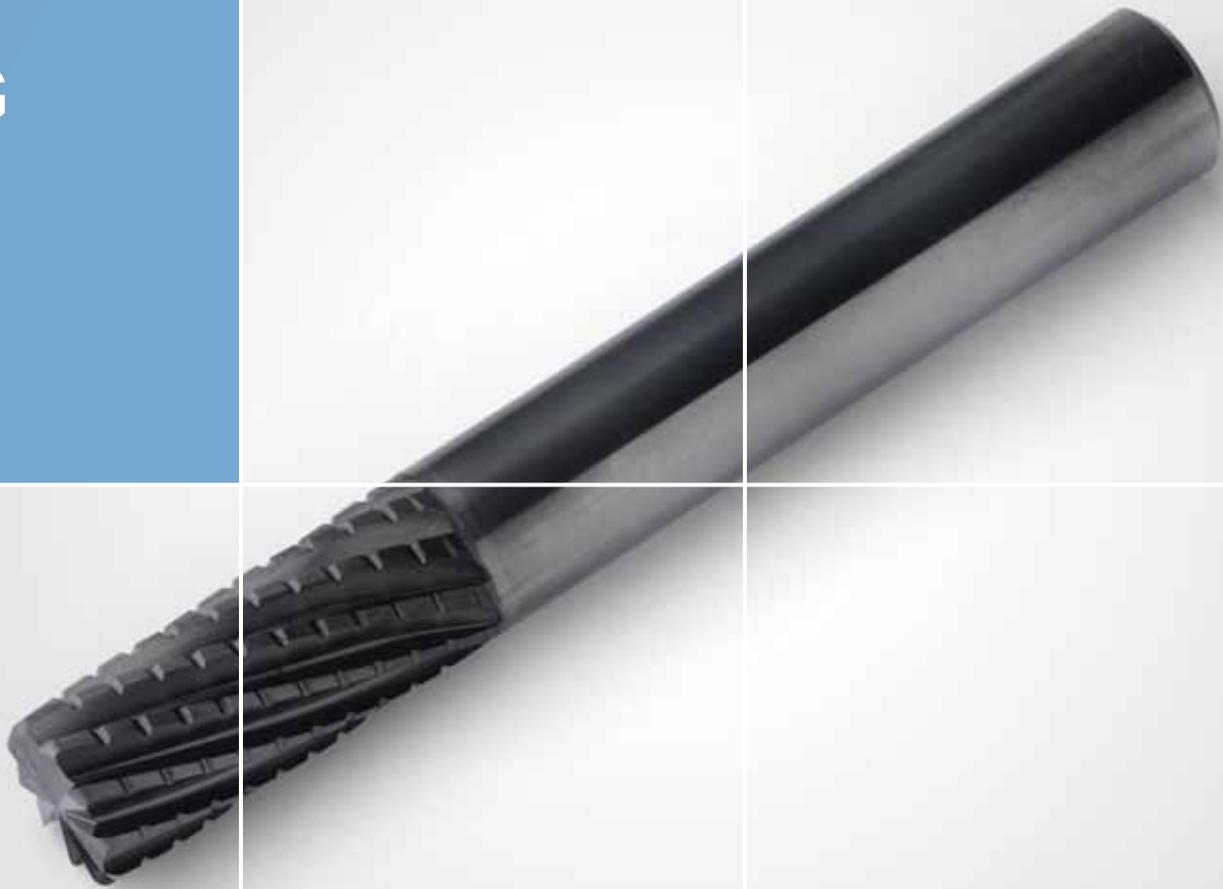
- Shorter flute lengths for increased stability
- Ideal for large radial engagement and small axial engagement conditions
- Precise and secure cutter/shank interface
- Advanced coatings and grades
- Internal coolant channels

**RANGE OVERVIEW:**

- Shorter flute lengths of  $0.7 \times D$
- Three-flute design
- Wide variety of cutting heads for all material types
- Square shoulder and ballnose versions
- Full range of standard diameters



# MILLING



Jabro-Composite JC875

## YOUR SECO BENEFIT:

- Fast and efficient cutting
- Longer tool life
- Clean controlled cuts for improved surface finish quality
- Elimination of uncut fibres
- No workpiece damage
- Wide range of cutter options

For further information please see catalogue / Machining Navigator Solid End Mills pages 278-290.

## FAST, EFFICIENT & WORKPIECE-SAFE COMPOSITE MACHINING

# JABRO® JPD & JC COMPOSITE END MILLS

Seco has optimised its line of composite machining end mills with two new groups of end mills with four new geometries. These geometries are dedicated to cutting carbon and glass fiber composites along with carbon fiber reinforced plastics (CFRP) and other such materials.

The first end mill group – JPD – includes solid-carbide endmills with brazed polycrystalline diamond (PCD) plates, while the second – JC – encompasses a range of advanced solid-carbide routers.

All four geometries incorporate special advanced designs for efficient machining. As a result, composite workpieces remain undamaged and with perfectly clean cut fibres. Main PCD-plated bodies include through-coolant channels for thorough chip and dust evacuation.

### **NEW! JPD880**

For this square end mill, Seco mounts the tool's brazed PCD plates in varying angular directions. One is in a neutral position (0-degree angle compared to centreline), one in an up-cutting position and another in a down-cutting orientation. Such positioning prevents the delamination of carbon fiber materials when side or slot milling.

### **NEW! JPD850**

This ball nose end mill with brazed PCD plates provides centre-cutting capability and features through coolant channels directed at each plate. Compressed air flows through these channels to effectively evacuate carbon fiber dust from the cutting zone and prevent premature end mill wear.

### **NEW! JPD840**

As a compression-type end mill, this tool's brazed PCD blades are positioned in two helix directions that converge. This design equally compresses cutting forces, down to almost zero, from upper and lower opposite end mill directions and ensures material stability, especially when machining thinner sheets of carbon fiber composites.

### **NEW! JC875**

This solid-carbide advanced router delivers superior surface finishes. Seco applied a special edge treatment to the end mill that prevents wear and ensures the longest possible working life. An added diamond coating further boosts the tool's wear-resistance and allows it to withstand the highly abrasive properties of composite materials. Seco also imparted a special chip-splitting design on to the end mill for clean cutting action.

#### **RANGE OVERVIEW:**

- JPD880 and 840 diameters from 6 mm to 16 mm
- JPD850 diameters from 4 mm to 16 mm
- Two available PCD plate lengths – normal and long – for JPD880
- JC875 diameters from 3 mm to 12 mm (and in imperial sizes .250" to .500")



Jabro-PCD JPD880



Jabro-PCD JPD850



Jabro-PCD JPD840

# MILLING



## YOUR SECO BENEFIT:

- Economical, high-performance cutting system
- Low cost per edge and low cost per part
- Easy, precise and accurate insert mounting, locating and adjustment
- Near zero axial runout
- Reduced maintenance and repair costs
- Superior surface finishes
- Extended tool life

For further information please see catalogue / Machining Navigator Milling pages 168-170.

## HIGH VALUE & NEAR ZERO AXIAL RUNOUT WITH NEW CUTTER CASSETTE DESIGN

# DOUBLE OCTOMILL™ CASSETTE

Seco introduces the new Double Octomill Cassette Cutter to its long successful range of face milling cutters. Using Seco's advanced pin-locating technology, the new cassettes ensure fast, easy and precise insert positioning. Equally important, cassette pockets are adjustable to practically eliminate axial runout.

The Double Octomill Cassette Cutter, incorporating Seco's patented pocket design, features cassettes that are adjustable in the Z-axis or axial direction. Inserts can be mounted and setup in cassettes separately then assembled into the cutter body. Each individual cassette is then adjusted so they are all cutting on the same plane. With this exact insert positioning, the cutter allows for increased feedrates while it ensures the best possible surface finishes as well as the longest tool life possible.



Cassettes are combined with new close-pitch cutter bodies that accommodate Seco's cost-effective Double Octomill inserts. They are double-sided and provide a total of 16 cutting edges for both economy and high performance.

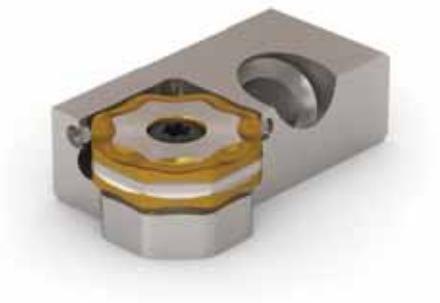
Because the cassettes are modular and removable, they can be quickly and inexpensively replaced if damaged. Users avoid the cost of replacing an entire cutter body.

**PRODUCT OVERVIEW:**

- Removable cassettes
- High-speed steel pins for precise insert locating
- Strong centre-locking screws
- Z-axis adjustable insert pockets

**RANGE OVERVIEW:**

- Large diameters from 125 mm to 315 mm (up to 500 mm (20") as custom)
- Available inch ranges from 5 inches up 12.5 inches (as standard)
- 16 cutting edge inserts





## PCD MILLING INSERTS FOR SMOOTH FINISHING TURBO 10 PCD

Seco's new PCD-tipped milling inserts – designed mainly for finish machining aluminium – work alone or alongside carbide inserts in the same cutter body. When used together with carbide inserts, the Turbo 10 PCD inserts perform as wiper inserts in fixed pockets and deliver superior part finish quality. Conversely, running all Turbo 10 PCD inserts in one cutter body ensures maximum cutting parameters and that the inserts are used to their full potential.

The two newly introduced PCD inserts work in all existing Turbo 10 cutter bodies. Both grades were designed to excel in aluminium, but can also be used for other PCD applications, such as polymers and fibre-reinforced polymers. Additionally, PCD05 can also be used for machining of titanium. Key applications for the PCD introductions include automotive and aerospace machining.

### YOUR SECO BENEFIT:

- High quality surface finishes
- Increased cutting speeds
- Smooth cutting
- Stability
- Low vibration
- Long tool life
- Versatility

For further information please see catalogue / Machining Navigator Milling page 645.

### PRODUCT OVERVIEW:

- PCD grades for aluminium and titanium alloys
- Inserts work alone or together with carbide inserts
- Solid carbide insert bodies
- 0.4-mm (.016") corner radii
- Improved insert locking

### RANGE OVERVIEW:

- PCD05 and PCD20 grades
- X010 insert size
- 1.08-mm (.043") wiper length



## WEAR RESISTANCE & ELIMINATION OF BUILT-UP EDGE IN TITANIUM MACHINING

### MS2050 MILLING GRADE

Seco further expands upon its MS2050 milling grade of inserts with new variations optimised for titanium machining. The additions span a wider scope of sizes, radii and geometries along with special coating technology.

A new silver colored PVD uni-coating not only gives the MS2050 inserts added heat resistance capabilities but practically eliminates the occurrence of built-up edge when cutting sticky materials, such as titanium. With the absence of built-up edge, the inserts last about 50 percent longer and run at much higher cutting data as compared with existing inserts.

#### PRODUCT OVERVIEW:

- Developed for titanium and high chromium content steels
- Carbide inserts with PVD uni-coating prevents built-up edge
- Wider scope of radii choices and insert sizes

#### RANGE OVERVIEW:

- 0.4 mm (.016") to 6.3 mm (.25") radii
- Positive geometries for shoulder, face, copy and high feed milling
- Applicable to Turbo 10, Helical T4-08 and Highfeed cutters
- Square styles



#### YOUR SECO BENEFIT:

- Improved productivity
- Cost-effective performance
- Increased tool life
- Stable and reliable operations

For further information please see catalogue / Machining Navigator Milling pages 582-633 and 646-648.

# THREADING



## YOUR SECO BENEFIT:

- Higher clamping power
- Increased tool rigidity
- Less threading passes
- Faster tool set up
- Longer tool life
- Efficient cooling

For further information please see catalogue / Machining Navigator Thread Turning page 53.

## PRECISE INSERT LOCATING & HIGH RIGIDITY HIGHLIGHT NEW HOLDER

# THREAD CHASER HOLDER

Featuring a unique Seco design, the company's new thread chaser insert holder incorporates a special carbide-pin locating system combined with a patented pocket seat surface pattern and high-pressure direct coolant capability. Together, these systems give the holder precision and rigidity mandatory for machining tough materials such as the hard, gummy or high-chrome-content ones used in the oil & gas industry.

Working in unison with top and axial clamps, the holder's insert-positioning system uses two horizontally oriented pins located at specific distances from the bottom of the insert pocket. The exact points on the inserts where these pins make contact are the same points Seco works from when grinding the insert's threading profile.



The two-pin system ensures extremely precise insert positioning from insert to insert as well as plays a key role in the holder's increased rigidity. With more rigidity and support, the holder helps reduce the amount of required threading passes for generating a full thread profile.

The new toolholder's pocket seat surface features milled scallops that provide even more chaser insert support. When an insert is mounted in the pocket, the clamping force acts on the scallop pattern and work hardens the seat surface to a hardness of 54 HRc.

With high-chrome, tough-to-machine materials in mind, Seco also equipped the new chaser insert holder with high-pressure coolant directed at key cutting areas of the insert. Coolant enters the holder from the back end, travels through an insert cavity directly to the insert's chipformer and into the channels between each tooth. With a maximum output of 210 bar, the Seco holder delivers the industry's highest coolant pressures for thread chasing operations.

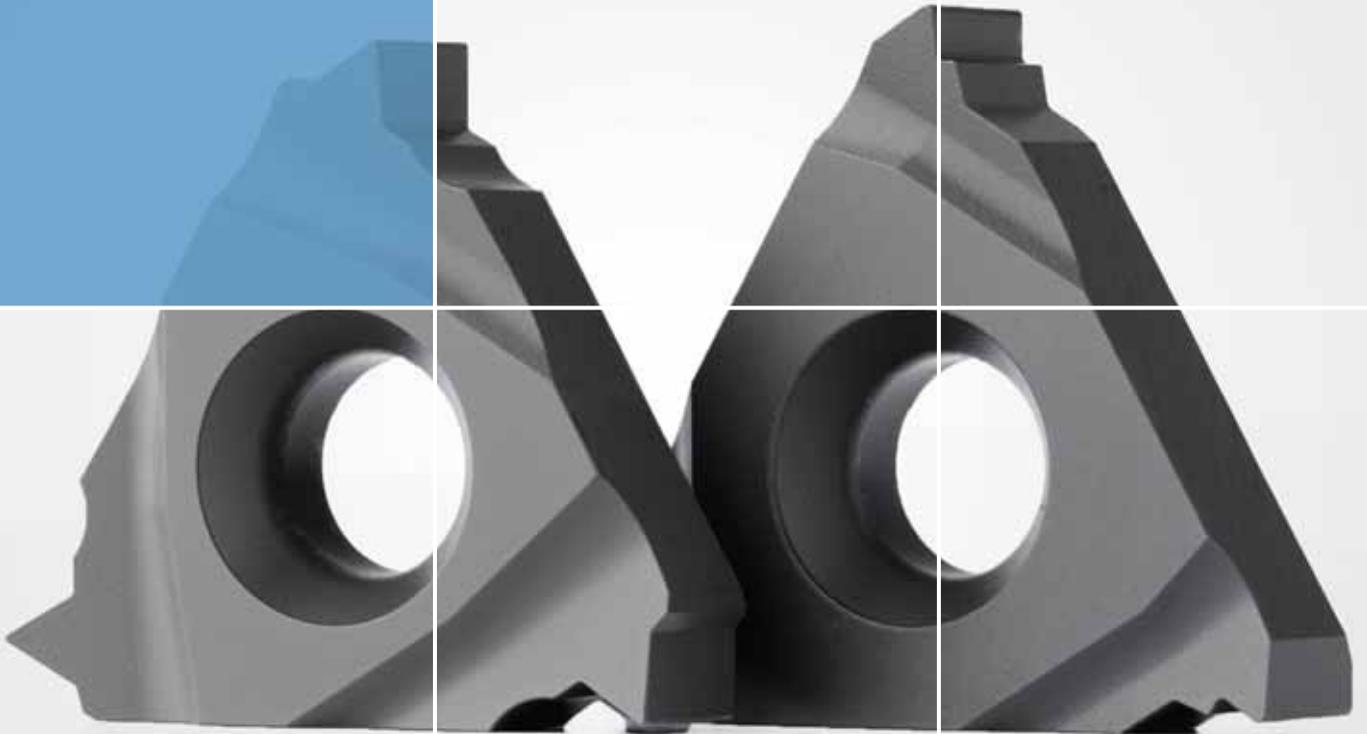
#### **PRODUCT OVERVIEW:**

- Both top and axial clamping
- Two cemented carbide locating pins
- Scalloped hardened insert pocket seat surface
- Advanced chipformer geometries
- 210-bar high-pressure direct coolant capability

#### **RANGE OVERVIEW:**

- P1 version for 15.875-mm-thick (.625") inserts
- P5 version for 25-mm-thick (.984") inserts
- Two chipformer sizes – M 3.97 mm (.156") and I 3.18 mm (.124")

# THREADING



## YOUR SECO BENEFIT:

- Superior wear resistance
- Highest level of built-up edge protection
- Longer tool life
- Higher productivity
- Smooth surface finishes
- Precision-ground threading profiles
- Cost-effective operation

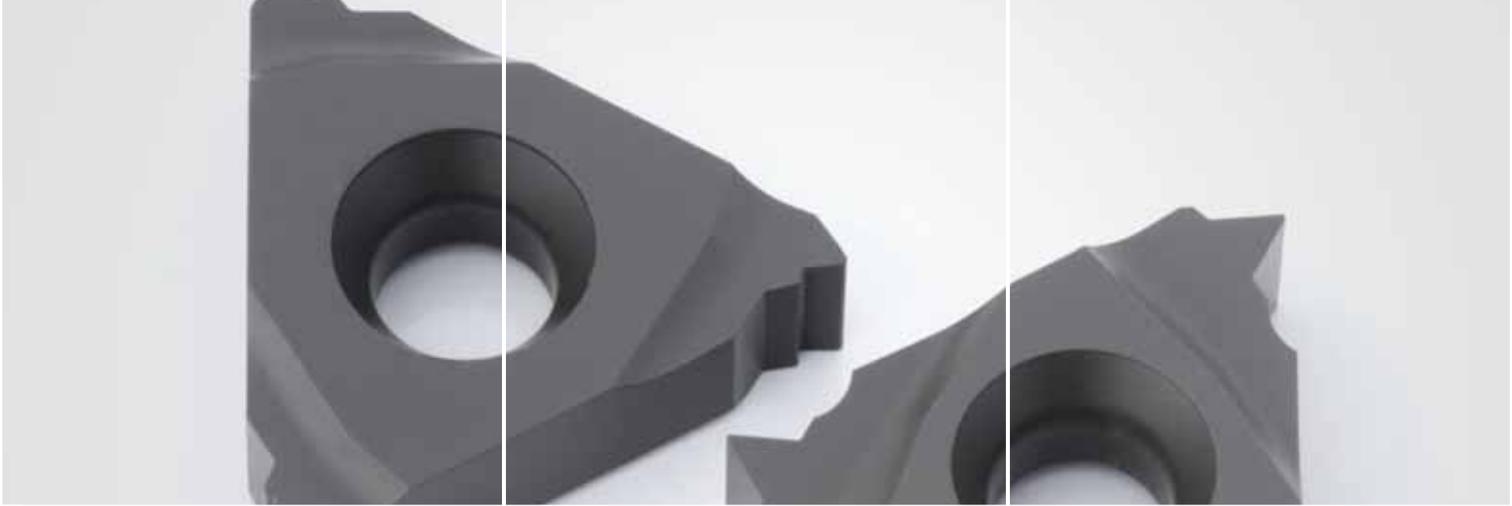
For further information please see catalogue / Machining Navigator Thread Turning pages 54-85.

## FIRST DURATOMIC® -COATED GRADE FOR THREADING INSERTS RESISTS WEAR & PREVENTS BUILT-UP EDGE

### TM4000

As an addition to its threading product range, Seco introduces its first Duratomic CVD-grade, single-point thread turning inserts. The new CVD-coated TM4000 grade threading inserts – designed primarily for steel applications – incorporate a special dual coating born from Seco's industry-proven existing turning insert coating technology.

The advanced coating provides superior wear resistance at higher cutting speeds and prevents built-up edge in lower-speed threading applications. As a result, TM4000 inserts deliver optimum tool life and boost thread-cutting speeds by as much as 15 percent as compared with Seco's previous threading line.



Limited machine spindle speeds, combined with materials with adhesive tendencies, can cause problems for threading operations – mainly built-up edges. Two key coating layers give the new TM4000 its protection against built-up edge in these scenarios.

The first layer is a CVD Ti(C, N), and the second is Seco's Al<sub>2</sub>O<sub>3</sub> Duratomic technology. The tool's substrate also delivers a balance between hardness and ductility, allowing it to handle high heat applications as well as withstand both thermal and mechanical shocks.

#### PRODUCT OVERVIEW:

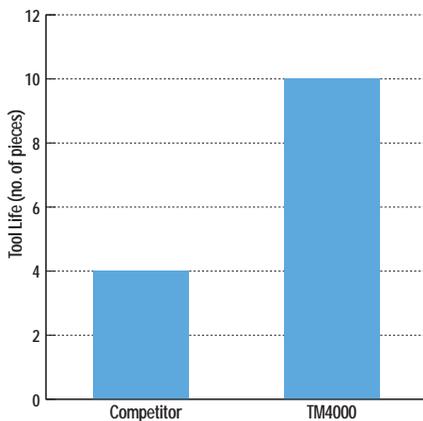
- Single-point insert design
- Both O.D. and I.D. threading
- Duratomic coating technology
- Optimised for steel
- Hard and ductile cemented carbide substrate
- Tough cutting edges
- Adaptable to both high and lower power machines

#### RANGE OVERVIEW:

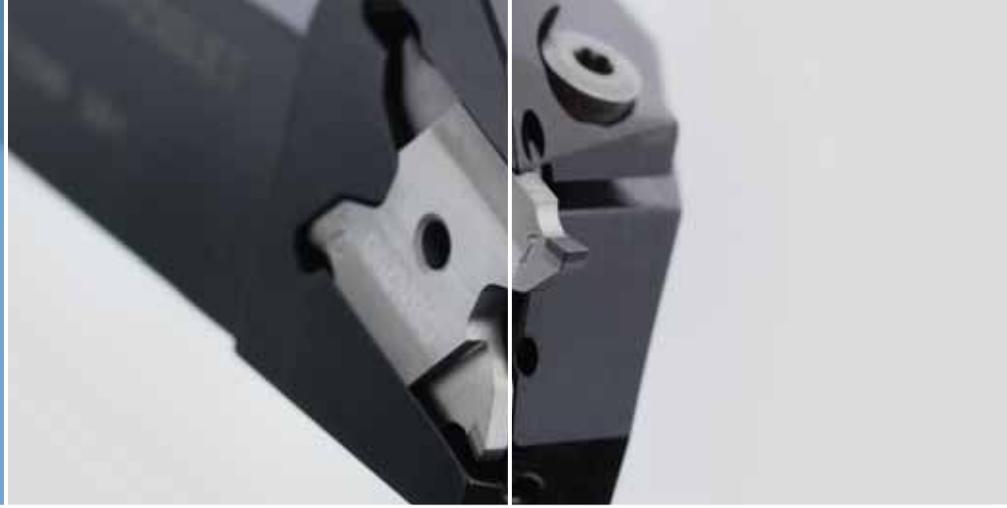
- Thread profiles: ISO, Unified, Whitworth, BSPT, NPT, Round thread, Trapeze thread, ACME, Stub ACME, API and API round
- Steel workpiece materials, also suitable for some stainless steels
- Available in Seco's Snap-Tap™ insert design

#### CASE STUDY:

Material: Steel 42 CrMo 4, SMG P5



# TURNING



## STABILITY & LONG TOOL LIFE IN HEAVY INTERRUPTED CUTS FOR CIRCLIP GROOVING

### X4 PCBN GROOVING

With the development of the X4 polycrystalline cubic boron nitride (PCBN) insert, Seco widens its carbide circlip-grooving insert product lineup. The new insert features a width size of 2.15 mm (ISO standard circlip/retaining clip size) and is specifically built for heavy interrupted/unstable cuts – as with splines – in hardened steels.

The insert's solid-carbide body structure provides the needed stability while it also increases tool life. Four cutting edges, as opposed to only one, make the X4 PCBN cost-effective, while the capability to also use the tool for 6TPI threading adds even more value. In testing, the tool outperformed similar existing products for unstable conditions and lasted up to three times longer.

#### YOUR SECO BENEFIT:

- Cost effective
- Long tool life
- High stability
- Reliability

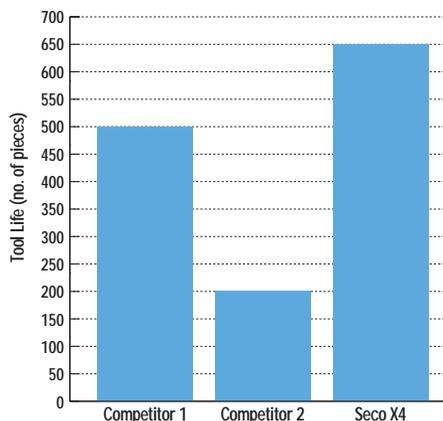
For further information please see catalogue / Machining Navigator Turning page 669.

#### PRODUCT OVERVIEW:

- CBN200
- Four PCBN cutting edges
- Geometry for heavy interrupted cuts

#### RANGE OVERVIEW:

- 2.15-mm thickness (ISO)
- Left and right hand versions





## AFFORDABILITY & VERSATILITY IN A NEW PCBN GRADE FOR ROUGHING CBN600

Seco has introduced the CBN600 PCBN insert grade for high-volume rough machining of grey cast irons and high chrome iron. The new universal line provides cost-effective performance, while complementing Seco's existing CBN300 and CBN500 premium grades for similar workpiece materials.

As a universal rough-turning grade, CBN600 withstands abrasive materials, heavy cutting forces and high levels of thermal shock.

### PRODUCT OVERVIEW:

- Built for rough turning grey cast iron and high chrome iron
- Solid CBN insert
- Compliment to CBN300 and CBN500 premium grades
- Thermal and force shock resistant for varying depths of cut conditions

### RANGE OVERVIEW:

- Nine standard products
- Round, rhombic and square styles
- Double sided

### YOUR SECO BENEFIT:

- Versatile universal grade
- Affordable performance

For further information please see catalogue / Machining Navigator Turning pages 400-430.

# TURNING



## EXPANSIONS BRING CUTTING SPEED & PRODUCTIVITY GAINS TO WIDER RANGE OF APPLICATIONS

### X4 EXPANSION

With new introductions including larger radii and TGH 1050 grade inserts, Seco is expanding the benefits of its short-reach grooving and parting-off X4 system to an even greater range of applications. Featuring a highly stable design that incorporates multi-edge, tangential inserts, X4 offers tremendous benefits in the areas of accuracy, security, productivity and surface quality.

#### NEW! ADDITIONAL RADII

The innovative, highly productive Seco X4 product range continues to grow with the addition of inserts that feature new corner radii sizes in response to customer demand. These new parting off and grooving inserts target those applications where customers require specific radii. With the larger radii options, customers can apply higher feeds while maintaining high quality surface finishes.

#### PRODUCT OVERVIEW:

- CP500 grade inserts
- New, bigger radii sizes
- Multi-edged, tangential inserts
- Applicable to toolholders with Jetstream Tooling™ Duo coolant technology

#### RANGE OVERVIEW:

- Eight large radii insert versions with widths from 1.5 mm - 3 mm with corner radii of 0.2 mm and 0.3 mm in addition to the current radii options of 0.1 mm and 0.15 mm (each with right- and left-hand versions)
- Two additional 1.5 mm angled inserts with smaller radii available

#### YOUR SECO BENEFIT:

- Minimised material consumption
- Precise grooving
- Longer tool life
- Rigidity and stability
- Increased productivity

For further information please see catalogue / Machining Navigator Turning pages 651-668.



### **NEW! TGH 1050 GRADE**

As the newest addition to the Seco X4 family of parting off and grooving products, the unique TGH 1050 grade features a very hard micro grain substrate and new coating for efficiently cutting hardened steels. The grade also complements Seco's existing CP500 and CP600 carbide insert grades and further broadens the application possibilities of the X4 range.

The new grade will benefit manufacturers in all industry segments, especially automotive. While the grade was designed for hardened materials, it is also well suited for machining superalloys/heat-resistant alloys often found in the aerospace and power generation industries. In testing, the TGH 1050 cut significantly faster and lasted much longer as compared with existing grades.

#### **PRODUCT OVERVIEW:**

- New hard TGH 1050 grade
- New PVD coating
- Multi-edged, tangential inserts
- Applicable to toolholders with Jetstream Tooling Duo coolant technology

#### **RANGE OVERVIEW:**

- 24 new inserts in widths of 0.5 mm - 3 mm in MC and FG geometries
- Right- and left-hand versions

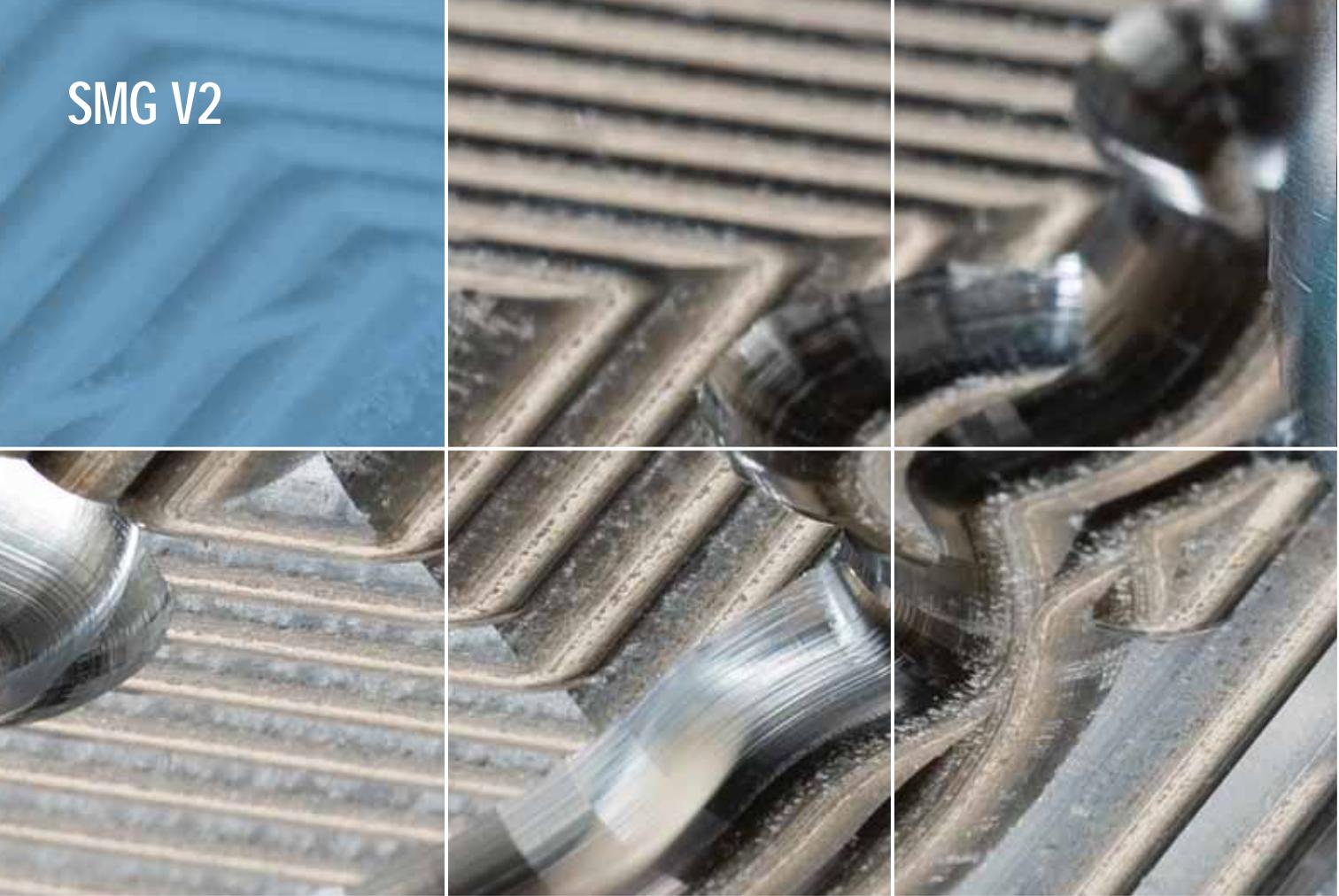


#### **YOUR SECO BENEFIT:**

- Extends benefits of X4 to hardened materials and superalloys
- Higher productivity
- Longer tool life
- Versatility
- Wider application range

For further information please see catalogue / Machining Navigator Turning pages 665-668.

# SMG V2



## YOUR SECO BENEFIT:

- Gain more accurate and precise metal cutting data
- Select the right tools and their proper cutting parameters per workpiece material for optimised machining operations
- Work with logical and readable classification charts in common formats used across all Seco cutting tools
- Easily access a wide range of workpiece materials listings supporting today's new advanced cutting tools
- Quickly classify individual workpiece materials into their appropriate groups to easily obtain cutting data

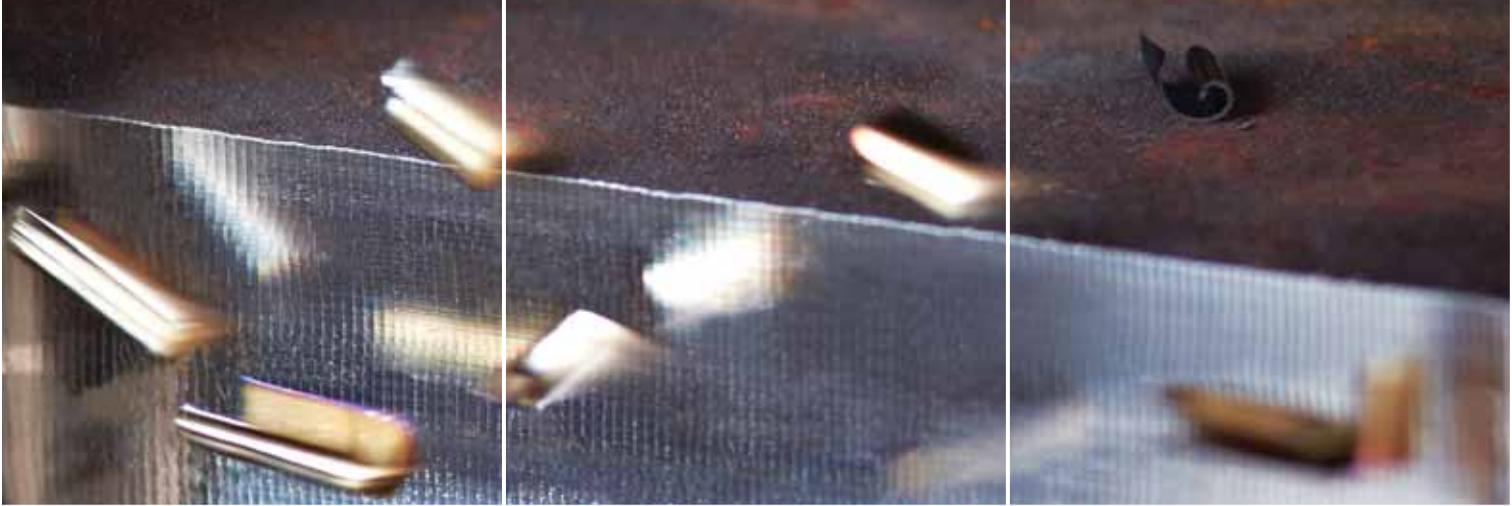
## COMPREHENSIVE AND CONCISE CUTTING DATA

# SMG V2

### NEW!

Seco has significantly expanded and simplified its SMG classification system for workpiece materials and their corresponding cutting data. Now known simply as SMG v2, the system originally derived its name from an abbreviation for Seco Materials Group. The updated system now supports advanced cutting tool materials as well as the latest ones used for today's workpieces, thus providing a quick, easy and valuable reference guide.

The SMG v2 presents its extensive materials coverage in a clear and logical structure, making the search for specific cutting data effortless. As a new and special data tool, the SMG v2 will prove the basis for successful optimisation of metalcutting operations and gains in productivity.

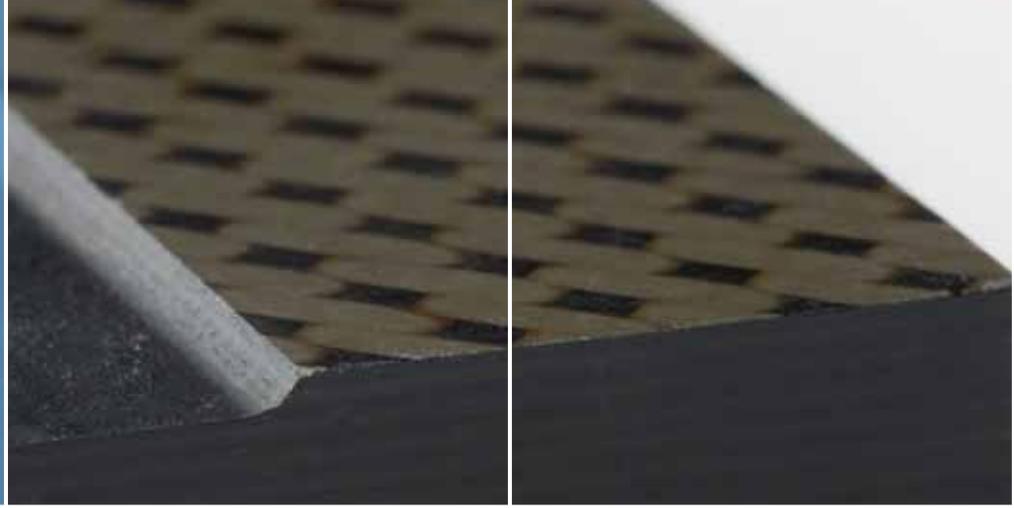


### **SMG V2 OVERVIEW**

- Created with the knowledge and expertise needed to understand complicated interactions between the cutting tool and workpiece in machining operations
- Simplified, understandable cutting-data chart format runs common across all Seco product catalogues
- Precise workpiece material categorisation based on types, capabilities and characteristics rather than relative levels of machinability
- New data display format makes charts applicable to all tool types and includes cutting tool recommendations
- Information contained in SMG v2 is applied consistently across all Seco support materials

### **RANGE OF MATERIALS INCLUDED**

- Expanded coverage encompasses advanced tool materials such as PCBN, PCD and ceramics
- Wider range of workpiece material classifications for steels, cast irons, non-ferrous, super alloys, titaniums and other hard / difficult materials, as well as plastics, composites and graphite
- Color-coordinated groups indicate ISO classification and fine-tuned SMG subsections
- Comprehensive cross-reference list indicates where a material may appear in different SMG groups due to how the material has been processed – e.g. annealed, quenched and tempered for through hardening, etc.
- Each SMG category includes details on a reference material that the user can refer to in order to determine whether the cutting data should be adapted for their specific application



## ISO-STANDARD MATERIALS

### STEELS, FERRITIC AND MARTENSITIC STAINLESS STEELS

SMG	Description	Reference
P1	Free-cutting steels	11 SMn30 $R_m = 385 \text{ N/mm}^2$
P2	Low-alloy ferritic steels, $C < 0.25\% \text{wt}$ Low-alloy weldable general structural steels	S235JRG2 $R_m = 420 \text{ N/mm}^2$
P3	Ferritic & ferritic / pearlitic steels, $C < 0.25\% \text{wt}$ Weldable general structural steels Case-hardening steels	16 MnCr 5 $R_m = 550 \text{ N/mm}^2$
P4	Low-alloy general structural steels, $0.25\% < C < 0.67\% \text{wt}$ Low-alloy Quench & Temper steels	C 45E $R_m = 660 \text{ N/mm}^2$
P5	Structural steels, $0.25\% < C < 0.67\% \text{wt}$ Quench & Temper steels	42 CrMo 4 $R_m = 700 \text{ N/mm}^2$
P6	Low-alloy through-hardening steels, $C > 0.67\% \text{wt}$ Low-alloy spring and bearing steels	C 100S $R_m = 600 \text{ N/mm}^2$
P7	Through-hardening steels, $C > 0.67\% \text{wt}$ Spring and bearing steels	100 Cr 6 $R_m = 650 \text{ N/mm}^2$
P8	Tool steels High Speed Steels (HSS)	X 40 CrMoV 5 1 $R_m = 700 \text{ N/mm}^2$
P11	Ferritic & martensitic stainless steels	X 20 Cr 13 $R_m = 675 \text{ N/mm}^2$

### AUSTENITIC AND DUPLEX STAINLESS STEELS

SMG	Description	Reference
M1	Free-cutting austenitic stainless steels	X 10 CrNiS 18 9
M2	Low-alloy austenitic stainless steels	X 5 CrNi 18 9
M3	Medium-alloy austenitic stainless steels	X 2 CrNiMo 18 14 3
M4	High-alloy austenitic and duplex stainless steels	X 2 CrNiMoN 22 5 3
M5	Difficult high-alloy austenitic and duplex stainless steels	X 2 CrNiMoN 25 7 4

### CAST IRONS

SMG	Description	Reference
K1	Grey cast irons (GCI)	EN-GJL-250
K2	Compacted graphite irons (CGI)	EN-GJV-400
K3	Malleable cast irons (MCI)	EN-GJMB-550-4
K4	Nodular cast irons (SGI)	EN-GJS-500-7
K5	Austempered ductile irons (ADI)	EN-GJS-1000-5
K6	Austenitic lamellar cast irons	EN-GJLA-XNiCuCr15-6-2
K7	Austenitic nodular cast irons	EN-GJSA-XNiMn23-4

### NON-FERROUS METALS

SMG	Description	Reference
N1	Aluminium alloys, $\text{Si} < 9\%$	AW-7075
N2	Aluminium alloys, $9\% < \text{Si} < 16\%$	AC-44200 $\text{Si} = 12\%$
N3	Aluminium alloys, $\text{Si} > 16\%$	AlSi17Cu5
N11	Copper alloys	CW614N

### SUPERALLOYS AND TITANIUM

SMG	Description	Reference
S1	Iron-based superalloys	Disalloy
S2	Cobalt-based superalloys	Stellite 21
S3	Nickel-based superalloys	Inconel 718
S11	Titanium, low alloyed, ( $\alpha$ )	Ti
S12	Titanium, medium alloyed, ( $\alpha + \beta$ )	TiAl6V4
S13	Titanium, high alloyed (near $\beta$ and $\beta$ )	Ti10V2Fe3Al

### HARD MATERIALS

SMG	Description	Reference
H3	Case-hardened steels	16 MnCr 5 60 HRC
H5	Quenched & Tempered steels	42 CrMo 4 50 HRC
H7	Quenched & Tempered steels Bearing steels	100 Cr 6 60 HRC
H8	Tool steels High Speed Steels	X 40 CrMoV 5 1 50 HRC
H11	Martensitic stainless steels	X 20 Cr 13 45 HRC
H12	Precipitation-hardened stainless steels	X 5 CrNiCuNb 16 4 35 HRC
H21	Manganese steels	X 120 Mn 12 50 HRC
H31	White cast irons	EN-GJN-HV600(XCr11) 55 HRC

# NON-ISO-STANDARD MATERIALS

## OTHER DIFFICULT MATERIALS

SMG	Description	Reference
PM1	Low-alloy PM materials	F-0008 Fe-0.7C
PM2	Medium-alloy PM materials	FLC-4608 Fe2Cu1.8Ni0.5Mo0.2Mn0.8C
PM3	High-alloy PM materials	
HF1	Hardfacing alloys, welded or plasma-deposited iron-based alloys	
HF2	Hardfacing alloys, welded or plasma-deposited cobalt- and nickel-based alloys	
CC1	Sintered tungsten carbide	G50

## PLASTICS AND COMPOSITES

SMG	Description	Reference
TS1	Thermosetting polymers	Urea formaldehyde (UF)
TS2	Thermosetting carbon-fibre composites	T300 T700 T800 HTA-S IMA - Epoxy (M21)...
TS3	Thermosetting glass-fibre composites	Epoxy - HX..(42..)/Eglass (7781...)...
TS4	Thermosetting aramide-fibre composites	Kevlar 49
TP1	Thermoplastic polymers	Polycarbonate (PC)
TP2	Thermoplastic carbon-fibre composites	PPS/PEEK - T300...
TP3	Thermoplastic glass-fibre composites	PPS/PEEK - E glass or A glass...
TP4	Thermoplastic aramide-fibre composites	

## GRAPHITE

SMG	Description	Reference
GR1	Graphite	R 8500

# ISO-P AND ISO-H MATERIALS

SMG	Description	Properties	Reference	SMG	Description	Properties	Reference
P2	Low-alloy ferritic steels, C < 0.25%wt Low-alloy weldable general structural steels	$320 < R_m < 600$	S235JRG2 $R_m = 420 \text{ N/mm}^2$	H3	Case-hardened steels	$58 < \text{HRC} < 62$	16 MnCr 5 60 HRC
P3	Ferritic & ferritic / pearlitic steels, C < 0.25%wt Weldable general structural steels Case-hardening steels	$430 < R_m < 610$	16 MnCr 5 $R_m = 550 \text{ N/mm}^2$				
P4	Low-alloy general structural steels, $0.25\% < C < 0.67\% \text{wt}$ Low-alloy Quench & Temper steels	$520 < R_m < 1200$	C 45E $R_m = 660 \text{ N/mm}^2$	H5	Quenched & Tempered steels	$38 < \text{HRC} < 56$	42 CrMo 4 50 HRC
P5	Structural steels, $0.25\% < C < 0.67\% \text{wt}$ Quench & Temper steels	$550 < R_m < 1200$	42 CrMo 4 $R_m = 700 \text{ N/mm}^2$				
P6	Low-alloy through-hardening steels, C > 0.67%wt Low-alloy spring and bearing steels	$520 < R_m < 1200$	C 100S $R_m = 600 \text{ N/mm}^2$	H7	Quenched & Tempered steels Bearing steels	$56 < \text{HRC} < 64$	100 Cr 6 60 HRC
P7	Through-hardening steels, C > 0.67%wt Spring and bearing steels	$600 < R_m < 1200$	100 Cr 6 $R_m = 650 \text{ N/mm}^2$				
P8	Tool steels High Speed Steels (HSS)	$600 < R_m < 1200$	X 40 CrMoV 5 1 $R_m = 700 \text{ N/mm}^2$	H8	Tool steels High Speed Steels	$38 < \text{HRC} < 64$	X 40 CrMoV 5 1 50 HRC
P11	Ferritic & martensitic stainless steels	$415 < R_m < 1200$	X 20 Cr 13 $R_m = 675 \text{ N/mm}^2$	H11	Martensitic stainless steels	$38 < \text{HRC} < 50$	X 20 Cr 13 45 HRC



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