



C O L O U R B A N D R A N G E

# INTRODUCTION

SOMTA Colour Band Application range of drills and taps is specially designed to optimize your machining performances. The need for greater productivity from expensive high-performance machine tools and the demand for the cutting tools to perform at optimum efficiency to minimize machine down-time, together with the demands for improved quality of machined components can be met with this range of Colour Band cutting tools. The geometry has been specifically designed for each material group to improve quality of finish and increase the tool performance.

## Product Types:

The CBA family consists of five "Colour Band Application" ranges of drill and tap combinations. Each range has been designed with different cutting geometries and surface treatments to ensure optimum tool performance for each specific material category. Each range of materials group has its own drill and tap combination, and taps are available in both Spiral Point and Spiral Flute to suit the individual requirement.



C O L O U R   B A N D   R A N G E

# Carbon Steel

## Green Band

The machinability of different steels is just as varied as their properties. Soft-tough construction steels place completely different demands on the tools, and the green band combination of taps and drills has been perfected for this range of steels.

### GREEN BAND TAP CHARACTERISTICS

- MSSE - Vanadium content for toughness
- Thread and flute configuration design for free cutting and structural steels in the general purpose range of medium tensile strengths.

### GREEN BAND CHARACTERISTICS (FOR BOTH TAP AND DRILL)

- Material Properties - Used to machine materials with hardness up to 250HB, tensile strength up to 900N/mm<sup>2</sup>.
- Surface Finish - TiN Coating increases surface hardness to 85Rc, with excellent resistance to abrasion and cold welding.

### GREEN BAND DRILL CHARACTERISTICS

- FLUTE - 33° helix, open profile designed with reinforced web for high rigidity under extreme conditions.
- POINT - The 130° SPLIT POINT provides self centering and easier penetration



Drilling based on Jobber drill lengths  
For deep hole drilling reduce speeds by

3 x Drill diameter	10%
4 x Drill diameter	20%
5 x Drill diameter	30%
More than 6 x Drill diameter	40%

## GENERAL MACHINING GUIDE

Tool Material	HARDNESS		TAPPING		DRILLING								
			Cutting speed	Cutting speed	Feed Rate for Diameters								
					Metres/min	Metres/min	3mm	5mm	6mm	8mm	10mm	12mm	16mm
MACHINED MATERIALS	Brinell	N/mm <sup>2</sup>											
<b>CARBON ALLOY STEELS</b>													
Free Cutting Mild Steel	<120	420N/mm <sup>2</sup>	20-45	40-50	0.120	0.150	0.170	0.220	0.260	0.280	0.320	0.360	
Low Carbon Steel	<200	758N/mm <sup>2</sup>	18-40	30-40	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280	
Medium Carbon Steel	<250	861N/mm <sup>2</sup>	14-25	25-35	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210	

**SOMTA** PRODUCT CODES: **TAPS:** 561, 562, 563, 566, 567, 568 **DRILLS:** 1G7

# Cast Iron White Band

Having damping and thermal conductivity, with high strength and resistance to wear characteristics, Cast Iron is a material that is used extensively for mass produced components which all require machining. The SOMTA white band range of taps and drills has been designed to suit this demand.

#### WHITE BAND TAP CHARACTERISTICS

- Material Types - Designed for highly abrasive materials such as Cast Iron and reinforced plastics.
- Flutes - Increased number of flutes reduces torque and increases tap life.

#### WHITE BAND CHARACTERISTICS (FOR BOTH TAP AND DRILL)

- Material Parameters - Used to tap materials with hardness up to 300HB, tensile strength up to 1000N/mm<sup>2</sup>.
- Surface Finish - TiAlN coating increases the surface hardness of the tool to around 87Rc with an excellent hot hardness working temperature and high oxidation temperature making it suitable for dry machining.

#### WHITE BAND DRILL CHARACTERISTICS

- FLUTE - Slow helix, parabolic flute designed with reinforced web for high rigidity under extreme conditions.
- POINT - The double angled "DX" point, 118° / 70° minimizes wear on the outer corners of the drill point in highly abrasive materials such as Cast Iron and Reinforced Plastics. The point is web thinned for easier penetration



Drilling based on Jobber drill lengths  
For deep hole drilling reduce speeds by

3 x Drill diameter	10%
4 x Drill diameter	20%
5 x Drill diameter	30%
More than 6 x Drill diameter	40%

## GENERAL MACHINING GUIDE

Tool Material			TAPPING		DRILLING							
MACHINED MATERIALS	HARDNESS Brinell	HARDNESS N/mm <sup>2</sup>	Cutting speed	Cutting speed	Feed Rate for Diameters							
			Metres/min	Metres/min	3mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm
<b>CAST IRONS</b>												
Plain Grey Irons	<150	541N/mm <sup>2</sup>	16-30	35-45	0.120	0.150	0.170	0.220	0.260	0.280	0.320	0.360
Plan 'SG' Iron	<250	861N/mm <sup>2</sup>	12-20	23-35	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
Alloy 'SG' Iron Nickel Hard	>250	861N/mm <sup>2</sup>	07-14	15-28	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210

**SOMTA** PRODUCT CODES: **TAPS: 578, 579 DRILLS: IW6**

# Aluminium

## Yellow Band

The alloying elements which achieve varying Aluminium Alloys have an effect on the machining properties of these materials. This generally creates a difficult chip formation and material which has tendencies to stick to the tool, placing very different demands on the tool. The yellow band contends with these machining difficulties.

### YELLOW BAND TAP CHARACTERISTICS

- Flute and Thread designed for more ductile materials such as Aluminium, Magnesium Alloys, Soft Brass (MS58), Plastic, Zinc Alloys and Copper.
- Flutes - Wide flutes allow more efficient swarf removal which prevents clogging and torque build-up.
- Rake Angle - High rake angle improves shear characteristic and reduces build-up on the cutting edge, allowing tap to cut more freely for longer periods.

### YELLOW BAND CHARACTERISTICS (FOR BOTH TAP AND DRILL)

- Surface Finish - Bright as ground condition which is the most suitable finish for this ductile range of products.
- Material Properties - Used to tap materials with hardness up to 200HB, tensile strength up to 700N/mm<sup>2</sup>.

### YELLOW BAND DRILL CHARACTERISTICS

- FLUTE - 35° helix, open profile designed for efficient swarf evacuation.
- POINT - The notched point reduces end thrust and optimizes centre cutting efficiency with chisel strength



Drilling based on Jobber drill lengths  
For deep hole drilling reduce speeds by

3 x Drill diameter	10%
4 x Drill diameter	20%
5 x Drill diameter	30%
More than 6 x Drill diameter	40%

## GENERAL MACHINING GUIDE

Tool Material			TAPPING		DRILLING							
	MACHINED MATERIALS	HARDNESS	Cutting speed Metres/min	Cutting speed Metres/min	Feed Rate for Diameters							
		Brinell			HARDNESS N/mm <sup>2</sup>	3mm	5mm	6mm	8mm	10mm	12mm	16mm
<b>ALUMINIUM ALLOYS</b>												
Wrought & Extruded	< 150	541N/mm <sup>2</sup>	30-55	50-60	0.120	0.150	0.170	0.220	0.260	0.280	0.320	0.360
Wrought & Treated	> 150	541N/mm <sup>2</sup>	27-50	35-50	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
"Cast, Low Silicon <5%"	< 150	541N/mm <sup>2</sup>	20-35	30-40	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
"Cast, High Silicon >10%"	> 150	541N/mm <sup>2</sup>	15-30	23-35	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
<b>COPPER</b>												
Pure Copper	<100	-	15-30	35-55	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
"Brass, Soft"	<200	717N/mm <sup>2</sup>	40-50	40-50	0.150	0.190	0.210	0.280	0.330	0.350	0.400	0.450
"Brass, Bronze"	>200	717N/mm <sup>2</sup>	30-50	35-45	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280

# Tough Treatable Steel

## Red Band

The mechanical properties of materials are influenced diversely by the addition of alloying elements and heat treatment processes, resulting in some high-strength, quenched and tempered steels or hardened steels. This range has its own unique set of machining requirements which are satisfied by the red band range of drills and taps.

### RED BAND TAP CHARACTERISTICS

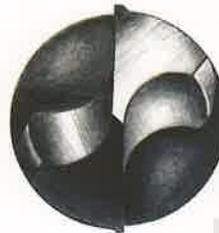
- HSSE - Vanadium content for toughness
- Thread and flute configuration designed for high tensile materials such as Tool Steels, Heat Treatable Steels, Spring Steel, Case Hardening Steel, Unalloyed Titanium, Nitriding Steel, Cold Drawn Constructional Steel and High Tensile Steel.

### RED BAND CHARACTERISTICS (FOR BOTH TAP AND DRILL)

- Material Properties - Used to machine materials with hardness up to 470HB, tensile strength up to 1500N/mm<sup>2</sup>.
- Surface Finish - TiAIN coating increases surface hardness of the tool to around 87Rc with an excellent hot hardness working temperature and high oxidation temperature making it suitable for dry machining.

### RED BAND DRILL CHARACTERISTICS

- FLUTE - Slow helix, parabolic flute designed with reinforced web for high rigidity under extreme conditions.
- POINT- The 130° special notched "UX" point style provides self centering, easier penetration, improved hole accuracy and improved load distribution. This special notch geometry gives a corrected rake angle of 15° which provides a strong point for harder materials, as well as preventing snatching with materials such as Aluminium, Brass, Bronze and Plastics



Drilling based on Jobber drill lengths  
For deep hole drilling reduce speeds by

3 x Drill diameter	10%
4 x Drill diameter	20%
5 x Drill diameter	30%
More than 6 x Drill diameter	40%

## GENERAL MACHINING GUIDE

Tool Material	HARDNESS		TAPPING		DRILLING								
			Cutting speed	Cutting speed	Feed Rate for Diameters								
					Metres/min	Metres/min	3mm	5mm	6mm	8mm	10mm	12mm	16mm
<b>MACHINED MATERIALS</b>	<b>HARDNESS</b>	<b>HARDNESS</b>											
	<b>Brinell</b>	<b>N/mm<sup>2</sup></b>											
<b>COPPER</b>													
High Tensile Bronze	<350	1144N/mm <sup>2</sup>	12-28	15-28	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210	
<b>CARBON ALLOY STEELS</b>													
Low Alloy Steel	>250	861N/mm <sup>2</sup>	12-20	25-30	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210	
"Alloyed, Heat Treated"	>300	971N/mm <sup>2</sup>	07-15	15-20	0.045	0.060	0.065	0.070	0.100	0.110	0.130	0.160	
"Alloyed, Heat Treated"	>350	1144N/mm <sup>2</sup>	05-09	10-15	0.045	0.060	0.065	0.070	0.100	0.110	0.130	0.160	
<b>NICKEL</b>													
"Nickel, Nimonic 75"	>300	971N/mm <sup>2</sup>	04-12	06-10	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210	
"Nickel, Inconel 718 Alloy"	<350	1144N/mm <sup>2</sup>	03-07	04-08	0.045	0.060	0.065	0.070	0.100	0.110	0.130	0.160	

**SOMTA** PRODUCT CODES: TAPS: 540, 550, 564, 576 DRILLS: IR5

# Stainless Steel

## Blue band

Stainless steels are used extensively for components and products that demand corrosion resistance and long life. The machining of stainless steels is difficult due to its work hardening properties, toughness and poor thermal conductivity, which places high demands on the cutting tools. The Blue band has been specifically adapted to suit these difficult machining requirements.

### BLUE BAND TAP CHARACTERISTICS

- Thread and flute configuration designed for tough materials, such as Stainless Steel, Titanium Alloys, Cast Steel, Heat Resisting Steel and Work Hardening Steel.
- HSSE - Vanadium content for toughness
- Truncated Thread - Truncated thread after lead reduces frictional contact with the threaded hole and allows easier penetration of coolant.

### BLUE BAND CHARACTERISTICS (FOR BOTH TAP AND DRILL)

- Material Properties - Used to tap materials with hardness up to 350HB, tensile strength up to 1250N/mm<sup>2</sup>.
- Surface Finish - TiAlN coating increases surface hardness of the tool to around 87Rc with an excellent hot hardness working temperature and high oxidation temperature making it suitable for dry machining.

### BLUE BAND DRILL CHARACTERISTICS

- FLUTE - Refined flute profile with high helix for enhanced chip removal
- POINT - Specifically developed MULTIFACET POINT for higher load carrying capacity and enhancing feed rates in the machining of difficult materials.



Drilling based on Jobber drill lengths  
For deep hole drilling reduce speeds by

3 x Drill diameter	10%
4 x Drill diameter	20%
5 x Drill diameter	30%
More than 6 x Drill diameter	40%

## GENERAL MACHINING GUIDE

MACHINED MATERIALS	HARDNESS Brinell	HARDNESS N/mm <sup>2</sup>	TAPPING		DRILLING							
			Cutting speed	Cutting speed	Feed Rate for Diameters							
			Metres/min	Metres/min	3mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm
<b>STAINLESS STEELS</b>												
Free Cutting	<250	861N/mm <sup>2</sup>	12-20	12-22	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
Austenitic	<250	861N/mm <sup>2</sup>	08-16	10-15	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280
"Martensitic, Ferritic"	>300	971N/mm <sup>2</sup>	07-10	12-18	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
<b>TITANIUM</b>												
"Pure Titanium, unalloyed"	<200	758N/mm <sup>2</sup>	10-16	20-32	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
Titanium Alloys	>300	971N/mm <sup>2</sup>	05-10	06-12	0.062	0.080	0.095	0.120	0.140	0.150	0.160	0.210
<b>NICKEL</b>												
"Pure Nickel, Unalloyed"	<300	971N/mm <sup>2</sup>	09-15	10-15	0.085	0.110	0.120	0.160	0.190	0.200	0.240	0.280



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