HSS Circular Saw Blades

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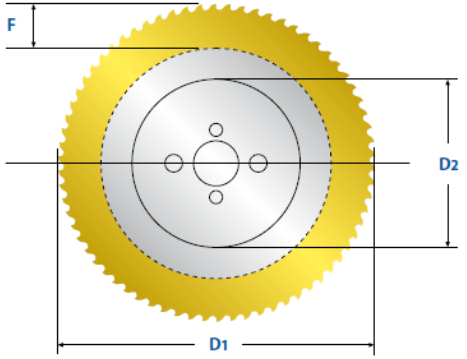
About us

MECHELEC manufactures the largest range of HSS Saws and Knives designed for long-period cutting for diverse applications in various industries. From the very beginning, our efforts have been directed towards producing nothing but the very best. No methods provided by Modern Scientific and Engineering Research have been neglected. Besides using the best imported material, MECHELEC gives great importance to correct heat treatment in the manufacture of Saws and Knives. The PVD coating provided delivers 3 to 10 times longer tool life.

Correct and constant heat treatment is fundamental in order to fully utilize the metallurgical and technological features of high-speed steels and emphasize all their technical features. Mechelec HSS saw blades are heat treated in salt bath to achieve best results.



- MECHELEC Knives give 30% more life
- MECHELEC Knives are the best in the country
- MECHELEC Knives are made out of best material
- MECHELEC Knives are as good as the best in the world
- MECHELEC Knives are specially treated for extra wear resistance
- MECHELEC Knives are guaranteed against defective material and workmanship

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Standard MECHELEC HSS saw blades are supplied in high speed steel grade M2 = DIN 1.3343, and can also be made available in cobalt-alloyed steel grades, such as M35 = DIN 1.3243 Diameters vary from 150 to 500 mm in various tooth forms.

MECHELEC **HSS circular saw blades** are primarily designed for cutting pipes, sections, solid ferrous materials and also to a less significant extent non-ferrous materials. MECHELEC can supply HSS saw blades as bright-finished (with no surface treatment) or as steam-treated (**Vapo**).

Alternatively a range of PVD (Physical Vapour Deposition) cutting blades can also be supplied with the following coatings:

TiN - Titanium Nitride; a good all round coating which allows saw cutting at much higher speeds than with HSS Steam Treated saw blades and are recommended for cutting steel tubes and profiles

TiALN - Titanium Aluminium Nitride; provides better protection against higher temperatures than a TiN coating. Recommended for cutting applications on which fast cutting speeds or very hard materials cause higher temperatures.

TiCN - Titanium Carbon Nitride; has a very low friction coefficient, extending the cutting blade life in steel tube cutting applications. Suitable for cutting all steel types including stainless steel.

M2 / DIN 1.3343 Chemical Composition %									
C	Si	Mn	P	S	Co	Cr	Mo	V	W
0.86 - 0.94	<=0.45	<=0.4	<=0.03	<=0.03	0	3.80 - 4.50	4.70 - 5.20	1.70 - 2.00	6.00 - 6.70

M35 / DIN 1.3243 Chemical Composition %									
C	Si	Mn	P	S	Co	Cr	Mo	V	W
0.88 - 0.96	<=0.45	<=0.4	<=0.030	<=0.030	4.5 - 5.00	3.80 - 4.50	4.70 - 5.20	1.70 - 2.00	6.00 - 6.70

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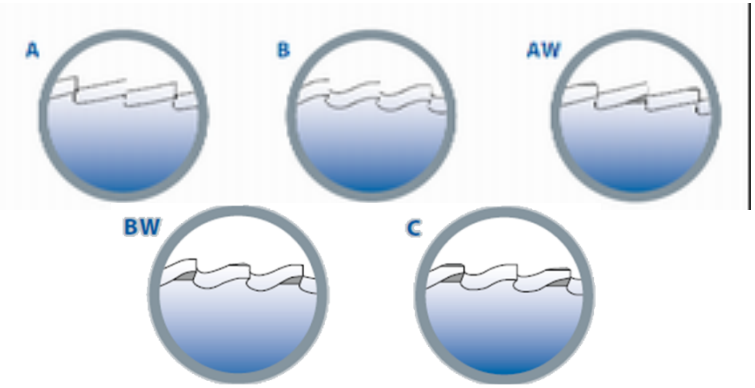
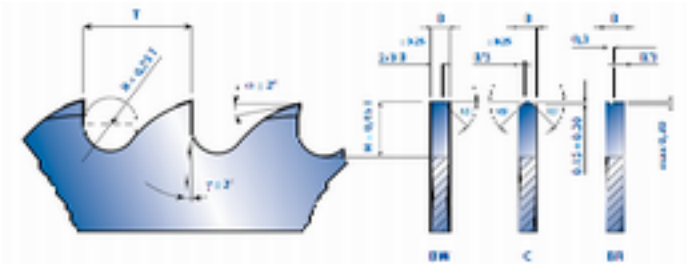
MECHELEC HSS circular saws are generally available in BW tooth form. Other tooth form can be provided on request.





Tooth shape A is normally used on fine toothing (<T3) for applications such as brass alloy cutting, jewellery and screw slotting.

Tooth shape AW, unlike type A, is alternately beveled, thus optimizing chip shredding. It is particularly suitable for precision cutting.

Tooth shape B is normally used for thin-walled pipes and the cutting of structural shapes, especially where chip removal is not an issue.

Tooth shape BW is primarily used for cutting pipes and sections. The tooth is alternately beveled at 45°, breaks the chip in two and guarantees good chip evacuation.

Tooth shape C is used for solid sections or very thick pipes. The chip is shredded into three parts due to the presence of both a finishing tooth without chamfer and a pre-cutting tooth (longer than 0.25 mm) with two chamfers on each side.

The circular saw blades are manufactured with the following standard angles:	HSS - Dmo5	HSS - Co5
	$\gamma = 18^{o} \pm 2^{o}$	$\gamma = 12^{o} \pm 2^{o}$
	$\alpha = 10^{o} \pm 2^{o}$	$\alpha = 8^{o} \pm 2^{o}$

Tooth choice and the correct cutting angle are the keys to obtaining the best results from saw blades: this choice depends on

- the material
- the section that needs to be cut

B	Sawblade Thickness
T	Tooth pitch
H	Tooth height
R	Gullet diameter
Γ	Rake angle
A	Relief angle
S	Thickness of piece

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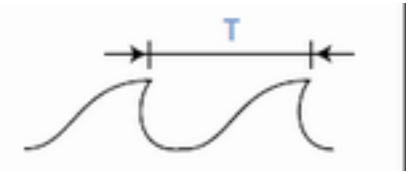
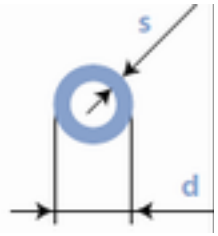
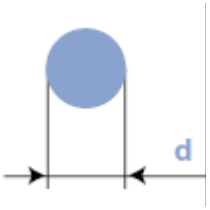
TOOTH PITCH: Once the material and the section to be cut have been identified, the pitch must be chosen. The correct pitch will prevent dangerous vibration and guarantee correct chip evacuation. The following data are approximate.







Solid Bar		
	Avz < 0.08 mm/Z	Avz > 0.08 mm/Z
d	T	T
≤ 20mm	5.5	
≤ 30mm	7	
≤ 40mm	8	
≤ 50mm	9	
≤ 60mm	10	12
≤ 70mm	11	12
≤ 80mm	12	14
≤ 90mm	12	14
≤ 100mm	14	16
≤ 120mm	14	16
≤ 140mm	14	18

Pipe and Structural Shapes				
O Avz = 0.05 to 0.08 mm/Z				
d	s	T	s	T
≤ 20mm	≤ 1mm	3	> 1mm	4
≤ 30mm	≤ 1.5mm	5	> 1.5mm	5.5
≤ 40mm	≤ 2mm	6	> 2mm	7
≤ 50mm	≤ 4mm	6	> 4mm	7
≤ 60mm	≤ 4mm	7	> 4mm	8
≤ 70mm	≤ 3mm	7	> 3mm	8
≤ 80mm	≤ 4mm	8	> 4mm	10
≤ 90mm	≤ 4mm	8	> 4mm	10
≤ 100mm	≤ 7mm	10	> 7mm	12
≤ 120mm	≤ 5mm	10	> 5mm	12
≤ 140mm	≤ 4mm	10	> 4mm	12

In order to choose the right number of teeth, it is important to consider the section that needs to be cut and the material. The pitch is correct when the teeth to section ratio is at least 1:3 for solid bars and 1:1 for pipes and structural shapes.

Solutions To Frequently Faced Problems

Problem	Cause	Solution
Clogged tooth gullet	Pitch too low	Reduce number of teeth
Poor quality of the cut surface	Wrong tooth form	Contact our technicians
	Wrong cutting parameters	Verify cutting parameters on the chart
Poor cutting performance	Cutting speed too high	Reduce the number of revolutions
	Insufficient lubrication	Increase pressure and flow rate of the coolant
	Wrong feed rate per tooth	Verify feed rate with charts
	Wrong cutting angles	Verify cutting angles
Filling material at the tip of the tooth	Poor sharpening	Verify sharpening quality
	Vibration during cutting	Verify stability of piece
Filling material on the sides of the tooth	Insufficient lubrication	Verify flow rate of coolant
	Excessive disc side run-out	Use reduced side run-out sawblades
Blade breakage during cutting	High working parameters	Verify parameters with the charts
	Poor clamping of the piece being cut	Verify the quality and strength of clamp
	Unsteady feed rate	Verify feeding system of the cut-off machine
	Wrong pitch	Verify parameters against the charts
Burn marks on the piece being cut	Worn saw blade	Blade must be resharpened
	Insufficient lubrication	Increase coolant flow / Check concentration

Number of teeth and tooth pitches (T in mm)

Diameter mm	T 3	T 4	T 5	T 6	T 7	T 8	T 9	T 10	T 11	T 12	T 14	T 16	T 18
175	180	140	110	90		64							
200	200	160	130	100		72							
210	210	160	130	110		84							
225	220	180	150	120		90	80						
250	240	200	160	128	110	100		80		64			
275	280	220	180	144	120	110	96	84	78	72			
300	320	240	200	160	140	120	110	100	90	80			
315	320	250	200	160	140	120	110	100	90	80	72		
325	320	250	200	170	160	128	110	100		90			
350	350	280	220	180	160	140	120	110		90	80		
370		310	220	190	160	140	120	110	100	90	80	70	
400		320	250	200	180	160	140	128		100	90	80	70
425		350	260	220	180	160	140	130	120	110	100	80	70
450			280	240		180		140		120	100	90	80
500			310	260		200		160		130	110	100	90
525			330	270		210		164		140	120	104	90
550			340	280		220		170		140	120	110	100
570			360	300		220		180		150	130	110	100
600			380	320		240		190		160	130	120	100
630			380	320		240		190		160	130	120	100

MATERIAL TO BE CUT	RECOMMENDED COATING
Low- alloy steel 400 - 600 N/mm2	VAPO
Medium hard alloy steel 700 - 900 N/mm2	VAPO / TiN
Hard steel 950 - 1100 N/mm2	TiN / TiAlN
Stainless steel	TiCN / TiAlN
Cast iron	TiN
Copper	Bright / CrN
Bronze	Bright / CrN
Brass	Bright / CrN
Aluminium	Bright / CrN

Stocked HSS Circular Saw Blade Sizes:

Coating: Bright / VAPO
Hardness: 60to 62 HRC
Outer Dia: 250/275/300/315/350/400mm
Bore: 32mm
Thickness: 1.5/ 2/2.5mm
Tooth Form: BW
Pitch T: 4mm

Other specifications are made to order

www.mechelec.co.in
+91956981100
info@mechelec.co.in

D 58 Pace City II,
Udyog Vihar Phase VI
Sector 37, Gurgaon – 122001
Haryana, INDIA

mechelec