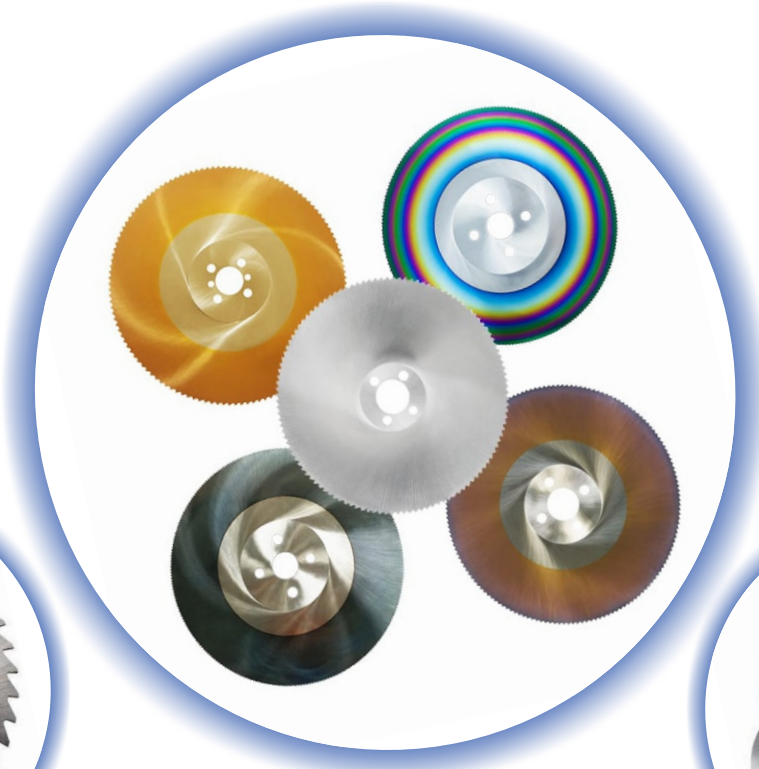
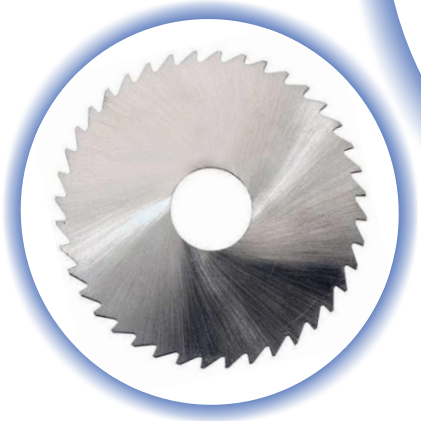
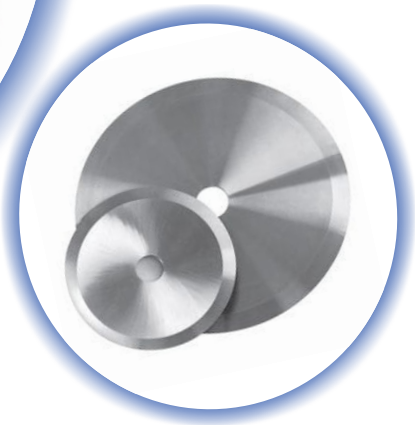
# AAR PEE
# TECH ENTERPRISES

"Diverse Cutting Solution Under One Roof"







METAL CUTTING HSS CIRCULAR SAW BLADES & SLITTING KNIVES FOR EXCEPTIONAL PERFORMANCE.

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# HSS METAL CUTTING CIRCULAR SAW BLADE

The demand for high quality Metal Circular Saw Blades has increased a lot during the last few years. The market is asking for raised cutting parameter in combination with higher life time of the saw blades. The answer is the new developed Circular Saw Blade with its new surface technique and the novel type of multi-layer coating.

Standard Metal Circular Saw Blades have a lateral surface hollow grinding as redial ground structure. The grinding chamfer are ground in the cutting direction by the finest peripheral grinding machine for the Circular Saw Blades so the friction force is reduced to a minimum.

Normally the steel used in the production of Circular Saw Blade are high speed steel of grade M2 and M35.This M2 grade (5%molybdenum) perfectly adequate for normal machining of low to medium strength material and qurantees very long service life for the saw blades.

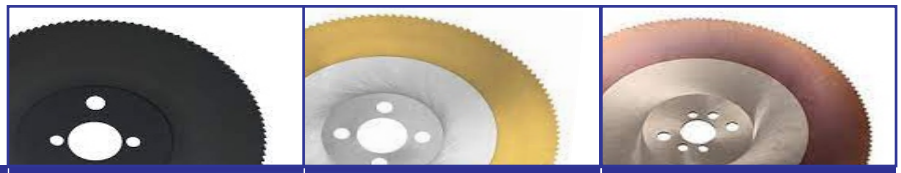
HSS M35 (5% cobalt) is higher quality material than M2, which is additionally alloyed with cobalt . Saw Blade with this grade of steel are used for machining of Stainless Steel or other material grade with high strength.

| M2 / DIN 1.3343 Chemical Composition % | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C | Si | Mn | P | S | C O | Cr | Mo | V | W |
| 0.86 - 0.94 | <=0.45 | <=0.4 | <=0.030 | <=0.030 | O | 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 |

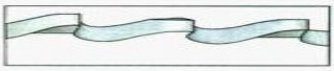
## Surface Coatings for Optimum Performance :-

Following are the some new hightech PVD coating suitable for cutting various high tensile strength material.



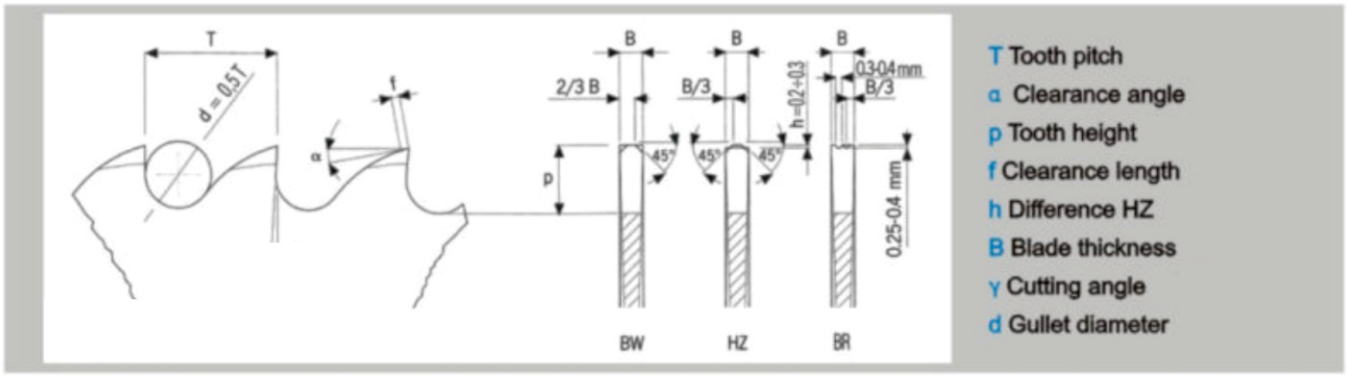
| Sort of Coatings | Steam Treated | TIN Coating | TIALN Coating |
|---|---|---|---|
| Surface | Ferric Oxide Treatment | Titan - Nitride | Titan - Aluminium-Nitride |
| Process | PVD, | PVD | PVD |
| Coating temperature | 200 - 550° C | 200 - 500° C | 300 - 450° C |
| Constancy of temperature | 400 - 500° C | 500 - 600° C | 600 - 800° C |
| Hardness of surface | No change | 2200 - 2400 HV | 3300 - 3500 HV |
| Colour of coating | black | golden - yellow | black - violet |
| Thickness of coating | 2 - 2.5µm | 2 - 4µm | 3 - 4µm |
| Friction | 0,2 - 0,3 | 0,4 - 0,5 | 0,3 - 0,4 |
| Operation | Mild Steel & Non ferrous metals like Copper, Brass and similar alloys | Structural Steel Alloyed steels Steel pipes and profile Pipes and profiles out non ferrous metals | Very hard steels Non ferrous steels Titanium-alloys Aluminium-silicon cast alloys Copper and brass |
| Techinal Recommendation | Good saw blade life because corrosion, resistance and magnetic properties. Good surface finish without side pick-ups due to smooth coating surface. | Raising of the coating hardness by reducing the friction. Universal coating for better saw blade lifetime. 50-100% higher speed and feed rates Prevention of side pick-ups | Multilayer-coating Low friction coefficient and high surface hardness Special for dry cutting or with insufficient cooling conditions. |

# Recommended Tooth Forms And Tooth Geometries

| | |
|---|---|
| **A**  | Tooth Shape A is normally used on the fine toothing where the tooth pitch is less than 3mm. For applications such as screw slotting, jewellery and brass alloy cutting. |
| **AW**  | Tooth Shape AW is alternately beleived to optimise chip shredding. This makes it particularly suitable for precision cutting. |
| **B**  | Tooth Shape B is normally used for very thin walled pipes and cutting structural shapes where chip removal is not an issue. It is Suitable for thin saw blades. |
| **BW**  | Tooth Shape BW is primarily used for cutting pipes and sections. The tooth is alternately beveled at 45 degree which breaks the chip into two and guarantees good chip evacuation. |
| **HZ**  | Tooth Shape C can be used for solid sections or very thick walled pipes. The chip is broken into three parts due to the presence of both a finishing tooth without bevels and a pre-cutting tooth (0.25mm longer) with two chamfers on each side. |

# Tooth Choice

Tooth Choice is the keys to obtaining the best result from your saw blades, the choice of tooth depends on the material and the section that needs to be cut. The Following information has been provided which help you to choose correct tooth parameters.




| T | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| p | 1,3 | 1,6 | 2,1 | 2,5 | 2,9 | 3,4 | 3,8 | 4,2 | 5,1 | 5,9 | 7,2 |
| d | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 | 6 | 7 | 8 |
| | h=0,2 | | | | | h=0,3 | | | | | |

# Correct Tooth Pitch - Optimum Performance

**The Choice of The Right Tooth Pitch Is Vital To Achieve The Optimum Performance For Metal Circular Saw**

**The pitch is correct when the teeth to section ratio is at least 1:3 for solid & 1:1 for pipes structural shapes**

| Material | Steel Up to 500 N/mm² | Steel Up to 800 N/mm² | Steel Up to 1200 N/mm² | Stainless steels | Cast Irons | Light metals | Copper and Bronze | Brass |
|---|---|---|---|---|---|---|---|---|
| Solid material dia. (mm) | Tooth Pitch T (mm) | | | | | | | |
| 10 - 20 | 8 | 6 | 5 | 5 | 5 | 8 | 6 | 8 |
| 20 - 40 | 10 | 8 | 6 | 6 | 6 | 10 | 8 | 10 |
| 40 - 60 | 12 | 10 | 8 | 8 | 8 | 12 | 10 | 12 |
| 60 - 90 | 15 | 13 | 10 | 11 | 11 | 15 | 13 | 14 |
| 90 - 110 | 18 | 16 | 12 | 14 | 14 | 18 | 16 | 18 |
| 110 - 130 | 22 | 18 | 14 | 16 | 16 | 22 | 18 | 20 |
| 130 - 150 | 25 | 20 | 16 | 18 | 18 | 25 | 20 | 22 |
| Pipes and profiles wall thickness (mm) | Tooth Pitch T (mm) | | | | | | | |
| <1 | 3 | 3 | 3 | 3 | - | 4 | 4 | 4 |
| 1 -1,5 | 4 | 4 | 3 | 4 | - | 5 | 5 | 5 |
| 1,5 - 2 | 5 | 4 | 4 | 5 | - | 6 | 6 | 6 |
| 2 -3 | 6 | 5 | 5 | 5 | - | 7 | 7 | 7 |
| >3 | 7 | 6 | 5 | 6 | - | 8 | 8 | 8 |

The data recommended in this table are intended only as a guide.

# For An Economical Cutting Of Metal Slitting Saw Blades

It is essential that the rotation speed and feed speed should be under control on order to optimize the cutting process. There is a close relationship between the two speeds which must always be observed. In the below table we recommend the most suitable cutting speed (V) and feed/tooth values according to the material to be cut.

| Material | Cutting Speed Vc = m/min | Fedding per tooth fz = mm/Z | Cutting angle Sw | Clearance angle FW | HSS type + surface |
|---|---|---|---|---|---|
| Steel (Solid Material) up to 500 N/mm$^2$ | 30 - 50 | 0,05 - 0,08 | 18 - 20° | 8 - 12° | Dmo 5 + steam treated execution |
| Steel (Pipes + Profiles) up to 500 N/mm$^2$ | - 240 | 0,08 - 0,12 | 18 - 20° | 8 - 12° | Dmo 5 + multi-layer coating |
| Steel (solid material) up to 800 N/mm$^2$ | 20 - 40 | 0,03 - 0,06 | 15 - 17° | 6 - 12° | Dmo 5 + steam-treated execution |
| Steels (Pipes + Profiles ) up to 800 N/mm$^2$ | - 120 | 0,05 - 0,08 | 15 - 18° | 6 - 12° | Dmo 5 + multi-layer coating |
| Steels up to 1200 N/mm$^2$ | 12 - 25 | 0,03 - 0,05 | 14 - 16° | 6 - 12° | Emo 5 + steam-treated execution |
| Stainless steels (solid material) | 10 - 25 | 0,04 - 0,07 | 14 - 16° | 6 - 12° | Emo 5 + steam-treated execution |
| Stainless steels (pipes + profiles) | - 50 | 0,06 - 0,10 | 16 - 18° | 6 - 12° | Emo 5 + multi-layer coating |
| Cast Irons | 15 - 25 | 0,07 - 0,12 | 16 - 18° | 6 - 12° | Dmo 5 + steam treated execution |
| Aluminium + aluminium alloys (solid material) | 600 - 900 | 0,05 - 0,10 | 22 - 25° | 10 - 12° | Dmo 5 + blank execution |
| Aluminium + aluminium alloys (pipes + profiles) | 800 - 1200 | 0,07 - 0,12 | 22 - 25° | 10 - 12° | Dmo 5 + blank execution |
| Bronze | 40 - 120 | 0,04 - 0,06 | 16 - 18° | 8 - 10° | Dmo 5 + steam-treated execution |
| Copper | 100 - 400 | 0,04 - 0,06 | 20 - 22° | 10 - 12° | Dmo 5 + steam-treated execution |
| Brass | 150 - 400 | 0,05 - 0,08 | 14 - 16° | 8 - 12° | Dmo 5 +steam-treated |

The data recommended in this table are intended only as a guide.

# HSS SLITTING CUTTER

HSS Slitting Cutters are widely demanded in various industries for cutting and slitting. Our valued customers can avail from us a complete range/variety of slitting cutters that is developed & designed by our skilled professionals using superb quality raw material in compliance with set business values. The high cutting resistance with minimum friction is one of the major attributed of these cutters. The offered product is available in different dimensions & sizes to meet the needs of our patrons.

## Some Special Features of our Slitting Cutters

- Very Low Friction coefficient
- Resistant to wear & tear
- Durable life
- Dimensional accuracy
- Burr free cutting/slitting

## Applications

- Non Ferrous Metal Industry
- Screw Slotting
- Ferrous Metal Industry
- Collet Manufacturing
- Pipes & Tubes Industry

## Specifications :-

- **Saw Diameter :-** 32mm to 250 mm (The larger the saw the more run out & wobbling it will have so used the smallest diameter that will work for your application.)
- **Saw Thickness :-** 0.5mm to 3.0mm (Use the thickest saw your application can tolerate. The thicker the saw the less delicate and the better behaves the saw will be.)
- **Teeth Profile :-** Saw can be available in coarse & fine teeth as per customer requirement.
- **Material :-** Slitting cutters can be supplied by us in high speed steel of grade M-2, M-35, M-42 etc. According to the application of the saw.
- **Keyway & Bore:-** Saws can have various keyways & bore according to the machine make. Keyways are to let you drive the saw with more torque as needed. Bore & Keyway can be produced as per customer requirement.

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