

BRASSINTER



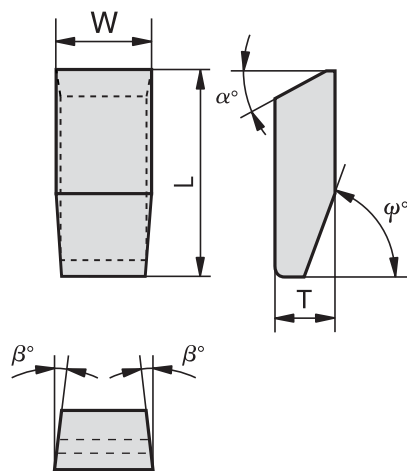
PASTILHAS DE SERRA

SAW TIPS

DIVISÃO METAL DURO
Hardmetals Division

ESTILO TWW

Pastilhas Neutras / Neutral Tips



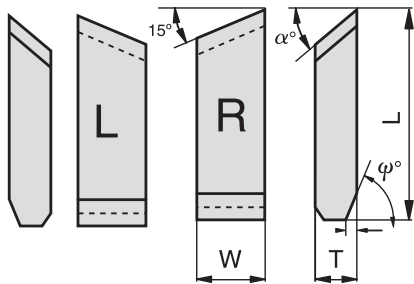
| Estilo Style | L \square Comprimento Length | W \square Largura - Width Min. - Max. | T \square Espessura Thickness | α° | β° | φ° |
|-----------------|--------------------------------------|--|---------------------------------------|----------------|---------------|-----------------|
| TWW 56 | 5,0 | 2,5 - 5,5 | 2,5 | 0° | 0° | 0,3 x 45° |
| TWW 55 | 5,5 | 2,5 - 5,5 | 1,7 | 15° | 0° | 0,6 x 30° |
| TWW 24 | 6,5 | 2,7 - 4,8 | 2,3 | 25° | 0° | 2,47 x 70° |
| TWW 14 | 6,6 | 1,8 - 6,5 | 2,2 | 20° | 0° | 1,0 x 4,5° |
| TWW 31 | 7,1 | 1,8 - 6,5 | 1,9 | 30° | 0° | 0,3 x 45° |
| TWW 15 | 8,0 | 1,8 - 8,3 | 1,8 | 20° | 0° | 1,0 x 45° |
| TWW 25 | 8,0 | 2,7 - 4,8 | 2,3 | 25° | 0° | 2,47 x 70° |
| TWW 32 | 8,3 | 1,8 - 6,5 | 1,8 | 30° | 0° | 1,2 x 70° |
| TWW 16 | 9,4 | 1,5 - 4,5 | 2,5 | 20° | 0° | 0,6 x 45° |
| TWW 20 | 9,6 | 1,8 - 7,5 | 2,1 | 15° | 0° | 1,2 x 70° |
| TWW 10 | 9,6 | 1,8 - 8,3 | 2,2 | 20° | 0° | 1,0 x 45° |
| TWW 22 | 9,6 | 1,8 - 8,3 | 2,4 | 15° | 0° | 0,8 x 60° |
| TWW 23 | 9,6 | 1,8 - 8,3 | 3,0 | 15° | 0° | 1,0 x 60° |
| TWW 11 | 9,6 | 1,8 - 8,3 | 3,2 | 20° | 0° | 2,0 x 45° |
| TWW 26 | 9,6 | 2,5 - 7,5 | 2,2 | 25° | 0° | 3,4 x 70° |
| TWW 12 | 10,0 | 2,2 - 10,6 | 3,6 | 20° | 0° | 2,0 x 45° |
| TWW 27 | 10,5 | 3,0 - 7,5 | 3,5 | 25° | 0° | 3,5 x 59° |
| TWW 34 | 10,5 | 3,0 - 10,0 | 2,5 | 25° | 0° | 3,57 x 70° |
| TWW 21 | 10,6 | 1,8 - 8,3 | 3,1 | 15° | 0° | 1,4 x 70° |
| TWW 13 | 11,7 | 1,8 - 8,3 | 3,2 | 20° | 0° | 1,0 x 45° |
| TWW 17 | 12,0 | 6,0 - 12,3 | 4,2 | 35° | 0° | 2,2 x 45° |
| TWW 28 | 12,5 | 3,5 - 6,5 | 3,0 | 25° | 0° | 4,5 x 64° |
| TWW 29 | 13,0 | 3,5 - 7,5 | 3,5 | 25° | 0° | 4,5 x 65° |
| TWW 30 | 14,0 | 3,0 - 15,0 | 4,0 | 30° | 0° | 2,0 x 60° |
| TWW 18* | 14,0 | 7,2 - 26,2 | 12,3 | 35° | 0° | 11,0 x 18° |
| TWW 19 | 14,3 | 5,2 - 26,2 | 12,3 | 30° | 0° | 2,0 x 60° |
| TWW 33 | 15,0 | 5,5 - 10,2 | 4,0 | 25° | 0° | 2,0 x 45° |

* Para o Estilo TWW 18 162 $\alpha^\circ = 30^\circ$ $\varphi^\circ = 11^\circ$

* For the style TWW 18 162 $\alpha^\circ = 30^\circ$ $\varphi^\circ = 11^\circ$

ESTILO TWW

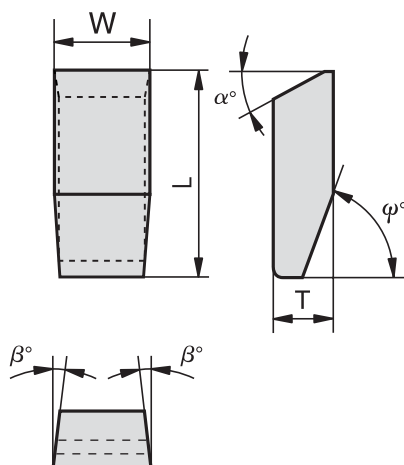
Pastilhas Direita - Esquerda / *Saw Tips - Right and Left Hand*



| Estilo Style | L (mm) Comprimento - Length Min. - Máx. | W (mm) Largura Width | T (mm) Espessura Thickness | α° | φ° |
|-----------------|---|----------------------------|----------------------------------|----------------|-----------------|
| TWW 932 L/R | 5,0 - 10,0 | 3,2 | 1,9 | 30° | 0,3 x 45° |
| TWW 933 L/R | 5,0 - 12,0 | 3,4 | 2,1 | 20° | 1,0 x 45° |
| TWW 934 L/R | 5,0 - 12,0 | 3,4 | 3,1 | 20° | 2,0 x 45° |
| TWW 936 L/R | 5,0 - 12,0 | 3,7 | 2,1 | 20° | 1,0 x 45° |
| TWW 937 L/R | 5,0 - 12,0 | 3,7 | 3,1 | 20° | 2,0 x 45° |
| TWW 943 L/R | 5,0 - 12,0 | 4,4 | 2,1 | 20° | 1,0 x 45° |
| TWW 944 R/L | 5,0 - 12,0 | 4,4 | 3,1 | 20° | 2,0 x 45° |
| TWW 947 L/R | 5,0 - 12,0 | 4,7 | 3,1 | 20° | 2,0 x 45° |
| TWW 951 L/R | 5,0 - 12,0 | 5,1 | 2,1 | 20° | 1,0 x 45° |
| TWW 953 L/R | 5,0 - 12,0 | 5,3 | 3,1 | 20° | 2,0 x 45° |
| TWW 954 L/R | 5,0 - 14,0 | 5,4 | 3,1 | 20° | 1,0 x 45° |
| TWW 955 L/R | 5,0 - 12,0 | 5,5 | 3,2 | 20° | 2,0 x 45° |

ESTILO TWW

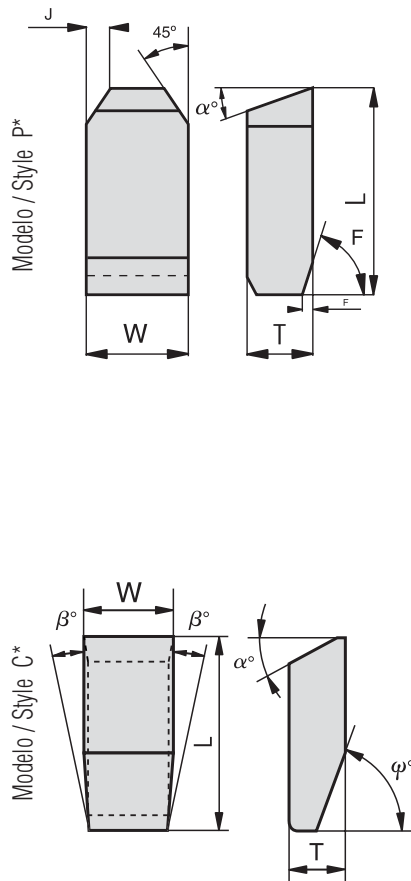
Pastilhas Neutras com Folga Lateral / *Neutral Saw Tips (Tapered Style)*



| Estilo Style | L (mm) Comprimento Length | W (mm) Largura - Width Min. - Máx. | T (mm) Espessura Thickness | α° | β° | φ° |
|-----------------|---------------------------------|--|----------------------------------|----------------|---------------|-----------------|
| TWW 50 | 8,0 | 2,5 - 8,3 | 2,2 | 25° | 5° | 1,5 x 60° |
| TWW 51 | 8,0 | 2,5 - 6,5 | 2,2 | 18° | 5° | 1,5 x 60° |
| TWW 52 | 10,5 | 2,5 - 11,5 | 2,5 | 20° | 5° | 1,2 x 70° |
| TWW 53 | 10,5 | 2,5 - 11,5 | 2,5 | 25° | 5° | 1,5 x 70° |
| TWW 54 | 15,9 | 3,5 - 13,5 | 2,5 | 30° | 5° | 1,6 x 45° |

ESTILO TMW

Pastilhas para Metal / *Metal Cutting Saw Tips*



| Estilo <i>Style</i> | L (mm) Comprimento <i>Length</i> | W (mm) Largura - <i>Width</i> Min. - Máx. | T (mm) Espessura <i>Thickness</i> | α° | β° | F | J |
|------------------------|--|---|---|----------------|---------------|-----------|-----|
| TMW 60 | 5,0 | 2,8 - 8,0 | 2,0 | 15° | 0° | 0,6 x 60° | 1,4 |
| TMW 61 | 6,0 | 3,0 - 8,0 | 3,0 | 8° | 2° | - | 1,7 |
| TMW 62 | 8,0 | 4,2 - 8,0 | 2,2 | 15° | 0° | 0,9 x 60° | 1,7 |
| TMW 63 | 8,0 | 4,5 - 8,0 | 3,0 | 8° | 2° | - | 1,7 |
| TMW 64 | 8,9 | 5,0 - 10,0 | 4,0 | 8° | 0° | - | 2,9 |
| TMW 65 | 10,0 | 4,0 - 8,0 | 2,2 | 15° | 0° | 0,9 x 60° | 1,3 |
| TMW 66 | 10,0 | 5,0 - 8,0 | 3,7 | 15° | 0° | 0,9 x 60° | 2,0 |
| TMW 67 | 10,0 | 6,0 - 10,0 | 4,0 | 8° | 2° | - | 2,4 |
| TMW 68 | 10,5 | 4,5 - 8,0 | 3,0 | 8° | 2° | - | 1,8 |
| TMW 69 | 11,0 | 5,0 - 10,0 | 3,7 | 15° | 0° | 1,2 x 60° | 2,1 |
| TMW 70 | 11,0 | 7,0 - 11,5 | 4,0 | 8° | 2° | - | 3,0 |
| TMW 71 | 12,6 | 5,8 - 10,0 | 3,7 | 15° | 2° | 1,2 x 60° | 2,8 |
| TMW 72 | 13,0 | 5,5 - 11,5 | 4,0 | 8° | 0° | - | 2,7 |
| TMW 73 | 13,6 | 7,0 - 10,0 | 3,7 | 15° | 2° | 1,2 x 60° | 3,2 |
| TMW 74 | 15,0 | 7,0 - 11,5 | 4,0 | 8° | 2° | - | 3,1 |
| TMW 80 | 6,0 | 3,0 - 4,6 | 3,0 | | | | |

P* Modelo Pré-Cortador / *Precutting Style*

C* Modelo Cortador / *Cutting Style*

Tolerâncias / *Tolerances*

Pastilhas de Serra Modelos TWW e TMW / *Saw Tips TWW and TMW Styles*

| Dimensões (mm) <i>Dimensions (mm)</i> | | | Tolerâncias (mm) <i>Tolerances (mm)</i> | | |
|--|---|------|--|---|-----|
| 0 | - | 15,0 | +0,2 | - | 0,0 |
| 15,1 | - | 30,0 | +0,4 | - | 0,0 |
| 30,1 | - | > | +0,6 | - | 0,0 |

Classes de Metal Duro / *Hardmetal Grades*

| Classes <i>Grades</i> | Composição (%) <i>Composition (%)</i> | | | | | TRS ¹ (N/mm ²) (MPa) | Densidade <i>Density</i> (g/cm ³) | Dureza <i>Hardness</i> (HRA) | Especificações <i>Specifications</i> | Aplicações <i>Applications</i> |
|--------------------------|---------------------------------------|----------------|------|----|-------------------------|---|---|------------------------------------|--|--|
| | WC | TiC Ta(Nb)C | Co | Ni | Outros <i>Others</i> | | | | | |
| BF34 | 93,5 | - | 6,0 | - | 0,5 | - | 14,9 | 93,5 | ISO K01 Microgrão | -Madeiras duras. -Materiais altamente abrasivos - MDF. -Aços endurecidos. -Operações de corte em acabamento leve. - <i>Hard wood. -Highly abrasive materials</i> - <i>Medium Density Fiber. -Hardened steel.</i> - <i>Cutting and finishing operations.</i> |
| BF33 | 89,4 | - | 10,0 | - | 0,6 | - | 14,5 | 92,1 | ISO K10 Microgrão | -Madeiras convencionais. -Classe com alta resistência a choques mecânicos. -Classe para aplicações diversas. -Classe mais indicada para a fabricação de fresas e brocas para usinagem de materiais diversos. - <i>Ordinary wood. -High mechanical shock</i> - <i>resistant grade. -General applications. -First</i> - <i>choice for milling and solid drills for</i> - <i>machining different materials.</i> |
| BF41 | 93,8 | 2,4 | 3,8 | - | - | 1700 | 15,0 | 93,2 | C4 ³ /ISO K01/G05 ³ | -Indicada para usinagem de aços endurecidos ou temperados e usinagem de peças altamente abrasivas como fibra, nylon, madeiras e operações de acaba- mento em ferro fundido -Alta resistência ao desgaste. - <i>Recommended for machining hardened or grunched</i> - <i>steel and highly abrasive materials like fiber, nylon,</i> - <i>wood and finishing operations on gray cast iron.</i> - <i>It has high wear resistance.</i> |
| BF30 | 92,0 | 2,0 | 6,0 | - | - | 2000 | 14,8 | 92,5 | ISO K10 | -Classe mais indicada para corte de madeiras em geral. -Classe mais empregada para pastilhas de solda, usinagem de ferro fundido ou nodular. -Possui grande aceitação no mercado. - <i>Standard grade for general woodworking.</i> - <i>First choice for brazed tips used for</i> - <i>machining of gray cast iron and ductile iron.</i> |
| BF20 | 94,0 | - | 6,0 | - | - | 2150 | 14,8 | 91,5 | C10 ³ /ISO K20/G10 ³ | Classe indicada para operações de corte e desbaste pesado de madeira, ferro fundido e materiais diversos. <i>First choice for cutting and roughing of wood,</i> <i>gray cast iron and different materials.</i> |
| BA55 | 77,5 | 14,0 | 8,5 | - | - | 1950 | 12,3 | 91,5 | ISO P30 | Primeira escolha para a usinagem de aços convencionais em operações de desbaste leve e acabamento. <i>Frist choise for medium roughing and</i> <i>finishing of ordinary steel.</i> |
| BA53 | 79,4 | 9,3 | 11,3 | - | - | 2200 | 12,9 | 90,4 | ISO P40 | Classe mais indicada para a usinagem pesada de aços convencionais, aços inoxidáveis e operações de usinagem pesada. <i>Recommended for roughing of ordinary steels</i> <i>and stainless steels.</i> |
| B25M | 68,0 | 22,0 | 10,0 | - | - | 2000 | 12,5 | 91,3 | ISO P25 | Classe utilizada em serras de metais e operações de fresamento em aços com dureza média (30 – 45 HRC). Desbaste leve ou acabamento. <i>Grade recommended for tips of circular saws for</i> <i>metal cutting and milling operations on medium</i> <i>hardness steels (30 - 45 HRC). Medium</i> <i>roughing and finishing.</i> |

1 - TRS - Teste de Ruptura Transversal / *Transverse Rupture Strength* / 2 - Referência utilizada pelo mercado / *Common Reference* / 3 - Conforme norma / *By - American Industry Standard*

Microgrão / *Micrograin*

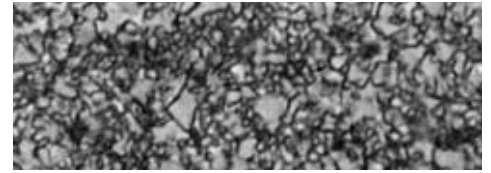
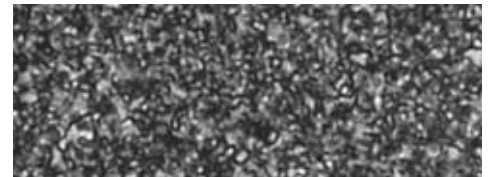
Classes de Metal Duro Tipo Microgrão

A Brassinter possui em sua linha duas classes de Metal Duro (BF33 e BF34), exclusivamente desenvolvidas para o corte de madeiras e materiais que exigem das ferramentas alta resistência ao desgaste, e grande tenacidade para suportar os diversos tipos de corte e operações existentes. A solução destes problemas foi encontrada nas classes microgrão. Por utilizar grãos de Carboneto de Tungstênio de tamanho muito reduzido (menores do que 1,0 micron), é possível conciliar em uma mesma ferramenta grande tenacidade, juntamente com alta resistência a abrasão. Qualidades necessárias para aplicações em diversos tipos de madeiras, nos compostos especiais MDF e blanks para a fabricação de ferramenta rotativas como fresas e brocas.

Micrograin Hardmetal Grades

Brassinter has in its line of products two carbide grades (BF33 & BF34) specially designed for woodworking and for materials that demand high wear resistance and high toughness. They are able to do all cutting operations that are necessary.

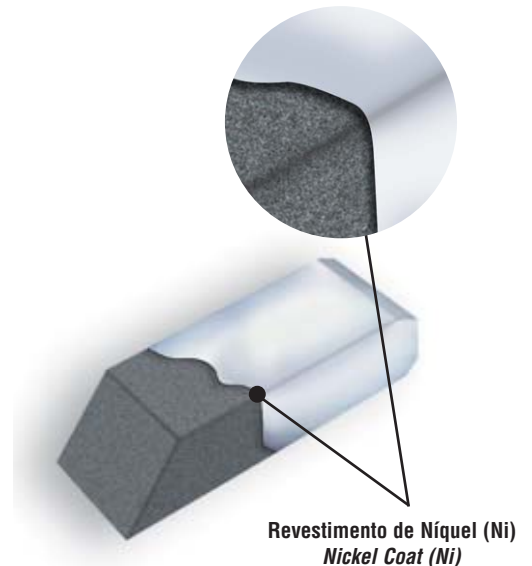
This combination of high toughness and wear resistance is obtained by the use of micrograin tungsten carbide (grain size less than 1,0 micron). These properties are necessary for working the different types of wood, medium density fiber (MDF) wood composites and also for blanks to make circular tools like milling and end mill tools.

Grão Fino - 1500x**Micro Grão - 1500x**

Revestimento de Níquel / *Nickel Coat (Ni)*

Especialmente projetado para processos automatizados de fabricação de serras, a Brassinter desenvolveu o revestimento de Níquel (Ni) para pastilhas de Metal Duro, que possui as seguintes vantagens: • Melhor Soldagem • Evita a oxidação • Indicado para processos automatizados.

Brassinter introduced nickel coated hardmetal tips having in mind the automated process for fabricating circular saws. They have the following advantages: • Better brazing • Prevents oxidation • Indicated for automated processes.

**Revestimento de Níquel (Ni)
*Nickel Coat (Ni)***

Desenvolvimento de Produtos / *Products Development*

Possuímos todos os recursos necessários para desenvolver produtos que atendam a todas as suas necessidades.

We have all required resources to develop products that attend your necessities.



BRASSINTER avança... muito! Mas preserva o idealismo de seus fundadores.

BRASSINTER never stops advancing. But at the same time preserves its founders' idealism.

BRASSINTER was founded fifty four years ago by professors and research workers from the S. PAULO RESEARCH AND DEVELOPMENT INSTITUTE, (IPT), which is associated with the ENGINEERING SCHOOL in UNIVERSITY OF S. PAULO; thus BRASSINTER came into the world determined to research applied metallurgy and the mechanics of metal cutting processes.

A climate of dedication during its formative years set BRASSINTER on the path of professionalism, and pragmatic approaches to its clients' needs. Over the years these attitudes have become a philosophy of competence, which has made the company the leader of an important industrial sector.

Nowadays BRASSINTER is proud of being a supplier, often the only supplier, to many major users of cutting tools, for whom quality is sine qua non.

BRASSINTER makes use of the best technology available. This in turn enables the client to guarantee the excellence of his products, and thus we define the mission of our three hundred strong team.

We invite you to inspect our product lines, some of which certainly improve your productivity.

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