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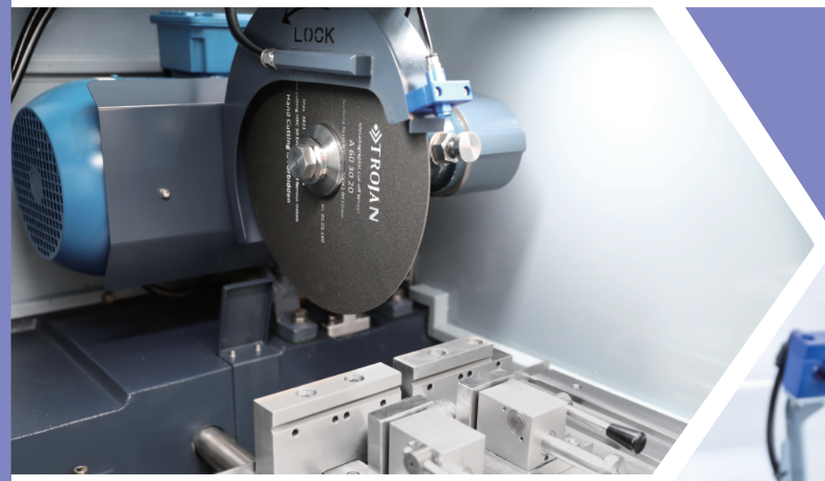


2025

Cutting Application Guide

Professional Metallographic Equipment, Consumables, and Application Solutions

Guide to Selecting Abrasive Wheels

Selecting the right abrasive wheels are crucial for ensuring the cutting quality and efficiency of material samples.Below is a guide to help you make the best decision when purchasing abrasive wheels. Trojan offers a full range of abrasive wheels specifically designed for material sample preparation. These wheels have been thoroughly tested and optimized on Trojan cutting equipment to ensure optimal performance. Trojan abrasive wheels are also compatiblewith similar specification cutting equipment from other brands.

How to Choose the Right Abrasive Wheel?

1.If the material hardness is known, refer to the bar chart 'Selection Guide for Abrasive Wheel ' in Figure1 (Page2) below. The vertical axis represents the material's Vickers hardness, while the horizontal axis includes the abrasive wheel codes and the corresponding materials:

- Go upwards along the y-axis of the bar chart until you find the hardness value of the material;
- Move to the right until you find the material group suitable for the application. If only one material needs to be cut, choose the abrasive wheel with a hardness value as close as possible to the middle of the interval.For two or more materials, select an abrasive blade that covers the whole hardness range;
- Find the bar chart color for the material group and the corresponding abrasive wheel series code. Refer to Table 3 (Page3), and then select the appropriate abrasive wheel code based on the required wheel diameter, arbor diameter, and thickness from Table 2 (Page2).

2.If the material hardness is unknown, the appropriate abrasive wheel can be selected based on the material group in Table 1 or Figure 1.

	Abrasive	Bond	Applicable materials
	SiC	Resin	Non-ferrous soft metals, ductile metals
	Al_2O_3	Resin	Ferrous metals
	CBN	Resin	Extremely hard ferrous metals
	Diamond	Resin	Harder and brittle materials
	Diamond	Metal	Harder and tough materials
	Diamond	Metal Electroplating	Mounting materials, primarily resin

Table1: Different colors correspond to different types of cutting wheels

	Model	Standard wheel size(Diameter×Arbor×Width in mm)
Precision	CT – 150A Low-Speed Precision Cutting Machine	100*12.7*0.4mm, 125*12.7*0.4mm, 150*12.7*0.5mm
	CT – 2300 Manual Cut-off Machine	180*12.7*0.8mm, 200*12.7*0.8mm 230*12.7*1.0mm
	TableCUT-200 Automatic Precision Cut-Off Machine	180*22*0.8mm, 200*22*0.8mm
Manual	CT-250S CT-250V Manual Cut-Off Machine	Φ250*32*1.5mm
	CT – 300 Manual Cut-Off Machine	Φ300*32*2.0mm, Φ350*32*2.5mm
Automatic	Beta-250 Automatic Cut-off Machine	Φ250*32.0*1.5mm
	Beta-300 Pro Automatic Cut-Off Machine	Φ300*32*2.0 mm
	Beta-400MA/Beta-400ProAutomatic/ Manual Cut-Off Machine	Φ400*32*3.0 mm, Φ450*32*3.2 mm
	Beta-500 Automatic Cut-off Machine	Φ508*50.8*4.0 mm

Table 2: Corresponding Abrasive Wheel Sizes for Cutter Models

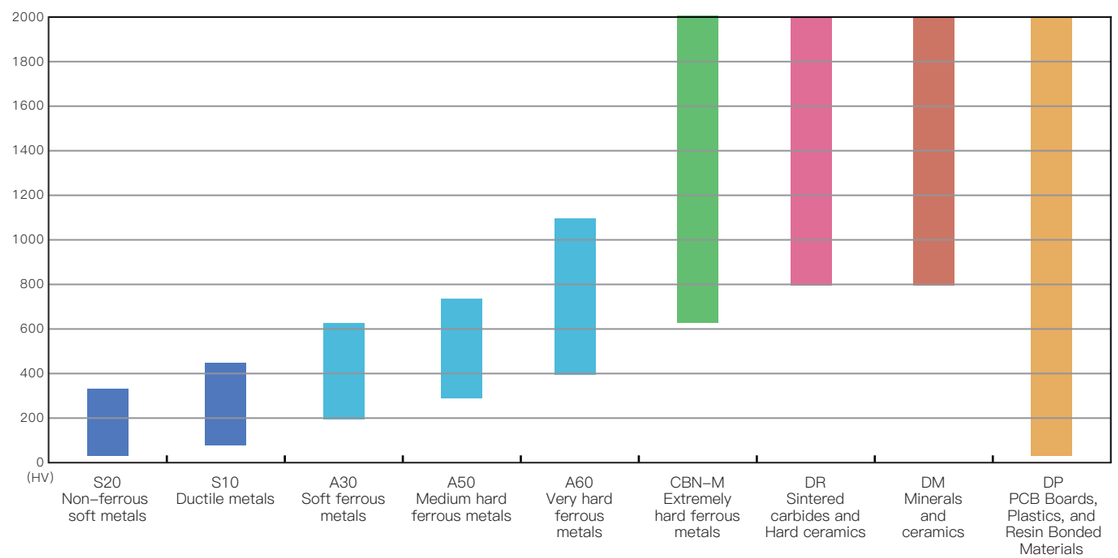


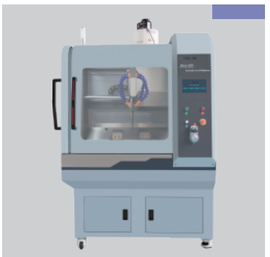
Figure 1: Selection Guide for Abrasive Wheel

Cutting Wheel Compatibility Chart

Compatible Cutter	S10 Ductile metals	S20 Non-ferrous soft metals	A30 Soft ferrous metals	A50 Medium hard ferrous metals	A60 Very hard ferrous metals	CBN-M Extremely hard ferrous metals	DR Sintered carbides and Hard ceramics	DM Minerals and ceramics	DP PCB Boards, Plastics, and Resin Bonded Materials
CT-150A	S10 10 04 S10 15 05	S20 10 04 S20 15 05	A30 10 04 A30 15 05	A50 10 04 A50 15 05	A60 10 04 A60 15 05	CBN-M10 13 04 CBN-M15 13 04	DR10 13 04 DR15 13 04	DM10 13 04 DM15 13 04	DP10 13 04 DP15 13 04
CT-2300	S10 20 08	S20 20 08	A30 20 08	A50 20 08	A60 20 08	CBN-M18 13 08	DR18 16 08	DM18 13 08	DP18 13 08
TableCUT-200	S10 20 08	S20 20 08	A30 20 08	A50 20 08	A60 20 08	CBN-M20 22 10	DR20 22 10	DM20 22 10	DP20 22 10
CT-250S CT-250V	S10 25 15	S20 25 15	A30 25 15	A50 25 15	A60 25 15	CBN-M25 32 15	DR25 32 15	DM25 32 15	DP25 32 15
CT-300 Beta-300Pro	S10 30 20	S20 30 20	A30 30 20	A50 30 20	A60 30 20	CBN-M30 32 20	DR30 32 20	DM30 32 20	DP30 32 20
CT-300	S10 35 25	S20 35 25	A30 35 25	A50 35 25	A60 35 25	CBN-M30 22 20	DR30 32 20	DM30 32 20	DP30 32 20
Beta-250	S10 25 15	S20 25 15	A30 25 15	A50 25 15	A60 25 15	CBN-M25 32 15	DR25 32 15	DM25 32 15	DP25 32 15
Beta-400 MA Beta-400 Pro	S10 40 30	S20 40 30 S20 45 30	A30 40 30 A30 45 30	A50 40 30 A50 45 30	A60 40 30 A60 45 30	/	/	/	/
Beta-500	/	S20 50 40	A30 50 40	A50 50 40	A60 50 40	/	/	/	/

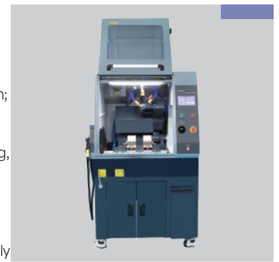
Table 3：Cutting Wheel Compatibility Chart

Sectioning Machines



Beta-500 Automatic Cutting Machine

- Wheel size: 500×32×4.0mm；
- Cutting capacity:Φ190mm/190×360mm;
- Cut types:Vertical, Horizontal, Segment, Continuous, Angled；
- Cutting modes: Constant-speed, Pulsing, Auto-speed Adjustment;
- Laser blade alignment;
- Cutting path simulation;
- XYZR 4-Axis full automation;
- Clamping for extra-long specimens (Fully open on both sides of the machine);
- Wireless handwheel for 4-Axis rapid alignment.



Beta-400Pro Automatic Cutting Machine

- Wheel size: 400×32×3.0mm；
- Cutting capacity: Φ130mm/30×400mm;
- Cut types: Manual, Table-Feed, Vertical, Segment, Parallel Slicing;
- Cutting modes: Constant-speed, Pulsing, Auto-speed Adjustment;
- Laser blade alignment;
- X-Axis Automation;
- Lamping for extra-long specimens (Left-Side door open);
- Joystick for 3-Axis rapid alignment.

Beta-300Pro Automatic Cutting Machine

- Wheel size: 300×32×2.0mm;
- Cutting capacity: Φ110mm/80×200mm;
- Cut types: YZ-Link, Table-Feed, Vertical;
- Cutting modes: Constant-speed,Pulsing, Auto-speed Adjustment;
- Auto end-cut detection;
- Laser blade alignment;
- Lamping for extra-long specimens (Left-Side door open);
- Joystick for 3-Axis rapid alignment.

Beta-250 Automatic Cutting Machine

- Wheel size: 250×32×1.5mm;
- Cutting capacity: Φ85mm/85×250mm;
- Cut types: Vertical, Horizontal；
- Cutting mode: Constant-speed；
- Laser blade alignment；
- Clamping for extra-long specimens (Fully open on both sides of the machine);
- Floor-standing independent water tank, removable for easy cleaning.

TableCUT-200 Automatic Precision Cut-Off Machine

- Wheel size: 200×22×0.8mm；
- Cutting capacity: Φ50mm/50×126mm;
- Cut types: Manual Y-Axis table feed, Auto Y-Axis table feed;
- Cutting modes: Constant-speed,Pulsing, Manual;
- Laser blade alignment;
- Auto air-Cut alignment;
- Drawer-type water tank, removable for easy cleaning.

Beta-400MA Manual/Auto Cutting Machine

- Wheel size: 400×32×3.0mm；
- Cutting capacity: Φ130mm/130×400mm;
- Cut types: Manual, Table-Feed, Vertical;
- Cutting modes: Constant-speed,-Pulsing, Auto-speed Adjustment;
- Laser blade alignment;
- Clamping for extra-long specimens (Left-Side door open);
- Joystick for 3-Axis rapid alignment.

CT-2300 Manual Table Cut-off Machine

- Wheel size: 180×12.7×0.8mm;
- Cutting capacity: Φ30mm/30×50mm;
- Cut types: Manual Y-Axis table feed;
- Variable speed;
- Coolant drainage tube for easy tank cleaning.

CT-300 Manual Cut-off Machine

- Wheel size: 300×32×2.0mm;
- Cutting capacity: Φ100mm/90×130mm;
- Cut types: Manual chop;
- Max cutting length: 240mm
- Floor-standing independent water tank, removable for easy cleaning.

Sectioning Machines

CT-250S/CT-250V Manual Cut-Off Machine

- Wheel size: 250×32×1.5mm;
- Cutting capacity: Φ80mm;
- Cut types: Manual Guillotine;
- Clamping for extra-long specimens (Left-Side door open);
- Floor-standing independent water tank, removable for easy cleaning.

CT-150A Low-Speed Precision Cutting Machine

- Wheel size: 100×12.7×0.4mm;
- Compact structure, high reliability;
- Suitable for precision cutting of ceramics and rock thin slices;
- Cut types: Weight-loaded feed cutting with a balance weight;
- Speed range: 0-600rpm.

Accessories for Sectioning Machines

Beta-500 Recirculating System
Capacity：130L
23.02.038

Beta-400 Recirculating System
Capacity: 130L,
Flow Rate: 100L/Min
23.02.037

Beta-300 Recirculating System
Capacity：80L,
Flow Rate：100L/Min
23.02.036

CT-300 Recirculating System
Capacity：65L
23.02.035

CT250/Beta250 Recirculating System
Capacity：60L,
Flow Rate：11.7L/Min
23.02.039

Fixture

Fast vise
Applicable machine: Beta-250
23.01.350 F250L ,1pc/pkg
23.01.360 F250R ,1pc/pkg

Fast vise
Applicable machine: Beta-300/400
23.01.370 F300L ,1pc/pkg
23.01.380 F300R ,1pc/pkg

Fast vise
Applicable machine: Beta-400/500
23.01.200 F400L ,1pc/pkg
23.01.210 F400R ,1pc/pkg

Small Vertical Clamping
Applicable machine: TableCut-200/CT-2300
23.01.290 H200 ,1pc/pkg

Small Fast and quick clamping
Applicable machine: TableCut-200/CT-2300
23.01.260 S200L ,1pc/pkg
23.01.270 S200R ,1pc/pkg

Paralleled out clamping
Applicable machine: TableCut-200/CT-2300
23.01.300 H200 ,1pc/pkg

Handlebar style fast-lock
Applicable machine: CT-300/Beta-300/400
23.01.150 S250L ,1pc/pkg
23.01.160 S250R ,1pc/pkg

Fast and quick clamping
Applicable machine: CT-250
23.01.240 S250L ,1pc/pkg
23.01.250 S250R ,1pc/pkg

Splitting fixture
Applicable machine: TableCUT-200/CT-2300
23.01.305 D200 ,1pc/pkg

Large Vertical clamp
Applicable machine: CT-250/300, Beta300/400/500
23.01.180 H400 ,1pc/pkg

Extend arm
Applicable machine: CT-250/300, Beta300/400/500
23.01.190 H400-EX ,1pc/pkg

Padding block for vertical vise
Applicable machine: CT-250/300, Beta300/400/500
23.01.170 H400-BLOCK ,1pc/pkg

Ordering Information

A30 Alumina Abrasive Wheels (Soft ferrous metals)

Material: Alumina, resin Bonded.

Application: Used for cutting soft ferrous metals (HRC 20–40).

Order No:	Code	Spec.(mm)	Package
01.01.313	A301505	150*12.7*0.5	10pcs
01.01.314	A301808	180*12.7*0.8	10pcs
01.01.315	A302008	200*22.0*0.8	10pcs
01.01.350	A302515	250*32.0*1.5	10pcs
01.01.360	A303020	300*32.0*2.0	10pcs
01.01.370	A303525	350*32.0*2.5	10pcs
01.01.380	A304030	400*32.0*3.0	10pcs
01.01.385	A304530	450*32.0*3.2	10pcs
01.01.390	A305040	508*50.8*4.0	10pcs

A50 Alumina Abrasive Wheels (Medium hard ferrous metals)

Material: Alumina, resin Bonded.

Application: Used for cutting medium hard ferrous metals(HRC 40–55).

Order No:	Code	Spec.(mm)	Package
01.01.213–1	A501505	150*12.7*0.5	10pcs
01.01.214	A501808	180*12.7*0.8	10pcs
01.01.224	A502008	200*22.0*0.8	10pcs
01.01.250	A502515	250*32.0*1.5	10pcs
01.01.260	A503020	300*32.0*2.0	10pcs
01.01.270	A503525	350*32.0*2.5	10pcs
01.01.280	A504030	400*32.0*3.0	10pcs
01.01.285	A504530	450*32.0*3.2	10pcs
01.01.290	A505040	508*50.8*4.0	10pcs

A60 Alumina Abrasive Wheels (Very hard ferrous metals)

Material: Alumina, resin Bonded.

Application: Used for cutting very hard ferrous metals(HRC>55).

Order No:	Code	Spec.(mm)	Package
01.01.111	A601505	150*12.7*0.5	10pcs
01.01.114–1	A601808	180*12.7*0.8	10pcs
01.01.118	A602008	200*22.0*0.8	10pcs
01.01.150	A602515	250*32.0*1.5	10pcs
01.01.160	A603020	300*32.0*2.0	10pcs
01.01.170	A603525	350*32.0*2.5	10pcs
01.01.180	A604030	400*32.0*3.0	10pcs
01.01.185	A604530	450*32.0*3.2	10pcs
01.01.190	A605040	508*50.8*4.0	10pcs

S10 Abrasive Cut Off Wheels (Ductile metals)

Material: Silicon carbide, resin bonded.

Application: Used for cutting tough titanium and titanium alloys, as well as ductility metals.

Order No:	Code	Spec.(mm)	Package
01.02.500	S101505	150*25.4*0.5	10pcs
01.02.580	S102008	200*22.0*0.8	10pcs
01.02.570	S102515	250*32.0*1.5	10pcs
01.02.560	S103020	300*32.0*2.0	10pcs

S20 Abrasive Cut Off Wheels (Non–ferrous soft metals)

Material: Silicon carbide, resin bonded.

Application: Used for cutting very soft non–ferrous metals such as aluminum, copper, and alloys (HV<200).

Order No:	Code	Spec.(mm)	Package
01.02.413	S201505	150*25.4*0.5	10pcs
01.02.422	S202008	200*22.0*0.8	10pcs
01.02.450	S202515	250*32.0*1.5	10pcs
01.02.460	S203020	300*32.0*2.0	10pcs
01.02.470	S203525	350*32.0*2.5	10pcs
01.02.480	S204030	400*32.0*3.0	10pcs
01.02.485	S204530	450*32.0*3.2	10pcs
01.02.490	S205040	508*50.8*4.0	10pcs

CBN–M Boron Nitride Cut Off Wheels

Material: CBN (Cubic Boron Nitride), metal–bonded.

Application: Designed for precision cutting of hard steels, iron, Co–Ni alloys, and lead–based alloys — ideal for low–speed sectioning.

Order No:	Code	Spec.(mm)	Package
01.10.920	CBN–M101304	100*12.7*0.4	1pc
01.10.925	CBN–M131304	125*12.7*0.4	1pc
01.10.930	CBN–M151305	150*12.7*0.5	1pc
01.10.935	CBN–M181308	180*12.7*0.8	1pc
01.10.950	CBN–M202210	200*22.0*1.0	1pc
01.10.960	CBN–M253215	250*32.0*1.5	1pc
01.10.970	CBN–M303220	300*32.0*2.0	1pc

Ordering Information

DR Resin-Bonded Diamond Cut Off Wheels

Material: Diamond, resin-bonded.

Application: High-brittleness sintered carbides, hard ceramics, and similar materials.

Order No:	Code	Spec.(mm)	Package
01.04.620	DR101304	100*12.7*0.4	1pc
01.04.625	DR131304	125*12.7*0.4	1pc
01.04.630	DR151305	150*12.7*0.5	1pc
01.04.645	DR181308	180*12.7*0.8	1pc
01.04.656	DR201310	200*22.0*1.0	1pc
01.04.660	DR253215	250*32.0*1.5	1pc
01.04.670	DR303220	300*32.0*2.0	1pc

DM Metal-Bonded Diamond Cut Off Wheels

Material: Diamond, metal-bonded.

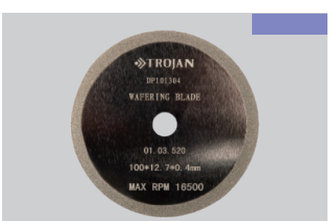
Application: Used for cutting minerals and ceramic materials.

Order No:	Code	Spec.(mm)	Package
01.05.720	DM101304	100*12.7*0.4	1pc
01.05.725	DM131304	125*12.7*0.4	1pc
01.05.730	DM151305	150*12.7*0.5	1pc
01.05.741	DM181308	180*12.7*0.8	1pc
01.05.748	DM202210	200*22.0*1.0	1pc
01.05.760	DM253215	250*32.0*1.5	1pc
01.05.770	DM303220	300*32.0*2.0	1pc

DP Electroplated Diamond Cut Off Wheels

Materia: Metal matrix with Nickel-Plated diamond edges.

Application: Used for cutting PCB, plastics, fiber-reinforced resins, or soft non-ferrous metals.



Order No:	Code	Spec.(mm)	Package
01.03.520	DP101304	100*12.7*0.4	1pc
01.03.525	DP131304	125*12.7*0.4	1pc
01.03.530	DP151305	150*12.7*0.5	1pc
01.03.541	DP181308	180*12.7*0.8	1pc
01.03.551	DP202210	200*22.0*1.0	1pc
01.03.560	DP253215	250*32.0*1.5	1pc
01.03.570	DP303220	300*32.0*2.0	1pc

Coolant

To achieve optimal cutting results and minimize thermal damage during metallographic sectioning, a dedicated cutting coolant is typically used. Free from minerals and nitrites, it provides both effective cooling and lubrication.

TJ1220 Cutting Coolant

Features: Prevents sample from overheating and provides excellent rust prevention.

Usage: Mix with water before use at a ratio of 1:20-30.The solution will appear milky white once properly mixed.

Order No:	Description	Package
01.07.810	TJ 1220 Cutting Coolant	1L
01.07.820	TJ 1220 Cutting Coolant	5L

TJ1410 Cutting Coolant

Features: Protects samples from overheating and provides excellent lubrication.

Usage: Mix with water before use at a ratio of 1:20-30.The solution will appear clear and transparent once properly mixed.

Order No:	Description	Package
01.07.857	TJ 1410 Cutting Coolant	1L
01.07.860	TJ 1410 Cutting Coolant	5L

TJ1506 Cleaner

Features: Effectively resists the growth and corrosion of microorganisms and eliminates unpleasant odors.

Usage: Mix with water before use at a ratio of 1:20-30.The solution will appear milky white once properly mixed.

Order No:	Description	Package
01.07.890	TJ 1506 Cleaner	1L
01.07.900	TJ 1506 Cleaner	5L