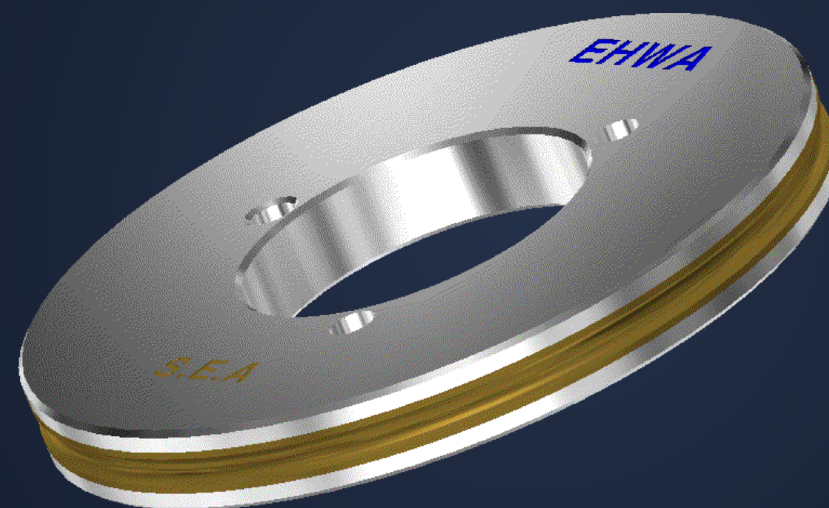




GLASS PROCESSING

Grinding Wheels for Edge Processing of Glass

Diamond tools for automotive safety glass and architectural glass. An overview of profiles, specifications and bond systems.



CHAPTER 1

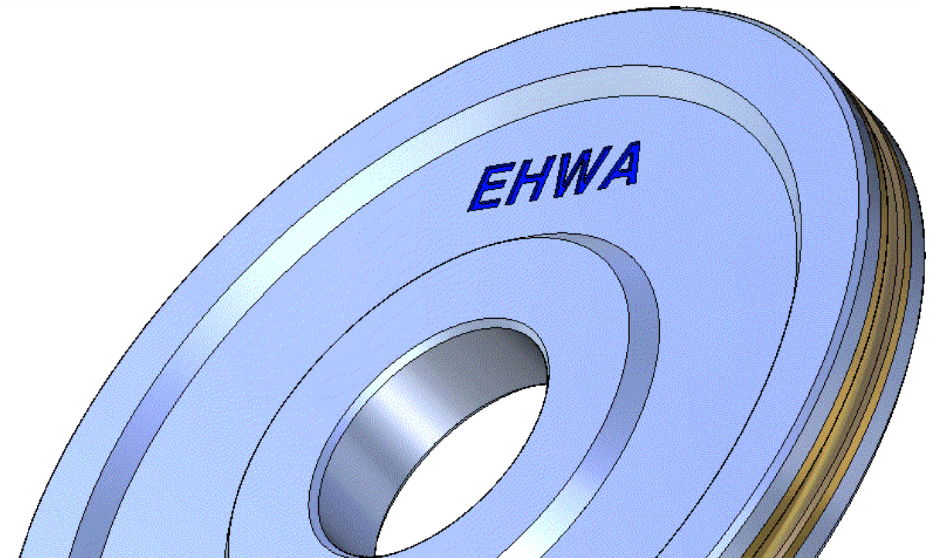
Automotive Safety Glass

- 1-1 Production Flow Safety Glass / Groove Profile
- 1-2 Example of EHWA Wheel Profiles
- 1-3 Grinding Wheel Dimensions
- 1-4 Grinding Wheel Specification
- 1-5 Grinding Behaviour Depending on Grit Size and Concentration
- 1-6 Diamond Grade and Grinding Behaviour
- 1-7 Bond Components (M-Series)
- 1-8 Product Overview
- 1-9 Product Overview (EG-Series)
- 1-10 EG-Series Technical Data
- 1-11 Customer Test Results (EG-Series)

CHAPTER 2

Architectural Glass

- 2-1 Edge Wheels for Architectural Glass
- 2-2 G-Series Bond for Architectural Glass



CHAPTER 1

Automotive Safety Glass

Windscreens, side and rear-view mirrors,
sunroofs: edge grinding of laminated and
tempered glass.



1-1

Production Flow Safety Glass / Groove Profile

1) PRODUCTION FLOW — SAFETY GLASS

Laminated / Tempered Glass

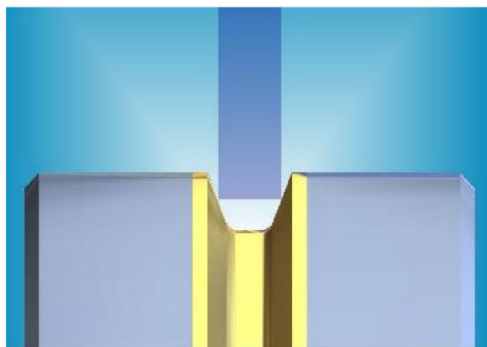


Edge Grinding

2) GROOVE PROFILE

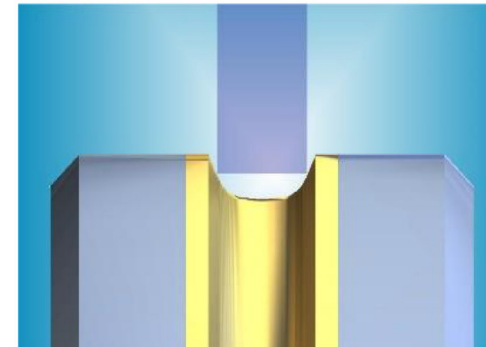
Dish Profile 1.8T – 2.1T glass

Windscreen



V-Profile 3.2T – 6.0T glass

Side & rear-view mirror



1-2

Example of EHWA Wheel Profiles

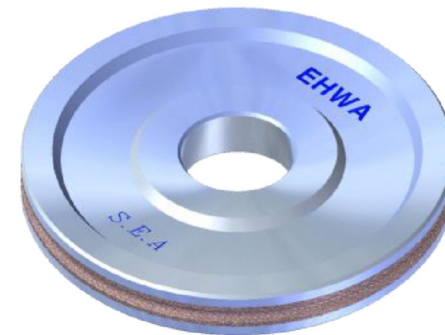
3.5T glass

- High surface quality for side and rear-view mirrors
- V = general, included angle 40 – 55°



2.1T glass

- For chamfering the windscreen
- V = general, included angle 40 – 60°



PROFILE OVERVIEW



Grinding Wheel Dimensions

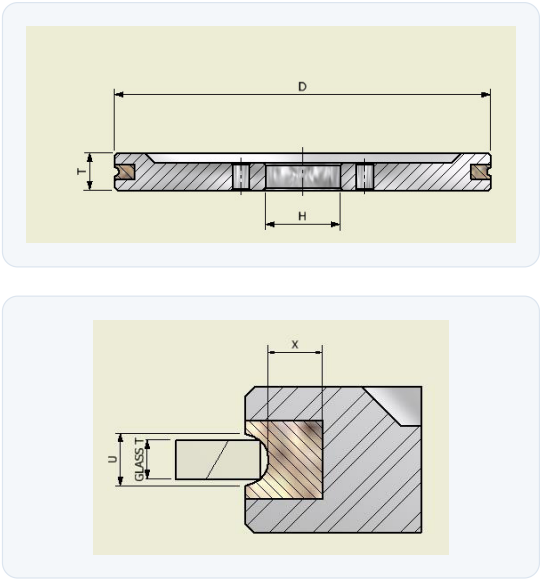
D (150 – 152 mm) · T (15 mm)

METRIC (MM)

GLASS	D	U	X
1,8	152	3,0	6 ~ 8
2,1	152		
3,2	152	4,5	6 ~ 8
3,5	152		
4,0	152	5,5	6 ~ 8
4,5	152		
5,0	152	6,0	6 ~ 8
6,0	152	7,0	6 ~ 8

INCH

GLASS (MM)	D	U	X
1,8	6	1/8	.236 ~ .315
2,1	6		
3,2	6	3/16	.236 ~ .315
3,5	6		
4,0	6	7/32	.236 ~ .315
4,5	6		
5,0	6	5/16	.236 ~ .315
6,0	6	3/8	.236 ~ .315



1-4

Grinding Wheel Specification

Diamond

Size

Concentration

Grade

Bond

Components

Hardness

Wear resistance



Maximum Performance

Tool life · Edge quality ·
Cutting performance



1-5

Grinding Behaviour Depending on Grit Size and Concentration

Grit Size

small large

Tool Life low → ~~high~~

Feed Rate slow → ~~fast~~

Edge Quality high → ~~low~~

Concentration

low high

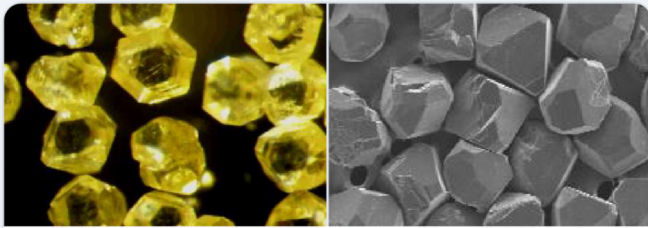
Tool Life low → ~~high~~

Edge Quality low → ~~high~~

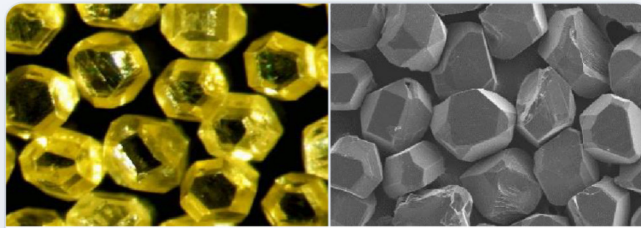
Cutting Performance fast → ~~slow~~

Dressing Frequency high → ~~low~~

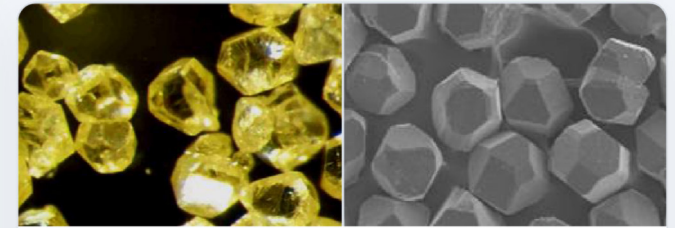
Diamond Grade and Grinding Behaviour



Low grade



Medium grade



High grade

Grade

low high

Tool Life

low → high

Cutting Performance

low → high

Dressing Cycle

often → few

Bond Components — M-Series (MB, ME, MG)

COMPONENTS

Iron

Copper

Cobalt

TiN

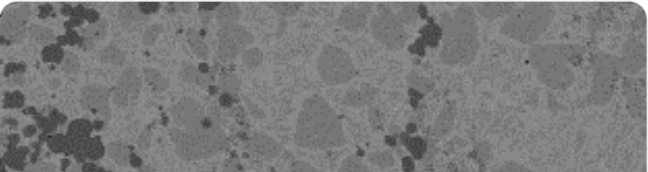
Silver

Carbide

→

Mixing

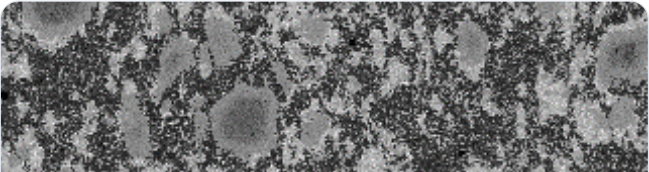
BOND	BOND HARDNESS	WEAR RESISTANCE	CUTTING PERF.	TOOL LIFE	DRESSING FREQ.
MB Series	soft	low	high	low	high
ME Series	medium hardness	medium	medium	medium	medium
MG Series	hard	high	low	high	low



Soft bond



Medium bond



Hard bond

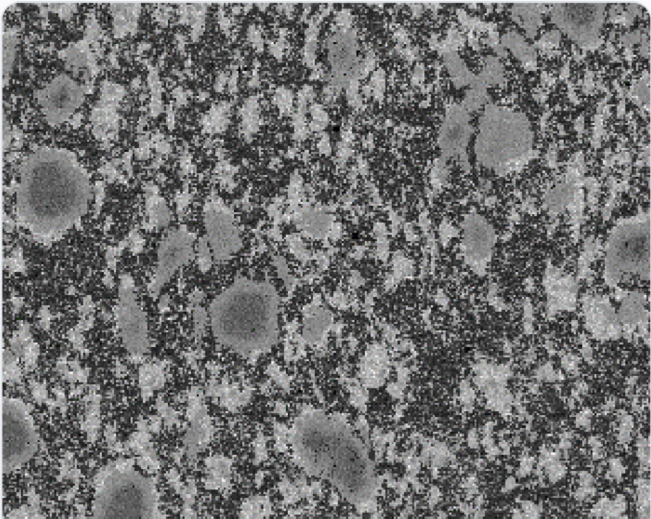
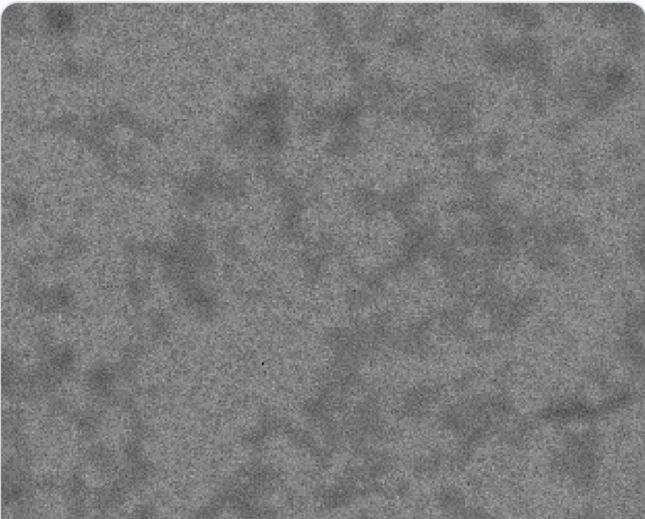
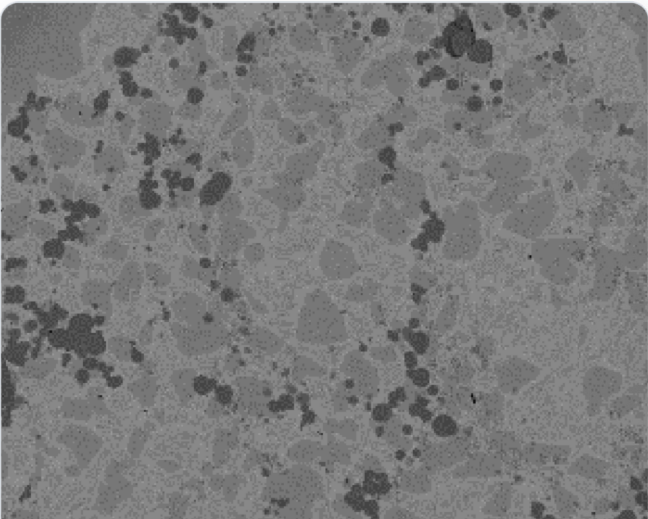
Product Overview

CUSTOMER	TYPE	DIMENSIONS	SPECIFICATION
K	Windscreen	250D-2.1T-63.5H	GL170R50MG7
	Side mirror	150D-3.2T-63.5H	GL170R50MG16
		150D-3.5T-63.5H	GL170R50MG16
	Sunroof	150D-4.0T-63.5H	GL200R50MG16
H	Windscreen	6"D-2.1T-63.5H	GL170R50MG16C
	Side mirror	6"(152)D-3.2T-63.5H	GL170S50MG21M
		6"D-3.5T-63.5H	GL170L50MG21M
	Sunroof	6"D-4.0T-63.5H	GL200S50MG21N
S	Windscreen	152D-1.6T-63.5H	GL170R50MG4
		152D-2.1T-63.5H	GL170R50MG4Z
	Side mirror	152D-3.2T-63.5H	GL200R50MG4Z
A	Side mirror	6"D-3.5MR-90H	GL170R50MG7
		8"D-3.2VRP-75H	GL170R50MG7
N	Side mirror	152D-3.15MF-30H	GL200S50MG21F

Product Overview (EG-Series)

The EG bond was developed to optimise tool life at high edge quality.

WORKPIECE	EG7	EG16C	EG21M	EG21N	EG72
Tempered Glass	●	●	●	●	
Laminated Glass		●	●		●
Special Property	High grinding perf.	Grinding perf. / tool life	High tool life	High tool life	High tool life



EG-Series Technical Data

TEST CONDITIONS

Wheel [MD-1FF6Y](#)

Dimension [152D-3.2T](#)

Specification [D91EG21M](#)

Speed [5.000 min⁻¹](#)

TESTED SPECIFICATIONS

[D91EG16C](#)[D91EG21F](#)[D91EG21M](#)[D91EG21F/H](#)

Grinding load

2 – 7 A at feed rate 18 – 22 m/min

Chip size

40 – 80 μ m at feed rate 18 – 22 m/min

Note: some specifications could not be tested because of burn marks on the glass.

Customer Test Results (EG-Series)

EG bond diamond wheels for specific machine types and wheel dimensions.

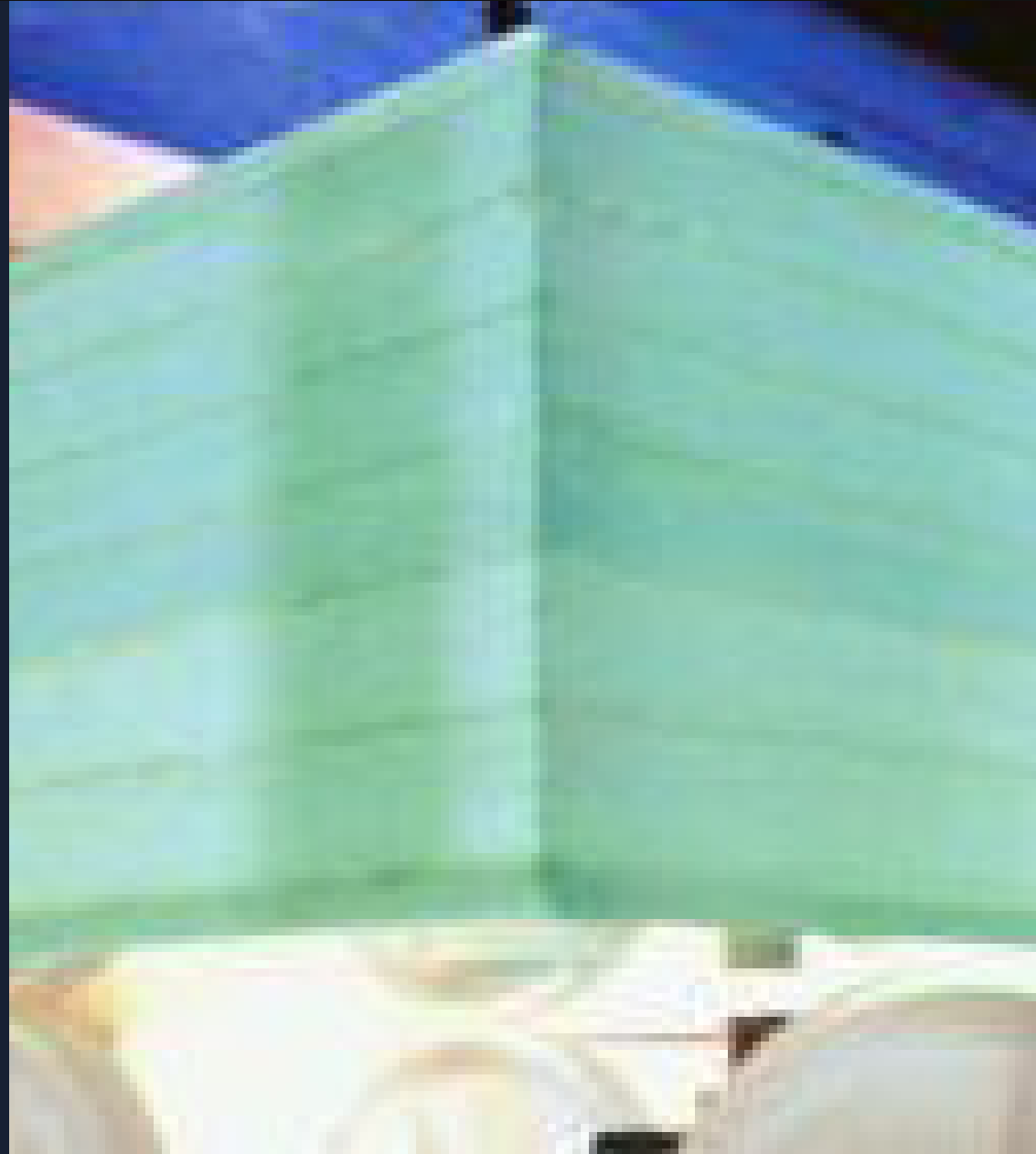
MACHINE TYPE	CNC	BANDO		BYSTRONIC	
Diameter (mm)	152	152	152	150	150
Layer (mm)	6	8,4	8,4	8,5	8,4
Glass	Side mirror	Side mirror	Side mirror	Side mirror	Side mirror
Speed (rpm)	6.000	5.000	5.000	5.000	5.000
Feed rate (m/min)	25 ~ 30	20 ~ 23	22 ~ 23	12 ~ 15	8 ~ 12
Tool life T/L (km)	5,5 ~ 6,5	5,0 ~ 6,0	6,0 ~ 7,0	4,5 ~ 5,5	4,5 ~ 5,5
Reprofiling cycles	4 ~ 6	6 ~ 8	7 ~ 8	6 ~ 8	6 ~ 8
Total T/L (km)	35 ~ 45	45 ~ 55	55 ~ 60	40 ~ 50	40 ~ 50
Specification	EAGLE-4	D76EG16C	D76EG21M / EG-Q	D91EG4022	D76EG6230

- 5 ~ 6 km average tool life. Total tool life depends on the number of reprofiling.

CHAPTER 2

Architectural Glass

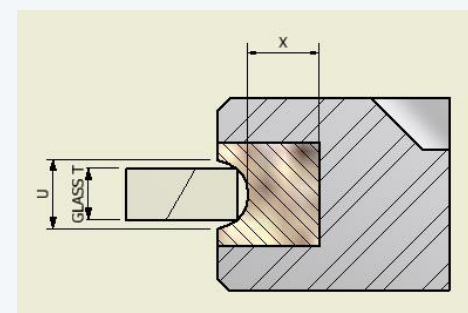
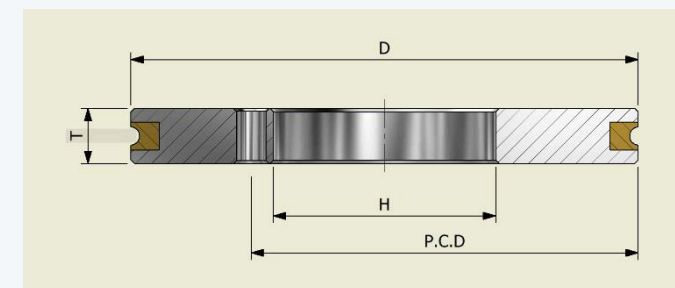
Edge wheels for INTERMAC and C edge grinding machines, with B, C and S bonds.



2-1

Edge Wheels for Architectural Glass

BASIC DIMENSIONS	D	U	X	T	MACHINE
100D-2.0T-22H	100	6,6	3 ~ 4	14	INTERMAC
100D-2.8T-22H	100	6,6	3 ~ 4	14	INTERMAC
100D-3.2T-22H	100	6,6	3 ~ 4	14	INTERMAC
100D-4.0T-22H	100	6,6	3 ~ 4	14	INTERMAC
100D-5.0T-22H	100	7,7	3 ~ 4	14	INTERMAC
175D-3.2T-25H	175	10	4 ~ 6	10	C Corner
220D-3.2T-50H	220	10	4 ~ 6	10	C Corner
220D-4.0T-50H	220	10	4 ~ 6	10	C Corner



Bond for Architectural Glass

MD-1FF6Y, 100D-3.2T-30H (CNC machine – INTERMAC)

MD-1FF6Y, 220D-2.8T-50H (C edge grinding)

BOND TYPE	C12	C9	C6	B21	S12
Standard #270 / #325)	●	●		●	
High grade #400 – #500)		●	●		
High grade #600 – #800)					●
Remark	Excellent tool life		Excellent grinding perf.		

B bond

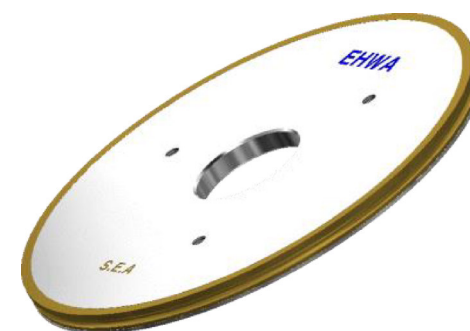
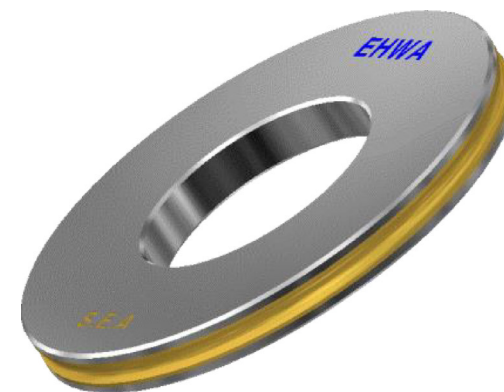
Soft bond

C bond

Medium bond (standard)

S bond

Soft bond





Consulting on Edge Processing

We match profile, grit size, concentration and
bond to your machine and your glass.

WEB
www.ehwadia.de

COMPANY
EHWA Diamond Ind. Co., Ltd.

