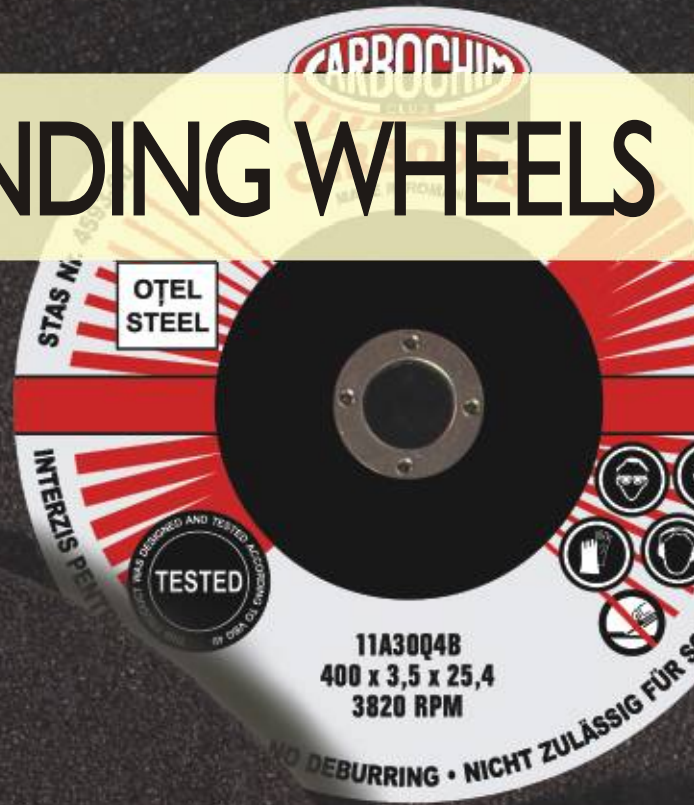




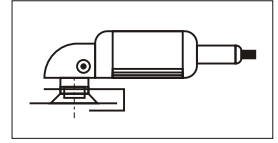
# CUTTING AND GRINDING WHEELS



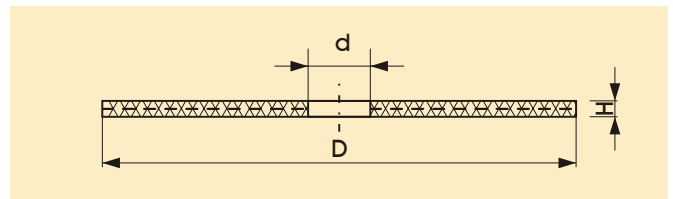
# CUT-OFF WHEELS

SHAPE

## 1 TRS



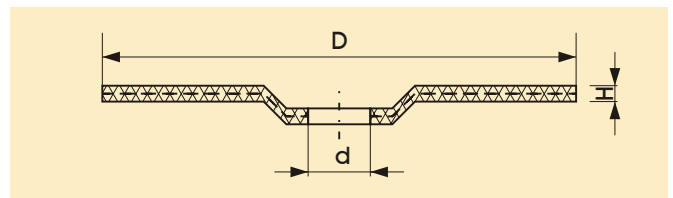
Flat cut-off wheels reinforced with glass fiber inserts.



SHAPE

## 27 TR

Depressed center cut-off wheels, reinforced with glass fiber inserts.



The cut-off wheels for portable angle grinders have a good cutting efficiency, high penetration capacity and an excellent quality/price ratio.

This type of cut-off wheels are used in cutting of:

- corners, pipes, bars, metal plates, different kind of building materials.

Maximum admitted peripheral speed: 80 m/s.

MATERIAL TO BE CUT	RECOMMENDED SPECIFICATIONS
<ul style="list-style-type: none"> <li>➤ Ferrous metals of medium hardness</li> <li>➤ Structural steel, alloyed steel</li> </ul>	11A 60-80Q 4B47E 11A 30Q 4B47
<ul style="list-style-type: none"> <li>➤ Special steel profiles, usual steel</li> </ul>	52A 30Q 4B2S
<ul style="list-style-type: none"> <li>➤ Stainless steel, rapid steel</li> </ul>	50A 60-80Q 4B28E 50A 30-36Q 4B28 50A 36O 3B28
<ul style="list-style-type: none"> <li>➤ Cast iron</li> </ul>	54AC 24-30Q 4B47
<ul style="list-style-type: none"> <li>➤ Building materials of medium hardness: marble, stones, bricks, porcelain</li> </ul>	21C 24-30Q 4B35 21C 24-30Q 4B0
<ul style="list-style-type: none"> <li>➤ Hard building materials: granite, hard refractory bricks, stones, bronze, brass</li> </ul>	21C 30P 4B35
<ul style="list-style-type: none"> <li>➤ Aluminium</li> </ul>	33A 36P 4B60

SIZES mm			SHAPE		SPECIFICATION								
D	H	d	1TRS	27TR	11A 60Q 4B47E 11A 80Q 4B47E	11A 30Q 4B47	52A 30Q 4B2S	50A 60Q 4B28 50A 80Q 4B28 free of Fe, Pb, S, Cl	50A 30-36Q 4B28 50A 30-36O 3B28 free of Fe, Pb, S, Cl	54AC 24Q 4B47 54AC 30Q 4B47	21C 24Q 4B35 21C 30Q 4B35	21C 30P 4B35	33A 36P 4B60
65	1,5	10	●		●			●	●				
65	2,5	10	●		●	●		●					
80	1,5	6,5 9,5	●		●			●					
80	2,5	6,5 9,5	●		●	●		●					
100	1	16 22,2	●		●			●	●				
	1,5	16 22,2	●		●			●					
	2,5	16 22,2	●	●		●	●		●				
115	1	22,2	●		●			●					
	1,5	22,2	●		●			●					
	2	22,2	●	●		●				●	●	●	●
	2,5	22,2	●	●		●	●		●	●	●	●	●
	3	22,2	●	●		●	●		●	●	●	●	●
125	1	22,2	●		●			●					
	1,5	22,2	●		●			●					
	2	22,2	●	●		●			●	●	●	●	●
	2,5	22,2	●	●		●	●		●	●	●	●	●
	3	22,2	●	●		●	●		●	●	●	●	●
150	1	22,2	●		●			●					
	1,5	22,2	●		●			●					
	2	22,2	●	●		●			●	●	●	●	●
	2,5	22,2	●	●		●	●	●	●	●	●	●	●
	3	22,2	●	●		●	●		●	●	●	●	●
180	1	22,2	●		●			●					
	1,5	22,2	●		●			●					
	2	22,2	●	●		●			●	●	●	●	●
	2,5	22,2	●	●		●	●		●	●	●	●	●
	3	22,2	●	●		●	●		●	●	●	●	●
230	2	22,2	●	●		●			●	●	●	●	●
	2,5	22,2	●	●		●	●		●	●	●	●	●
	3	22,2	●	●		●	●		●	●	●	●	●

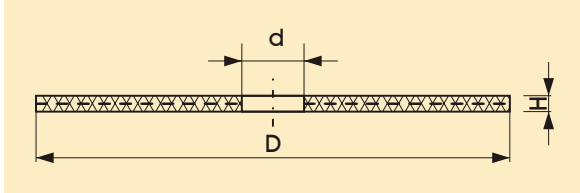
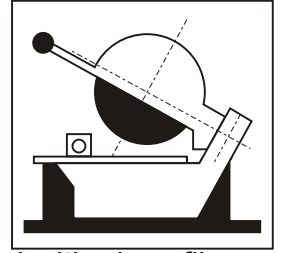
Note: other thickness and grit sizes available upon request



# CUT-OFF WHEELS FOR FIXED MACHINES

SHAPE

## 1 TRS



Flat cut-off wheels reinforced with glass fiber inserts.



The cut-off wheels for fixed machines have a lot of advantages, as follows: high cutting efficiency, short cutting time, good quality of cutted surfaces.

This type of cut-off wheels are used in cutting of: casting deadheads, blanks, forged pieces, bars and pipes with large sections, railway trails

Maximum admitted peripheral speed: 80 m/s or 100 m/s (for the cut-off wheels used to cut the railway trails and for the FORTE - 11A 30Q 4B45F cut-off wheels).

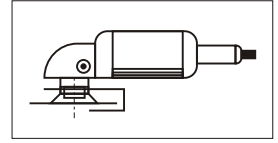
MATERIAL TO BE CUT	RECOMMENDED SPECIFICATIONS
Building steel, alloyed steel	11A 30Q 4B47
➤ High alloyed steel	11A 24-30Q 4B45
*Cutting of pipes with large sections	11A 30Q 4B45F
➤ Special steels (railway trails)	11A 30Q 4B45RU
Stainless steel	50A 24-30Q 4B45RU
	50A 60-46Q 4B2
	54A 24-30Q 4B28
	54AC 24-30Q 4B47
➤ Cast iron	21C 24-30Q 4B35
Building materials, concrete, rocks	

SIZES mm			SPECIFICATIONS								
D	H	d	11A 30Q 4B47	11A 24Q 4B45 11A 30Q 4B45	11A 30Q 4B45F	11A 24Q 4B45RU 11A 30Q 4B45RU	50A 24Q 4B45RU 50A 30Q 4B45RU	50A 30Q 4B28 50A 60Q 4B2	54AC 24Q 4B47 54AC 30Q 4B47	21C 24Q 4B35 21C 30Q 4B35	
300	3	25,4	●	●		●	●	●	●	●	
		40	●	●		●	●		●	●	
	3,5	25,4	●	●	●	●	●		●	●	
		40	●	●	●	●	●			●	
350	4	25,4	●	●	●	●	●		●	●	
		40	●	●	●	●	●			●	
	2,8	50,8						●			
		3	20		●		●	●			
	3,5	25,4	●	●	●	●	●	●	●	●	
		32	●	●	●	●	●	●			
		20		●		●	●				
		25,4	●	●	●	●	●	●	●	●	
32		●	●	●	●	●			●		
4		20		●		●	●			●	
400	3,5	25,4	●	●	●	●		●		●	
		32		●	●	●				●	
	4	40		●	●	●					
		25,4		●	●	●	●	●	●	●	
	5	25,4		●	●	●	●	●	●	●	
		32		●	●	●	●	●	●	●	
500	4	25,4		●		●		●	●		
		40		●		●		●	●		
	5	25,4		●		●	●	●	●	●	
600	7	60		●		●	●	●		●	
		100		●		●	●			●	

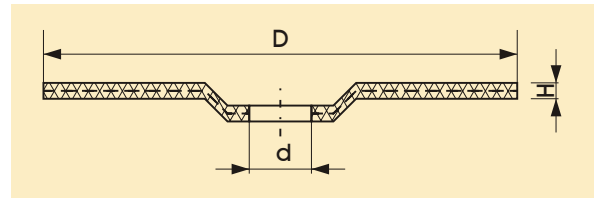
# GRINDING WHEELS FOR PORTABLE ANGLE GRINDERS

SHAPE

## 27 E



Depressed center grinding wheels, reinforced with glass fiber inserts.



The grinding wheels for portable angle grinders are very efficiently used in operations in which is asked to remove in short time large additions, for example:

- cleaning and grinding of casted and forged pieces.
- removing of casting flaws.

- adjustment of weldings

Maximum admitted peripheral speed : 80 m/s.



MATERIAL TO BE GRINDED	RECOMMENDED SPECIFICATIONS
Structural steel, alloyed steel	11A 24-30Q 4B47
➤ *grinding of thick welded joints	11A 24R 4B47
Stainless steel	50A 36O 3B28
	50A 30-36Q 4B28
	54AC 24-30Q 4B47
➤ Cast iron	21C 24-30Q 4B35
Building materials: marble, rocks, concrete	21C 30P 4B35
➤ Hard rocks	33A 46P 4B60
Aluminium	

SIZES mm			SPECIFICATION						
D	H	d	11A 24-30Q 4B47	11A 24R 4B47	50A 36O 3B28 50A 30-36Q 4B28	54AC 24-30Q 4B47	21C 24-30Q 4B35	21C 30P 4B35	33A 46P 4B60
100	4;6;8	22.2	●						
115	4;6;8;10	22.2	●		●	●		●	●
125	4;6;8;10	22.2	●		●	●		●	●
150	4;6;8;10	22.2	●			●		●	●
180	4;6;8;10	22.2	●	●	●	●	●	●	●
230	4;6;8;10	22.2	●	●	●	●	●	●	●

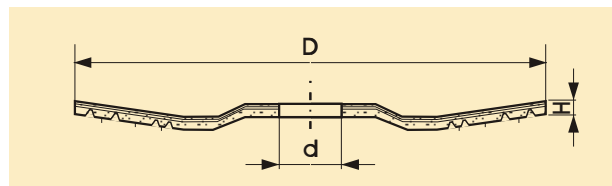
Note: other thickness and grit sizes available upon request

## SHAPE

# 29



Depressed center grinding disc, reinforced with glass fiber inserts.



The grinding discs are used to process the concave and convex surfaces:

- at grinding of weldings to different containers
- at processing of tin plate of body of cars, vassel construction, deburring of pieces made by cast iron, steel and non-ferrous metals, processing of ornamental rocks and concrete.

It is recommended to be used together with rubber or plastic backing.

SIZES (mm)			RECOMMENDED SPECIFICATION	MATERIAL TO BE GRINDED
D	H	d		
115;125; 180	4	22,2	50A 36 P4B	• stainless steel, steel, cast iron
115;125; 180	4	22,2	21C 36 P4B	• ornamental rocks
115;125; 180	4	22,2	54AC 36 P4B	• cast iron, non-ferrous metals

# CUT-OFF WHEELS WITHOUT INSERTS FOR STATIONARY MACHINES

## SHAPE

# 1 TR

The cut-off wheels 1TR shape are thin wheels ( $h=1,2 - 4$  mm), respectively extra-thin ( $h=0,4 - 1,0$  mm) with fine grit sizes, used to cut small pieces and pieces of thermo-sensitive materials.

### Extra-thin cut-off wheels used on stationary machines, with mechanical lead

EXTERNAL DIAMETER (mm)	THICKNESS (mm)		
	Grit sizes 60-80	Grit sizes 100-120	Grit sizes 150 + fin
• 80, 100	0.7	0.5	0.4
• 115, 125, 150	0.8	0.7	0.5
• 180, 200	1.0	0.9	0.8

MATERIAL TO BE CUT	RECOMMENDED SPECIFICATION
• Stainless steel	50A 120 Q 4B2E
• Rapid steel, steel for tools	33A 120 P 4B2E
• Wolfram and wolfram alloy	33A 120 O 4B2E
• Non-ferrous metals and alloy of them	33A 80-120 Q 4B2E
• Structural steel	11A 100 Q 4B2E
• Non-metals, synthetic materials	21C 80-100 Q 4B2E
• Ceramics, glass	21C 80-120 N 4B2E

### Thin cut-off wheels used on stationary machines, with mechanical lead

EXTERNAL DIAMETER (mm)	THICKNESS (mm)		
	Grit sizes 30 - 36	Grit sizes 46 - 60	Grit sizes 80 + fin
• 80, 100	1.5 - 2	1.5	1.2 - 1.5
• 115, 125, 150	2 - 3	1.5 - 2.0	1.2 - 1.5
• 180, 200, 230	2.5 - 3.5	2 - 2.5	1.2 - 1.5
• 250, 300	3 - 4	2 - 2.5	1.5

MATERIAL TO BE CUT	RECOMMENDED SPECIFICATION
• Stainless steel	50A 60-80Q 4B44E
• Alloyed and high alloyed steel	33A 60-80Q 4B44E
• Structural steel	11A 60-80Q 4B44E
• Non-ferrous metals and alloy of them	33A 80-100Q 4B44E
• Non-metals, synthetic materials	21C 46-60M 4B44E
• Ceramics	21C 60-80P 4B44E

The cut-off wheels 1TR shape are used at 60 m/s maximum speed.

The usual dimensions of cut-off wheels without inserts manufactured by S.C. CARBOCHIM S.A. and the corresponding number of rotations for each diameter are indicated in the table below:

Dimensions (mm)			Admitted number of rotations for 60 m/s	Dimensions (mm)			Admitted number of rotations for 60 m/s
External diameter	Internal diameter	Thickness		External diameter	Internal diameter	Thickness	
80	20	0.4÷2	14330	180	20	0.8÷3.5	6370
100	20, 16	0.4÷2	11465	200	20	1.0÷3.5	5730
115	20	0.4÷2	9970	230	20, 32	2÷3.5	4985
125	20	0.5÷3	9170	250	20, 32	2÷4	4585
150	20	0.5÷3	7645	300	32	2÷4	3820



# OBLIGATORY RULES FOR CUTTING OPERATION

1. The cut-off wheels must be stored into a dry room with 10-20°C temperature; settled horizontally and covered with a plate to avoid bending.

2. Before using check if the cut-off wheels were not damage during the transport.

3. Before to fit on cutting machines, check the number of rotations of this not to exceed the number of rotations that are indicated on the label of cut-off wheel.

4. Mount the cut-off wheels between the cardboard flanges, which must be equal with the fixing flanges diameters; the diameter of the fixing flanges must be min. 1/3 from the cut-off wheel diameter.

After correct mounting, test the cut-off wheel at light running.

5. The cut-off machine must be well fixed in order to avoid oscillations. Driving shaft must be without radial and axial clearances.

6. The piece must be well fixed in order to avoid its removal, that may cause the cut-off wheel breaking.

It is an obligatory request to arrange the piece in order to avoid any bending stress during the cutting operation and especially at its finish.

It must pay attention in cutting pipe, as the cutted segment doesn't clamp on cut-off wheel because it will be broke.

For all pretentious cuttings or for complex sections, it will be used only reinforced cut-off wheels which resist at breaking avoiding accidents.

Avoid large cutting depths and large contact lengths between piece and cut-off wheel.

7. The engine power must be carefully chosen. Any peripheral speed fall affect the quality, as well as the cutting process.

On the other side, a smaller advance leads to fast clogging of the cut-off wheels, that will hinder obtaining of white, cold and without burrs cuts.

To correct such a clogging, it is enough to make some rapid cuttings on small cutting sections (contact lengths) and the disc will self-sharp.

1 TRS

1 TRS

1 TRS

1 TRS

1 TRS

1 TRS

1 TRS

8. For manual cuttings on sheet, use a square spacer, in order to avoid the cut-off wheel's flexure and breaking.

9. If you work on cutting machines which allow advance adjustments, it is recommended to establish it by tests; the cutting parameters will be proper for each type of cutted material. If it doesn't obtain white cuts and the machine hasn't any defect it must be changed the cut-off wheel's specification.

10. When blue cuts and burrs don't disturb, use hard cut-off wheels with closed structure.

If the cut is white and cold, but at the finish of the cutting arise however a burr, this matter can be very easy solved by setting under the cutting material an auxiliary material, so that the cut-off wheel should not cut on light cutting at the finish of the cutting operation.

The auxiliary material fixing must be firmly fixed and similar with the piece's material.

11. It is recommended to keep a straight cutting in order to avoid the disc breaking caused by its bending stress.

12. For heat sensitive materials, the heat must be absorbed with the help of a cooling liquid.

Wet cutting must be adjusted when the thermal conductivity of the material doesn't allow heat elimination from the contact point.

It is never allowed to use cooling alkali liquids as well as the leading of the liquid jet straight on cut.

Discontinuous supply or on a single surface with cooling liquid lead to the ununiform usage of the cut-off wheels.

As to other grinding operations, at first it must stop the cooling and then the machine.

13. The use of cases and goggles is obligatory.

**DON'T USE THE CUTTING WHEELS  
FOR DEBURRING OPERATIONS!**

27 E

27 E

27 E

27 E

27 E

27 E

27 E

# OBLIGATORY RULES FOR GRINDING OPERATION

1. The grinding wheels and discs must be stored accordingly, into dry room, at 10-20°C temperatures, settled horizontally, in packets of 25-50 pieces, depending on the disc thickness.

2. Before using check if the grinding wheels and discs were not damaged during the transportation.

3. Before mounting the grinding wheels on the deburring machine, check the machine's revolution not to exceed the maximum number of rotations indicated on the label of the grinding wheel.

4. The deburring machine must be in good working state, respectively without radial and axial clearance of the driving shaft.

5. It is categorically forbidden to grind with cut-off wheels.

6. The work piece for grinding must be well fixed.

7. Due the big thicknesses (4-10 mm) of the grinding wheels, the grinding machine's power must be corelated with the mounted grinding wheel's weight, not to overforce the grinding machine.

8. Before starting the proper grinding operation, test the grinding wheel at light running.

9. Avoid the steep penetration in the work piece and watch to maintain a constant strength force on the piece.

10. Avoid to maintain the grinding wheel on sharp edges because of the danger to cut the inserts and to break the disc.

11. Don't work without the grinding machine's protection case and also it is necessary to use the protection goggles.

27 E

27 E

27 E

27 E

27 E

27 E

27 E

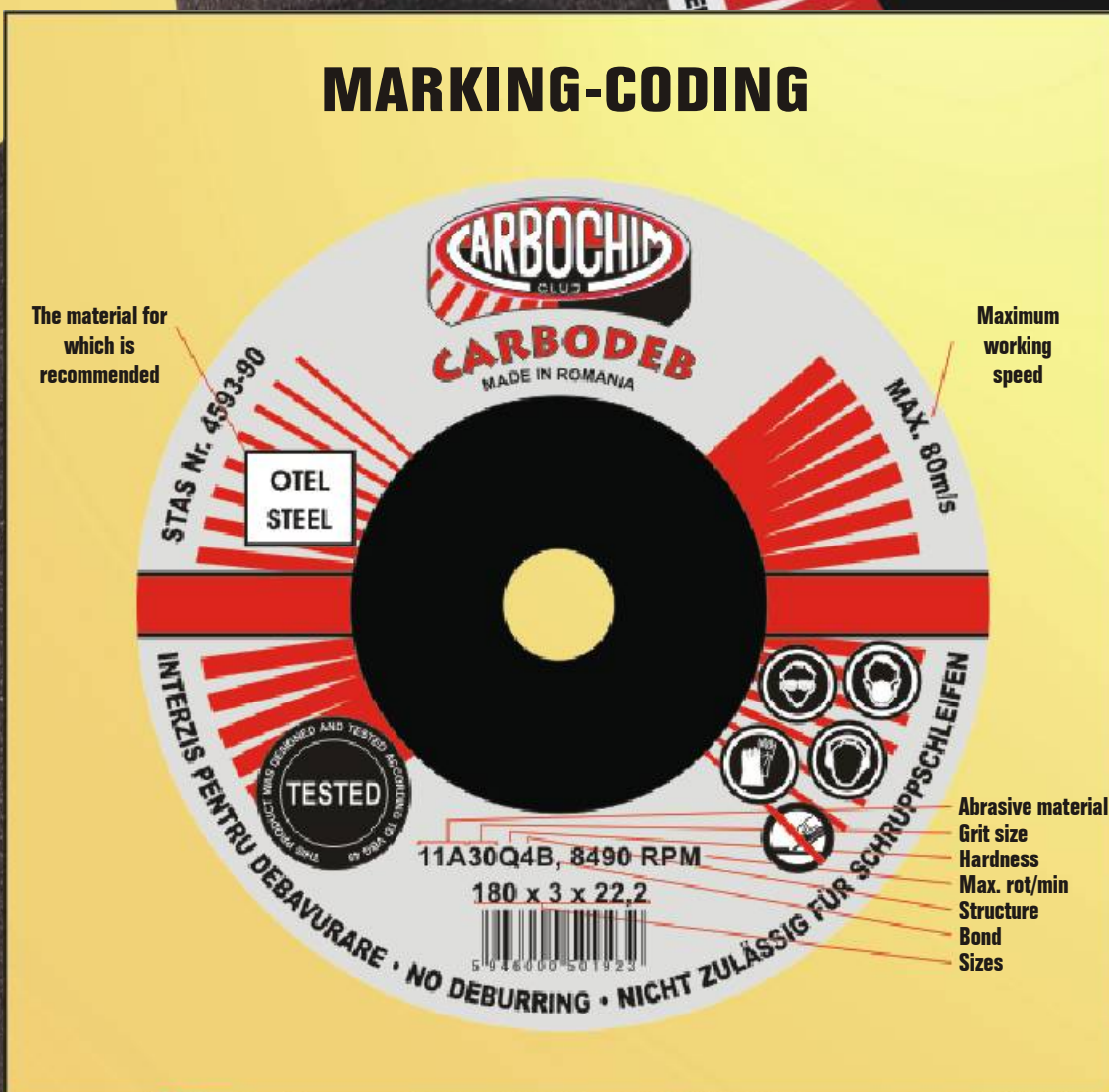


# CARBOCHIM S.A.

Piața 1 Mai Nr. 3  
3400 Cluj-Napoca, România

Tel: +40-(0)264-437005 / 437008;  
Fax: +40-(0)264-437014 / 437026;  
<http://www.carbochim.ro>

## MARKING-CODING



### MAX. SPEED FOR CUTTING AND GRINDING WHEELS REINFORCED WITH GLASS FIBER INSERTS

MAXIMUM SPEED	D mm	100	115	125	150	180	230	300	350	400	500	600	800
	80 m/s	Rotation	15280	13290	12230	10190	8490	6650	5095	4360	3820	3060	2550