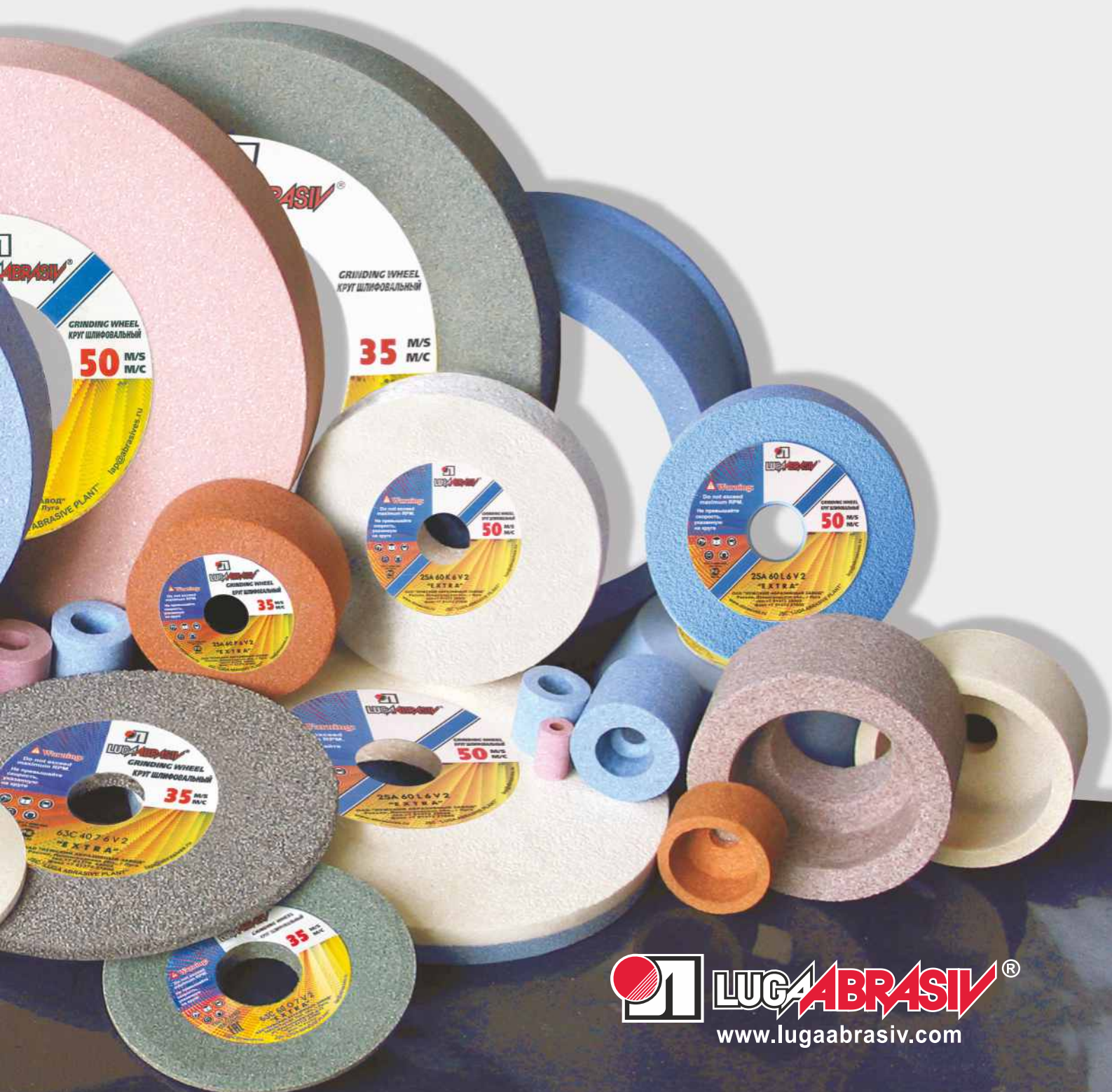


# Abrasive tools on ceramic bond



# SYSTEM OF ABRASIVE TOOLS MARKING

$\frac{3}{1}$      $\frac{150 \times 16 \times 32}{2}$      $\frac{25A}{3}$      $\frac{40}{4}$      $\frac{K}{5}$      $\frac{6}{6}$      $\frac{V}{7}$      $\frac{30}{8}$

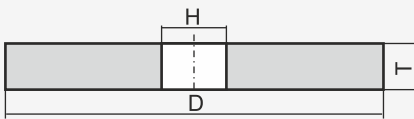
D
T
H

| 1. TYPE              |  |
|----------------------|--|
| WHEELS               |  |
| 1                    | straight profile wheel                         |
| 2                    | annular wheel                                  |
| 3                    | conic profile wheel                            |
| 4                    | double-sided conic profile wheel               |
| 5                    | recessed wheel                                 |
| 6                    | cup-cylindrical wheel                          |
| 7,8,9                | double-sided recessed wheel                    |
| 10                   | double-sided recessed hub wheel                |
| 11                   | cup conic wheel                                |
| 12                   | flat dish wheel                                |
| 14                   | dish wheel                                     |
| 20                   | one-sided conic recessed wheel                 |
| 21                   | double-sided conic recessed wheel              |
| 23                   | one-sided conic and cylindrical recessed wheel |
| 27                   | depressed center wheel                         |
| 35                   | straight profile butt-end wheel                |
| 36,37,40             | wheel with pressed-in fastening components     |
| 38                   | hub butt-end wheel                             |
| 41                   | cut-off wheels                                 |
| 42                   | cut-off wheels with depressed center           |
| SEGMENTS             |  |
| SP                   | rectangular                                    |
| 1S                   | convex-concave                                 |
| 2S                   | concave-convex                                 |
| 3S                   | convex-flat                                    |
| 4S                   | flat-convex                                    |
| 5S                   | trapezoidal                                    |
| 6S                   | for floor grinding                             |
| 7S                   | for surface grinding                           |
| 9S                   | for rail grinding                              |
| STONES               |  |
| BP                   | rectangular                                    |
| BKv                  | square   |
| BT                   | triangular                                     |
| BKr                  | round  |
| BPs                  | special  |
| 2. WHEEL SIZES       |  |
| D                    | outer diameter                                 |
| T                    | height   |
| H                    | hole diameter                                  |
| 3. ABRASIVE MATERIAL |  |
| 14A (A)              | BROWN FUSED ALUMINA                            |
| 25A (WA)             | FUSED ALUMINA                                  |
| 38A (ZK)             | ZIRCONIA ALUMINA                               |
| 53C, 54C (C)         | BLACK SILICON CARBIDE                          |
| 63C, 64C (GC)        | GREEN SILICON CARBIDE                          |

| 4. GRIT (FEPA)                      |                               |
|-------------------------------------|-------------------------------|
| ABRASIVE GRAIN                      |                               |
| F10                                 | F36                           |
| F12                                 | F40                           |
| F14                                 | F46                           |
| F16                                 | F54                           |
| F20                                 | F60                           |
| F22                                 | F70                           |
| F24                                 | F80                           |
| F30                                 | F90                           |
| POWDERS                             |                               |
| F100                                | F180                          |
| F120                                | F220                          |
| F150                                |                               |
| MICROCRYSTALLINE POWDERS            |                               |
| F230                                | F360                          |
| F240                                | F400                          |
| F280                                | F500                          |
| F320                                | F600                          |
| 5. HARDNESS                         |                               |
| F, G                                | HIGHLY SOFT                   |
| H, I, J                             | SOFT                          |
| K, L                                | AVERAGE SOFT                  |
| M, N                                | AVERAGE                       |
| O, P, Q                             | AVERAGE HARD                  |
| R, S                                | HARD                          |
| T                                   | HIGHLY HARD                   |
| V                                   | EXTREMELY HARD                |
| 6. STRUCTURE                        |                               |
| 1-2-3-4                             | closed                        |
| 5-6-7                               | average                       |
| 8-9-10                              | open                          |
| 11-13                               | high-porous                   |
| 7. BOND                             |                               |
| V                                   | CERAMIC                       |
| B                                   | RESINOID                      |
| BF                                  | RESINOID WITH REINFORCEMENT   |
| B4                                  | RESINOID WITH GRAPHITE FILLER |
| 8. OPERATING SPEED, MPS             |                               |
| 20; 25; 32; 35; 40; 50; 63; 80; 100 |                               |

# GRINDING WHEELS

## Type 1



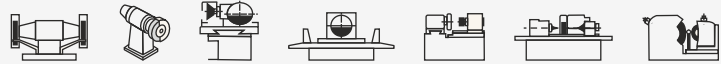
D – 16mm ÷ 900mm  
T – 3mm ÷ 200mm  
H – 6mm ÷ 400mm



**35m/s**  
**50m/s**  
**60m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F16 |
| Hardness        | F-S      |
| Structure       | 5-13     |

For all types of grinding of details and constructions from different kinds of steel and also for sharpening of cutting tools made from high-speed steel.

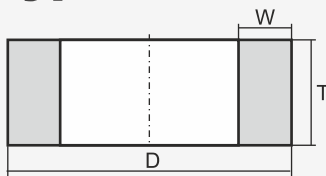


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F180-F16      |
| Hardness        | H-V           |
| Structure       | 6-8           |

For all types of grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, sharpening of hard-alloy cutting tools.

## Type 2



D – 120mm ÷ 460mm  
T – 11mm ÷ 150mm  
W – 15mm ÷ 50mm



**32m/s**  
**35m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F150-F24 |
| Hardness        | F-P      |
| Structure       | 5-10     |

For flat grinding by butt-end of the wheel of details and constructions from different types of steel and also for sharpening of cutting tools from high-speed steel.

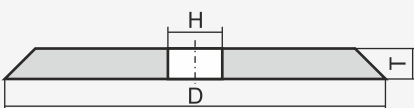


**32m/s**  
**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F90-F24       |
| Hardness        | J-M           |
| Structure       | 6-8           |

For flat grinding by butt-end of the wheel of details and constructions made from cast iron, non-ferrous metals and mineral materials.

## Type 3



D – 40mm ÷ 600mm  
T – 6mm ÷ 70mm  
H – 8mm ÷ 305mm



**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F16 |
| Hardness        | J-Q      |
| Structure       | 5-8      |

For sharpening of rip-and disc saws teeth made from instrumental steel, spline grinding, gear-tooth grinding, sharpening of cutting tools made from high-speed steel.

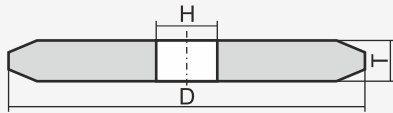


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F90-F24       |
| Hardness        | J-Q           |
| Structure       | 6-8           |

For gear-tooth grinding, spline grinding of details made from cast iron, non-ferrous metals and mineral materials, sharpening of hard-alloy cutting tools.

## Type 4

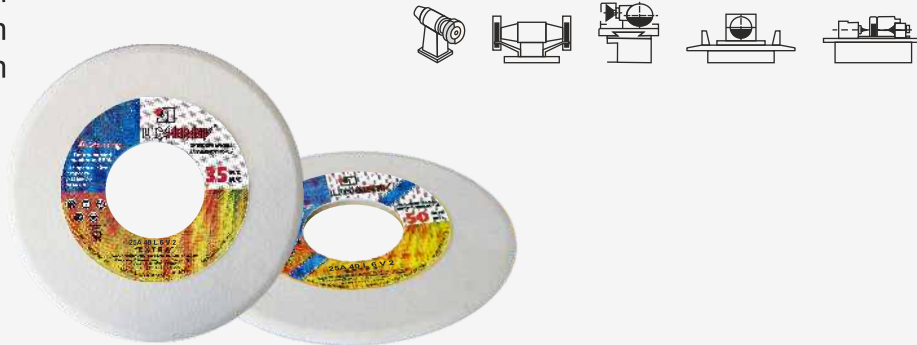


**35m/s**  
**50m/s**

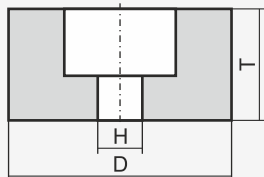
| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F24 |
| Hardness        | H-P      |
| Structure       | 5-10     |

For gear-tooth grinding, thread grinding of details made from different types of steel, sharpening of cutting tools made from high-speed steel.

D – 250mm ÷ 500mm  
T – 8mm ÷ 36mm  
H – 76mm ÷ 203mm



## Type 5



**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F16 |
| Hardness        | H-Q      |
| Structure       | 5-10     |

For all types of grinding of details and constructions made from different kinds of steel, for sharpening of cutting tools made from high-speed steel.

D – 16mm ÷ 600mm  
T – 8mm ÷ 100mm  
H – 6mm ÷ 305mm

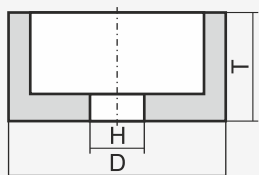


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F120-F16      |
| Hardness        | J-Q           |
| Structure       | 6-8           |

For all types of grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening of hard-alloy cutting tools.

## Type 6



**32m/s**  
**35m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F16 |
| Hardness        | F-Q      |
| Structure       | 6-10     |

For flat, round inner grinding of details and constructions made from different types of steels, for sharpening of cutting tools made from high-speed steel.

D – 40mm ÷ 300mm  
T – 25mm ÷ 100mm  
H – 13mm ÷ 150mm

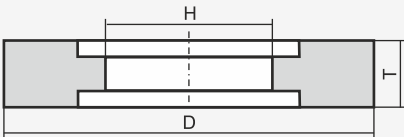


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F150-F36      |
| Hardness        | F-P           |
| Structure       | 6-8           |

For flat, round inner grinding of details and constructions from cast iron, non-ferrous metals, natural and artificial stone, glass, sharpening of hard-alloy cutting tools.

## Type 7



D – 125mm ÷ 900mm  
T – 20mm ÷ 180mm  
H – 32mm ÷ 305mm

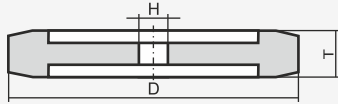
**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F16 |
| Hardness        | J-Q      |
| Structure       | 5-10     |

For flat, round outer and inner grinding of details and constructions made from different types of steel, for sharpening of cutting tools made from high-speed steel, for grain peeling.



## Type 7-S

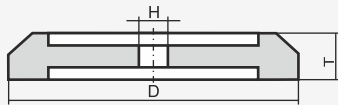


**35m/s**

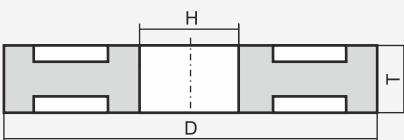
| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F90-F16       |
| Hardness        | K-Q           |
| Structure       | 6-8           |

For flat, round outer grinding of details and constructions made from different types of cast iron, non-ferrous metals, natural and artificial stone, for grain peeling.

## Type 7-M



## Type 8

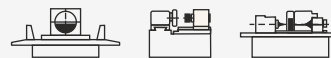


D – 350mm ÷ 450mm  
T – 40mm ÷ 50mm  
H – 127mm ÷ 203mm

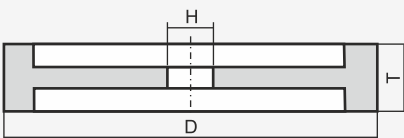
**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F100-F16 |
| Hardness        | J-Q      |
| Structure       | 5-10     |

For flat, round outer and inner grinding of details and constructions made from different types of steel.



## Type 9

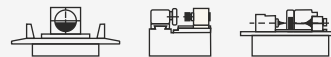


D – 175mm ÷ 450mm  
T – 25mm ÷ 50mm  
H – 32mm ÷ 203mm

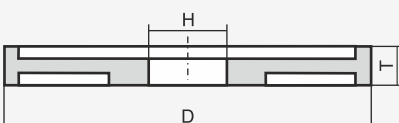
**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F100-F16 |
| Hardness        | J-Q      |
| Structure       | 5-10     |

For flat, round outer and inner grinding of details and constructions made from different types of steel.



## Type 10



D – 150mm ÷ 300mm  
T – 10mm ÷ 20mm  
H – 32mm ÷ 127mm

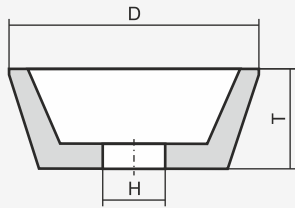
**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F100-F40 |
| Hardness        | K-P      |
| Structure       | 6-8      |

For grinding of snap gauges and sliding calipers.



## Type 11



D – 50 mm ÷ 250 mm  
T – 25 mm ÷ 140 mm  
H – 13 mm ÷ 100 mm



**32m/s**  
**35m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F150-F36 |
| Hardness        | I-Q      |
| Structure       | 6-8      |

For flat grinding of details and constructions made from different kinds of steel, for spline grinding, sharpening of cutting tools made from high-speed steel.

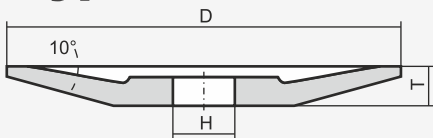


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F180-F36      |
| Hardness        | I-Q           |
| Structure       | 6-8           |

For flat grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening of hard-alloy cutting tools.

## Type 12



D – 50 mm ÷ 280 mm  
T – 8 mm ÷ 32 mm  
H – 6 mm ÷ 90 mm



**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F36 |
| Hardness        | I-P      |
| Structure       | 6-8      |

For recessing of details and constructions made from different kinds of steel, for sharpening of cutting tools made from high-speed steel.

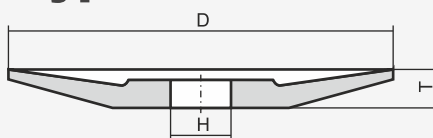


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F180-F40      |
| Hardness        | J-Q           |
| Structure       | 6-8           |

For recessing of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening of hard-alloy cutting tools.

## Type 14



D – 100 mm ÷ 500 mm  
T – 10 mm ÷ 33 mm  
H – 20 mm ÷ 203 mm



**35m/s**  
**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F36 |
| Hardness        | I-P      |
| Structure       | 6-8      |

For recessing of details and constructions made from different kinds of steel, for sharpening of cutting tools made from high-speed steel.

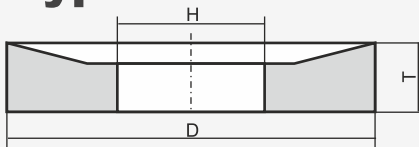


**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F120-F40      |
| Hardness        | K-M           |
| Structure       | 6-8           |

For recessing of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening of hard-alloy tools.

## Type 20



**35m/s**  
**50m/s**

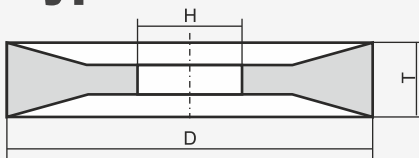
D – 100mm ÷ 500mm  
T – 32mm ÷ 100mm  
H – 20mm ÷ 203mm

| Characteristics |         |
|-----------------|---------|
| Material        | 25A     |
| Grit            | F60-F24 |
| Hardness        | K-P     |
| Structure       | 6       |

For all kinds of grinding with the possibility of synchronous processing by butt-end and peripheral side of the details and constructions made from different types of steel, for sharpening of cutting tools made from high-speed steel.



## Type 21



**35m/s**  
**50m/s**

D – 200mm ÷ 600mm  
T – 16mm ÷ 80mm  
H – 32mm ÷ 305mm

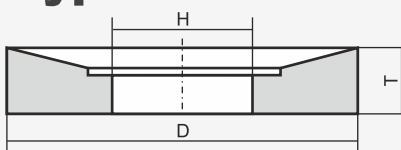


| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F120-F36 |
| Hardness        | K-P      |
| Structure       | 6-8      |

For all kinds of grinding with the possibility of synchronous processing by butt-end and peripheral side of the details and constructions made from different types of steel, for sharpening of cutting tools made from high-speed steel.



## Type 23



**35m/s**  
**50m/s**

D – 300mm ÷ 750mm  
T – 40mm ÷ 100mm  
H – 127mm ÷ 305mm

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F100-F36 |
| Hardness        | J-Q      |
| Structure       | 6-8      |

For all kinds of grinding with the possibility of synchronous processing by butt-end and peripheral side of the details and constructions made from different types of steel, for sharpening of cutting tools made from high-speed steel, for grain peeling.

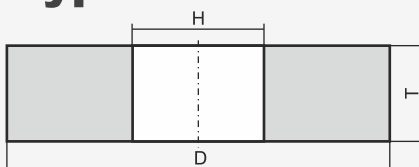


**32m/s**  
**35m/s**

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F120-F36      |
| Hardness        | K-P           |
| Structure       | 7-8           |

For all kinds of grinding with the possibility of synchronous processing by butt-end and peripheral side of the details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening of hard-alloy cutting tools.

## Type 35



**35m/s**

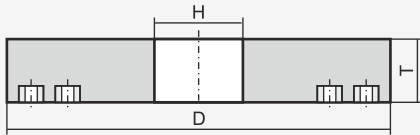
D – 300mm ÷ 400mm  
T – 40mm ÷ 50mm  
H – 76mm ÷ 203mm

| Characteristics |     |
|-----------------|-----|
| Material        | 25A |
| Grit            | F60 |
| Hardness        | K-O |
| Structure       | 5-6 |

For flat grinding by butt-end of the details and constructions made from different types of steel.



## Type 36



35m/s

D – 380mm ÷ 660mm  
T – 55mm ÷ 100mm  
H – 0mm ÷ 350mm

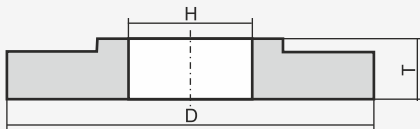
| Characteristics |         |
|-----------------|---------|
| Material        | 25A     |
| Grit            | F60-F22 |
| Hardness        | K-N     |
| Structure       | 6-8     |



For flat grinding by butt-end of the details and constructions made from different types of steel.



## Type 38



35m/s

D – 300mm ÷ 900mm  
T – 25mm ÷ 40mm  
H – 127mm ÷ 305mm

| Characteristics |     |
|-----------------|-----|
| Material        | 25A |
| Grit            | F60 |
| Hardness        | K-O |
| Structure       | 6   |

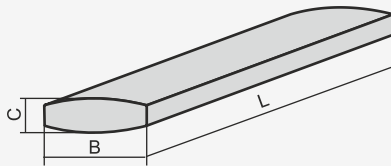


For flat grinding by butt-end of the details and constructions made from different types of steel.

The plant receives the orders for wheels manufacturing with the dimensions and characteristics not indicated in the given table.

## SPECIAL GRINDING STONES

### Type BPs



B – 15mm ÷ 20mm  
C – 5mm ÷ 8mm  
L – 125mm ÷ 140mm

| Characteristics |      |
|-----------------|------|
| Material        | 25A  |
| Grit            | F150 |
| Hardness        | K-P  |
| Structure       | 6-8  |

For final setting and sharpening of cutting tools, tapping cutters.

### Type B



B – 35mm ÷ 40mm  
C – 15mm ÷ 20mm  
L – 225mm

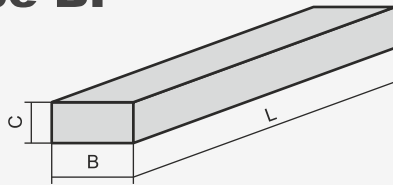


For setting, sharpening of scythes and cutting tools. The grinding stones are made from fused alumina and silicon carbide grinding materials.

The plant receives orders for grinding stones manufacturing with the dimensions and characteristics not indicated in the given table.



## Type BP



B – 9mm ÷ 200mm  
C – 8mm ÷ 50mm  
L – 100mm ÷ 300mm

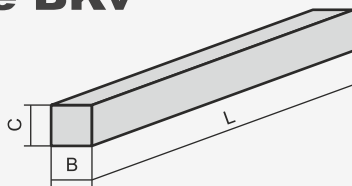
| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F40 |
| Hardness        | H-Q      |
| Structure       | 6-8      |

For flat and round outer grinding, for honing of details made from different kinds of steel, sharpening and setting of cutting tools, including diamond cutting tools.

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F180-F16      |
| Hardness        | H-Q           |
| Structure       | 7-8           |

For flat and round outer grinding, for honing of details made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening and setting of cutting tools, including diamond cutting tools.

## Type BKv



B – 6mm ÷ 50mm  
C – 6mm ÷ 50mm  
L – 100mm ÷ 300mm

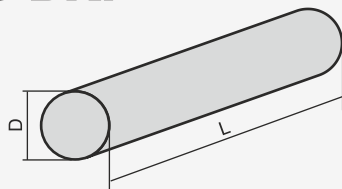
| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F36 |
| Hardness        | H-Q      |
| Structure       | 6-8      |

For flat and round outer grinding, for honing of details made from different kinds of steel, sharpening and setting of cutting tools.

| Characteristics |               |
|-----------------|---------------|
| Material        | 54C; 63C; 64C |
| Grit            | F180-F40      |
| Hardness        | I-Q           |
| Structure       | 7-8           |

For flat and round outer grinding, for honing of details made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening and setting of cutting tools.

## Type BKr

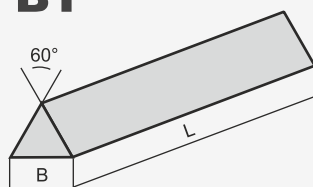


D – 10mm ÷ 85mm  
L – 100mm ÷ 190mm

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F120-F40 |
| Hardness        | K-O      |
| Structure       | 6-8      |

For sharpening and setting of cutting tools, for sharpening of combine knives.

## Type BT



B – 13mm ÷ 20mm  
L – 100mm ÷ 150mm

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F180-F60 |
| Hardness        | K-P      |
| Structure       | 6-8      |

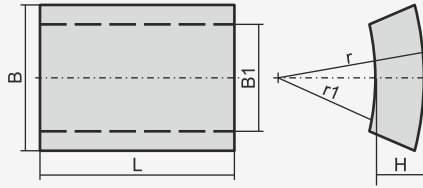
For flat grinding of details and constructions made from different kinds of steel, for sharpening and setting of cutting tools.

| Characteristics |           |
|-----------------|-----------|
| Material        | 63C, 64C  |
| Grit            | F180-F100 |
| Hardness        | K-O       |
| Structure       | 7-8       |

For flat grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain, for sharpening and setting of cutting tools.

# SEGMENTS

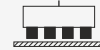
## Type 1C



B – 75mm ÷ 90mm  
H – 20mm ÷ 55mm  
L – 125mm ÷ 140mm

| Characteristics |         |
|-----------------|---------|
| Material        | 25A     |
| Grit            | F40-F36 |
| Hardness        | G-H     |
| Structure       | 6-8     |

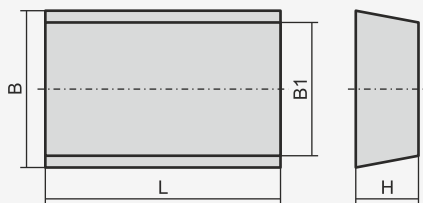
For flat grinding of details and constructions made from different kinds of steel.



| Characteristics |          |
|-----------------|----------|
| Material        | 63C, 64C |
| Grit            | F40      |
| Hardness        | J        |
| Structure       | 7        |

For flat grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone.

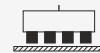
## Type 5C



B – 56mm ÷ 150mm  
H – 16mm ÷ 40mm  
L – 100mm ÷ 150mm

| Characteristics |         |
|-----------------|---------|
| Material        | 25A     |
| Grit            | F90-F24 |
| Hardness        | H-P     |
| Structure       | 6-10    |

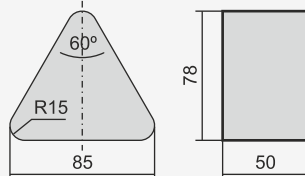
For flat grinding of details and constructions made from different kinds of steel.



| Characteristics |          |
|-----------------|----------|
| Material        | 63C, 64C |
| Grit            | F60-F36  |
| Hardness        | J-P      |
| Structure       | 7        |

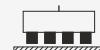
For flat grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone.

## Type 6C



| Characteristics |          |
|-----------------|----------|
| Material        | 25A; 54C |
| Grit            | F60-F36  |
| Hardness        | K-P      |
| Structure       | 6-7      |

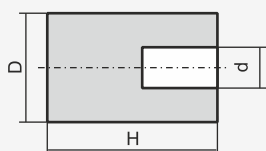
For high-performance grinding of concrete and marble floors.



The plant receives orders for segments manufacturing with the dimensions and characteristics not indicated in the given table.

# CYLINDRICAL MOUNTED GRINDING POINTS

## Type AW



D – 16mm ÷ 32mm  
H – 20mm ÷ 40mm  
d – 6mm

**35m/s**

**50m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 25A      |
| Grit            | F120-F40 |
| Hardness        | K-Q      |
| Structure       | 6-8      |

For smoothing operations and inner grinding of details and constructions made from different kinds of steel.



**35m/s**

| Characteristics |          |
|-----------------|----------|
| Material        | 63C, 64C |
| Grit            | F90-F40  |
| Hardness        | M-N      |
| Structure       | 7-8      |

For smoothing operations and inner grinding of details and constructions made from cast iron, non-ferrous metals, natural and artificial stone, glass, porcelain.

JSC «LUGA ABRASIVE PLANT» was founded in 1906.

We cherish our rich history, traditions and vast experience in manufacture of abrasive tools.  
Today JSC "LugaAbrasive Plant" is one of the largest and highly efficient plants in the world.

We sell more 321 400 000 pieces per year of cut-off resinoid bond wheels, manufacture flap wheels made of coated abrasives and other goods, ceramic bonded tool, crucibles for melting of non-ferrous metals.

The products of the plant enjoy great popularity both in Russia and abroad.  
Competent and well-thought-out strategy, the latest technologies, modern equipment, professional and cohesive team - all that is a reliable basis for the successful and dynamic development of the plant!

## WE PRODUCE:

### CUTTING AND GRINDING WHEELS, BARS, SEGMENTS ON BAKELITE BOND



### GRINDING WHEELS, BARS, SEGMENTS ON CERAMIC BOND



### COATED ABRASIVES, ABRASIVE TOOLS ON FLEXIBLE BASE



### REFRATORY PRODUCTS, CRUCIBLES, GRAPHITE-CONTAINING CRUCIBLES ON CARBON BIND





JSC "Luga Abrasive Plant"

32, Krasnoarmeiskaya str., 188230, Luga, Leningrad reg., Russia

TEL: +7 (81372) 22593, +7 (81372) 22002, +7 (81372) 21937

FAX: +7 (81372) 27800, +7 (81372) 41800, +7 (81372) 40780

e-mail: lap@abrasives.ru www.abrasives.ru