

## B24D

**TOOLS FOR GRINDING, BUFFING OR SHARPENING (abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls [B24B 31/14](#); honing tools [B24B 33/08](#); lapping tools [B24B 37/11](#))**

### Definition statement

*This place covers:*

- Grinding, polishing or sharpening tools for working on any material. It covers in particular;
- physical features of abrasive bodies, or sheets, e.g. abrasive surfaces of special nature or physical properties enhanced by additives, and abrasive bodies or sheets characterised by their abrasive constituents, e.g. used as bonding agent;
- bonded abrasive wheels, or wheels with inserted abrasive blocks, as well as bushings or mountings therefor
- wheels having flexibly-acting working parts, e.g. buffing wheels, as well as mountings therefor;
- constructional features of flexible abrasive materials and special features in the manufacture of such materials, as well as wheels or drums supporting in exchangeable arrangement a layer of such flexible abrasive material, e.g. sandpaper;
- hand tools or other devices for non-rotary grinding, polishing, or stropping;
- the manufacture of grinding tools, e.g. wheels, not otherwise provided for.

### Relationships with other classification places

Subclass [B24B](#) covers predominantly the machines or devices for grinding, polishing or sharpening using tools covered by [B24D](#), including the headstocks holding the tools. [B24B](#) covers as well the tools specially designed for the particular grinding or polishing operations of tumbling, honing or lapping. It further provides places for the tools specially adapted for grinding or polishing optical surfaces on lenses as a particular kind of work.

Complementary to [B24D 3/00](#), [C09K 3/14](#) covers abrasive materials eligible as constituents of abrasive bodies or sheets and [C09G 1/02](#) covers polishing compositions containing abrasives or grinding agents.

The main group [B24D 18/00](#) covers the manufacture of grinding tools, e.g. wheels, except for the manufacture of flexible abrasive materials, which is covered by [B24D 11/001](#).

### References

#### Limiting references

*This place does not cover:*

Abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls	<a href="#">B24B 31/14</a>
Honing tools	<a href="#">B24B 33/08</a>
Lapping tools	<a href="#">B24B 37/11</a>

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Grinding discs or grinding worms specially adapted for use in machines for manufacturing gear teeth	<a href="#">B23F 21/02</a>
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Tools specially designed, e.g. bowl-like, for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work	<a href="#">B24B 13/01</a>
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### **Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Headstocks as component parts of grinding machines or devices, especially grinding heads	<a href="#">B24B 41/04</a>
Polishing compositions containing abrasives or grinding agents	<a href="#">C09G 1/02</a>
Abrasives	<a href="#">C09K 3/14</a>
Friction linings; Attachment thereof; Selection of co-acting friction substances or surfaces	<a href="#">F16D 69/00</a>

### **Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Grinding	means machining by fixed abrasive particles in its most general sense and covers "corrective" operations, such as correction of dimension, e.g. diameter, or shape, e.g. roundness. It is characterised by a comparatively high material removal rate.
Polishing	means mechanically finishing the surface of a work so as to improve, e.g. smoothen, its surface, without substantial change of dimension or shape of the work as would occur in grinding.
Abrading	is used in its most general sense to mean mechanically removing material by a multitude of fixed or loose particles that are forced into the surface of the work so that each particle cuts away small chips of material.
Cutting	is used in the sense that an abrasive grain functions as a microscopic single-point cutting edge and shears a chip, analogous to what is conventionally called a "cut" chip.

#### Comments

It is noted that the above terms overlap in material removal rate and surface roughness such that a clear distinction by these parameters is not possible.

In connection with glass the terms "grinding" and "polishing" are treated as being equivalent.

### **Synonyms and Keywords**

*In patent documents, the following words/expressions are often used as synonyms:*

- "buffing" and "polishing"
- "stropping" and "sharpening"
- "dressing" and "conditioning"

**B24D 3/00**

**Physical features of abrasive bodies, or sheets, e.g. abrasive surfaces of special nature; Abrasive bodies or sheets characterised by their constituents**

**Definition statement**

*This place covers:*

Physical and chemical properties of abrasive bodies, or sheets, including also their supporting structures.

This group is subdivided in inorganic (e.g. metallic, concrete, ceramic...) and organic constituents (e.g. rubber, resin...) with close-grained or porous structure. The constituent may be used as supporting member, for pre- and after-treatment, or as bonding agent. This group covers also additives, which are used for enhancing special physical properties, e.g. wear resistance, electric conductivity, or self cleaning properties.

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Compositions of friction linings	<a href="#">F16D 69/02</a>
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**B24D 3/14**

**ceramic, i.e. vitrified bondings**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Mixture with metals	<a href="#">B24D 3/06</a>
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**B24D 3/348**

**{utilised as impregnating agent for porous abrasive bodies}**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

After-treatments in general	<a href="#">B24D 3/005</a>
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**B24D 5/00**

**Bonded abrasive wheels, or wheels with inserted abrasive blocks, designed for acting only by their periphery; Bushings or mountings therefor**

**Definition statement**

*This place covers:*

Bonded abrasive wheels, or wheels with inserted abrasive blocks, where the grinding action is performed only by the periphery of the wheel. wheels in one piece, wheels with inserted blocks, cut-off wheels and zonally-graded wheels comprising different abrasives.

The abrasive wheels may have integrated cooling provisions. The bushings or mountings of the grinding wheels, as well as balancing means are also covered by this group.

**B24D 5/06**

**with inserted abrasive blocks, e.g. segmental**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Bonded abrasive wheels which are zonally-graded	<a href="#">B24D 5/14</a>
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**B24D 5/10**

**with cooling provisions, e.g. with radial slots**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Cooling equipment not incorporated in grinding wheels, including devices for feeding coolant	<a href="#">B24B 55/02</a>
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**B24D 5/165**

**{Balancing means}**

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Balancing means not incorporated in the bushings or wheels, but provided as distinct balancing mechanisms	<a href="#">B24B 41/042</a>
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## B24D 7/00

**Bonded abrasive wheels, or wheels with inserted abrasive blocks, designed for acting otherwise than only by their periphery, e.g. by the front face; Bushings or mountings therefor**

### Definition statement

*This place covers:*

Bonded abrasive wheels, or wheels with inserted abrasive blocks, where the grinding action is performed otherwise than only by the periphery of the wheel, e.g. by the front face.

Wheels in one piece, wheels with inserted blocks, and zonally-graded wheels comprising different abrasives.

The abrasive wheels may have integrated cooling provisions or apertures for inspecting the surface to be abraded.

The bushings or mountings of the grinding wheels are also covered by this group.

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Saw cylinders having their cutting rim equipped with abrasive particles for working stone or glass	<a href="#">B28D 1/041</a>
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## B24D 7/06

**with inserted abrasive blocks, e.g. segmental**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Bonded abrasive wheels which are zonally-graded	<a href="#">B24D 7/14</a>
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## B24D 7/10

**with cooling provisions**

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Cooling equipment not incorporated in grinding wheels, including devices for feeding coolant	<a href="#">B24B 55/02</a>
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## B24D 7/18

### Wheels of special form

#### Relationships with other classification places

If a wheel is specially designed for a particular purpose provided for in a single other class, that class takes precedence.

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Saw cylinders having their cutting rim equipped with abrasive particles for working stone or glass	<a href="#">B28D 1/041</a>
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## B24D 9/00

### Wheels or drums supporting in exchangeable arrangement a layer of flexible abrasive material, e.g. sandpaper

#### Definition statement

*This place covers:*

Wheels or drums supporting a layer of flexible abrasive material in an exchangeable arrangement. The supporting drums may be expansible or rigid for carrying the flexible material in tubular form.

This group covers also tools having rolled strips of flexible abrasive material, as well as circular back-plates for carrying flexible material, including suction means for securing the material.

#### References

##### Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheels having flexibly-acting working parts, e.g. buffing wheels	<a href="#">B24D 13/00</a>
Wheels or drums as machine elements not intended to be used in connection with abrasive materials	<a href="#">F16C</a> , <a href="#">F16D</a> , <a href="#">F16H</a> , <a href="#">F16J</a>

## B24D 11/00

### Constructional features of flexible abrasive materials; Special features in the manufacture of such materials

#### Definition statement

*This place covers:*

Constructional features of flexible abrasive materials, as well as their fabrication. This includes backings, e.g. foils, webs mesh fabrics, as well as the finishing of manufactured abrasive webs, for example by cutting or deforming. This group covers also the connection of the ends of abrasive materials, e.g. for making abrasive belts.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Manufacture of grinding tools or other grinding devices, e.g. wheels, not otherwise provided for	<a href="#">B24D 18/00</a>
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## B24D 13/00

### Wheels having flexibly-acting working parts, e.g. buffing wheels; Mountings therefor

#### Definition statement

This place covers:

Wheels having flexible working parts acting by their periphery, as well as by their front face. Flexible working parts may be flaps, strips, brushes and felted or spongy material, including also steel wool or foamed latex. This group covers also cooling provisions used in connection with the wheels, as well as their mountings.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheels having the flexible abrasive material in an exchangeable arrangement	<a href="#">B24D 9/00</a>
Machines, devices or processes for polishing or finishing surfaces on work by means of tools made of soft or flexible material, with or without the application of solid or liquid polishing agents, e.g. using buffing wheels.	<a href="#">B24B 29/00</a>

## B24D 13/147

### {comprising assemblies of felted or spongy material; comprising pads surrounded by a flexible material}

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Lapping pads for working plane surfaces, e.g. for wafer polishing	<a href="#">B24B 37/20</a>
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**B24D 13/18****with cooling provisions****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Cooling equipment not incorporated in grinding wheels, including devices for feeding coolant	<a href="#">B24B 55/02</a>
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**B24D 15/00****Hand tools or other devices for non-rotary grinding, polishing, or stropping****Definition statement***This place covers:*

Hand tools or other devices for non-rotary grinding, polishing or stropping, having rigidly- or resiliently-supported operative surfaces. The hand tools may have a grip or holder to move the tool with respect to the workpiece, or the workpiece to be treated is moved by hand with respect to the tool or other manual devices. This group covers also hand tools specially designed for sharpening cutting edges, such as e.g. shaving blades, scissors, knives, skate blades or ski edges.

**B24D 15/06****specially designed for sharpening cutting edges****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Motor, hand or foot driven machines	<a href="#">B24B 3/00</a>
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**B24D 15/068****{for sharpening ski edges, i.e. sharp edges defined by two surfaces intersecting at an angle of substantially 90°}****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Edge-sharpeners for treating skis	<a href="#">A63C 11/06</a>
Hand-held or hand-operated filing or rasping devices	<a href="#">B23D 67/12</a>
Machines for grinding, polishing or stropping specially designed for sharpening ski edges	<a href="#">B24B 3/006</a>

**B24D 18/00**

**Manufacture of grinding tools {or other grinding devices}, e.g. wheels, not otherwise provided for**

**Definition statement**

*This place covers:*

Manufacture of grinding tools or other grinding devices, using particular manufacturing operations or methods, e.g. particular moulding or press shaping operations, electrolytic deposition, impregnation, impressing abrasive powder in a matrix, application of adhesives, not otherwise provided for.

**References****References out of a residual place**

*Examples of places in relation to which this place is residual:*

Special features in the manufacture of flexible abrasive materials	<a href="#">B24D 11/001</a>
Setting gems or the like on metal parts, e.g. diamonds on tools	<a href="#">B23P 5/00</a>
Shaped ceramic products characterised by their composition; Forming processes therefor; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products	<a href="#">C04B 35/00</a>
Manufacture of abrasive or friction articles or materials containing macromolecular substances	<a href="#">C08J 5/00</a>

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Texturing by laser	<a href="#">B23K 26/355</a>
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**B24D 99/00**

**Subject matter not provided for in other groups of this subclass**

**Definition statement**

*This place covers:*

Any other subject-matter related to this subclass, but not provided for in other groups of this subclass.

**References****Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Saw chains; rod like saw blades; saw cables	<a href="#">B28D 1/124</a>
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## **B24D 99/005**

### **{Segments of abrasive wheels}**

#### **Definition statement**

*This place covers:*

Abrasive segments for abrasive wheels which are fixed e.g. in form of a single segment on a support member, or in form of a plurality of segments on a support member, as e.g. on a rim, plane surface or spherical surface. This group covers also cutting elements, such as shear cutter type cutting elements used in rock bits or other cutting tools, typically having a body (substrate) and an ultra hard material, where the ultra hard material forms the cutting surface.