B24D

TOOLS FOR GRINDING, BUFFING, OR SHARPENING (tools for grinding or polishing optical surfaces on lenses or surfaces of similar shape B24B13/01; grinding heads B24B41/00; manufacture of abrasive or friction articles or shaped materials containing macromolecular substances C08J5/14; polishing compositions C09G1/00; abrasives C09K3/14)

Definition statement

This subclass/group 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.

Relationship between large subject matter areas

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 manufacture of abrasive articles or shaped materials containing macromolecular substances, e.g. as bonding agent, is covered by C08J 5/14.

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 relevant to classification in this subclass

This subclass/group does not cover:

Abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls	B24B 31/14
Honing tools	B24B 33/08
Lapping tools	B24B 37/11

Examples of places where the subject matter of this class 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	B23F 21/02
Tools specially designed, e.g. bowl-like, for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work	B24B 13/01

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	B24B 41/04
Manufacture of abrasive articles or shaped materials containing macromolecular (polymeric) substances	C08J 5/14
Polishing compositions containing	C09G 1/02

abrasives or grinding agents	
Abrasives	C09K 3/14
Friction linings; Attachment thereof; Selection of co-acting friction substances or surfaces	F16D 69/00

Glossary of terms

In this subclass/group, 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 expressions/words " buffing" and "polishing" are often used as synonyms.

In patent documents the following expressions/words " stropping" and "sharpening " are often used as synonyms.

In patent documents the following expressions/words "dressing" and "conditioning" are often used as synonyms.

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 (composition of friction linings F16D69/02)

Definition statement

This subclass/group 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.

Informative references

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

Compositions of friction linings	F16D 69/02

B24D 3/348

[N: utilised as impregnating agent for porous abrasive bodies (after-treatments in general B24D3/005)]

Informative references

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

After-treatments in general	B24D 3/005

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 subclass/group 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 (zonally graded B24D5/14)

References relevant to classification in this group

This subclass/group does not cover:

Bonded abrasive wheels which are zonally-graded	B24D 5/14

B24D 5/10

with cooling provisions, e.g. with radial slots

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	B24B 55/02

B24D 5/165

[N: Balancing means]

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	B24B 41/042

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 subclass/group 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 relevant to classification in this group

This subclass/group does not cover:

Saw cylinders having their cutting rim equipped with abrasive particles for working stone or glass	B28D 1/041

B24D 7/06

with inserted abrasive blocks, e.g. segmental (zonally-graded

B24D7/14)

References relevant to classification in this group

This subclass/group does not cover:

Bonded abrasive wheels which are zonally-graded	B24D 7/14

B24D 7/10

with cooling provisions

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	B24B 55/02

B24D 9/00

Wheels or drums supporting in exchangeable arrangement a layer of flexible abrasive material, e.g. sandpaper (wheels or drums as machine elements F16)

Definition statement

This subclass/group 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 relevant to classification in this group

This subclass/group does not cover:

Wheels having flexibly-acting working parts, e.g. buffing wheels	B24D 13/00

Informative references

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

Wheels or drums as machine elements not intended to be used in connection with abrasive materials	F16C, F16D, F16H, F16J

B24D 11/00

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

Definition statement

This subclass/group 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.

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	B24D 18/00

B24D 13/00

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

Definition statement

This subclass/group 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 connexion with the wheels, as well as their mountings.

References relevant to classification in this group

This subclass/group does not cover:

Wheels having the flexible abrasive material in an exchangeable arrangement	B24D 9/00

Informative references

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

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.	B24B 29/00

B24D 13/147

[N: comprising assemblies of felted or spongy material; comprising pads surrounded by a flexible material]

References relevant to classification in this group

This subclass/group does not cover:

Lapping pads for working plane surfaces, e.g. for wafer polishing	B24B 37/20

B24D 13/18

with cooling provisions

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	B24B 55/02

B24D 15/00

Hand tools or other devices for non-rotary grinding, polishing, or stropping

Definition statement

This subclass/group 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 relevant to classification in this group

This subclass/group does not cover:

Motor, hand or foot driven machines	B24B 3/00

B24D 15/068

[N: for sharpening ski edges, i.e. sharp edges defined by two surfaces intersecting at an angle of substantially 90°]

References relevant to classification in this group

This subclass/group does not cover:

Machines for grinding, polishing or stropping specially designed for sharpening ski edges	B24B 3/006

Informative references

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

Edge-sharpeners for treating skis	A63C 11/06
Hand-held or hand-operated filing or rasping devices	B23D 67/12

B24D 18/00

Manufacture of grinding tools [N: or other grinding devices], e.g. wheels, not otherwise provided for

Definition statement

This subclass/group covers:

Manufacture of grinding tools or other grinding devices, using different methods, such as e.g. moulds or presses, ectrolytic deposition, impregnation, impressing abrasive powder in a matrix, extrusion, application of glue or others.

References relevant to classification in this group

This subclass/group does not cover:

Manufacture of flexible abrasive materials	B24D 11/001

Informative references

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

Texturing by laser	B23K 26/0084

B24D 99/00

Subject matter not provided for in other groups of this subclass [N: (B28D1/124 takes precedence)]

Definition statement

This subclass/group covers:

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

References relevant to classification in this group:

This subclass/group does not cover:

Saw chains; rod like saw blades; saw cables	B28D 1/124

B24D 99/005

[N: Segments of abrasive wheels]

Definition statement

This subclass/group 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.