Claims

1. A polishing tool (1) for machining technical surfaces, consisting of a polishing base body (1a) and a polishing medium carrier (1b), wherein
   - the polishing medium carrier (1b) has at least one polishing grain, which is dissolved in a slurry in the active gap (13) between the polishing tool (1) and the workpiece (2), and
   - the polishing tool has integrated cooling channels, which are used for feeding a polishing medium slurry, characterized in that
   - at least one material property of the polishing medium carrier (1b) changes vertically or parallel in relation to an axis of rotation (3a) of the polishing tool in order to control a polishing removal function in a targeted manner on a surface to be machined of a workpiece (2),
   - the at least one material property of the polishing medium carrier (1b) varies over the entire polishing medium carrier (1b), and
   - the effect of the at least one polishing grain on the workpiece surface is influenced by the change in the material property of the polishing medium carrier (1b).

2. The polishing tool (1) as claimed in claim 1, characterized in that the changing material property of the polishing medium carrier (1b) is a hardness of a polishing carrier material, as a result of which a coefficient of friction of the polishing medium carrier (1b) is adjusted.

3. The polishing tool (1) as claimed in claim 2, characterized in that the hardness of the polishing carrier material varies rotationally symmetrically in relation to the axis of rotation (3a) of the polishing tool (1).

4. The polishing tool (1) as claimed in one of claims 1 to 3, characterized in that the at least one material property varies locally only in individual regions of the polishing medium carrier (1b).

5. The polishing tool (1) as claimed in one of claims 2 to 4, characterized in that the polishing medium carrier (1b) has a different hardness in different regions (9a, 9b, 9c), which are arranged along a predetermined direction or two predetermined directions that are perpendicular to one another in a plane.

6. The polishing tool (1) as claimed in one of claims 1 to 5, characterized in that cooling channels (7a, 7b, 7c) for transporting a polishing slurry vertically in relation to the axis of rotation (3a) are introduced into the polishing medium carrier (1b) in linear, concentric and/or free-form structures.

7. The polishing tool (1) as claimed in one of claims 1 to 6, characterized in that cooling channels (8) for transporting a polishing slurry parallel in relation to the axis of rotation (3a) are introduced into the polishing base body (1a) and the polishing medium carrier (1b).

8. The polishing tool (1) as claimed in one of claims 1 to 7, characterized in that the polishing tool (1) is configured to vary a polishing pressure.

9. The polishing tool (1) as claimed in one of claims 1 to 8, characterized in that the polishing base body (1a) and the polishing medium carrier (1b) are connected to one another.

10. The polishing tool (1) as claimed in one of claims 1 to 9, characterized in that the polishing tool (1) has an edge support (12) with an adapted hardness for over-edge polishing.

11. The use of a polishing tool (1) as claimed in one of claims 1 to 10, for surface polishing and sub-aperture polishing of technical surfaces.

12. A method for producing a graduated and adaptive polishing tool (1) for polishing using loose grain, consisting of a polishing base body (1a) and a polishing medium carrier (1b), comprising the following steps:

- providing the polishing base body (1a),
- providing a negative shape of the polishing medium carrier (1b),
- feeding at least two polymers to at least one print head,
- creating at least one layer on the negative shape using the print head, as a result of which the polishing medium carrier (1b) is formed,

and

- the polishing medium carrier (1b) is adhesively bonded or cemented to the polishing base body (1a), characterized in that
- at least two regions of the polishing medium carrier (1b) with different material properties are created, and
- at least one layer has a continuous hardness gradient.

13. The method as claimed in claim 12, characterized in that the polymers are supplied via two separate print heads, which operate sequentially or in parallel during the creation of the at least one layer.

14. The method as claimed in claim 12 or 13, characterized in that each polymer consists of at least two components, wherein the different components are each mixed together by a mixer and are meterably supplied to the print heads.

15. The method as claimed in one of claims 12 to 14, characterized in that the at least one layer is cured by UV radiation.

16. The method as claimed in one of claims 12 to 15, characterized in that an additional polymer is introduced into each layer as a support material, which is removed by dissolving after the respective layer has been created.

17. The method as claimed in one of claims 12 to 16, characterized in that, after the step subsequent to the creation of the at least one layer, the shape of the polishing medium carrier (1b) is dressed in order to minimize dimensional deviation.

18. The method as claimed in one of claims 12 to 17, characterized in that, after the step subsequent to the creation of the at least one layer, the shape of the polishing medium carrier (1b) is dressed, wherein the shape of the polishing medium carrier (1b) is adapted to a surface to be polished.