

Plastic bristles for toothbrushes

The present invention relates to a plastic bristle for toothbrushes and to a toothbrush provided
5 with such bristles.

The object of this invention, then, is to provide a plastic bristle which allows a better and more gentle cleaning action than a conventional bristle, which usually comprises one comparatively
10 coarse monofilament.

This object is achieved according to the invention by a bristle according to Claim 1.

A toothbrush provided with such bristles forms the subject matter of Claim 6.

15 Since the core of the individual bristles comprises a multiplicity of thin filaments, a better cleaning action is achieved than in the case of a plastic bristle comprising one monofilament.

A fibrous structure is achieved at the bristle
20 ends by virtue of the filaments projecting beyond the sheath, and this structure ensures gentle cleaning of the surface of the teeth because the filament ends can penetrate into the narrowest grooves and depressions in the surface of the teeth and into the spaces between
25 the teeth. Harm to the gums is avoided.

If the filaments differ visibly from the bristle sheath, e.g. due to being of a different colour, then this not only achieves a special aesthetic effect, but also provides a good visible indication of
30 the state of the toothbrush. Specifically, the degree of wear of the bristles can thus easily be established.

The thickness of the bristles is selected such that, while having sufficient rigidity and stability, said bristles are sufficiently flexible and have the
35 desired fineness.

The core of the bristles advantageously comprises at least 2 filaments and preferably 20-60 filaments, which results in a particularly effective and gentle cleaning effect.

An exemplary embodiment of a toothbrush provided with novel bristles is explained in more detail hereinbelow with reference to the drawing, in which, purely schematically:

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Figure 1 shows a side view of a toothbrush,

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Figure 2 shows, on a larger scale than in Figure 1, part of the head of the toothbrush according to Figure 1,

Figure 3 shows an enlarged illustration, partly in section, of the top part of a single bristle,

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Figure 4 shows a section along line A-A in Figure 3, and

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Figure 5 shows, partly in section, the free end of a single bristle during teeth cleaning.

The toothbrush 1 shown in Figure 1 has, as is known, a handle 2 and a bristle carrier 3 which is integral with said handle. Bristle clusters 4 are introduced into this bristle carrier 3. As can be seen from Figure 2, each bristle cluster 4 comprises a multiplicity of bristles 5.

The structure of a single bristle will now be explained with reference to Figures 3 and 4.

Each bristle has a core 6 which is formed by a number of preferably mutually parallel plastic filaments 7. Said core 6 is enclosed by a sheath 8 which is formed by a plastic matrix 9 in which the filaments 7 are embedded, to be precise preferably without any cavities. The filaments 7 and matrix 9 may consist of the same plastic, preferably of a polyamide. The filaments 7 project beyond the sheath 8 at the free end 5a of the bristle 5, as can be seen from Figures 3 and 5. The filament ends project in this way since the bristles 5 are subjected to a suitable rounding

operation at their free end 5a, as a result of which the sheath 8 is mechanically removed, although the filament ends are not abraded away in the process.

5 The core 6 comprises at least 2 filaments, but preferably 20-60 filaments 7. The filaments 7 have a thickness (diameter d) of from 0.01-0.08 mm. The thickness (diameter D) of the bristles 5 is 0.1-0.3 mm, preferably 0.15-0.25 mm.

10 It is intended that the sheath 8 and the filaments 7 should differ visibly from one another. This is achieved in a particularly simple manner in that the filaments 7 are of a different colour from the sheath 8. This measure achieves a special aesthetic effect and allows an indication to be given of the
15 state of the toothbrush. The different colouring of the sheath 8 and of the projecting filament ends 7a means that it is easy to see when the free bristle end 5a has been worn away, i.e. when the projecting filament ends 7a have been abraded away.

20 Figure 5 readily portrays the advantages obtained from the special configuration of the bristles 5. The fine-filament ends 7a projecting beyond the sheath 8 form a fibrous structure, as a result of which it is possible to penetrate into the narrowest grooves
25 and depressions in the surface 10a of a tooth 10 and thus to achieve gentle, but very effective, cleaning. In addition, the gums are not harmed. The bristles 5, have, on the one hand, sufficient rigidity and, on the other hand, enough flexibility to achieve the desired
30 cleaning action.

If there are no cavities between, on the one hand, the filaments 7 forming the bristle core 6 and, on the other hand, said core 6 and the sheath 8, foreign substances and particles, e.g. microorganisms
35 are prevented from penetrating into the bristle 5.



Patent Claims

1. Plastic bristle for toothbrushes, having a thickness of from 0.1-0.3 mm, preferably 0.15-0.25 mm, and comprising a core (6), which is formed from a number of plastic filaments (7) having a thickness of from 0.01-0.08 mm, and a plastic sheath (8) which encloses the core (6), the filaments (7) projecting beyond the sheath (8) at the bristle end (5a).
2. Bristle according to Claim 1, characterized in that the filaments (7) are embedded in a plastic matrix (9), which also forms the sheath (8).
3. Bristle according to Claim 1 or 2, characterized in that the filaments (7) visibly differ from the sheath (8), preferably by the filaments (7) and sheath (8) being of different colours.
4. Bristle according to one of Claims 1-3, characterized in that the core (6) comprises at least 2 filaments (7), preferably 20-60 filaments (7).
5. Bristle according to one of Claims 1-4, characterized in that the sheath (8) and the filaments (7) consist of polyamide.
6. Toothbrush having bristles according to one or more of Claims 1-5, in the case of which the bristles (5) are combined to form bristle clusters (4) and are introduced into a bristle carrier (3), and the filaments (7) project beyond the sheath (8) at the free end (5a) of the bristles (5).
7. Toothbrush according to Claim 6, characterized in that the filaments (7) differ visibly from the sheath (8) and are preferably of a different colour from the sheath (8).
8. Toothbrush according to Claim 6 or 7, characterized in that the bristles (5) are subjected to a rounding operation at their free end (5a).