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(71) Applicant: **Catinari, Madrisano**

62012 Civitanova Marche (Macerata) (IT)

(72) Inventor: **Catinari, Madrisano**

62012 Civitanova Marche (Macerata) (IT)

(74) Representative: **Faggioni, Carlo Maria et al
Fumero**

**Studio Consulenza Brevetti Snc
Pettenkoferstrasse 20-22
80336 Munich (DE)**

(54) **Biodegradable insole**

(57) An insole is disclosed, characterised in that at least the upper, foot-facing layer of said insole is made of a chitin-chitosan complex.

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Description

[0001] The present invention relates to a biodegradable shoe insole, which allows optimal disposal by simple composting.

[0002] Waste involves increasing problems. In Italy, the majority of waste is sent to landfill sites, causing environmental and space problems.

[0003] Separate collection allows to recycle some waste fractions, in particular biodegradable ones. Usually they are composted and decomposed to products which are harmless to the environment.

[0004] Although many materials from which a shoe is made are biodegradable (for example soft leather and leather, although less so after tanning), it is common to manufacture shoe insoles from synthetic materials (for example elastomeric materials), usually non-biodegradable ones. Moreover, insoles are generally subject to problems caused by bacteria and fungi, such as odours and skin problems for the user.

[0005] It is an object of the present invention to provide a biodegradable insole, which may be composted and disposed of without producing waste.

[0006] Such object is achieved by the present invention, which concerns an insole characterised in that at least the upper, foot-facing layer of said insole is made of a chitin-chitosan complex.

[0007] According to the present invention, the insole is manufactured with the foot-facing part made of a material based on a chitin-chitosan complex. Preferably, the insole consists of two layers: a bottom one and one facing the user's foot.

[0008] The bottom is advantageously made of a light and biodegradable plastic material, such as the one detailed in International Application PCT/IT2005/000166 may be.

[0009] Concerning instead the foot-facing layer, said layer consists of the above-mentioned chitin-chitosan complex. Advantageously, the chitin-chitosan complex used is the one sold under the commercial name Crabyon.

[0010] A particularly advantageous composition comprises between 5 and 40% of chitin-chitosan complex and between 60 and 95% of a cellulosic material, for example the one sold under the commercial name Modal-Micro. A preferred composition is between 10 and 35% of chitin-chitosan complex and between 65 and 90% of cellulosic compound, particularly preferred between 15 and 25% of chitin-chitosan complex and between 75 and 85% of cellulosic compound.

[0011] The insole may be dyed, preferably with natural dyes, with percentages varying between 1 and 5%, preferably of 3%.

[0012] The above-mentioned two-layer insole may be manufactured by lamination and thermoforming, obtaining virtually any desired pattern and size.

[0013] Since the chitin-chitosan complex has antibacterial properties, the insole according to the present in-

vention has, in addition to pronounced biodegradability properties (composting is sufficient for its disposal) also antibacterial properties, which prevent the formation of unpleasant odours and colours.

Claims

1. An insole, **characterised in that** at least the upper, foot-facing layer of said insole is made of a chitin-chitosan complex.
2. The insole as in claim 1., **characterised in that** it consists of two layers: a bottom one and one facing the user's foot.
3. The insole as in claim 2., **characterised in that** the bottom is made of a light and biodegradable plastic material.
4. The insole as in any one of the preceding claims, **characterised in that** said upper layer further comprises a cellulosic compound.
5. The insole as in claim 4., **characterised in that** the composition comprises between 5 and 40% of chitin-chitosan complex and between 60 and 95% of cellulosic material.
6. The insole as in claim 5., **characterised in that** the composition comprises between 10 and 35% of chitin-chitosan complex and between 65 and 90% of cellulosic compound.
7. The insole as in claim 6., **characterised in that** the composition comprises between 15 and 25% of chitin-chitosan complex and between 75 and 85% of cellulosic compound.
8. The insole as in any one of the preceding claims, **characterised in that** it is dyed with natural dyes.
9. The insole as in claim 8., **characterised in that** said dyes are applied in percentages between 1 and 5 wt% on the composition total.
10. The insole as in claim 9., **characterised in that** said dyes are present in a percentage of 3%.
11. The insole as in any one of claims 2. to 10., **characterised in that** it is manufactured by coupling and thermoforming.



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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 8782

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Place of search The Hague		Date of completion of the search 31 January 2006	Examiner Clausel, B
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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