

투습방수성이 우수한 신발용 바이오 라미네이팅 소재개발

Elastic and excellent moisture transmittance is developing bio-laminated fabric for footwear

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Abstract

본 연구에서는 신축성이 우수한 친수형 무공 PET 필름을 사용해서, 소취성, 보온성 및 투습방수성이 우수한 신발용 소재를 개발하였다. 이상의 목적을 달성하기 위해서 최적 소재의 선정, PET 필름의 특성평가, 최적 라미네이팅 공정조건 확립, 첨가제 선정 및 가공조건 확립 등에 대해서 실험고찰을 하였으며, 얻어진 주요 결과는 다음과 같다.

- (1) 신발의 갑피용 및 안창용 최적소재로서 경편직물을 선정하였으며, PET 필름의 최적 요구특성은 내수성 9460mmH₂O, 투습성 10,000g/m²/24hrs, 인장강도 42kgf/cm², 신도 249% 였다.
- (2) Hot-melt 라미네이팅 공정에서의 투습방수성을 좌우하는 Dot roll No, Coating gap의 최적조건은 CP75(Engraved dot roll no), -0.2mm(Coating Unit gap) 였다.
- (3) EVA base polymer 및 기타 조제의 최적 배합비를 확립하고 이를 바탕으로 compound를 제조하여 Press로 molding하여 안창용 Sponge를 얻었다.
- (4) 안창 sponge 위에 점착된 knit 소재의 소취효과는 우수하였으며, 갑피용 투습방수 경편직물의 보온성도 15~20%로 우수하였다.

1. Introduction

Elasticity used an excellent hydrophilic model PET film in the study of the book, and deodorant nature, heat retention, moisture permeability and waterproof developed material for excellent footwear. We are about the choice of the most suitable material, the characteristic evaluation of the PET film, the most suitable laminating process establishment, processing standardization establishment and considered an experiment to achieve the above-mentioned purpose, and the provided importance result seems to be next. The goal of this research is a high functional Bio material development for shoes ,which maximizes comfortableness, lightweight and elasticity used a hydrophilic

PET film, which is better than Gore-Tex and is able to complement of low elasticity and deodorant nature.

The PTFE film of Gore-Tex is incongruent material for clothing and shoes because of low elasticity.

2. Experimental

This experiment measures MVTR, Waterproof, Tensile strength, hardness and Specific gravity, Tear strength, Spit tear strength, Thickness, Cross head speed, Insole fabric and etc(so on) in accordance with ISO, KS, ASTM.



Fig. 1. Footwear appearance.

3. Results and discussion

Elasticity used an excellent hydrophilic model PET film in the study of the book, and deodorant nature, heat retention, moisture permeability and waterproof developed material for excellent footwear. We are about the choice of the most suitable material, the characteristic evaluation of the PET film, the most suitable laminating process, processing standardization establishment and considered an experiment to achieve the above-mentioned purpose, and the provided importance result seems to be next.

- (1) We chose warp knitted fabric as the most suitable material of the footwear, and the most suitable demand characteristic of the PET film was water resistance 9460mmH₂O, MVTR 10,000g/m²/24hrs, tensile strength 42kgf/cm², tensile elongation 249%.
- (2) The optimum of Dot roll number, Coating gap controlling moisture permeability in the Hot-melt laminating process is CP75(Engraved dot roll no), -0.2mm(Coating Unit gap).
- (3) We established EVA base polymer and the most suitable combination ratio of the others compounding of medicines, and it produced compound at basics, and molding did this in Press and got lining Sponge.
- (4) Deodorant activity of knit material adhered to on lining sponge was excellent, and the heat retention of bio-laminated warp knitted fabric was excellent in 15~20%.

4. References

1. Martens, C. R., Emulsion and water-soluble paints and coating. New York; reinhold, 1964.
2. U.S. Patent No. 4,384,096, Larry F. Sonnabend, May 17, 1983.

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