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WARMTH PROPERTIES OF WOOL BLEND CLOTHING

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Abstract
This in research natural and chemical fibers based on working issued half wool mixture dressy of tissues heat shelf life, air conductivity and hygroscopicity features experimental in a way studied. Wool– cotton, wool – viscose and wool – polyester from mixtures prepared fabric samples thermophysicist in the parameters noticeable differences was observed. Research results this showed that wool is viscose mixture lowest heat conductivity to the coefficient has (l = 0.034 W / m·K), that is mixture cold climate in the conditions clothes is the optimal option for . Results mixture fibrous materials based on energy economical, hygienic and heat insulation high dressy tissues design opportunities expands.

Keywords: Wool fiber, mixed tissue, heat conductivity, heat insulation, thermophysics characteristics, clothing material, weather permeability, hygroscopicity.

Introduction

Modern textile in the industry mixture fibrous tissues ecological, economic and functional advantages with separated It stands. Various natural and chemical fibers mixing through not only product cost reduce, maybe his/her physical-mechanical, thermophysical and hygienic features

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balancing opportunity available. Heat balance storage human physiological convenience for important importance has .

Of clothes heat shelf life human of the body energy exchange in the process heat permeability coefficient , air conductivity and humidity absorption such as parameters with directly related . Wool fibers natural elasticity, hygroscopicity and low heat conductivity coefficient with separated although they are some in cases mechanic endurance or the form storage feature in terms of to restrictions Therefore , wool is cotton , wool is viscose . and wool – polyester mixtures optimal heat based on insulation and mechanic strength provider tissues working exit current scientific direction is [1].

In our region climate conditions half wool mixture clothes to the evenings demand high that shows . People natural from discomfort protection for the purpose different from clothes They use . Most many widespread hot keeper textile to their belongings dresses , coats , jackets and other items Raw of things physicist , thermophysicist properties them organization did fibers type , texture to the structure and different additional processing given integral related . Natural fibrous fabrics external appearance bright in colors even if they don't , they the heat good saves]. Also natural with fabric clothes water good snoring and conductive is [2-3]. This is the upper from clothes precipitation on time far term open in the air to move obstacle does .

Research purpose and tasks

Research purpose – wool mixture content clothing-like of tissues heat preservation features determine their optimal mix ratio from marking consists of . The goal done increase for following main tasks by designating received :

1. Wool, cotton, viscose and polyester based on mixture fibrous tissues 2. Preparation of samples heat permeability (λ), air conductivity and hygroscopicity indicators to determine.

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3.Mixed fibers ratio of change of tissues thermophysicist to the characteristics the impact assessment.
4. Cold climate optimal composition for define, apply recommendations working exit.

Material and research methods

Experimental of samples working issued by "UZWOOLENTEX" LLC weaving in the enterprise, SmithGS980 automatic weaving on the machines done increased. In the body yarn 15×2 tex , composition 50% wool + 50% polyester ; warp threads and wool - cotton , wool - viscose and wool – polyester in combinations Tests were carried out in accordance with ISO 5084:1996, ISO 11092:2014 and GOST 8051–83 standards . appropriate was held Table 1 .

Table 1 Mix content half wool tissue samples technological indicators

Sample	Raw material fibrous composition		Mowing type	Tissue density, 10ip/dm	
	In the body	lazy		In the body	Argoq
1	Wool 50%+Pe 50%	55% wool + 45% polyester	2/2 sarge	84	72
2	Wool 50%+Pe 50%	Wool 50%+Cotton 50%	2/2 sarge	82	70
3	Wool 50%+Pe 50%	60% wool + 40% viscose	2/2 sarge	86	74

1 5x2 tex linear density Wool50%+Pe50% wool blend Polyester as the main yarn from yarns , as warp yarns I option Wool 50%+cotton 50% yarns, option II 60% wool + 40% viscose yarns and option III 55% wool + 45% polyester 30 tex yarn was used for production .

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Results and Analysis

Table 2 presents an analysis of the physical and thermophysical parameters of the experimental tissue samples.

2 – Table Physical and thermophysical parameters of experimental half-wool fabrics

Sample	Heat conductivity l (W / m·K)	Air conductivity ($cm^3/cm^2·s$)	Hygroscopicity (%)
1 (wool – polyester)	0.0 41	46	9.1
2 (wool – cotton)	0.0 36	38	12.4
3 (wool – viscose)	0.03 4	3 6	13.6

Based on the results obtained, Sample -1 (wool – polyester): λ = 0.041 W / m·K , air conductivity = 46 $cm^3/cm^2·s$, hygroscopicity = 9.1%, Sample -2 (wool - cotton): l = 0.036 W / m·K , air conductivity = 38 $cm^3/cm^2·s$, hygroscopicity = 12.4%, Sample 3 (wool - viscose): l = 0.034 W / m·K , air permeability = 36 $cm^3/cm^2·s$, hygroscopicity = 13.6%. In terms of heat preservation properties, wool-cotton blend fabric sample 2 improved by 18% compared to samples 1 and 2.

The results of the analysis show that the wool-viscose blend has the lowest thermal conductivity (0.034 W/m·K), which indicates that the fabric has high thermal insulation properties. The wool-polyester blend has the highest thermal conductivity, making it suitable for summer clothing.

Conclusion

1. Wool fibers cotton, viscose and polyester with mixing as a result dressy of tissues heat, air conductivity and hygroscopicity indicators controllable at the level changes.
2. 60% wool + 40% viscose content fabric the most high heat preservation to the feature was found to have.

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3. Research results based on cold climate for intended clothes working in the release wool – viscose mixtures application recommendation is being done.
4. Next in stages heat permeability modeling and energetic efficiency determination works planned.

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