

TEXTILES. LEATHERSHIP

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ARAMID FIBRES FOR TECHNICAL TEXTILES

I. CORRELATIONS BETWEEN STRUCTURE AND PROPERTIES

BY

VASILE BLAȘCU

Abstract. Before the first aramid fibres were introduced in the 1960s and 1970s, organic fibres were relatively low performance materials, primarily used in textile applications. Now several different types of high performance organic fibres exist, all competitive with inorganic fibres in some or even most of their properties.

The main applications for high performance organic fibres are in asbestos replacement, ballistics, rubber reinforcement, cables and composites. Most of the usage is of aramid fibres, with over 55,000 metric tons used each year.

While inferior to inorganic fibres in some properties, organic fibres provide combinations of properties not available with inorganic fibres and so have made possible new designs and applications. The excellent properties of aramid result from both chemistry and physical microstructures. The paper analyses the correlation between structure and properties.

Key words: aramid fibres, aramid structure, aramid properties, meta-aramids, para-aramids.

TRACTION BEHAVIOUR IN DRY AND WET STATE OF FLAX AND HEMP TECHNICAL YARNS

BY

ADRIANA MUSTAȚĂ

Abstract. Worldwide, one can notice an increased tendency to use the flax and hemp fibres in the textiles technical field as a consequence to the fact that these fibres show high strength with regard to tensile, friction, rotting process, reduced breaking elongation. They also present high spinning capacity and are high length technical fibres. Owing to the increased air permeability, higroscopicity and antiseptic properties, the flax and hemp fibres can be also used medical applications.

The use of flax and hemp technical yarns requires knowledge about deformation and relaxation of fibres and yarns during their processing. The water absorption in flax and hemp fibres modifies their mechanical properties. In the case of flax and hemp it is important to know how the fibres properties are translated into the characteristics of the technical yarn.

The present paper studies the deformation of flax and hemp technical yarns, in dry and wet state. The structural modifications of the yarn and the component fibres as consequence of traction were pointed out by the load displacement curve analysis.

Key words: technical yarn, flax, hemp, mechanical properties, behaviour traction.

STUDY OF WINDING TENSION VARIATION IN RING SPINNING FRAMES

BY

FLORINA LILIANA BUZESCU and DORIN AVRAM

Abstract. The dynamic study of the traveller of the ring spinning frame, conducted in the paper, has led us to obtain the analytical equation of an ellipse in which the variables are the winding angle of the yarn on the bobbin and the ratio between the centrifugal force acting on the traveller and the yarn tension in the portion between the traveller and the bobbin. Given the fact the value of the winding tension has direct influence on the number of yarn breaks, by analyzing the obtained equation we could study the variation of this tension depending on the winding angle, setting the limits in which the spinning is possible.

Key words: traveller, yarn, angular velocity, centrifugal force, winding tension.

A TURBO C++ PROGRAM FOR THE ADEQUACY ANALYSIS OF A LINEAR MODEL FOR TECHNICAL YARNS

BY

VALERIA SLABU

Abstract. The paper describes the principal functions of the Turbo C++ Program, which resolves the analysis of the adequacy a linear modelling operation: the calculated regression coefficients, the power of correlation between the variables, the analysis of the variation for linear regression and the confidence intervals for the estimation of the regression coefficients. These results are given for analysis of technical yarns.

Key words: model, regression, correlation, program, instruction.

GRAFTING OF MONOCHLOROTRIAZINYL- β - CYCLODEXTRIN ON HEMP YARNS DESTINED TO THE OBTAINING OF MEDICAL TEXTILES

BY

**CRISTINA RACU, AURELIA GRIGORIU, ANA MARIA GRIGORIU,
ADRIANA MUSTAŢĂ and LILIANA HRISTIAN**

Abstract. The paper presents the influences of the simultaneous process of wet spinning and grafting of the reactive derivative monochlorotriazinyl- β -cyclodextrin on hemp fibres, upon the physical-mechanical characteristics of the yarns obtained as a result of hemp roving processing on the wet spinning frame.

Key words: hemp, wet spinning, grafting, monochlorotriazinyl- β -cyclodextrin, yarn mechanical characteristics.

PRODUCTION AND CHARACTERIZATION OF COMPOSITE YARNS CONTAINING GLASS-COATED METALLIC WIRE

BY

MARIANA ICHIM and VALERIA GRIBINCEA

Abstract. Glass-coated metallic wires included into the structure of textile products impart their own properties to textiles and make them suitable for electromagnetic shielding applications. In this research composite yarns including glass-coated metallic wire aimed for conductive fabrics were obtained both on ring spinning machine and ring twisting machine. The properties of the glass-coated metallic wire, core spun and plied yarns are presented.

Key words: glass-coated metallic wire, core yarn, plied yarn.

RESEARCHES REGARDING THE PRODUCTION OF NATURAL POLYMERS ADHESIVE YARNS

BY

COZMIN-TOMA BUDA and DORIN AVRAM

Abstract. Approximately 80 percent of the organic chemical industry is devoted to the production of synthetic polymers, such as plastics, textiles fibres, and synthetic rubbers. Natural polymers are widely found in nature and they are from vegetable and animal origin polymers. Biodegradability is one of the most important features of the natural polymers, but also important are physiological tolerance and the possibility to break bonds by enzymatic degradation. The present research pursues the obtaining of adhesive yarns coated with natural polymer and the comparison between three types of yarns: fully drawn polyester yarns (FDY), fully drawn polyester yarns (FDY) coated with polyamide resin (thermo adhesive yarns) and fully drawn polyester yarns coated with natural polymer.

Key words: natural polymer, biodegradability, ecological, polyamide resin, fully drawn polyester.

ECOLOGICAL NONWOVEN TEXTILES FOR TECHNICAL APPLICATIONS

BY

FLORENTINA-FLORI COSTACHE and MARIA ZAMFIR

Abstract. The paper is presenting researches on the structures of nonwovens for technical applications, with a very high liquid absorption capacity, used for medical applications in a wide range of emergency cases when such a property is a requirement. The nonwovens made from biodegradable fibre raw materials are evaluated from the point of view of functional characteristics.

Key words: nonwoven, ecological textile, structure, absorption, technical application.

ASPECTS OF FRICTION BEHAVIOUR OF THE ANTISTATIC CLOTHS WITH METALLIC FIBRE CONTENT

BY

LUCICA CIOARĂ and IOAN CIOARĂ

Abstract. This work presents the results of the studies dedicated to structure/properties relationship, carried out on clothes with antistatic properties. The antistatic cloths were obtained by using conductive yarns containing metallic fibres. The cloths are destined to the protection equipment. For this type of cloths, one of the stresses they are subjected to during their utilization is the abrasion. If during the abrasion process the metallic fibres are damaged or eliminated from the structure, the cloth resistivity will be affected as well as its antistatic properties. The variants of the analyzed cloths are simple and complex structures. Due to the utilized weave the metallic fibres are distributed on the front or the reverse side or in the middle layer of the cloth. We evaluated the antistatic properties after the abrasion stress, in order to appreciate the extent to which they were affected by the friction wear.

Key words: antistatic, properties, weave, fabric, abrasion, metallic fibre.

STUDY OF THE STRUCTURE INFLUENCE ON THE ARCHITECTURE OF FILTERING TISSUE PORES

BY

IOAN CIOARĂ and LUCICA CIOARĂ

Abstract. The work highlights the filter importance in the industrial processes and the necessity for it to ensure efficient and good quality filtering along their entire working life. The shape, dimension, uniformity and stability of pores from a filtering tissue are conditions that permit the filtering operation to maintain in course of time the quality standards of the corresponding process. The pore architecture concerns both its shape and size (area and volume). The structural characteristics that determine the pores architecture are the yarn count and density, yarn properties and the utilized weave. The work analyzes the weave influence on the pore shape and size. Filtering tissues obtained of monofilament polyamide yarns with plain weave, twill D2/2 and twill D3/1 are analyzed. In order to appreciate the filtering efficiency and fineness, it is important to analyze also other quality indices of the filters, like the active filtering surface and the curve of pore distribution against their area.

Key words: filtering, pore, open area, weave, pore distribution.

CREATIVE TECHNICAL TEXTILES FOR ARCHITECTURE

BY

ANA LĂCRĂMIOARA LEON

Abstract. From the first shelter with animal skins to the latest textiles membranes designed to constructions it was a long road to go. Initially, textiles were created for covering the body, the walls and the small clay buildings. Later, architects and engineers thought how to improve both aesthetics and functionality by using textile materials properties and they imagined technologies to incorporate them into walls, roofing, insulation panels, solar panels or similar. It is a well-known concept that the material surface and the material structure work together as a single unit. The goal of this paper is to present some creative uses of textile materials for modern architecture.

Key words: architectural textiles, biomimetics, textile membranes, textile roofing.

THE TECHNICAL TEXTILE INDUSTRY AND ITS MARKETS

BY

ELENA ONOFREI

Abstract. The technical textile sector is a divers and dynamic one, comprising a wide range of materials, products, processes and applications. Nowadays, the technical textiles sector is regarded as the most fast changing sector of the global textile industry, due to the innovation in new materials, processes and their applications. Within the total, some application areas will grow faster than others in the next years. The growth rate of most technical textile segments will be not high but contrasts sharply with the declining fortunes of the apparel-related segments of the industry. World consumption of technical textiles is expected to grow year by year both in developed and developing countries due to the increased real incomes and consumer spending. Asia remains an engine of growth.

Key words: technical textiles, textile market, textile consumption.

CONDUCTIVE TECHNICAL TEXTILES

BY

DANIELA NEGRU and DORIN AVRAM

Abstract. The importance of technical textiles materials is increasing in order to satisfy the requirement of the market. The global growth rates of technical textiles are about 4% per year, greater than the growth of home and apparel textiles (1% per year). The conductive textiles are materials textile combined with other materials, textiles or not. Conductive polymers (polyaniline, polypyrrole), and conductive materials (carbon nanotubes and particles) have important electrical properties. Conductive textiles can be obtained by coating fabrics and yarns with conductive solutions. The conductive material that we used in this research was particles of carbon black, which was the main component of a conductive solution, which covered a textile fabric structure. The fabric was made from cotton yarns and in the structure were inserted stainless steel yarns.

Key words: conductive polymer, carbon black, electrical resistance, coating, conductive textiles.

TRANSPOSITION OF DRAWING IN ELECTRONIC COMMAND FOR TECHNICAL TEXTILE WEAVING

BY

FRANCISC NAGY, MIHAI CIOCOIU and SORIN MACARIE

Abstract. The paper describes the whole transposition process it took place at software level of a modern weaving machine from the colour and design information from drawing for the weaving up to the connection thread. It presents a format description that can bind the information of threads position and colour displacement in the weaving machine with the position and colour information of drawing pixels.

Key words: graphic, format, electronic, card.