AD-A177 794 METHOD OF OBTAINING FIREPROOF POLYACRYLONITRILE FIBER OR FABRIC MADE FROM IT(U) FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH V Y KOTINA ET AL. 19 FEB 87 1/1

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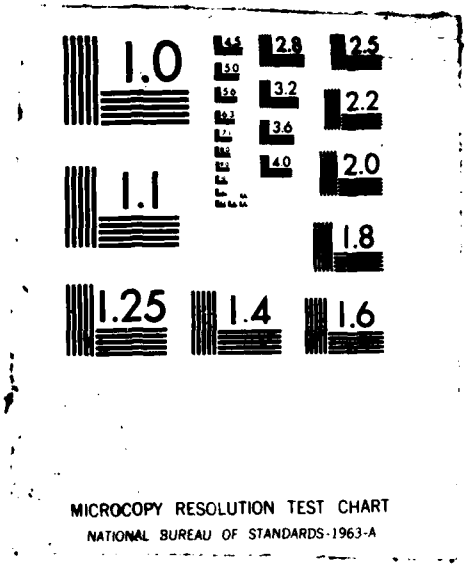
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MICROCOPY RESOLUTION TEST CHART
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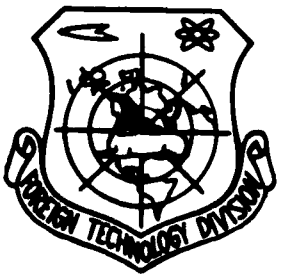
METHOD OF OBTAINING FIREPROOF POLYACRYLONITRILE FIBER OR FABRIC MADE FROM IT

by

V.Ye. Kotina, A.A. Konkin, R.M. Kosova



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HUMAN TRANSLATION

FTD-ID(RS)T-0142-87 19 February 1987

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By: V.Ye. Kotina, A.A. Konkin, R.M. Kosova

English pages: 2

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Block	Italic	Transliteration	Block	Italic	Transliteration
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yё or ё.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log

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METHOD OF OBTAINING FIREPROOF POLYACRYLONITRILE FIBER OR FABRIC MADE FROM IT

V.Ye. Kotina, A.A. Konkin, and R.M. Kosova
(Inventors)

A method is known for obtaining fireproof polyacrylonitrile fiber by means of heating up to 200°C, however, the fiber which is obtained has low strength characteristics.

A method is being proposed for obtaining fireproof polyacrylonitrile fiber or fabric made out of it. In this method the polyacrylonitrile fiber is subjected to gradual heat treatment, being heated initially at 200°C for 25-30 h. Then the temperature is raised to 300°C at a rate of 1.5-2.0° per minute. After a temperature of 300°C is reached the temperature is raised to 400-475° in the course of 15-25 min. In this case a fireproof material with satisfactory mechanical properties is obtained. The processed polyacrylonitrile fabric does not catch fire in the flame of a burner and has the following strength characteristics: weight of 1 m² - 200 g; strength on base 38-45 rkm [abbreviation not verified], on the weft - 30-35 rkm; elongation on base and on the weft - 4-5%. sq meter (Russian Translations)

The polyacrylonitrile fiber processed in this manner also does not ignite in the flame of a burner and has a strength of 9-12 rkm and elongation of 5-7%.

Example. Unrelaxed polyacrylonitrile fiber or fabric made from it is subjected to heat treatment in a medium of air at 120°C for one hour.

The temperature is raised from room to 120°C in no less than 30 min.

Then the temperature is raised at this same rate up to 150°C and the samples are held at this temperature for one hour. After this the temperature is raised to 200°C and the fiber held for 25-30 h.

A necessary condition is the removal of the gaseous products which are given off in the process of heating, therefore it is recommended to conduct the process of heating at 200°C in a current of nitrogen, which contributes to the obtaining of strong samples with a higher break elongation. After such treatment the fiber or fabric becomes black. Then the fiber or fabric is subjected to treatment with a gradual raising of temperature to 400-450°C.

The samples of fabric of fiber acquire the properties of incombustibility only upon achievement of a temperature of 400-475°C, at which they are treated for 1-1.5 h.

Such samples were held at 2500°C for 100 h, and in this case their strength was changed insignificantly.

INVENTION CLAIM

A method for obtaining fireproof polyacrylonitrile fiber or fabric made from it with the application of heat treatment at 200°C, characterized by the fact that for the purpose of improving the thermal stability while preserving the mechanical properties the polyacrylonitrile fiber of fabric made from it is subjected to gradual treatment initially at 200°C, and then at 400-475°C.

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