

I 62995-65 ZWT(1)/FGD GN

ACCESSION NR: AP5014228

UR/0362/65/001/005/0509/0516

AUTHOR: Zuyev, V. Ye.; Koshalev, B. P.; Tyorogov, S. D.; Khmelevtsov, S. S.

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12,55

6

TITLE: Attenuation of visible and infrared radiation by artificial fogs

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 1, no. 5, 1965, 509-516

TOPIC TAGS: cloud physics, fog, IR radiation, atmospheric physics, atmospheric optics

ABSTRACT: The optical and microphysical properties of fog were investigated theoretically and experimentally by a group associated with the Siberian Physico-technical Institute. Data on the attenuation of visible and infrared radiation in fogs calculated with allowance for polydispersion and absorption in water droplets were compared with results of experimental determinations of the spectral transmittance of artificially created fog.

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In the theoretical part of the study, approximate expressions were derived for determining the aerosol attenuation $\alpha(\lambda)$ of clouds and fog. Calculations were performed for values of λ ranging from 0.5 to 14 microns and for values of r (the most probable distribution radius) and μ (parameter characterizing the distribution half-width) of the drop-size distribution function of natural water clouds and fog. Parameter r ranged from 2 to 10 microns, and μ , from 1 to 10 microns. Figs. 1 and 2 show the results of calculations of $\alpha(\lambda)/\alpha(0.5)$ for wavelengths ranging from 1 to 14 microns. It is evident from the figures that the spectral behavior of the relative attenuation essentially depended on the parameters of the drop-size distribution function.

On the basis of an analysis of the theoretical results, the following conclusions were drawn: 1) In the visible region, $\alpha(\lambda)$ is practically independent of wavelength for all clouds and fog. 2) In the 10.5-12.2-micron region, transmittance is higher than it is in the visible region. 3) With

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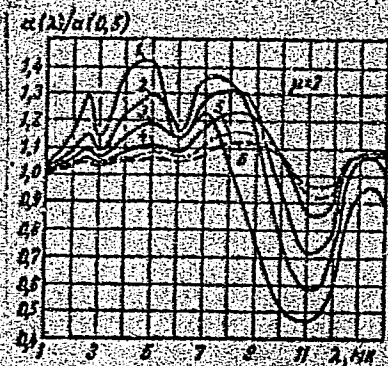


Fig. 1. Calculated relative attenuation as a function of wavelength for $\mu = 2$

1 - $r = 2$; 2 - $r = 3$; 3 - $r = 4$;
4 - $r = 5$; 5 - $r = 8$; 6 - $r = 10$.

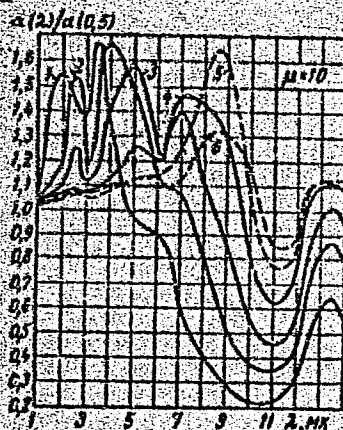


Fig. 2. Calculated relative attenuation as a function of wavelength for $\mu = 10$. Designations of curves are the same as in Fig. 1.

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162985
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increased distribution half-width (decreased ν) or r , the transmittance maximum shifts toward the longer-wave region, but does not go beyond 10—12 microns. 4) In the 1—5-micron region, transmittance for any microstructure characteristics is lower than it is in the visible region. The ratio $\alpha(\lambda)/\alpha(0.5)$ reaches its maximum of 1.76 at $\lambda = 3.5$ microns and $\nu = 10$, $r = 2$ microns. 5) In the spectral regions of 5—10, 5 and 12.2—14 microns, transmittance depends on microstructure parameters and can either be higher or lower than it is in the visible region. 6) The spectral behavior of the aerosol attenuation of clouds and fogs in the 1—14-micron range depends on microstructure parameters. In the case of large-drop clouds ($r = 8$ —10 microns) with a large distribution half-width ($\nu = 1$), the aerosol attenuation is neutral over the entire investigated range. 7) Transmittance in spectral regions occupied by water absorption bands is lower than in regions that are not. 8) The spectral behavior of transmittance in the 3—4- and 10—12-micron regions is determined chiefly by the behavior of the complex refractive index.

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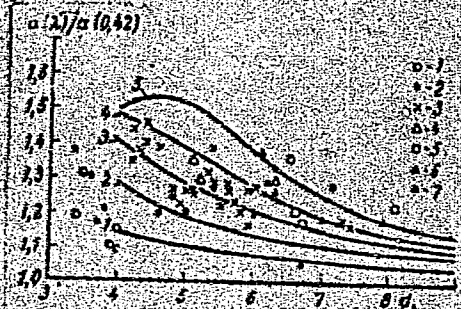


Fig. 3. Comparison of experimental and theoretical relative attenuation as a function of RMS values of fog particle diameters for $\lambda = 2.6$ microns

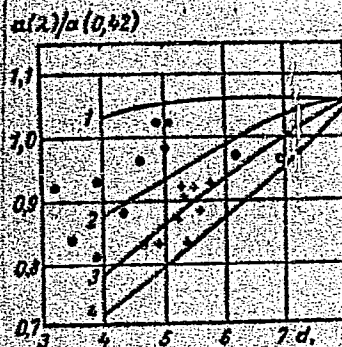


Fig. 4. Comparison of experimental and theoretical relative attenuation as a function of RMS values of fog particles for $\lambda = 14$ microns

Symbols represent the results of experimental measurements. Solid curves are calculated for various μ . 1 - $\mu = 1$; 2 - $\mu = 2$; 3 - $\mu = 3$; 4 - $\mu = 4$; 5 - $\mu = 5$; 6 - $\mu = 6$; 7 - $\mu = 7$.

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The theoretical results were compared with experimental data obtained in artificial fogs. The equipment used in the experiments was capable of measuring fog particles ranging in size from the very largest to 0.8--1.0 microns in diameter. Over 2000 spectral measurements were made from 800 droplet samples from 120 artificially created fogs. The optical density of fogs investigated varied between 0.1 and 1.6, and the attenuation at 0.42 micron varied between 2×10^{-2} and $8.5 \times 10^{-1} \text{ cm}^{-1}$. For the 1.0--14-micron region, comparisons were made of calculated and experimental values of relative attenuation as a function of RMS values of fog-particle diameters for various μ . Figs. 3 and 4 show these values for the 2.6- and 14.0-micron wavelengths. These figures are typical of the satisfactory agreement between experimental and theoretical values over the entire investigated range. Orig. art. has 4 graphs.

ASSOCIATION: Sibirskiy Fiziko-Tekhnicheskiy Institut (Siberian Physical-Technical Institute)

SUBMITTED: 10 Mar 54
NR REF SOV: 005
Card 5/6 *fat*

ENCL: 00
OTHER: 004

SUB CODE: ES
FSB v.1, no.9

L 09362-67 EMT(1)/PCG GW

ACC NR: AF6023419

SOURCE CODE: UR/0139/66/000/003/0121/0125

AUTHOR: Zuyev, V. Ye.; Koshelev, B. P.; Tvorogov, S. D.; Khmelevtsov, S. S. 42

ORG: Siberian Physicotechnical Institute im. V. D. Kuznetsov (Sibirskiy fiziko-
tekhnicheskiy institut) 8

TITLE: Spectral transparency and microstructure of artificial fogs. III. Comparison
of calculated and experimental data. VY

SOURCE: IVUZ. Fizika, no. 3, 1966, 121-125

TOPIC TAGS: atmospheric transparency, atmospheric water vapor, aerosol, fog, atmo-
spheric cloud, light absorption

ABSTRACT: In the first two parts (Izv. vuzov SSSR, Fizika, nos. 2 and 3, 1964) the
authors determined the transparency and attenuation coefficients of artificial and
natural fogs for a wide range of microstructure parameters. The present article de-
scribes the concluding investigations and presents a summary of the results, which
cover more than 800 samples containing in all some 500,000 drops, and more than 2000
spectral measurements. The theoretical values of the attenuation coefficient of the
aerosol components of clouds and fogs, calculated by the method proposed in the earlier
papers, is compared with experimental results obtained in an artificial fog chamber.
The optical density of the investigated fogs ranged between 0.06 and 2.7, the attenua-
tion coefficient at 0.42 μ wavelength was 0.02 - 0.9 m^{-1} , and the ratio of the attenua-
tion coefficient at other wavelengths to that at 0.42 μ ranged from 0.37 to 1.41, de-

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Card 2/2 *gl*

KOSHELEV, B.V.

Morphologic and ecologic characteristics of cogenesis in related species of percid fishes. Trudy Inst. morf. zhiv. no.38:189-231 '63. (MIRA 16:10)

(*spawning of spring*)
KOSHELEV, B. V. Cand Biol Sci -- (diss) "Ecology of the ~~springtime~~ spawning
fish in the Volga ^River delta." Mos, 1958. 19 pp with charts (Mos Order
of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov.
Biol-Soil Faculty), 120 copies (KL, 11-58, 115)

KOSHELEV, B.V.

Some data on the biology of reproduction of carp in the Volga Delta
[with summary in English]. Zool.zhur. 36 no.8:1217-1227 Ag '57.

(MLRA 10:9)

1. Kafedra ikhtiologii biologo-pochvennogo fakul'teta Moskovskogo
gosudarstvennogo universiteta.

(Volga Delta--Carp)

KOSHELEV, B. V.

Some data on the biology of reproduction of tench in Rybinsk
Reservoir. Trudy DGZ no.6:423-430 '60. (MIRA 13:10)
(Rybinsk Reservoir--Tench)

KOSHELEV, B.V.

Seasonal characteristics of egg maturation in fishes with two types of spawning. Dokl.AN SSSR 136 no.1:214-217 Ja '61. (MIRA 14:5)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR.
Predstavleno akademikom I.I.Shmal'gauzenom.
(Fishes--Eggs) (Perch)

KOSHELEV, B.V.

Variations in the reproduction cycle of fishes with simultaneous spawning due to changes in the environmental conditions. Vop. ikht. 1 no.4:716-724 '61. (MIRA 14:12)

1. Institut morfologii zhivotnykh imeni A.N.Severtsova AN SSSR, Moskva.

(Fishes)
(Reproduction)

KOSHELEV, B.V.

Effect of the characteristics of ovary maturation in fishes on the fecundity and structure of the spawning stock. Vop. skol. 5:105-106 '62. (MIRA 16:6)

1. Institut morfologii zhiivotnykh AN SSSR, Moskva.
(Fishes--Physiology) (Reproduction)

KOSHELEV, D.

KOSHELEV, D., podpolkovnik.

Experience carrying out tactical-drill exercises in forcing rivers
on the march. Voen-inzh.zhur. 101 no.9:8-12 S '57. (MIRA 10:9)
(Stream crossing, Military)

KOSHELEV, D., polkovnik.

Equipping class training areas for teaching vehicle maintenance.
Voen.-inzh. zhur. 101 no.11:28-29 N '57. (MLPA 10:11)
(Military education)
(Vehicles, Military)

KOSHELEV, D., podpolkovnik

Organization and execution of a company's specialized tactical training.
Voen.-inzh.zhur. 102 no.4:10-17 Ap '58. (MIRA 11:4)
(Military engineering) (Infantry drill and tactics)

KOSHELEV, D.I., inzh. (Voronezh)

Stand for an overhead welder. Stroi.truboprov. 8 no.7:29 JI '63.
(MIRA 17:2)

1. Stroitel'nyy uchastok No.7 Svarochno-montazhnogo tresta, Voronezh.

KOSHELEV, F. B.

Sovetskii metod industrializatsii strany kollektivizatsiia sel'skogo khoziaistva. Moskva, Izdatel'stvo "Pravda," 1946.

Title translated: The Soviet method of industrialization of the country and the collectivization of agriculture.

1. KOSHELEV F. B.

2. USSR (600)

4. Volga-Don Canal

7. Importance of the V.I. Lenin Volga-Don Navigation Canal for the national economy, Vest.stat. no.5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KOCHULEV, F. B.

Cost and Standard of Living

Steady rise of the workers' standard of living in a socialist society. *Vop. ekon.* No. 9, 1952.

Monthly List of Russian Acquisitions, Library of Congress, December 1952. Unclassified.

KOSHELEV, F. F.

PROCESSES AND PROPERTIES INDEX

1st and 2nd ORDERS

COMMON ELEMENTS

COMMON VARIABLES INDEX

RECLAIMING RUBBER. I. A. Tartakovskii, F. F. Koshelev and B. A. Dogadkin. Russ. 46,350, March 31, 1946. Devulcanized or non-devulcanized natural or synthetic rubber is ground and dispersed in an aq. medium, any fabric present is removed by centrifuging and the rubber part of the dispersion is dried.

ASME-ISA METALLURGICAL LITERATURE CLASSIFICATION

1930-1949

ALLIANCE

1st AND 2nd ORDERS

COMMON ELEMENTS

COMMON VARIABLES INDEX

1st AND 2nd ORDERS

COMMON ELEMENTS

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1st AND 2nd ORDERS

METALS AND ALLOYS																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP
AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK
BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF
CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA
DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV
DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ
ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL
FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG
GH	GI	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GA	GB	GC	GD	GE	GF	GG	GH
GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GA	GB	GC	GD
GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY
GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU
GV	GW	GX	GY	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ
HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL
IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG
JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB
KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW
KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR
LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM
MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH
NI	NJ	NK	NL	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE
OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ
PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU
PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP
QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL
RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG
SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB
TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TV
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TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV	TV

KOSHELEV, F. L. F. PROCESSES AND PROPERTIES INDEX

ca

30

Some scientific research problems of the rubber industry in the third five-year plan. F. Koshelev. *Caoutchouc and Rubber (U. S. S. R.)* 1937, No. 6, 23-6.--A discussion. A. Pestoff

ASS-51A METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

KOSHELEV, F. F. 30

ca

Chlorination of Soviet natural and synthetic rubbers. F. F. Koshelev, V. N. Prosvov and A. S. Solov'ev. *Caoutchouc and Rubber (U. S. S. R.)* 1939, No. 8, 21-4. Chlorination of Soviet natural and synthetic rubbers is best conducted in dichloroethane. All attempts to chlorinate natural rubbers in the absence of a solvent proved fruitless. Chlorination of natural rubbers was accelerated by I, $SnCl_4$ and $AlCl_3$. Chlorination in the presence of I increased the stability of chlorinated rubbers; $AlCl_3$ and $SbCl_5$ increased the percentage of fixed Cl. Chlorination of synthetic rubber in solns. contg. Fe reduced the stability and soly. of the product. Pb decreased the soly. but not the stability of the product. Both Fe and Pb had no effect on the amt. of Cl which combined. Heating the products for 12 hrs. at 60-80° did not reduce their stability. B. Z. Kamuch

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

1939-1940

1941-1942

1943-1944

1945-1946

1947-1948

1949-1950

1951-1952

1953-1954

1955-1956

1957-1958

1959-1960

1961-1962

1963-1964

1965-1966

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1969-1970

1971-1972

1973-1974

1975-1976

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1981-1982

1983-1984

1985-1986

1987-1988

1989-1990

1991-1992

1993-1994

1995-1996

1997-1998

1999-2000

KOSHELEV, F. F.

PHASE X

TREASURE ISLAND BIBLIOGRAPHICAL REPORT

AID 742 - X

Call No.: AF510128

BOOK

Author: KOSHELEV, F. F.

Full Title: RUBBER TECHNOLOGY

Transliterated Title: Tekhnologiya reziny

PUBLISHING DATA

Originating Agency: None

Publishing House: State Scientific and Technical Publishing House
of Chemical Literature ("Goskhimizdat")

Date: 1951

No. pp.: 500

No. of copies: 3,000

Editorial Staff: Engineer V. M. Moskalev contributed to the text of

Ch. IX (Part 2): "Textile Materials".

PURPOSE AND EVALUATION: A textbook for students of schools for advanced chemical studies, as well as a manual for engineers and technicians in the rubber and allied industries. The book is interesting because it is based on the work of Soviet scientists. It describes in detail the types of rubber obtained from plants and produced synthetically in the USSR, as well as the equipment and technical methods for processing rubber used in Soviet industry. The last chapter "Manufacturing of Articles from Latex" is brief (7 pages) as compared with extensive descriptions of the direct industrial uses of latex to be found even in older American books (e.g., Modern Rubber Chemistry, by H. Barron, 1948;

KOSHELEV, FEDOR FEDOROVICH PHASE I BOOK EXPLOITATION

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Koshelev, Fedor Fedorovich, and Klimov, Nikolay Sergeyevich

Obshchaya tekhnologiya reziny (General Technology of Rubber) Moscow, Goskhimizdat, 1958. 480 p. 8,000 copies printed.

Ed.: Yevstratov, V. F.; Tech. Ed.: Lur'ye, M. S.

PURPOSE: The book is a text-book for students of higher chemical and technical schools (vuzes) and can be used by engineers and technicians working in the rubber and allied industries. This book is the second edition of the text-book "Technology of Rubber" (revised and supplemented). It consists of 4 parts.

COVERAGE: Part I deals with colloidal, chemical, physical, and technological properties of rubbers and rubberlike polymers used in manufacture of rubber. Part II describes the basic ingredients of rubber mixtures, and discusses present-day theories on the effect of vulcanization accelerators and masticators, and the reinforcing and aging of rubber. Part III contains a description of the basic technological processes of rubber production: preparation of natural rubber and of ingredients of rubber mixtures, mastication of rubber, preparation of rubber mixtures, methods of molding, vulcanization of rubber products.

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General Technology of Rubber

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Considerable attention is devoted to recent technological methods of rubber manufacturing, mechanization and automation of manufacturing processes, assembly of equipment and use of continuous processes. Part IV. describes the basic principles for compounding rubber mixtures used in manufacturing various articles. Parts I, II and IV are written by F. F. Koshelev. Part III is written by F. F. Koshelev in collaboration with N. S. Klimov. The authors thank the following scientists for their assistance: S. V. Burov, V. F. Yevstratov and the staff of scientific research institutes of rubber and tire industries and A. B. Kusov, Docent of the Leningrad Institute of Technology (Leningradskiy tekhnologicheskii institut) and also the faculty members of the rubber technology department at the Moscow Institute of Fine Chemical Technology (Moskovskiy institut tonkoy khimicheskoy tekhnologii). There are 226 references, 88 of which are Soviet (including 11 translations), 121 English, and 17 German.

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NAZAROV, I.N. [deceased]; CHERKASOVA, Ye.M.; KOSHELEV, F.F.; BABITSKIY,
B.L.; VINITSKIY, L.Ye.

Study of action of arylalkylaminopropanols and aminopropiophenones
as accelerators in rubber vulcanization. Khim.nauk i prom. 3 no.5:
678-679 '58. (MIRA 11:11)

1. Moskovskiy institut tenkoy khimicheskoy tekhnologii im. M.V. Lo-
monosova i Nauchno-issledovatel'skiy institut khimicheskoy promyshlen-
nosti.

(Amino compounds)

(Vulcanization)

SOV/138-58-8-11/11

AUTHORS: ~~Koshelev, E. E.~~ and Klimov, N. S.

TITLE: General Rubber Technology (Obshchaya tekhnologiya)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 8, pp 39 - 40 (USSR)

ABSTRACT: This is the second edition of a text book first published in 1951, favourably reviewed by A. B. Kusov. Publishers: Goskhimizdat, 1957.

Card 1/1

KOSHELEV, F.F.; KORNEV, A.Ye.

Corrosion resistance of rubbers at elevated temperatures in
relation to the vulcanizing group and nature of the reinforcer.
Kauch. i rez. 17 no.3:16-19 Mr '58. (MIRA 11:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonosova.

(Rubber) (Vulcanization)

5(1,3)

AUTHORS:

Koshelev, F. F., Spiridonova, Ye. M. SOV/153-2-2-23/31

TITLE:

Electrically Conductive Types of Rubber (Elektroprovodyashchiye reziny)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 263-269 (USSR)

ABSTRACT:

The type of rubber mentioned in the title is being used lately in various branches of industry, medicine, and aviation. The property mentioned in the title depends on the type of rubber and the production-method for the mixture, the component of which it forms (Refs 1,2). The most important factors which determine this property are the content, type, and grain size of the carbon black, its inner crystalline structure, the chemical nature of its surface, as well as the ability of forming netlike and space-structures in the rubber (Refs 1-6). Accelerators (Refs 3,7) and fluxing agents considerably influence the conductivity of the rubber. The paper deals with the production of types of conductive rubber based on local raw-materials, and the investigation of their properties. The types of rubber in question are divided into two groups according to their field of

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Electrically Conductive Types of Rubber

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application: a) Rubber for the down-lead of static charges with an electric resistance of 10^3 to 10^7 ohm.cm and b) rubber for special purposes: resistance below 10^3 ohm.cm. The resistance was measured with the compensation-method (Fig 1). The dependence of the electrical conductivity of the vulcanisates on their filling with acetylene black for mixtures of rubbers SKS-30A and SKN-40 is shown in figure 2. As appears from it, the resistance of the rubber-types forms a function of the filling: It decreases rapidly with the increase of the carbon black contents and reaches a minimum of resistance at a ratio of carbon black : rubber = 80 : 100. Table 1 shows that other types of carbon black are inferior to acetylene-black with regard to an increase in conductivity. Figure 3 shows the changes in resistance depending upon combinations of individual types of carbon black. Table 2 illustrates the resistance of the vulcanisates on the basis of various types of rubber. The influence of accelerators on resistance is illustrated in table 3. Thiuram increases the resistance. Sulphur and activators are of no significant influence. Figures 4 and 5 show the changes of the defo-coefficient depending upon the

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Electrically Conductive Types of Rubber

SOV/153-2-2-23/31

carbon black combinations and the contents of fluxing agents. It follows from figure 6 that increased doses of fluxing agents increase the resistance in a different way. The following conclusions are drawn from the results:

- 1) The electric resistance of rubber types depends on the existence of polar groups in the rubber.
- 2) Fluxing agents enable the extraction of raw mixtures with good working properties, but they increase the electric resistance of the vulcanisates.
- 3) The thermal reaction considerably reduces resistance.
- 4) Repeated strain-deformations rapidly increase the resistance of the vulcanisates.
- 5) The electrically conductive carbon black structures are unstable and movable, as can be seen from numerous tests with repeated deformation and following thermal reactions. There are 8 figures, 5 tables, and 13 references, 4 of which are Soviet.

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Electrically Conductive Types of Rubber

SOV/153-2-2-23/31

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M. V. Lomonosova; Kafedra tekhnologii reziny (Moscow
Institute for Fine Chemical Technology imeni M. V. Lomonosov;
Chair of Rubber Technology)

SUBMITTED: July 11, 1958

Card 4/4

83848

S/138/60/003/003/004/007
A051/A029

15.9120 also 2209

AUTHORS: Koshelev, F.F.; Kun Ke-Chan; Kornev, A.Ye.

TITLE: The Effect of Mercaptobenzothiazole Salts and Metal Oxides on the Properties of Vulcanizates Produced From Natural Rubber

PERIODICAL: Kauchuk i Rezina, 1960, No. 3, pp. 25 - 29

TEXT: Although the action of mercaptobenzothiazole salts as accelerators of vulcanization has already been investigated (Ref. 1), a detailed study of their effect on the properties of vulcanized rubber was not carried out. Therefore, the purpose of the present article was to investigate the effect of these salts and various metal oxides on the physico-mechanical and dynamic properties of vulcanized rubber produced from natural rubber. The synthesized zinc, lead, bismuth, cadmium and strontium salts of mercaptobenzothiazole were taken as material for investigation. The authors briefly describe the experimental procedure. It is shown that the nature of the metal oxide chosen as activator has a definite effect on the physico-mechanical properties of the rubber when the latter is vulcanized with these salts. The vulcanized rubber with cadmium and strontium salts is characterized by a high resistance to thermal aging and ex-

X

Card 1/3

83848

S/138/60/000/003/004/007

A051/A029

The Effect of Mercaptobenzothiazole Salts and Metal Oxides on the Properties of
Vulcanizates Produced From Natural Rubber

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomo-
nosova (Moscow Institute of Fine Chemical Technology imeni M.V.
Lomonosov)

Card 3/3

S/138/60/000/006/003/008
A051/A029

On the Development of Self-Vulcanizing Materials for the Repair of Pneumatic Tires

cement was developed for use in the cold repair of rubber articles with a sufficiently high adhesiveness and a satisfactory thermostability at 100°C. In order to avoid gelatination during the production and storage of the pastes and cements, two solutions of the cement and the paste were developed which are mixed together prior to their application. In order to find the most active ultra-accelerators of vulcanization at low temperatures, Zn, Pb, Al, Bi, Cd and Sb salts of dialkyldithiocarbamate acids were studied. It was found that the zinc salt has a higher level of vulcanization. Various epoxide resins were tested for the purpose of increasing the adhesiveness of the cements to vulcanized rubber and fabrics. It was established that the partial replacement of the epoxide resin with phenolformaldehyde increases the stability of the cement during storage. Gas channel carbon black, and mineral fillers (colloidal silica UK-333 (UK-333) and YC-170 (US-170), powdered silica gel, the silicates of calcium, zinc, etc.), were tested as fillers for increasing the mechanical resistance of the layers of the adhesive. Tests were performed on the tube and casing rubbers.

Card 2/3

86288

15.920D

2109,2209

S/153/60/003/005/013/016
B013/B058

AUTHORS: Gridunov, I. T., Koshelev, F. F., Sadovaya, Ye. F.

TITLE: Use of Moistened Silica Gel Powder in Fire-inhibiting Rubber

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 5, pp. 924-927

TEXT: The fireproofness of rubber from nairit (polychloroprene rubber), to which moistened silica gel powder was added, was studied here. The quality of the raw materials used, nairit, silica gel powder, and others, conformed with the State ГОСТ (GOST) standards, as well as technical specifications. Mixtures were rolled in laboratory rollers of 300 mm length. Samples were vulcanized in steam-heated presses at 143°C with a specific pressure of 30-40 kg/cm² per mold. Mechanical properties were checked by the methods laid down by GOST. Fireproofness was determined by the method described by K. A. Andrianov and D. A. Kardashev (Ref. 9). Test results are given in Tables 1-6. The studies showed that an addition of silica gel powder with 20% humidity content increases the fireproofness

Card 1/2

86288

Use of Moistened Silica Gel Powder in Fire-
inhibiting Rubber

S/153/60/003/005/013/016
B013/B058

of rubber from nairit. The physical and mechanical, as well as technical, properties of the material are not impaired thereby. The use of moistened silica gel powder combined with chlorinated paraffin and chlorinated rubber warrants complete incombustibility and outstanding mechanical properties of rubber from nairit. There are 6 tables and 10 references: 2 Soviet and 8 British. X

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M. V. Lomonosova, Kafedra tekhnologii reziny (Moscow
Institute of Fine Chemical Technology imeni M. V. Lomonosov,
Department of Rubber Technology)

SUBMITTED: November 26, 1958

Card 2/2

15.9120

14.2320

27937 S/138/61/000/007/003/007
A051/A129AUTHORS: Koshelev, F.F.; Zanemonets, N.A.

TITLE: Relationship of the thermal effects of vulcanization of natural and synthetic rubbers to the sulfur content, temperature and accelerator type

PERIODICAL: Kauchuk i rezina, ²⁰no. 7, 1961, 15 - 18

TEXT: The present article deals with the results obtained in an investigation of the thermal effects in natural rubber, CKMC-50 (SKMS-50) and CKC-30A (SKS-30A), depending on the sulfur content (to 100 w.p. of rubber), accelerator and temperature. The general thermal effect of the vulcanization reaction was computed from the formula:

$$q_{\text{sum}} = \frac{q_v^{\text{aver.}} (\tau_n - \tau_0)}{\gamma}, \quad (1)$$

where $q_v^{\text{aver.}}$ is the average intensity of heat formation in $\text{kcal/m}^3 \cdot \text{h}$; τ_n - time from the beginning of heating, corresponding to the calculated moment n ; τ_0 - time, corresponding to the beginning of vulcanization; γ - specific gravity of the mixture, kg/m^3 . The heat conductivity coefficients $q_v^{\text{aver.}}$ were determined

Card 1/6

27937 S/138/61/000/007/003/007
A051/A129

Relationship of the thermal effects of....

in stationary thermal conditions and the temperature-conducting coefficients in regular ones. The volumetric heat capacity was calculated from the formula: $c_v = \frac{\lambda}{a}$ (2). The results of the experimental determination of the sum of thermal effects of the vulcanization with an accelerator and with 30 w.p. of sulfur (temperature 150°C) are given as:

Type of rubber	q _{sum} , kcal/kg mixture
NR	74.5
SKMS-50	52.6
SKS-30A	73.8

The data show that the sum of the thermal effects of the vulcanization reaction of mixtures based on natural and butadiene-styrene rubbers are both about equal. The presence of the methyl group in the rubber lowers the thermal effect of the vulcanization. Results of the computation of the sum of the thermal effects of vulcanization for mixtures based on natural rubber and SKS-30A with various sulfur contents are given in Table 2. The data show that with an increase in the sulfur content in the mixture the thermal effect increases and also the intensity of the heat formation q_v . The authors further investigated the effect of the type of the accelerator on the kinetics of heat formation and the sum of the ther-

Card 2/6

Relationship of the thermal effects of....

27937 S/138/61/000/007/003/007
A051/A129

mal effects of the vulcanization reaction of the mixtures. The introduction of an accelerator into the mixture based on SKMS-50 increases the intensity of the heat formation. The new method, called the method of thermographical balances, was checked. The effect of vulcanization temperature on the kinetics of heat formation and on the sum of thermal effects of the vulcanization reaction was also investigated. An increase in the vulcanization temperature decreases the duration of the vulcanization and elevates the intensity of heat emission. The following conclusions are drawn: The mixtures based on NR and SKS-30A which were investigated have the same vulcanization thermal effect values. The thermal effect of vulcanization of methyl-styrene SKMS-50 rubber is much lower. Thus, the presence of a methyl group in the benzene ring reduces the thermal effect of the vulcanization. The thermal effect increases with the sulfur content in the raw mixture. The mixtures containing DFG, thiuram and MgO as accelerators, and mixtures without accelerators, have the same thermal effect of vulcanization. A mixture containing BT sulfenamide is characterized by a higher value of the thermal effect than the same mixture without an accelerator; captax lowers the value of Q_{sum} . A method is recommended for vulcanization of mixtures with a low sulfur content based on the equality of the thermal effect of the rubber vulcanization without an accelerator and with certain accelerators. This method is also applic-

Card 3/6



Relationship of the thermal effects of....

27937 S/138/61/000/007/003/007
A051/A129

able to determining the thermal effects at low temperatures of vulcanization (120 - 140°C). The thermal effect increases with an increase in the temperature. There are 5 figures, 4 tables and 2 Soviet-bloc references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomono-
sova (Moscow Institute of Fine Chemical Technology im. M.V. Lo-
monosov)

4

Card 4/6

S/138/62/000/001/009/009
A051/A126

AUTHORS: Koshelev, F.F.; Il'yin, N.S.; Glagolev, V.A.

TITLE: Production of adhesives on laboratory scale

PERIODICAL: Kauchuk i rezina, ^{2/}no. 1, 1962, 54

TEXT: A method has been developed for producing adhesives in quantities of 150 - 500 g, for studying their properties in the laboratory. An instrument for grinding fabric, manufactured at the Kiev Plant of Medical Appliances, was used (Fig. 1). Dissolution takes place in the glass container (3), with knives having cutting and mixing blades and rotating at a speed of 4,000 or 8,000 rpm. The compression rubber-metal collar and rubber linings of the head (2) were replaced in the plant instrument by a rubber collar and linings, made of oil-benzene-resistant rubber, manufactured at the "Kauchuk" Plant. The preparation of the solution takes about 10 - 20 min, depending on the type of rubber or the rubber mix composition. The described instrument can be used to produce adhesives containing 60 - 100% by weight of active filters, up to 100 w.p. of rubber, and also viscose rubber solutions. The head and blades must be disassembled periodically for cleaning and lubricating of the rotary parts. There are 2 figures.

Card 1/2

L0296.

S/081/62/000/014/031/039
B166/B144

15.9410

AUTHORS: Koshelev, F. F., Il'in, N. S., Glagolev, V. A.

TITLE: Bonding rubbers to steel with chloronairite-base adhesives

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1962, 650, abstract
14P352 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon.
issled. Gos. kom-ta Sov. Min. SSSR po khimii, no. 9, 1961,
56 - 60)

TEXT: The bonding strength with steel (BS; ГОСТ 209-41 (GOST 209-41)) was determined for rubbers made from HK (NK), and for butadiene-styrene and butadiene-nitrile rubbers and nairite, bonded with an adhesive (20% solution) based on chloronairite (CN) containing 64% Cl. The Cl ions were washed out and the surface of the steel was first cleaned with emery paper. Adhesive made from CN has high adhesion to steel and to polar rubbers but very low BS with nonpolar rubbers. In order to increase the BS on the adhesive - rubber interface it is recommended that the following additions be made to CN adhesives: (1) rubbers which covalcanize with the rubber being bonded to the steel (for example, carboxyl-containing butadiene-styrene rubbers with 1-1.5% methacrylic acid); (2) active fillers

Card 1/2

Card 2/2

KOSHELEV, F.F.; KAMENSKIY, B.Z.; YURGENSON, M.P.; VOSTROKNUTOV, Ye.G.

Rubber patches for on-the-road repairing of tire tubes.
Kauch.i rez. 21 no.12:43-45 I '62. (MIRA 16:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Tires, Rubber--Repairing)

ACCESSION NR: AP4017161

S/0138/64/000/002/0009/0011

AUTHORS: Koshelev, F. F.; Korablev, Yu. G.; Bukanov, A. M.; Chasovshchikov, G. L.

TITLE: The strengthening of rubber films by alkaline lignin

SOURCE: Kauchuk i rezina, no. 2, 1964, 9-11

TOPIC TAGS: synthetic rubber, emulsion polymerization, zinc oxide, thiuram, sodium oleate, Leukanol, lignin, physicomachanical property, vulcanization, calcium chloride

ABSTRACT: Commercial synthetic rubbers, and experimental butadiene-containing rubbers prepared at the polymerization laboratory of the Institut organicheskoy Khimii AN SSSR (Institute of Organic Chemistry AN SSSR) were investigated. The lignin was obtained from waste sulfite liquor of wood pulp processing. Most of the mixtures consisted of 100 parts rubber (by weight), 5 parts of a 33% dispersion of zinc oxide, and 3 parts of a similar dispersion of thiuram. The solid ingredients were dispersed in a 5% aqueous solution of Leukanol in a ball mill. A 15% lignin solution in 20% ammonia was prepared, and up to 10% of it was added to the rubber dispersion. No vulcanizing agents were used for films prepared from SKD-1 and L-7 commercial rubbers, since the undercoat of calcium chloride (applied to the glass
Card 1/2

ACCESSION NR: AP4017161

molds where the films were cast) acts as a vulcanizing agent for carboxylic type rubbers, as does lignin. The films were subjected to syneresis in warm water for 30 minutes, dried in a thermostate at 70C, and vulcanized at 140-150C for various periods of time. It was found that in all instances the tensile strength and modulus at 300% elongation increased as the result of incorporation of lignin. The extraction of lignin from the compounded rubbers by 2% alkali was observed to decrease with the duration of vulcanization, suggesting a chemical bond. Orig. art. has: 3 charts.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Industry)

SUBMITTED: 00

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 004

Card 2/2

ACCESSION NR: AP4038906

S/0138/64/000/005/0004/0007

AUTHORS: Bilalov, Ya. M.; Koshelev, F. P.; Korablev, Yu. G.; Levitin, I. A.

TITLE: The utilization of standard cis-butadiene rubber SKD in protector rubber compounds

SOURCE: Kauchuk i rezina, no. 5, 1964, 4-7

TOPIC TAGS: protector rubber compound, cis butadiene rubber SKD, butadiene methylstyrene rubber SKMS 30ARKM15, plasticizer PN.6, carbon black KhAF, carbon black PM70, carbon black AySAF, protector compound technological property

ABSTRACT: Data are reported on the properties of protector rubber compounds obtained by combining cis-butadiene rubber SKD with butadiene-methylstyrene rubber SKMS-30 ARKM-15. The issuing material consisted of a typical protector compound on a SKMS-30 ARKM-15 base, filled with 50 parts (by weight) of carbon black of the KhAF type, various amounts of which were replaced by SKD. It was found that the compound containing 50 parts of SKD (vulcanized at 151C) showed high hardness, plasticity, and scorching tendency, but had a low resistance to cracking. All of its properties related to wear resistance showed a substantial improvement. Other tests were conducted on the effect of adding various

Card 1/2

L 27622-65 EWT(m)/EPF(c)/T/ENT(j) Po-/Pr-I RM

ACCESSION NR: AP5005390

B/0138/65/000/002/0010/0012

AUTHOR: Bilalov, Ya. M.; Koshelev, F. F. Korablev, Yu. G.; Levitin, I. A.

26
22
8

TITLE: Use of polyethylene in rubber mixes

SOURCE: Kauchuk i rezina, no. 2, 1965, 10-12

TOPIC TAGS: butadiene-styrene rubber, tread rubber, low pressure polyethylene, high pressure polyethylene, improved rubber mix, improved vulcanizate

ABSTRACT: A study has been made of the effect of polyethylene on the processability and physicomechanical properties of butadiene-styrene tread rubbers (SKS-30 ARKM-15). The experiments were conducted with KNAF carbon black-filled butadiene-styrene rubber mixes and vulcanizates containing 0-15% low- or high-pressure polyethylene (LPPE or HPPE). It was shown that the properties of butadiene-styrene rubber can be improved by the addition of LPPE, while HPPE hardly affects these properties. The different effects of LPPE and HPPE were attributed to a difference in structure. The results of the study indicated that the optimum amount of LPPE to be added to SKS-30 ARKM-15 tread mixes is 5%. Such mixes exhibit improved processability and reduced scorching and shrinkage. Their vulcanizates exhibit improved modulus at 300% elongation, and improved resistance to wear and ozone. Orig. art. has: 3 figures and 1 table. [B0]

Card 1/2

L 27622-65			
ACCESSION NR:	AP5005390	2	
ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology); Moskovskiy shinnyy zavod (Moscow Tire Plant)			
SUBMITTED:	00	ENGL:	00
NO REF SOV:	004	OTHER:	003
		SUB CODE:	MT, OC
		ATD PRESS:	3190
Card 2/2			

L-59382-65	EFP(o)/EWP(j)/EWT(m)	Pc-1/Pr-1	RM
ACCESSION NR:	AP5017843		
			UR/0286/65/000/011/0079/0079 678.4.048.9:547.85
AUTHOR:	Koshel'ev, F. F.; Unkovskiy, B. V.; Gritunov, I. T.; Otopkova, M. A. Donskaya, M. M.; Ignatova, I. A.; Andreyev, I. V.		
TITLE:	Method of protecting rubbers. Class 39, No. 171569 15		
SOURCE:	Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 79		
TOPIC TAGS:	rubber, rubber stabilizer		
ABSTRACT:	An Author Certificate has been issued for a noncoloring stabilizer which protects natural rubber against ozone and light-induced aging. The stabilizer is a 4,4,6-trialkyl-1H-alkyl(aryl, aralkyl)-1,2,3,4-tetrahydropyrimidinethione-2 [SM]		
ASSOCIATION:	Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)		
SUBMITTED:	20Feb64	ENCL: 00	SUB CODE: NT
NO REP SV:	000	OTHER: 00	ATD PRESS: 4047
Card 1/	25		

I 59373-65 BWT(m)/EPF(c)/EMP(j) Pc-4/r-4 RM	
ACCESSION NR: AP5017846	UR/0286/65/000/011/0079/0079 678.4.048.4:547.496.3
AUTHOR: <u>Kochel'ev, F. F.; Unkovskiy, B. V.;</u> <u>Donikaya, M. M.; Ignatova, L. A.</u>	<u>Gridunov, I. T.; Otopkova, M. A.</u>
TITLE: Method of increasing the ozone and based vulcanizates. Class 39, No. 171572	light-ozone resistance of natural-rubber-
SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 79	
TOPIC TAGS: natural rubber, stabilizer	
ABSTRACT: An Author Certificate has been issued for a stabilizer for improving the ozone and light-and-ozone stability of natural-rubber-based vulcanizates. The sta- bilizer used is a 1-(2-alkyl-3-oxoalkyl)-3-alkyl or aryl)-2-thiourea [sic]. [SM]	
ASSOCIATION: none	
SUBMITTED: 24Dec63	ENCL: 0 SUB CODE: MT
NO REF SOV: 000	OTHER: 000 ATD PRESS: 4047
Card 1/1 ddp	

L 45451-66 ENT(m)/ENP(j) IJP(c) RM

ACC NR: AR6026774

(A)

SOURCE CODE: UR/0081/66/000/003/5094/5094

AUTHOR: Otopkova, M. A.; Koshelev, F. F.; Donskaya, M. M.; Unkovskiy, B. V.;
Koren'kova, O. P.

54

B

TITLE: Chemical protection of rubbers from the action of ozone

SOURCE: Ref. zh. Khimiya, Part II, Abs. 85672

REF SOURCE: Sb. Sintez i issled. effektivn. stabilizatorov dlya polimern. materialov.
Voronezh, 1964, 125-137

TOPIC TAGS: ozone, antioxidant additive, amine, natural rubber

ABSTRACT: The effect of antiozonants (AO) of the classes of p-phenylenediamine (I),
p-anisidine and thiourea on the O₃-resistance of rubbers from NK was studied as a function
of the nature of the substituent at the N atom. Particularly effective are N,N'-
di-sec-butyl-I and its disulfide derivatives. On the basis of an analysis of the influence
of the structure of AO on the effectiveness of their action, it is postulated
that the mechanism of protective action of AO is determined by the presence of the N
atom in their molecules and by the degree of its basicity, determined by the nature of
the substituents. M. Otopkova. [Translation of abstract]

SUB CODE: 07,11

LS

Card 1/1

L 1856-66 EWT(m), EPF(c)/EWP(j) RM

ACCESSION NR: AP5022091

UR/0138/65/000/008/0012/0016
678.048:541.124

AUTHOR: Zuyev, Yu. S.; Koshelev, F. F.; Otopkova, M. A.; Mikhaleva, S. B.

TITLE: Effect of antiozonants on the ozonization of rubbers at different temperatures

SOURCE: Kauchuk i rezina, no. 8, 1965, 12-16

TOPIC TAGS: vulcanizate, ozonization, antiozonant, natural rubber, isoprene rubber

ABSTRACT: The effect of temperature on the ozonization of rubbers in the presence of antiozonants has been studied to clarify the mechanism of action of antiozonants and for technical purposes. Experiments were conducted at 16 to 46C with stressed and unstressed unfilled vulcanizates of natural (pale crepe) and nonstabilized isoprene (SKI-3) rubbers. N-phenyl-N'-isopropyl-p-phenylenediamine (4010NA) and N,N'-diphenyl-p-phenylenediamine (DFFDA) were used as the antiozonants. The ozone concentration during the experiments was maintained at 1-1.5 x 10⁻³ vol%; stressed rubbers were subjected to a deformation approaching the critical value of 20%. The experiment consisted of the determination of ozone-consumption and crack-growth kinetics. Investigation of the respective kinetic curves showed that the 4010NA antiozonant slows down ozone crack growth in natural and isoprene rubber by reacting

Card 1/2

L 1856-66

ACCESSION NR: AP5022091

2

both with ozone and the polymer; the effectiveness of the 4010NA antiozonant is partly due to promotion of the catalytic decomposition of ozone. Increasing the ozonization temperature of vulcanizates in the vicinity of critical deformations usually increases the ozone consumption but slows down the destruction and increases the life of vulcanizates. In the initial stages, the ozonization process of unstressed natural and isoprene rubbers does not differ from that of stressed rubbers in respect to the values of the activation energy, but has a much slower rate. In the absence of antiozonants, ozonization of SKI-3 proceeds somewhat faster than that of natural rubber due to the presence of traces of SKI-3 polymerization catalysts. This difference disappears in the presence of an antiozonant. The results of the study indicate that ozone cracking cannot be attributed to chemical processes alone, and that the physical conditions of the process must also be taken into account. Orig. art. has: 4 figures.

[B0]

ASSOCIATION: Nauchno-issledovatel'skiy institut resinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 011

OTHER: 005

ATD PRESS: 4087

Card 2/2 GP

SHIKHIREV, N.I.; PUKHOV, A.P.; SHEVYAKOV, N.M.; KOSHELEV, F.F.; NOVIKOV, M.I.

Continuous action proportioning unit for free flowing materials.
Kauch. i rez. 24 no.5:46-48 My '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

ZUYEV, Yu.S.; KOSHELEV, F.F.; GTOPKOVA, M.A.; MIKHALEVA, S.B.

Effect of antiozonants on the ozonization of rubber at various temperatures. Kauch. i rez. 24 no.8:12-16 '65.

(MIRA 18:10)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.

L 12804-66 EWT(m)/EWP(j) RM

ACC NR: AP5028901

SOURCE CODE: UR/0138/65/000/011/0016/0018

AUTHOR: ⁴⁴ Koshlev, F. F.; ⁴⁴ Shchekotikhina, L. P. 28

ORG: ⁴⁴ Scientific Research Institute of the Rubber Industry (Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti) B

TITLE: New active organic fillers for synthetic rubbers ⁴⁴

SOURCE: Kauchuk i rezina, no. 11, 1965, 16-18

TOPIC TAGS: synthetic rubber, rubber chemical, urea resin, vulcanization

ABSTRACT: A rosin-maleic-urea resin (RMU) filler was synthesized and tested in SKS-30 vulcanizates and vulcanized films of chloroprene and butadiene-nitrile latexes. It was found to have reinforcing properties only when introduced into the latex in the form of water-soluble sodium or ammonium salts, with subsequent precipitation with the rubber by solutions of organic acid salts of polyvalent metals, particularly aluminum. The filler studied has a desirable effect on the various physicommechanical properties of the vulcanizates, and retards their light and heat aging. It was found that salts formed by polyvalent metals with the RMU resin and with organic acids impart identical properties to the vulcanizates, and that these properties are determined by the coordinate nature of the interaction between the fillers and the rubber. Orig. art. has: 1 table.

SUB CODE: 11 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002

Card 1/1 HW

UDG: 678.046.7-546/547.07.004.12

05649-67

ACC NR: AP6026760

istance to thermal-oxidative aging of the vulcanizates containing CdO surpass those of vulcanizates containing ZnO. Orig. art. has: 3 figures and 1 table. 0

SUB CODE: 11/ SUEM DATE: 12Mar65/ ORIG REF: 009

Card 2/2 *epk*

L 39080-66 EWT(m)/EWP(j)/T IJP(c) WW/RM/JWD

ACC NR: AF6021975

SOURCE CODE: UR/0153/66/009/002/0322/0324

AUTHOR: Gridunov, I. T.; Sergeyev, A. S.; Koshelev, F. F.; Potapov, A. M.;
Puzrin, B. S.ORG: Rubber Technology Department, Moscow Institute of Fine Chemical Technology im.
M. V. Lomonosov (Kafedra tekhnologii reziny, Moskovskiy institut tonkoy khimicheskoy
tekhnologii)TITLE: On the evaluation of the incombustibility of rubbers

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 2, 1966, 322-324

TOPIC TAGS: combustion, rubber

ABSTRACT: The incombustibility of several rubber compositions was evaluated by studying the dependence of the combustibility (in terms of the extinction time in seconds) on the time during which the specimen remained in the flame. The five compositions studied were: (1) composition A (pts. by wt.): nairit, 100; MgO 10; ZnO, 5; chlorinated paraffin, 5.5; chalk, 5; (2) composition B = composition A + 5.0 pts. by wt. of aluminum hydroxide; (3) composition C = composition A + 20 pts. by wt. of aluminum hydroxide; (4) composition D = composition A + 40 pts. by wt. of aluminum hydroxide; (5) composition E = composition A + 40 pts. by wt. of nickel sulfate crystal hydrate. The corresponding curves are shown in Fig. 1. On each curve,

Card 1/2

UDC: 678.014

KOSHELEV, F. P.

Koshalev, F. P. Labor productivity during the new Five-Year-Plan Moskva, Profizdat, 1944

87 p. (50-21303 HC335.K8193

KOSHELEV, F. P.

Koshelev, F. P. The Lenin-Stalin program for Socialistic construction in the USSR and its achievements Moskva, Voen. izd-vo, 1948.

68 p. (50-18009) HC335.K818

KOSHELEV, F. P.

Koshelev, F. P. The postwar Five-Year-Plan-a way to fulfill it ahead of time Moskva Moskovskii rabochii, 1949.

51 p. V pomoshch' slushateliam vechernikh partiinykh shkol (50-20739) HC335.K819

KOSHELEV, F. P.

FPP.
.R93101

PUTI LIKVIDATSII PROTIVOPOLOZHNOI MEZHDU GORODOM I DEREVNEY V SSSR.
MOSKVA, IZD-VO ZNANIYE, 1950. 44 p. (VSESOUZNOYE OBSHCHESTVO PO RASPROSTRA-
NENIYU POLITICHESKIKH I NAUCHNYKH ZNANIY)

KOSHELEV, F. P.

KOSHELEV, F. P. The great victories of the Soviet people in the struggle for the post-war Stalin Five-Year-Plan. Moskva, Voen. izd-vo, 1950. 110 p. (51-34304)

HC335.K824

KOSHELEV, F. P.

KOSHELEV, F. P. Basic results of the fulfillment of the 1st post-war Five-Year-Plan.
Moskva, Voen, izd-vo, 1951. 190 p. (52-29236)

H0335, K0185

KOSHELEV, F. P.

EPP.
.RS3037

O RABOTE I. V. STALINA "K VOPROSAM AGRARNOY POLITSIKI V SSSR". MOSKVA,
IZD-VO ZNANIYE, 1952. 39 s. (VSESOUZNOYE OBSHCHESTVO PO RASPROSTRANENIYU
POLITICHESKIKH I NAUCHNYKH ZNANIY. 1952, SERIYA 3, NO. 33)

Koshelev, F. P.

N/5
780.1
.K86

Velichestvennyye stalinskiye stroyki kommunizma i ikh narodnokhozyaystvennoye
znachenije (Great Stalinist constructions and their National economic signifiante)
Moskva, Gospolitizdat, 1952.
166 p. Tables

KOSHELEV, F. P.

A new stage in the development of the national economy of the USSR. Moskva, Voennoe
izd-vo Ministerstva oborony Soiuza SSR, 1954. 349 p.

KOSHLEV, Filipp Petrovich

Soviet industry. Moscow, Foreign languages publishing house, 1957.
53 p. illus. 20 cm. (The Land of Soviets)
Translated from the Russian: Promyshlennost' sovetskogo soyuza.

PHASE I BOOK EXPLOITATION

1176

Koshelev, Filipp Petrovich, Professor

Preimushchestvennyy rost proizvodstva sredstv proizvodstva--ekonomicheskiy zakon rasshirennogo vosproizvodstva (Preferential Growth of the Means of Production is the Economic Law of Expanded Reproduction) Moscow, Izd-vo "Znaniye," 1958. 31 p. (Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy. Seriya III, 1958, no. 26) 62,000 copies printed.

Sponsoring Agency: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy.

Ed.: Kurina, Ye. A.; Tech. Ed.: Berlov, A.P.

PURPOSE: This pamphlet published by the All-Union Society for the Dissemination of Political and Scientific Information is intended for the general reader.

Card 1/2

Preferential Growth (Cont.)

1176

COVERAGE: The author discusses and explains the reasons why the Soviet Union places so much emphasis on the production of capital goods in preference to consumer goods.

TABLE OF CONTENTS:

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Association and Interaction Between the Law of Preferential Growth of the Means of Production and the Economic Laws of Socialism	15
Use of the Law of Preferential Growth of the Means of Production in Solving the Economic Problems of a Socialist Society	24

AVAILABLE: Library of Congress JG/1sb
2-24-59

Card 2/2

KOSHELEV, Filipp Petrovich, prof.; SHVEYTSER, Ye.K., red.; VORONINA, R.K.,
tekh.n.red.

[Economic law of the preferential growth of the production of the
means of production] Ekonomicheski zakon preimushchestvennogo rosta
produktstva sredstv produktstva; materialy k lekttsiam po kursu
politicheskoi ekonomii. Moskva, Gos.izd-vo "Vysshiaia shkola," 1960.
70 p. (MIRA 13:10)

(Economics)

KOSHELEV, G.

Contribution of efficiency promoters. Sov.shakht. 10 no.4:
27 Ap '61. (M RA 14:9)

1. Pomoshchnik glavnogo inzhenera shakhty No.1-4 tresta Kras-
nodonugol'.
(Coal mining machinery--Technological innovations)

KOSYLOV, V. A.

Dressmaking - Patterns

New method for preparing patterns. Leg. Prom., 12, No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

Koshelev G. G.

KOSHELEV, Grigoriy Grigor'yevich; KLARK, Gel'ma Brunovna; UDAL'TSOV, A.H.,
glavnyy red.; SHREYDER, A.V., kand.tekhn.nauk, red.

[Practices of protecting marine installations of the petroleum
industry from corrosion by means of protective devices] Opyt
zashchity morskikh neftepromyslovykh sooruzhenii ot korrosii
s pomoshch'iu protektorov. Moskva, In-t tekhnikoOekon.inform.,
1956. 21 p. (Informatsiia o nauchno-issledovatel'skikh rabotakh.
Tema 23, no.1-56-140) (MIRA 11:2)

(Corrosion and anticorrosives)

(Petroleum industry--Equipment and supplies)

KOSHELEV, G.G., inzh.; ROZENFEL'D, I.L., doktor tekhn.nauk

Corrosion resistance of low-carbon and low-alloy steels in sea
water. Sudostroenie 25 no.1:12-17 N '59. (MIRA 13:4)
(Steel--Corrosion)

KOSHELEV, G. G., Cand Chem Sci -- (diss) "Electrochemical protection of steel structures from corrosion by the sea." Moscow, 1960. 14 pp; (Academy of Sciences USSR, Inst of Physical Chemistry); 150 copies; price not given; (KL, 17-60, 142)

KOSHELEV, G.G.; KLARK, G.B.

Corrosion resistance of carbon and low-alloy steels in various
climatic regions of the U.S.S.R. Trudy Inst.fiz.khim. 8:84-99
'60. (MIRA 14:4)

(Steel--Corrosion)
(Corrosion and anticorrosives--Climatic factors)

S/137/61/000/006/089/092
A006/A101

AUTHORS: Koshelev, G.G., Klark, G.B.

TITLE: Corrosion of aluminum alloys under atmospheric conditions

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1961, 51, abstract 61403
("Tr. In-ta fiz. khimii AN SSSR", 1960, no. 8, 100 - 109)

TEXT: The \overline{A} 16 (D16) and β 95 (V95) Al-alloys show high corrosion resistance in various climatic regions. The conditions of an industrial town and Northern sea shores proved to be most unfavorable. Least corrosion resistance was shown by a plated, non-anodized, artificially composed D16 alloy. Anodized D16 and V95 alloys filled with water and dichromate showed equal corrosion resistance. During the corrosion of non-anodized D16 and V95 alloys, the whole surface of the specimens is covered with small seats of corrosion. In the presence of an anodic film, corrosion is more localized.

Ye. Layner

[Abstracter's note: Complete translation]

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S/081/61/000/014/016/030
B103/B226

AUTHORS: Koshelev, G. G., Rozenfel'd, I. L.

TITLE: Corrosion resistance of low-carbon and low-alloy steels in sea water

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 337, abstract 144219. (Tr. In-ta fiz. khimii. AN SSSR, 1960, vyp. 8, 333 - 344)

TEXT: Tests of steels carried out in the Barents Sea within six years showed that the rate of corrosion of the low-alloy steels $\text{X}\lambda 1$ (SKhL1), MC1 (MS1), MK (MK), and of the carbon steel $\text{C}\tau. 3$ (St. 3) completely immersed into sea water is approximately equal. The average rate of corrosion of completely immersed steel amounts to 0.5 kg/m^2 per year; the decrease of metal thickness is 0.06 mm per year. The tendency of SKhL1 and MS1 toward local corrosion is somewhat stronger than that of St. 3 and MK. The depth of corrosion pits in SKhL1 and MS1 reaches 1 mm within 5 years, whereas in St. 3 and MK it amounts only to 0.4-0.6 mm. The rate of

Card 1/2

AKIMOV, G.V. [deceased]; KLARK, G.B.; KOSMOLEV, G.G.

Corrosion of metal construction elements in contact with other
building materials. Prom. stroi. 39 no. 2:49-53 '61.

(MIRA 14:2)

(Steel, Structural--Corrosion)

KLARK, G.B.; KOSHELEV, G.G.; BERUKSHTIS, G.K.

Corrosion of metals in contact with building materials. Prom.
stroil. 40 [i.e. 41] no.6:27-31 Je '63. (MIRA 16:10)

1. Institut fizicheskoy khimii AN SSSR.

KOSHELEV, G.G., kand.khimicheskikh nauk

Regularities of the deposition of hydroxide films in the process
of the electrochemical protection of steel structures against
corrosion. Sudostroenie 29 no.10:46-49 0 '63. (MIRA 16:12)

DERYAGIN, Georgiy Aleksandrovich; KOSHELEV, G.M., inzh., retsenzent;
YEROKHIN, A.A., kand.tekhn.nauk, retsenzent; KONDRATOV, A.S.,
kand.tekhn.nauk; KOHOBOV, L.A., dotsent, kand.tekhn.nauk, red.;
TOKAR', V.M., red.; GARNUKHINA, L.A., tekhn.red.

[Using technological methods for increasing the durability of
machine parts] Povyshenie vynoslivosti detalei mashin tekhnolo-
gicheskimi metodami. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz,
1960. 202 p. (MIRA 13:11)
(Machine-shop practice)

KOHNINOV, S. P., Eng.

Electric Substations

Bussing bar bridges with whole wire. Elektr. sta. 23 no. 7, 1952.

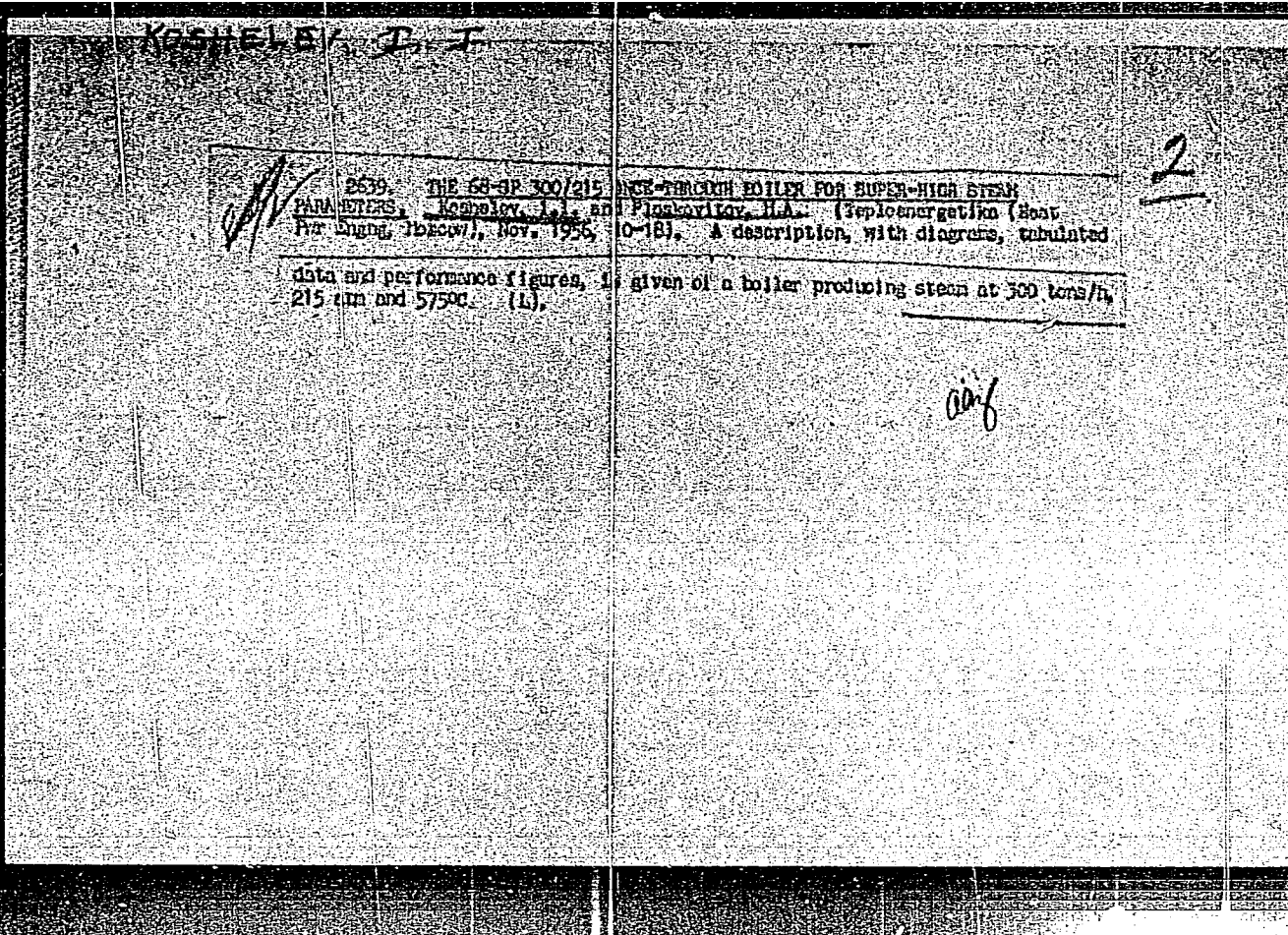
Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

KOSHELEV, I., inzh.

For an efficient use of fuel. Mor.flot 23 no.2:28-49 F '63.
(MIRA 16:2)

1. Nachal'nik otдела teplotekhniki Murmanskogo Arkticheskogo
parokhodstva.

(Marine engines--Fuel consumption)



AUTHOR: Koshelev, I.I., Engineer SOV/96-58-7-13/22

TITLE: A direct-flow boiler with steam-washing and separating device.
(Pryamotochnyy kotel s promyvochno-separatsionnym ustroystvom)

PERIODICAL: Teploenergetika, 1958, 5, No.7, pp. 55-63 (USSR)

ABSTRACT: The use of steam-washing and separating equipment in direct-flow boilers has made it possible to reduce requirements in respect of feed-water purity, to remove salts from the cycle and so to extend the field of application of these boilers. This article describes the results of tests on a boiler type 67SP with the final form of washing and separating device. A diagram of this final form of the boiler is given in Fig.1. The feed-water passes through two economiser stages to the lower radiation section and thence to the transitional zone (first bundle), to the separator, the second bundle and then to the upper radiation section, the super-heater and de-super-heater. A feed regulating valve is installed on the pipe between the economiser and the lower radiation section, and injection water is extracted immediately before this point. The first injection beyond the first bundle of the transitional zone is used to maintain a small superheat of about 5°C. The steam wetness immediately before the separator is maintained at about 1.5%. To do this accurately, a further injection is used beyond the first bundle of the transitional zone so that the steam reaching the separator has a wetness of about 2%. In the first arrangement,

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A direct-flow boiler with steam-washing and separating device. SOV/90-58-7-13/22

water removed in the separator was withdrawn through a water shutter and measuring vessel, but the annular chamber of the separator sometimes became overfull. To ensure reliable withdrawal of the water a small amount of steam was taken with it; this steam later recovered in an auxiliary separator and returned to the steam line beyond the centrifugal separator. Tests showed that with the auxiliary separator in operation, the main separator worked stably in the presence of the usual disturbances. After leaving the measuring vessel the separated water was removed from the cycle through a blow-down line, consisting of an assembly of throttles, to the medium-pressure boilers, so that the blow-down heat was fully used. Five samplers were installed to determine the salt contents of steam and water; their locations are described and they are also shown in Fig. 1. The methods of analysis are described. Investigations were then made to determine the effectiveness of steam-washing and salt extraction with the boiler operating under regulated conditions. The tests were made with different amounts of blow-down and with different steam temperatures beyond the first bundle of the transitional zone, with the 1954 model of the All-Union Thermotechnical Institute electronic automatic system in operation. This equipment was generally as described by Davydov

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A direct-flow boiler with steam-washing and separating device. SOV/96-58-7-13/22

and Dudnikov in Teploenergetika, 1957, No.11, but the signal controlling the first injection was altered; the steam temperature beyond the first bundle should be as low as possible and sometimes, when the first bundle of the transitional zone gave slightly wet steam, the regulating signal taken from the temperature beyond this bundle was lost. Therefore, a so-called 'moisture meter' was set up and the first injection was controlled from a signal related to the steam wetness before the first bundle of the transitional zone. With this arrangement the first steam injection worked reliably whatever the condition of the steam beyond the first bundle of the transitional zone. In addition, to improve the control of water level in the measuring vessel an additional signal was used depending on the rate of change of steam wetness before the first bundle of the transitional zone. The tests were made at boiler loads of 185-190 tons/hr with a feed-water temperature of 250 - 205°C; the regulators of pressure, feed, fuel, air, furnace draught and injection were all in operation. At a boiler load of 230 tons/hr the steam flow through the auxiliary separator was 5.5 tons/hr. Ten tests were made in this series; a graph of the boiler operating conditions during one of the tests is given in Fig.2. The mean, maximum and minimum values of various conditions in the ten tests are seen in Table.1. The results of chemical tests on the feed water and steam are given in Table.2. The feed-water had a low content

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A direct-flow boiler with steam-washing and separating device. SOV/96-58-7-13/22

of hardness salts, chlorides and silicic acids; there were practically no phosphates. The feed contained sodium sulphates and carbonates, the ratio between them being about constant. The Na-ion content was determined by flame spectrometry. The formulae used to determine the magnitude of deposits in the boiler passages and the quantity of salts removed with the blow-down are given. The results of the calculations, displayed in Table.3, show the washing efficiency and the concentration ratio before and after the separator and before and after the boiler as a whole. It will be seen from Table.3. that the efficiency of the washing and separating equipment was about the same for each of the contaminants, being 72.4 - 75.8%. In previous tests, before the scheme had been revised, the efficiency was 64%. The data of Table.3. are analysed and conclusions are drawn in respect of the contents of the following ions: Na; SO₄; OH, HCO₃; and SiO₃; Ca; Cl. The discharge removes about half the admixtures introduced with the feed-water in respect of OH, HCO₃ and SiO₃ ions taken together; in other words, the amount of these substances in the feed-water of a boiler with this steam-washing and separating equipment can be 1.73 times as great as for an ordinary direct-flow boiler. The corresponding ratio for Na-ions is 1.6 times. These figures were obtained under normal operating conditions with the usual variations in steam output and are not

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A direct-flow boiler with steam-washing and separating device SOV/96-58-7-13/22

exaggerated. Tests, the results of which are given in Table.4, were run with the washing and separating equipment in operation to determine the stability of operation of the boiler in respect of both steam-raising and salt-extraction under variable operating conditions, created artificially by varying the fuel supply. It is obvious that salt could only be washed out after a certain amount of deposits had accumulated in the transitional zone and, therefore, the boiler was tested under transient conditions, after 6 - 7 days operation with sodium contents in the water five to ten times greater than provided for in the design standard. The tests covered continuous operation of the boiler with steam-washing for 17 days with all automatic equipment in operation, including pressure-regulators. Samples were taken continuously at the ionite filters and salt concentrators were in operation on the feed-water and on the superheated steam. The test conditions are described. Conditions were altered by starting or stopping fuel feeders, one, two or three at a time; the automatic equipment then took about 6 minutes to readjust the speed of the feeders. The level of water in the measuring vessel did not vary excessively, the steam temperature variations beyond the first bundle did not exceed 5 - 6°C and the boiler steam pressure remained practically constant. Various other test conditions were also used. Sodium-concentration analysis are given in Table.4. The sodium content of the feed-water ranged from 73.7 - 165 micrograms

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A direct-flow boiler with steam-washing and separating device. SOV/96-58-7-13/22

per kg and of the steam from 12.6 to 30.5 micrograms per kg. The washing efficiency was of the order of 75%. Test results are plotted in Fig.3. Analysis of the test results shows that when three of the ten fuel feeders are simultaneously connected or disconnected, the water level in the measuring vessel varies for a short time. The reserve of regulation in both injections was fully used up, so that larger disturbances could hardly have been used. In all the tests the salt content of the steam at the superheater outlet did not increase. Thus in respect of steam generation and purity, the washing and separating device maintained normal conditions with fuel delivery disturbances of the order of 30%. It should be remembered that the tests were preceded by 160 hours operation with very high sodium-concentration in the feed. There are 4 tables and 3 figures.

ASSOCIATION: MO TsKTI

Card 6/6 1. Boilers - Equipment 2. Boilers - Operation
 3. Feed-water - Processing

~~KOSHELEV~~, I. I.: Master Tech Sci (diss) -- "Investigation of a through-flow boiler with washing-separation equipment". Moscow, 1959. 22 pp (Min Higher Educ USSR, Moscow Order of Lenin Power Engineering Inst), 150 copies (KL, No 8, 1959, 136)

KOSHELEV, I.I., inzh.

Equations for determining steam purity, extraction of salts from the boiler cycle, and requirements to feed water supplied to through boilers equipped with scrubber devices [with summary in English], Teploenergetika 6 no.1:14-22 Ja '59.

(MIRA 12:1)

1. Moskovskoye otdeleniye Tsentral'nogo nauchno-issledovatel'skogo kotloturbinnogo instituta.
(Boilers)

SOV/96-59-4-10/21

AUTHORS: Koshelev, I.I., Engineer and
Novi, V.O., Engineer

TITLE: Hygrometer Type RPK (Vlagomer BPK)

PERIODICAL: Teploenergetika, 1959, Nr 4, pp 49-55 (USSR)

ABSTRACT: This article describes a method of measuring the wetness of steam before the transitional zone of once-through boilers. An instrument developed for this purpose is described. The operation of the wetness regulator installed before the transitional zone of the boiler is analysed. The operating process of a once-through boiler is illustrated in Fig.1 in the form of a graph of heat transfer to the working medium plotted against temperature. As is well known, temperature signals that might be used to control the operation of the boiler can only be obtained from the water or from the super-heated steam because evaporation takes place at a constant temperature. However, the evaporation process is very important and it would be very desirable to obtain signals that characterise the operation of the evaporative surfaces to control the boiler. One of the present authors has patented a proposal

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Hygrometer Type BPK

to use the wetness of the saturated steam as such a signal using the type BPK hygrometer. The function of the hygrometer is to respond to instantaneous changes in the wetness of the saturated steam as it passes through the pipe connecting the lower radiation part of the boiler to the transitional zone and so to control the wetness at this point. The hygrometer has now been tested both in rigs and under practical conditions on once-through high-pressure boilers. A schematic diagram of a hygrometer installation is given in Fig.2 and the operating principles are explained. A sample of wet steam is taken from the appropriate part of the boiler and is passed to a horizontal film-type separator of high efficiency. The separated water passes to a measuring vessel with a hole in the bottom and so the height of the column of water above the hole is a direct measure of its rate of flow through the hole. The pressure drop across the hole is measured by a differential manometer. The steam that has been dried in the separator passes through a steam measuring diaphragm and is then remixed with the water and discharged. It is shown by an elementary mathematical

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Hygrometer Type BPK

SOV/96-59-4-10/21

treatment that although both of the pressure drops measured depend on both the steam dryness and the rate of sampling, their ratio is a function of the steam dryness only. The signals received from the apparatus are easily arranged to inject water at a point immediately before the first bundle of the transitional zone, so maintaining the steam wetness there constant. The design of components of the system is then considered. The rate of sampling is, of course, important. Simple design formulae are given for the main components. A hygrometer was installed in a once-through boiler type 67-SP and graphs of the steam wetness before the first bundle of the transitional zone and of the steam temperature beyond the first bundle of the transitional zone when the first injection device is controlled by the meter are given in Fig. 4. The curves show that over quite a wide range of control the steam wetness did not vary by more than $\pm 0.4\%$ and the temperature beyond the first bundle of the transitional zone varied by only $\pm 1^{\circ}\text{C}$, the response to various disturbances was satisfactory. Experimental

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