

S/137/61/000/012/046/149  
A006/A101

AUTHORS: Reznyakov, A. E., Tonkonogiy, A. V.

TITLE: A cyclonic power-metallurgical process

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 26 - 27, abstract  
123187 (V sb. "Nauka Sov. Kazakhstana", Alma-Ata, AN KazSSR, 1960,  
301 - 324)

TEXT: The intensifying of basic pyrometallurgical processes requires new types of furnace, operating on crushed material. Such a furnace is, in particular that operating on a cyclonic process. The authors analyze the theoretical principles of the process in the cyclonic apparatus. Equations are given for the movement of the gaseous medium and solid particles; carbon particle combustion in the chamber and on the walls, and heat-exchange equation for an individual particle. The expediency is demonstrated of using a cyclonic apparatus for pyroprocesses which take place in the diffusion range, as e.g. for oxidizing-melting of sulfide concentrates. Experimental results are presented, obtained on an enlarged cyclonic unit at the Institute of Power Engineering, AS KazSSR, from melting Cu sulfide concentrates, polymetallic concentrates, cakes of the Ust'-Kameno- ✓

Card 1/2

A cyclonic power-metallurgical process

S/137/61/000/012/046/149  
A006/A101

gorsk Combine, and slags of the Leninogorsk Plant. Information is presented on the operation of a semi-industrial unit for the reprocessing of Cu-concentrates at the Balkhash Combine of Mining and Metallurgy, confirming the possibility of using the cyclonic principle in melting Cu sulfide concentrates. Outlooks of applying the cyclonic process to metallurgy are discussed. ✓

L. Povedskaya

[Abstracter's note: Complete translation]

Card 2/2

S/031/60/000/011/006/008  
A161/A133

AUTHORS: Reznyakov, A. B., Tonkonogiy, A. V.

TITLE: Conference on cyclone processes

PERIODICAL: Akademiya nauk Kazakhskoy SSR, Vestnik, no. 11, 1960, 101 - 102

TEXT: An all-Union conference on cyclone processes was convened from 21 through 23 September 1960 in Alma-Ata. The Academy of Sciences and the GNTK of the Kazakhskaya SSR were the initiators. All leading research and design institutes of the nonferrous and ferrous metallurgy of the USSR participated: Institut metallurgii Akademii nauk SSSR (The Institute of Metallurgy of the Academy of Sciences of the USSR), Gintsvetmet, Giprotsvetmet, Giredmet, Giprostal', Tsni-ishermet, Unipromed', Vniimt, Vniitsvetmet, Kazgiprotsvetmet, and others. Chemistry and power engineering research institutes took part as well. The author of the cyclone principle (i.e. of the first cyclone stoker) and co-author of the cyclone melting process Professor G. F. Khorre (of MVTU im. Bauman), was present. The 150 participants included technicians from the Balkhash and Dzhezkazgan metallurgical combines, the Ust'-kamenogorsk lead-and-zinc combine; the Chimkent lead plant, the Kazakhstan "magnitka", the Sredneural'skiy medeplavil'nyy zavod

Card 1/4

S/031/60/000/011/006/008  
A161/A133

Conference on cyclone processes

(Mid-Ural copper plant), the Magnitogorsk metallurgical combine. Nine of the 25 reports were on the theory of the process. Professor G. F. Khorre and A. V. Tonkongiy reported on the present state of the cyclone process. Reports of the Institut energetiki AN KazSSR (Power Engineering Institute of the Academy of Sciences of the KazSSR) concerned the motion of air and gas, of fuel particles and materials, combustion, oxidation, heat exchange. Professor A. B. Reznyakov and Professor A. L. Tseft outlined the theoretical application aspects of the process in metallurgy and in chemical industry. [Abstracter's note: No details are included]. Eleven reports presented investigation results and information on cyclone heat projects for the nonferrous metallurgy. V. B. Meyerovich of Balkhashskiy gornometallurgicheskii kombinat (BGMK) (Balkhash Mining-and-Metallurgical Combine) reported on behalf of the Academy of Sciences of the KazSSR and the BGMK on the results of investigations of cyclone heat in a 100-ton furnace at the BGMK. The furnace reached the rated productivity. Its output per floor space unit is twice the output of reverberatory furnaces; the fuel consumption is by one half less; the copper content in matte can be much higher (which facilitates further processing in converters); the losses with dust are lower; the content of sulfur dioxide in the gas from the furnace meets the standard of sulfuric acid production. The first full-scale two cyclone chambers have been installed in one

Card 2/4

Conference on cyclone processes

S/031/60/000/011/006/008  
A161/A133

reverberatory furnace at the BGMK after the experiments. I. M. Tsygoda (of Vniitsvetmet) reported on the behalf of the Academy of Sciences of the KazSSR and Vniitsvetmet on experiments with zinc cakes (wastes of hydrometallurgical process). The experiments have not yet been finished, but the advantages of the cyclone process are evident. It follows from the reports of A. I. Okunev (of Unipromed') and others that the high efficiency of the cyclone process has been confirmed in melting roasted copper-zinc concentrates and other materials. N. D. Taskayev (of AS of the Kirgizskaya SSR) said that the cyclone process proved to be the most effective method in processing antimony ores in Kirgizia. V. V. Tsyganov (of Kazgiprotsvetmet) reported on some results of design work for the reconstruction of the existing and the construction of new ferrous industry plants, mentioning that in the case of reconstruction and expansion of the Irtyshskiy copper plant the cyclone process will require lower investment costs, and the production costs will be lower than for electric melting. The reports of A. A. Ionass (of NIUIF) and V. V. Tikhonov of the Institut khimicheskikh nauk AN KazSSR (Institute of Chemical Sciences of AS KazSSR) concerned cyclone melting of apatites and phosphorites for fertilizers and fodders. The high efficiency of the cyclone processes in various applications was emphasized in the conference decisions, as well as too long preparations for practical use. Construction of

Card 3/ 4

Conference on cyclone processes

S/031/60/000/011/006/008  
A161/A133

pilot full-scale cyclone furnaces was recommended in the Ural (for copper-zinc concentrates) and in East Kazakhstan (for polymetallic ores), and faster completion of semi-industrial and larger-scale experiments delaying the completion of projects (at the Dzhezkazgan, Irtyshskiy, Tekeliyskiy, Achisayskiy combines and other places). The completion of the big special large-scale cyclone process laboratory at the Academy of Sciences of the KazSSR was mentioned as particularly important. The Academy of Sciences of the KazSSR has been commissioned with the coordination of work with technological cyclone installations, and the MVTU im. Baumana (MVTU imeni Bauman) of work with cyclone power installations. The further research work planned includes cyclone melting of iron ores.

Card 4/4

S/030/60/000/012/017/018  
B004/B056

AUTHORS: Reznyakov, A. B., Doctor of Technical Sciences,  
~~Tonkonogiy, A. V.~~, Candidate of Technical Sciences

TITLE: The Cyclone Melting of Metals

PERIODICAL: Vestnik Akademii nauk SSSR, 1960, No. 12, pp. 119-120

TEXT: From September 21 to September 23, 1960 the vsesoyuznaya nauchno-  
tekhnicheskaya konferentsiya po tsiklonnym protsessam (All-Union  
Scientific Technical Conference on Cyclone Processes) took place at  
Alma-Ata. It was organized by the Akademiya nauk Kazakhskoy SSR (Academy  
of Sciences Kazakhskaya SSR) and the Gosudarstvennyy nauchno-tekhnicheskii  
komitet Soveta Ministrov (State Scientific Technical Committee of the  
Council of Ministers) of this republic. It was further attended by  
delegates of academic and scientific institutes, as well as by specialists  
of the large metallurgical plants of the Kazakhstan and Ural. G.F. Knorre  
and A. V. Tonkonogiy as well as collaborators of the Institut energetiki  
(Institute of Power Engineering) of the Academy of Sciences Kazakhskaya  
SSR reported on research work carried out of the cyclone melting process.

Card 1/3

The Cyclone Melting of Metals

S/030/60/000/012/017/018  
B004/B056

A. B. Reznayakov and A. L. Tseft described its applicability in metallurgy and in the chemical industry. Together with the Institutes of the Academy of Sciences, experiments were carried out on a large pilot plant of the Balkhashskiy gornometallurgicheskiy kombinat (Balkhash Mining and Metallurgy Combine), and, according to a report made by V. V. Meyerovich, good results were obtained. The building of an industrial test plant has been completed. The experiments at the opytnyy zavod Vsesoyuznogo nauchno-issledovatel'skogo instituta tsvetnoy metallurgii (Experimental Plant of the All-Union Scientific Research Institute of Nonferrous Metallurgy) with waste-products of the hydrometallurgical working up of zinc concentrates from Ust'-Kamenogorsk were also successful (I.M. Tsygoda). The same was confirmed by A. I. Okunev for copper-zinc concentrates of the Ural, and by N. D. Taskayev for antimony ores from Kirgiziya. V.V.Tsyganov spoke about the reconstruction and building of new plants of the nonferrous metallurgy and gave the following data: If one puts capital investment costs and prime costs in the case of the Irtyschskiy medeplavil'nyy zavod (Irtysch Copper Melting Plant) for cyclone melting equal to unity, they amount to 1.25 and 1.30 for levitation melting, and to 1.36 and 1.55 for electric melting respectively. A. A. Ionass and V. V. Tikhonov spoke about

Card 2/3



The Cyclone Melting of Metals

S/030/60/000/012/017/018  
B004/B056

cyclone melting of phosphorites and apatites and mentioned an hourly output of more than 1.5 t/m<sup>3</sup>. It was decided to accelerate the industrial experiments in the Balkhash Combine and to erect test plants in the Ural and Eastern Kazakhstan. The building of a laboratory for large cyclone plants at the Academy of Sciences Kazakhskaya SSR is due to be completed this year. The coordination of scientific and technical research work with respect to technological cyclone plants was left to the Academy of Sciences Kazakhskaya SSR, and for cyclone power plants to the Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (Moscow Higher Technical School imeni Bauman).

Card 3/3

REZNYAKOV, A.B., doktor tekhn.nauk

Expanding the use of Ekibastuz coal. Vest.AN Kazakh.SSR 16 no.3:  
34-39 Mr '60. (MIRA 13:6)

(Coal)

REZNYAKOV, A.B.; BOGDANOV, Ye.P.

Courses for a radical solution of the problem of using Ekibastuz  
coal. Vest.AN Kazakh.SSR 16 no.10:38-45 0 '60. (MIRA 13:10)  
(Ekibastuz Basin--Coal)

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27889  
S/030/61/000/010/006/011  
B102/B104

AUTHORS: Reznyakov, A. B., Doctor of Technical Sciences, and  
Tonkonogiy, A. V., Candidate of Technical Sciences

TITLE: Cyclone melting in non-ferrous metallurgy

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 10, 1961, 102 - 105

TEXT: The cyclone process described was developed by the Akademiya nauk Kazakhskoy SSR (Academy of Sciences Kazakhskaya SSR). Its principle consists in a mixture of finely pulverized ore and fuel being blown tangentially into the cylindrical cyclone chamber (150 m/sec); this mixture is deposited on the chamber wall, and melts or burns in an eddy current of glowing gas. The melting products reach a collecting chamber where they are separated into slag and matte. Laboratory and pilot plant tests were conducted at the Institut energetiki Akademii nauk Kazakhskoy SSR (Institute of Power Engineering of the Academy of Sciences Kazakhskaya SSR); tests on an industrial scale at the Balkhashskiy gornometallurgicheskiy kombinat (Balkhash Mining Metallurgical Combine). The pilot plant chamber had a capacity of 10 tons charge per day, the industrial one a

Card 1/3

Cyclone melting in...

27889  
S/030/61/000/010/006/011  
B102/B104

capacity of 100 tons per day (1 m diameter, 1.7 m height). The latter was used for the melting of copper sulfide with mazout and coal dust as fuels, and operated continuously for 45 days. It also proved useful for the melting of other nonferrous ores, and permitted a fuel saving of 10 - 12%. Further two cyclone chambers were built by the Balkhash Combine and the first of them was put into operation in November 1960 (1.5 m diameter, 2.3 m height). A comparison with data of reverberatory furnaces showed that cyclone chambers have a number of advantages. Experiments on the dressing of materials containing different metals (Pb, Zn, Cu, S) were successful. Cyclone melting installations proved specially suited for extracting metallic residues from old slags. These residues amount to about 9% for Zn and 2.5% for Pb and can be molten out to 85 and 89%, respectively. New experiments concluded in 1960 permitted an increase of these figures to 90 and 95%, respectively. The Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnykh metallov (All-Union Scientific Research Institute of Nonferrous Metals) conducted pilot plant tests of cyclone melting of Ust-Kamenogorsk zinc, the Kazakhskiy gosudarstvennyy institut po proyektirovaniy u predprinyyatiy tsvetnoy metallurgii (Kazgiprotsvetmet) (Kazakh State Institute for the

Card 3/3

27889

3/030/61/000/010/006/011  
B102/B104

Cyclone melting in...

(Ministry of Establishments of Nonferrous Metallurgy) participating among others. Besides financial savings, the cyclone melting process also permits a total automation of the process. There are 3 tables and 1 Soviet reference.

Card 1/1

REZNYAKOV, A.B.; BASINA, I.P., kand. tekhn. nauk; KURMANGALIYEV, M.R.,  
kand. tekhn. nauk

Combustion of a mixture of Ekibastuz coal with other coal types  
in a cyclone combustion chamber with liquid cinder removal.  
Vest. AN Kazakh SSR 22 no.8:58-62 Ag '65.                      (MIRA 18:9)

1. Chlen-korrespondent AN Kazakhskoy SSR (for Reznyakov).

REZNYAKOV, A.B.

Possibilities of generalized macrokinetics of heterogeneous processes.  
Vest. AN Kazakh. SSR 21 no.6:22-28 Je '65. (MIRA 18:7)

1. Chlen-korrespondent AN Kazakhskoy SSR.



CHOKIN, Sh.Ch.; REZNYAKOV, A.B.

Tasks of power engineering research in Kazakhstan in its new  
stage. Izv. AN Kazakh. SSR. Ser. tekhn. i khim. nauk no.2:  
83-86 '63. (MIRA 17:2)

REZNYAKOV, A.B.

Conditions of synonymity of causal relationships. Vest. AN  
Kazakh. SSR 19 no.9:49-57 S '63. (MIRA 16:11)

1. Chlen-korrespondent AN Kazakhskoy SSR.

REZNYAKOV, A. B.; FATEYEVA, Ye. T.; NAYBURGER, N. V.

Study of ~~the~~ combustion of a pulverized coal torch in a  
special laboratory furnace. Izv. AN Kazakh. SSR. Ser. energ.  
no. 2:83-94 '62. (MIRA 16:1)

(Coal, Pulverized) (Combustion)

REZNYAKOV, A.B.

Comparison of the theories of the burning of a pulverized coal  
flame developed in the U.S.S.R. Izv. AN Kazakh.SSR. Ser.energ.  
no.1:3-8 '60. (MIRA 15:5)

(Coal, Pulverized---Combustion)

REZNYAKOV, A.B.

Simulation and main principles for simulating physical and  
chemical processes in cyclones. Izv. AN Kazakh. SSR. Ser. energ.  
no.2:46-59 '61. (MIRA 14:12)  
(Metallurgical furnaces)

REZNYAKOV, A. B.

Development of energy resources and heat engineering research in  
Kazakhstan during the last forty years; brief review. Trudy  
Inst. energ. AN Kazakh. SSR 3:21-25 '61. (MIRA 14:12)  
(Kazakhstan--Heat engineering)  
(Kazakhstan--Power resources)

RFZNYAKOV, A.B.

Principal basis for the development of power engineering in Kazakhstan.  
Trudy Inst. energ. AN Kazakh. SSR 2:40-48 '60. (MIRA 15:1)  
(Kazakhstan--Power engineering)

REZNYAKOV, A.B.

Principal results of the studies of furnace torches and furnace combustion processes. Trudy Inst. energ. AN Kazakh. SSR 2:303-308 '60.  
(MIRA 15:1)

(Furnaces) (Combustion)



PYATETSKIY-SHAPIRO, I.I.; ZHELANKINA, T.S.; KEYLIS-BOROK, V.I.; PAVLOVA, L.G.;  
REZNYAKOVSKIY, P.T.

Use of electronic computers in locating earthquake epicenters. Dokl.  
AN SSSR 151 no.2:323-325 J1 '63. (MIRA 16:7)

1. Institut fiziki Zemli im. O.Yu.Shmidta AN SSSR. Predstavleno  
akademikom Ye.K.Fedorovym.  
(Electronic computers) (Seismometry)

REZONTOV, V.A.

Determining the erythrocyte content of the peripheral blood by  
means of the FEK-M photocolormeter. Voen.-med.zhur. no.9:72-73  
S '61. (MIRA 15:10)

(ERYTHROCYTES) (COLORIMETRY)

PREOBRAZHENSKIY, P.V., kand.med.nauk; REZONTOV, V.A.

Charateristics of the course and treatment of severe thermal  
burns of the eyelids in radiation sickness in dogs. Vest.oft.  
no.4:7-13 '62. (MIRA 15:11)

(RADIATION SICKNESS) (BURNS AND SCALDS)  
(EYELIDS--WOUNDS AND INJURIES)

L1622

S/205/62/002/005/009/017  
D268/D308

27.2400

AUTHORS: Lagun, M.A., and Rezontov, V.A.

TITLE: The effect of thyroïdin on the restoration of body reaction after severe radiation sickness

PERIODICAL: Radiobiologiya, v. 2, no. 5, 1962, 715 - 718

TEXT: To determine the effect of thyroïdin on survival, some of the survivors of 415 11-13 month-old rats irradiated with gamma rays at 750 and 850 r received daily doses of thyroïdin of 10 or 25 mg twice daily, perorally, for 2, 3 and 4 months. A culture of *Bacillus perfringens* was inoculated to the hip muscle at 1.1 and 0.8 ml for males and females respectively, producing general gas gangrene symptoms. Catalase and peroxidase activity of the blood was also studied. One month after inoculation, there was 51 % mortality in irradiated as against 33 % in nonirradiated rats. Resistance was lower in irradiated males than in females. At 2 months mortality in males and females was 52 and 15 % respectively above that of the control, and 10 and 2 % respectively at 4 months. Only 33 % of 174 rats given thyroïdin before irradiation died. Under the con-  
Card 1/2

The effect of thyroidin on the ...

S/205/62/002/005/009/017  
D268/D308

ditions of this experiment, therefore, thyroidin reduced mortality in irradiated rats from gas gangrene. The beneficial effect of thyroidin was less clear in the data for catalase and peroxidase activity of the blood, though at 2 months after irradiation there was a marked tendency to normal catalase activity in animals given the preparation. The beneficial action of thyroidin on irradiated rats is attributed to direct stimulation of immunobiological reactions. At 10-25 mg daily for 2-4 months after irradiation, it gave almost normal resistance to gas gangrene in rats. There are 1 figure and 1 table. K

SUBMITTED: January 31, 1962

Card 2/2

REZONTOV, V.A.; LAGUN, M.A.

Role of the state of the thyroid gland in asthenic syndrome  
following radiation disease. Dokl. AN SSSR 148 no.3:700-701  
Ja '63. (MIRA 16:2)

1. Predstavleno akademikom Ye.N. Pavlovskim.  
(THYROID GLAND) (ASTHENIA) (RADIATION—PHYSIOLOGICAL EFFECT)

REZONTOV, V.A.

Spectrophotometric determination of the difference between  
the oxygen content in arterial and venous blood. Vop. med.  
khim. ll no.4:95-99 JI-Ag '65. (MIRA 18:8)

REZONTOV, V.A.

Some characteristics of recurrent acute radiation sickness.  
Med. rad. 8 no.10:86-91 0 '63. (MIRA 17:6)

1. Nauchnyy rukovoditel' i deystvitel'nyy chlen AMN SSSR  
P.D. Gorizontov.



REZONTOV, V.A.

Decrease in the rate of the recovery as a characteristic  
of acute radiation sickness in repeated irradiation. Med.  
rad. 8 no.7:52-56 JI '63. (M. 1961)

1. Nauchnyy rukovoditel' -- deyatvitel'nyy chlen AMN SSSR  
P.D. Gorizontov.

REZONTOV, V.A., kapitan meditsinskoy sluzhby; POPOV, A.V., podpolkovnik meditsinskoy sluzhby, kand.med.nauk; PONOMAREV, P.S., podpolkovnik meditsinskoy sluzhby. Voer. - med. zhur. no.8:39'62.  
(MIRA 16:9)

Acute form of radiation sickness with the syndrome of predominant affection of the gastrointestinal tract; review of the literature.

(RADIATION SICKNESS) (ALIMENTARY CANAL--DISEASES)

REZONTOV, V.A.

Evaluation of the restoration from radiation damages based on a study of the state of myelopoiesis in dogs after repeated ionizing irradiation. Radiobiologia 4 no.1:108-113 '64. (MIRA 17:4)

ACCESSION NR: AP4015094

S/0205/64/004/001/010F/0113

AUTHOR: Rezontov, V. A.

TITLE: Evaluation of the repair of radiation damage by a study of myelopoiesis in dogs following repeated exposure to ionizing radiation

SOURCE: Radiobiologiya, v. 4, no. 1, 1964, 108-113

TOPIC TAGS: radiation, radiation sickness, cobalt 60, gamma irradiation, radiation sickness duration, dog, dog myelopoiesis, bone marrow, bone marrow radiation damage

ABSTRACT: When dogs 2-5 years of age were exposed to gamma rays from cobalt 60 at an intensity of 7 r/min (300 rads), the peripheral WBC decreased for about 20 days, then increased steadily, with a second smaller drop after 50-70 days; if these dogs were then subjected to a second similar dose of radiation after intervals of 1.5-15 months, the WBC again fell and began to return to normal levels after about 20 days at a slower rate than before. Mathematical analysis of the results in 37 dogs showed that R, the relative decrease in regenerative capacity (given by  $1-k/k_0$ , where k is the increase in WBC in thousands/mm<sup>3</sup>/day), which decreases with increasing time interval between exposures, can be described in terms of either an exponential or a logarithmic equation:  
Card 1/2

ACCESSION NR: AP4015094

$$R = 0.74 e^{-\lambda t} \text{ or } R = 0.78 - 0.09 \ln t$$

where t is the time in months and  $\lambda = 0.0222 + 0.0017/\text{month}$ . Extrapolation of these curves shows that the regenerative capacity at the end of a dog's normal life span is only about 90% of normal following a radiation dose of this magnitude. The regenerative capacity, however, was independent of the degree of normalization of the bone marrow as shown by smears. Orig. art. has: 3 figures, 1 table and 3 formulas.

ASSOCIATION: none

SUBMITTED: 14Mar62

DATE ACQ: 12Mar64

ENCL: 00

SUB CODE: AM

NO REF SOV: 003

OTHER: 018

Curd 2/2

S/0205/64/004/001/0108/0113

ACCESSION NR: AP4015094

AUTHOR: Rezontov, V. A.

TITLE: Evaluation of the repair of radiation damage by a study of myelopoiesis in dogs following repeated exposure to ionizing radiation

SOURCE: Radiobiologiya, v. 4, no. 1, 1964, 108-113

TOPIC TAGS: radiation, radiation sickness, cobalt 60, gamma irradiation, radiation sickness duration, dog, dog myelopoiesis, bone marrow, bone marrow radiation damage

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Card 1/2

ACCESSION NR: AP4015094

$$R = 0.74 e^{-\lambda t} \text{ or } R = 0.78 - 0.09 \ln t$$

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ASSOCIATION: none

SUBMITTED: 14Mar62

DATE ACQ: 12Mar64

ENCL: 00

SUB CODE: AM

NO REF SOV: 003

OTHER: 018

Curd 2/2

L 18201-63 EWT(1)/EWT(m)/BDS/ES(j) AMD/AFFTC/ASD AR/K

ACCESSION NR: AP3004275

S/0241/63/008/007/0052/0056

57  
56

AUTHOR: Rezontov, V. A.

TITLE: Decreased regenerative process rate as a characteristic of acute radiation sickness in repeated irradiation

SOURCE: Meditsinskaya radiologiya, v. 8, no. 7, 1963, 52-56

TOPIC TAGS: repeated radiation sickness, regenerative process, acute radiation sickness, leucocyte, erythrocyte, myelopoiesis, Co-60 gamma irradiation

ABSTRACT: 39 dogs who survived total body gamma irradiation (Co-60, 7 r/min) of 300 r dose (LD sub 10/30) were exposed to a second dose of 300 r at different periods (1½, 2½, 5, and 15 mos) to study the extent of injury and the regeneration process in repeated acute radiation sickness. The following were used as regeneration indices: leucocytes, erythroblasts, and myeloid cells. It was found that for all the animals the basic clinical and hematological shifts are greater after second exposure than after first exposure. The regeneration rate is 2-3 times slower. These data should be

Card 1/2



L 18201-63

ACCESSION NR: AP3004275

considered in developing treatment for repeated acute radiation sickness. Orig. art. has: 3 figs, 1 table.

ASSOCIATION: (P. D. Gorizontov, Scientific Supervisor and Member of Academy of Medical Sciences, USSR)

SUBMITTED: 28Nov62

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: AM

NO REF SOV: 010

OTHER: 011

Card 2/2

F. ... ..

... .. by  
... ..  
... .. (1951)

FELNBERG, S. T.; FELDNER, A. J.

New photometric methods for the determination of niobium and tantalum in metals and alloys. Report No.3: Photometric determination of tantalum using 1-(2-pyridylazo)-resorcinol. Zhur.anal.khim. 19 no.9:1078-1084, 1964. (MIRA 17:10)

L 12927-66 EWT(1)/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) JD/JG

ACC NR: AP6000179

SOURCE CODE: UR/0032/65/031/012/1434/1437

AUTHOR: Yelinson, S. V.; Pobedina, L. I.; Rezova, A. T.

ORG: none

TITLE: <sup>21, 44, 55</sup> Spectrophotometric determination of niobium in steels with a PAR reagent

SOURCE: Zavodskaya laboratoriya, v. 31, no. 12, 1965, 1434-1437

TOPIC TAGS: photometry, spectrophotometric analysis, niobium

ABSTRACT: A method was developed for analyzing niobium content in steels alloyed with Cr, Ni, Ti, Mo, W etc., based on optical density measurements of niobium compound complexes with the reagent PAR-1 (2-pyridyl-azo-resorcin), in tartrate solutions acidified with 0.75-N HCl. The method has an accuracy of ±2% for samples containing about 1% of niobium. Since the optical density of niobium - PAR solutions is a sensitive function of the pH in tartrate solutions (a plateau occurs however between 5 to 7 pH), experiments were performed on solutions containing niobium acidified with HCl to obtain pH control. It was found that the optical density remained constant for 50 ml solutions containing 50 mkg of niobium and 100 mg of ammonium tartrate in which the concentration of HCl ranged from 0.5 to 1.0 N; consequently, 0.75-N HCl solutions were used throughout. The dependence of optical density on niobium content in 0.75-N solutions of HCl was linear, thereby permitting the determination of 5 to 80 mkg of niobium.

UDC: 543.420.62

Card 1/2

L 12927-66

ACC NR: AP6000179

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bium in a 50 ml volume. Data are given for limitations on the concentrations (mg/50 ml) of the alloying elements, to prevent discrepancies in the analysis. The method is described. Optical density was measured on a FEK-M with a green filter ( $\lambda = 536 \text{ m}\mu$ ) in a glass cuvette with  $l = 3 \text{ cm}$ . Niobium content was calculated according to the formula

$$\% \text{Nb} = \frac{Kd_{pr}}{d_{so}}$$

where K-Nb content in the standard sample, %;  $d_{pr}$ ,  $d_{so}$  are optical densities of the aliquots of the sample solution (assay) and of the standard sample. Results are given for industrial heats of steels containing from 0.1 to 8% Nb. Orig. art. has: 2 figures, 3 tables.

SUB CODE: 07,14/

SUBM DATE: 00/

ORIG REF: 008/

OTH REF: 002

Card 2/2

YBIL... ..  
SPECTROPHOTOMETRIC METHODS FOR THE DETERMINATION OF COPPER

IN METALS AND ALLOYS. Report No. 4: Study of  
copper(II) complex with 5-(4-pyridylazo)-resorcinol in the  
presence of oxalate, tartrate, and other anions. Eur.  
Chem. Soc. (London) 1966, 1, 105. (MIRA 1967)

YELINSON, S.V.; REZOVA, A.T.

Determination of alkali metals and halogens in zirconium dioxide by  
high-voltage electrodialysis. Zav.lab. 26 no.11:1209-1210 '60.  
(MIRA 13:11)

(Alkali metals—Analysis) (Zirconium oxide)  
(Electrodialysis)

S/032/60/026/011/004/035  
B015/B066

AUTHORS: Yelinscr, S. V. and Rezova, A. T.

TITLE: Determination of Alkali Metals and Halogens in Zirconium  
Dioxide by High-voltage Electrodialysis ✓

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11,  
pp. 1209-1210 ✓

TEXT: In the production of metallic Zr by electrolysis of molten potassium fluozirconate small quantities of F and K may be left in the Zr metal. Also the zirconium dioxide obtained from the raw material may contain these impurities. To separate potassium and fluorine from zirconium dioxide, a high-voltage electrodialysis was applied in the present case. B. S. Tsyvina (Ref. 1) already indicated that this method is applicable to hydroxides of metals which may be precipitated at pH below 7.5. Since Zr precipitates from dilute solution at pH = 2, this method may be used. A device consisting of an electrodialyzer of the Pauli type with a BBC-1 (VVS 1) rectifier and the corresponding

Card 1/2



Determination of Alkali Metals and Halogens  
in Zirconium Dioxide by High-voltage  
Electrodialysis

S/032/60/026/011/004/035  
B015/B066

controlling and measuring instruments may be used to separate potassium. A voltage up to 2000 v and an amperage up to 500 ma may be attained. The electrode chambers are separated by a cellophane membrane which is permeable for the electrolyte. Platinum electrodes are used and a stirrer is fitted in the central chamber. The completeness of the potassium and fluorine separation was checked on artificial  $ZrO_2$  samples. It was found that at high potassium content the liquid in the electrode chambers must be changed 2-3 times. The final determination of the separated potassium was made gravimetrically with tetraphenyl borate, that of fluorine was performed colorimetrically or in the form of  $PbClF$  (Ref. 4). There are 1 figure, 2 tables, and 4 Soviet references.

Card 2/2

SOV/75-13-5-12/24

AUTHORS: Yelinson, S. V., Petrov, K. I., Rezova, A. T.

TITLE: Spectrochemical Determination of Tantalum in Zirconium (Spektrokhimicheskoye opredeleniye tantala v tsirkonii)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 5, pp 576-579 (USSR)

ABSTRACT: For the determination of small amounts of tantalum ( $< 0,01\%$ ) in zirconium photometric methods are not suitable because of their comparatively small sensitivity ( $40\mu$  in 20 ml). The sensitivity of a direct spectral determination of tantalum in zirconium is also small ( $\sim 1 \cdot 10^{-2}\%$ ). By preceding separation of tantalum from zirconium the sensitivity of the spectrometric determination can be increased. The separation is best carried out by extraction of tantalum in form of its fluoride complex (Refs 2-4). Chernikov, Tramm and Pevzner (Ref 5) used for this extraction the fluoride compound cyclohexanone. In the present paper it is shown that the extraction by cyclohexanone permits the quantitative separation of tantalum from zirconium. The tantalum is removed from the 2-4 m sulfuric acid solution, which contains hydrofluoric acid, by cyclohexanone. For the quanti-

Card 1/4

SOV/75-13-5-12/24

Spectrochemical Determination of Tantalum in Zirconium

tative extraction it will be sufficient to shake out three times with always the same volume cyclohexanone as the test solution. Under these conditions also relatively large amounts of tantalum pass quantitatively into the organic layer whereas the zirconium remains in the aqueous solution. In the spectrometric determination of small amounts of tantalum in the extract it is necessary to concentrate the extract previously in order to achieve high sensitivity of the determination. For this purpose, cyclohexanone as azeotrope is distilled off with water (boiling point 90°C). By means of the radioisotope  $Ta^{182}$  it was proved that no tantalum is lost on the extraction and on the distillation of the azeotrope. The authors also investigated the conditions for the spectrometric determination of the tantalum in the extract. The highest sensitivity is attained by spark-excitation of the spectra and by the use of carbon electrodes with a diameter of only 3-3,5 mm. When working on a spectrograph of type ISP-22, the sensitivity under these conditions amounts to 0,1%. Molybdenum was used as internal standard. The most intensive line of tantalum (2685,1 Å) was measured. The line of molybdenum lies in a comparative position at 2688,0 Å. These two lines are very well apt for the quanti-

Card 2/4

SOV/75-13-5-12/24

Spectrochemical Determination of Tantalum in Zirconium

tative determination. In a log  $\epsilon$  - W diagram (W... variation of blackening) the calibration curve within the range 3-100  $\gamma$  Ta/ml is a straight line. On extraction of the tantalum fluoride complex also small quantities of sulfuric acid and zirconium are extracted. The acidity, however, does not affect the precision of the spectral analysis, the sensitivity only is a little reduced by the sulfuric acid. Also quantities up to 30  $\gamma$  zirconium/ml do not influence the determination of tantalum. The elaborated spectrochemical determination for tantalum in zirconium was applied to several samples of zirconium. The results are given and are satisfactory. The method permits the determination of  $1 \cdot 10^{-3}\%$  Ta in 1g Zr with a mean arithmetic error of  $\sim 20\%$  (relative). The authors express their gratitude for valuable advices to L. V. Lipis. There are 2 figures, 9 tables, and 6 references, 3 of which are Soviet.

SUBMITTED: September 2, 1957

Card 3/4

Spectrochemical Determination of Tantalum in Zirconium

SOV/75-13-5-12/24

Card 4/4

L 16672-65. EWT(m)/EPF(n)-2/EWP(b)/EWP(t) Pu-4 IJP(c) JD/JG  
S/0075/64/019/009/1078/1084

ACCESSION NR: AP4045846

AUTHOR: Yelinson, S. V. ; Rezova, A. T.

TITLE: New photometric methods for the determination of niobium and tantalum in metals and alloys. Communication 3. Photometric determination of tantalum using 1-(2-pyridylazo)-resorcinol

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 9, 1964, 1078-1084

TOPIC TAGS: spectrophotometry, tantalum analysis, pyridylazo-resorcinol, tantalum complex, photometric analysis

ABSTRACT: The existing colorimetric methods for determining tantalum suffer from many interferences and consequently it was the purpose of this work to study new colorimetric reagents 1-(2 pyridylazo)-resorcinol (PAR) in the presence of various other constituents which keep tantalum in solution. It was established that in the presence of  $C_2O_4^{-2}$ ,  $F^-$  or  $H_2O_2$  tantalum forms colored complexes with PAR at pH = 4-5.5. For the determination of Ta in heat resistant alloys

Card 1/2

L 16672-65

ACCESSION NR: AP4045846

Ta-C<sub>2</sub>O<sub>6</sub><sup>-2</sup> -PAR complex is most suitable. Tantalum reacts with PAR at pH = 5.5 when the ratio Ta:PAR is 1:1. The color persists when the solution contains 200 mg of ammonium oxalate per 50 cc of solution. This work resulted in the development of a photometric method for the determination of tantalum in zirconium, molybdenum, tungsten and uranium alloys. The sensitivity of this method is 0.2 µg/ml. It enables determination of tantalum content in alloys from 0.1% and up. The accuracy of tantalum determination in alloys containing it at 1% level is 2% relative. A study was made of the interference of different metal ions on the determination of tantalum. Orig. art. has: 2 figures

ASSOCIATION: None

SUBMITTED: 14Oct63

ENCL: 00

SUB CODE: GC *IC*

NO REF SOV: 010

OTHER: 000

Card 2/2

~~REZSO, Gimes~~ *GIMES, Gyorgy*  
REZSO, Gimes; ORBAN, Gyorgy

Colo cytological examinations in pregnancy. Magy. noorv. lap. 20 no.6:  
356-363 Dec 57.

1. Budapesti Orvostudományi Egyetem I. sz. női klinikájának (igazgató:  
Horn Béla) és az Országos Méddo-seg vizsgálo Intézet (főorvos: Orban  
György) közleménye.

(PREGNANCY, physiol.

cytol. exam. of vaginal smears (Hun))

(VAGINAL SMEARS, in pregn.

cytol. exam. (Hun))



~~REZSO, Hargitai, Dr.~~  
*Hargitai, Hargitai (Dr.)*  
REZSO, Hargitai, Dr.

Significance of the fontanelle bone (os Paracelsi). Gyermekgyógyászat  
8 no.9-10:319-320 Sept-Oct 57.

1. A Fejérmegyei Tanács Kórháza (igazgató főorvos: Korossy Ferenc  
dr.) közleménye.

(CRANIUM, abnorm.  
os Paracelsi, clin. significance (Hun))

HORVATH, M. REZSO, S.

Retroperitonealis osteoma. Orv. hetil. 94 no.18:498-500 3 May 1953.  
(GLML 24:5)

1. Doctors. 2. First Surgical Clinic (Director -- Prof. Dr. Gyula Jaki)  
and Second Internal Clinic (Director -- Prof. Dr. Gabor Czoniczer),  
Szeged Medical University.

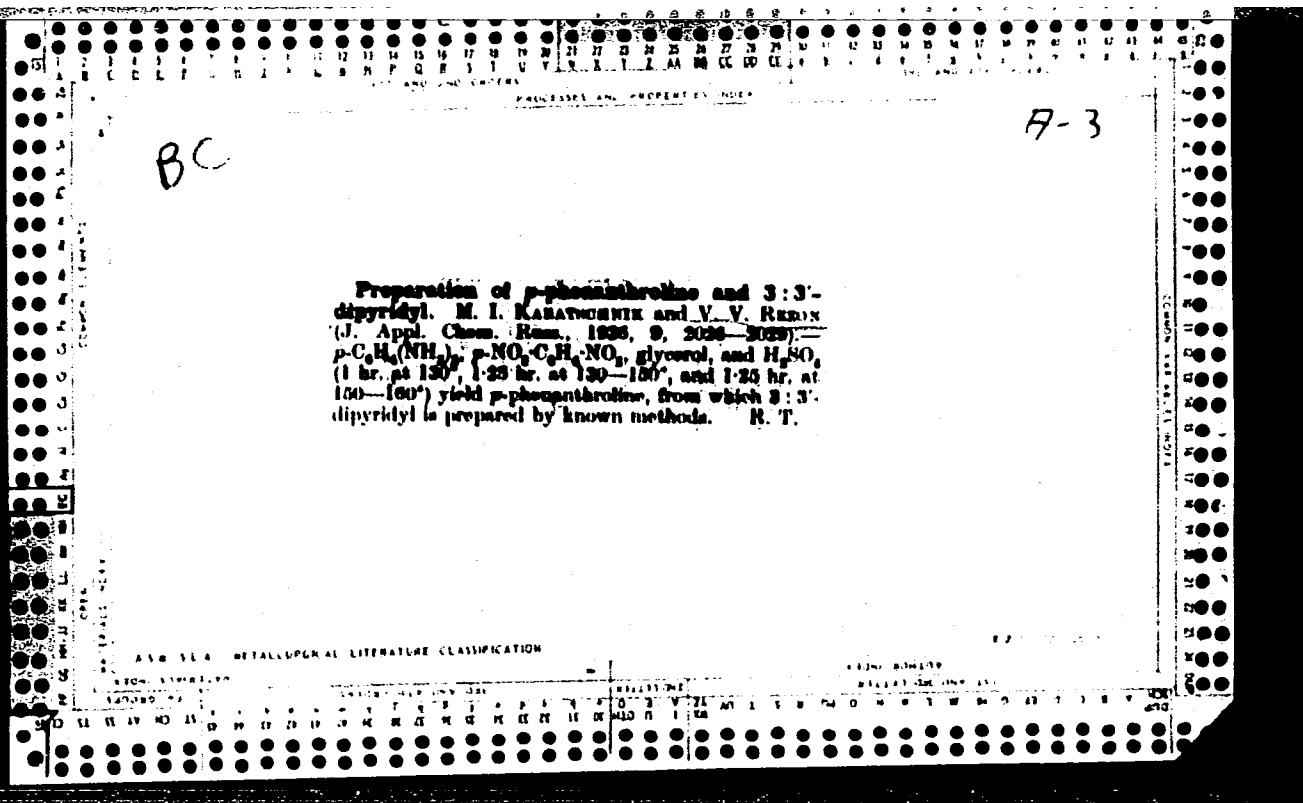
ROSKIN, V.I., red.; REZTSOV, V.N., red.; MORGUNOVA, G.F., vedushchiy red.;  
FEDOTOVA, I.G., tekhn.red.

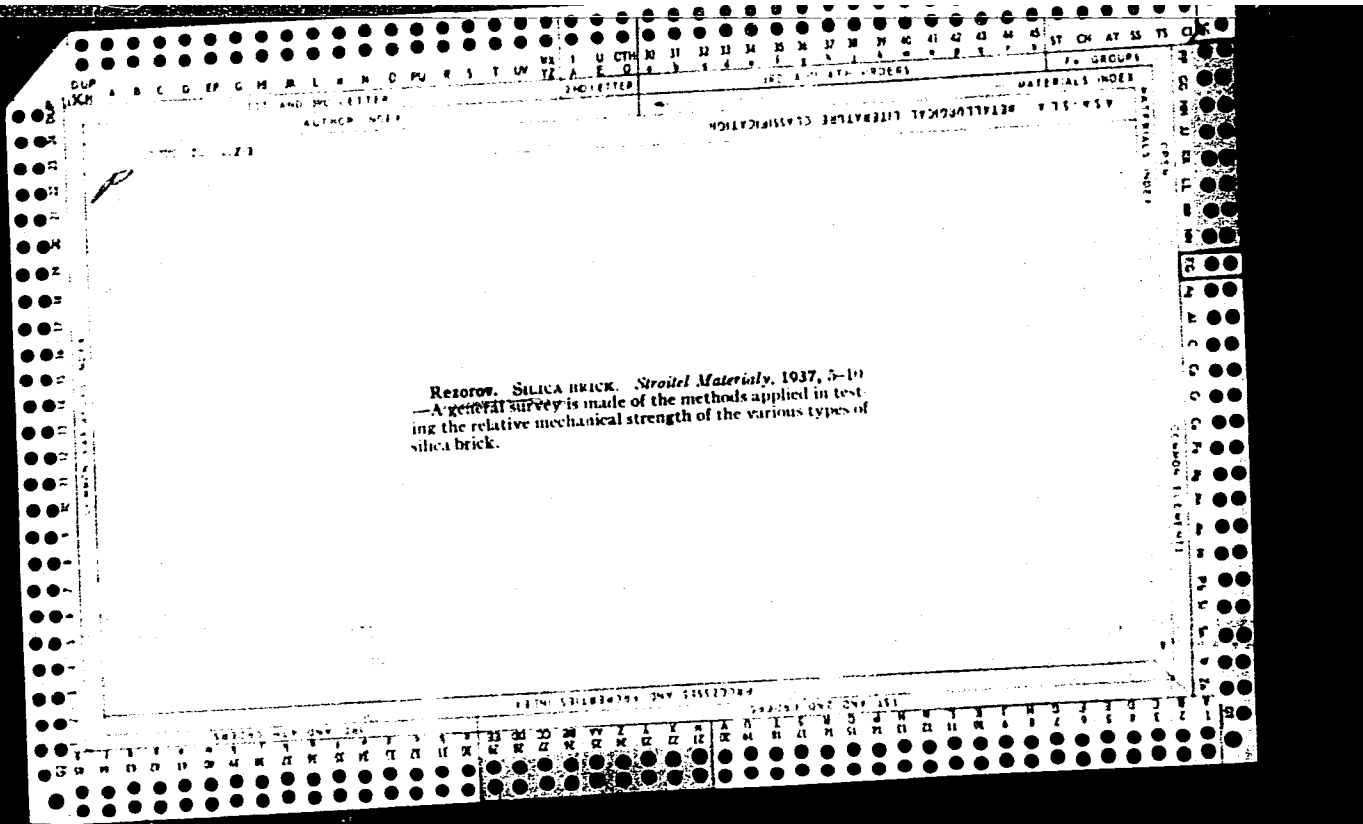
[Repairing, manufacturing parts, and assembling testing and  
measuring instruments] Remont, izgotovlenie detalei i montazh  
kontrol'no-izmeritel'nykh priborov. Moskva, Gos.nauchno-tekhn.  
izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 243 p. (Edinye ot-  
raslevye normy vremeni dlia predpriatii neftianoi promyshlennosti).  
(MIRA 13:3)

1. Moscow. Nauchno-issledovatel'skiy institut truda. Tsentral'noye  
byuro promyshlennykh normativov po trudu.  
(Oil fields--Equipment and supplies)  
(Measuring instruments)

BEZVYAKOV, N.P.

Using a vinyl-n-butyl ether polymer for the healing of wounds of  
various natures and origins. Uch. zap. LGU no,222:312-314 '57.  
(ETHER) (WOUNDS--TREATMENT) (MLRA 10:8)





REZTSOV, A. (g.Vichuga)

A warmhearted person. Okhr.truda i nota.strakh. no.7:58-59  
J1 '59. (MIRA 12:11)

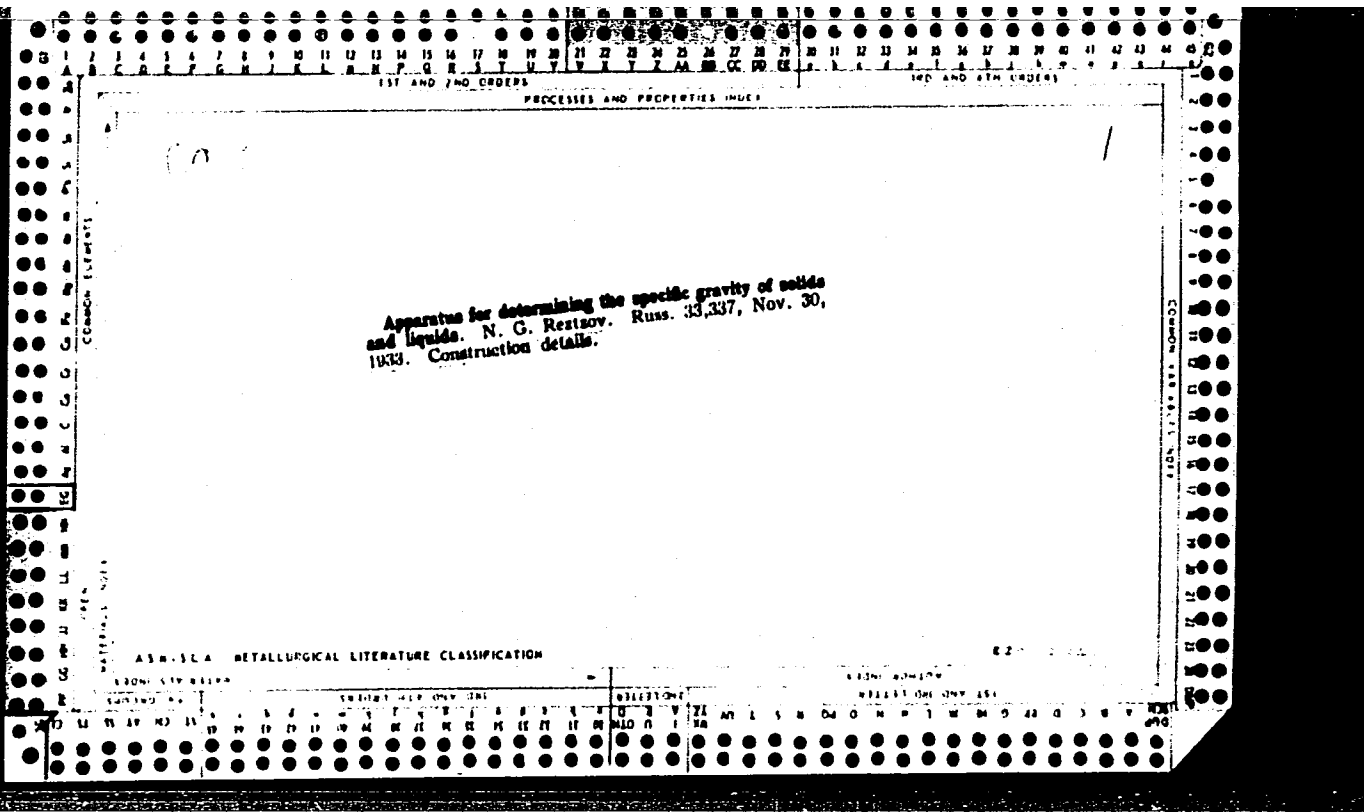
(Insurance, Social)

Name: REZTSOV, D.I.

Wrote an article on the Sh-38 sound recording equipment, known as "SHORINOFON". This apparatus is capable of recording radio broadcasts, rerecording phonograph records, etc. Recordings are cut from a celluloid film (moving picture film). The following aspects are treated: recorder pickup, motor, ribbon roller mechanism, etc.

REF: R. F. <sup>document</sup> #20, p.20, 1938





REZTSOVA, G.L.

3233. Fatigue of rubber. G. I. SLONIMSKY, V. A. KARGIN, G. N. RIUKU, E. V. REZTSOVA, M. LOUIS-RIERA. Dokl. Akad. Nauk S.S.S.R., 1953, 93, No. 3, 623-6; Index Aero., 1954, 10, No. 6, abs. 318/106. The investigation shows that fatigue in rubber is due to complex and inter-related physical and chemical factors. Under deforming stress, chain molecules are ruptured, releasing chemically active radicals. The reaction between the reactive groups in the polymer structure is accelerated by deformation, and the resulting structural modifications progressively diminish the yield and rupture strength of the material. Furthermore, mechanical action causes reorientation of the vulcanisation structure, and spatial reorientation of the progress of the chemical reactions leading to the appearance of anisotropy in the mechanical characteristics of the material. Finally destruction is accelerated by relaxation phenomena developing in conjunction with the chemical reactions, leading to ultimate failure.

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Materials

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REZTSOVA, N.S.

Features of the X-ray picture of bone changes in multiple myelomatosis. Ortop.travm. i protez. 20 no.2:26-30 F '59. (MIRA 12:12)

1. Iz kafedry rentgenologii i meditsinskoy radiologii (zav. - prof. A.A. Lemberg) Ukrainskogo instituta usovershenstvovaniya vrachey (dir. - dots. I.I. Ovsiyenko) i Instituta meditsinskoy radiologii (dir. - dots. Ye.A. Bazlov).

(MYELOMA, PLASMA CELL, pathol.

bones, x-ray (Rus))

(BONE AND BONES, pathol.

in plasma cell myeloma (Rus))

Reztsova, E.V.

1936. Mechanism of fatigue of vulcanized rubbers. G. L. Slonimskii, V. A. Kuroth, G. N. Bujko, E. V. Reztsova and M. I'vuis-Risaa. "Starenie i Utomlennost", 1953, p. 100-18. Polyisobutylene and unsaturated natural and Butyl rubbers were subjected for 288 h to severe shearing deformation. Fatigue lowers the molecular weight of polyisobutylene causing destruction or structuring, changes the swellability of rubbers, their strength characteristics and the frequency dependence of the deformation. In the process of fatigue of rubber with uni-axial deformation there is an increase in the anisotropy of the mechanical properties of the test-piece, connected basically with reversible relaxation phenomena. Fatigue is connected with the occurrence in the deformed polymer of free radicals, which set off chemical processes such as oxidation. As a result of the non-uniformity of the structure of the rubber these processes give rise to local microdefects, the growth of which brings about final destruction of the test-piece. There are 16 references, and the discussion is reported.

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1 PM  
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Keztsova E. V.

62 ✓ Discussion of fatigue in rubber. G. L. Slonimskii, V. A. Kargin, G. N. Bulko, E. V. Keztsova, and M. L'yuis-Riera. *Doklady Akad. Nauk S.S.S.R.* 93, 523-6(1953).— The fatigue of rubber is a complex phenomenon of interrelated chem. and phys. changes. Deformation causes a rupture of chain mols., with the formation of free chem. active radicals. Chem. reactions which proceed because of the existence of reactive groups and free radicals are accelerated by deformation because of the lowering of the activation energy and by increasing the possible no. of collisions. Chem. structure changes affect the mech. and rupture mechanisms of the material. Mech. forces bring about a reorientation of the vulcanization structure and produce anisotropy in the mech. properties of the material. Relaxation processes are superimposed upon this whole complex of processes. Gradual changes in the rubber properties during fatigue finally end in destruction of the material, which is not discussed in the article. W. M. S.

(4)

РЕЗЮМЕ v -

Category : USSR/Atomic and Molecular Physics - Physics of high-molecular substance D-9

Abs Jour : Ref Zhur. - Fizika, No 1, 1957, No 1005

Author : Slonimskiy. G.L., Kargin.V.A., Buyko, G.N., Reztsova, Ye.V., L'yuis-Riyera. M.

Title : Concerning the Problem of the Mechanism of Rubber Fatigue

Orig Pub : Stareniye i utomleniye kauchukov i rezin i povysheniye ikh stoykosti. L., Goskhimizdat, 1955, 100-118

Abstract : See Ref. Zhur. Khim. 1956, 48630

Card : 1/1

REZTSOVA, E. V.

*Chem*  
*Mech*

4258. Mechanical properties of carbon black-petrolatum mixtures. V. A. KARGIN, G. L. BLONNIKOV, and E. V. REZTSOVA. *Dokl. Akad. Nauk S.S.S.R.*, 1955, 105, 1001-3; *Chem. Abs.*, 1956, 50, 9177. The mechanism of the effect of carbon black on rubber is greatly complicated by the chemical activity and the highly elastic deformation of rubber. A carbon black-petrolatum mixture was selected as a model of similar changes not complicated by chemical changes resulting from interaction with the hydrocarbon because of the chemical inertness of petrolatum hydrocarbons. The components were ground for 10 to 15 min at room temperature, and the mixture was stored for 24 h. Although the components had no highly elastic properties when taken singly, the mixture had a well-defined high elasticity. The mechanical properties of the mixture were studied, and compression and relaxation curves were compared with similar curves for rubber-carbon black mixtures; they proved to be similar. Furthermore, the tensile strength and elasticity of mixtures after heating 2 to 3 h to 180 to 200° showed that the relatively weak structure first formed at low temperature breaks down, and a firmer structure, possibly formed by chemical changes, is produced. The relatively low strength of the carbon black-petrolatum structure shows, however, that reinforcement of rubber by carbon black must be principally due to their interaction.

421C8.R

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M.A. 4007-2  
JUL 1955

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2000

REZTSOVA, E.V.

2548. Question of the mechanism of the flow of  
structuring polymers. V. A. Kargin, T. I.  
Soudova, G. L. Stasimovskii and E. V. Reztsova.  
Zhur. Fiz. Khim., 1956, 30, 1903. The authors  
develop their theories on the development of  
chemical structure effects in high polymers under  
powerful forces when being processed. They  
suggest the addition of suitable substances to  
control such processes. 32422

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4820  
2 May

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SLOHINSKIY, G.L.; REZTSOVA, Ye.V.

Mutual solubility of polymers. Part 5: Mechanochemical compatibility. Vysokom.soed. 1 no.4:534-538 Ap '59. (MIRA 12:9)

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

5(4)  
AUTHORS: Slonimskiy, G. L., Restsova, Ye. V. SOV/76-33-2-38/45

TITLE: Mechano-chemical Phenomena in Polymers (O mekhanic-khimicheskikh yavleniyakh v polimerakh). I. A Study of the Phenomenon of Chemical Flow in Raw and Vulcanized Rubbers (I. Issledovaniye yavleniy khimicheskogo techeniya v kauchukakh i rezinakh)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 480-486 (USSR)

ABSTRACT: The recently discovered phenomenon of the chemical flow of polymers (Refs 2-4) which arises from the effect of increased tension must be especially obvious in working processes, for example, the rolling of polymers. In the work of this paper the chemical flow of structured, highly-elastic polymers was studied in linear and three-dimensional flow. Tested were samples of SKB-1 sodium butadiene rubber (without anti-oxidants), technical butadiene styrene SKS-30A rubber, natural rubber (NK) and its vulcanisate, and thermostructured materials (SKB-T). The SKB-1 was produced by the standard method (60 parts by weight of carbon to 100 parts rubber) using NK with Captax (or Altax + diphenyl guanidine) as accelerator. It was rolled on cooled micro-rollers (ratio of the rates of revolution 1 : 1.1)

Card 1/3

Mechano-chemical Phenomena in Polymers.  
I. A Study of the Phenomenon of Chemical Flow in  
Raw and Vulcanized Rubbers

SOV/76-33-2-38/45

for a time varying from 10 minutes to several hours. After rolling for one hour the "Defo" number (deformation number) for the cold-rolling of the SKB-1 linear polymer fell from 650 to 410, while the hot-rolling caused a decrease from 650 to only 550, thus indicating that the rolling temperature is of importance with polymers which are still structurable. A SKS-30A rubber stabilized with phenyl- $\beta$ -naphthylamine (neozon D) did not show any marked change after being rolled for 24 hours as opposed to the SKB-1 which became brittle and crumbled after 6 hours. From the experimental results obtained (Tables 1-4) and published data (Refs 9-11) it is concluded that mechano-chemical phenomena play a decisive role in the processing of polymers, and that they are not merely side effects as previously believed. The observations in regard to the influence of small amounts of added substances (0.3% di-tert-butyl hydroquinone, dinitrile of azo isosebacic acid, and benzoyl peroxide added to SKB-1) (Table 1), which can initiate or interrupt chain radical processes, on the properties

Card 2/3

Mechano-chemical Phenomena in Polymers.  
I. A Study of the Phenomenon of Chemical Flow in  
Raw and Vulcanized Rubbers

SOV/76-33-2-38/45

of rubber indicate on one side the possibility of regulating technological processes and also indicate the determining role played by mechano-chemical phenomena. Because of this, new methods must be developed to evaluate polymers giving due consideration to chemical flow. In conclusion Academician V. A. Kargin is thanked. There are 4 tables and 11 references, 8 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti  
MKhP SSSR, Moskva (Scientific Research Institute of the Tire  
Industry of the MKhP USSR, Moscow)

SUBMITTED: August 8, 1957

Card 3/3

5(4), 15(8)

SOV/76-33-3-23/41

AUTHORS:

Reztsova, Ye. V., Lipkina, B. G., Slonimskiy, G. L.

TITLE:

On Mechano-chemical Phenomena in Polymers (O mekhano-khimi-cheskikh yavleniyakh v polimerakh). II. The Effect of Initiators and Inhibitors of Radical Chain Processes (II. Vliyaniye initsiatorov i ingibitorov tsepnykh radikal'nykh protsessov)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 3, pp 656 - 661 (USSR)

ABSTRACT:

Mention is made of results obtained by investigating the variation of plasto-elastic properties in rubber rolling to which various initiators and inhibitors were added. Further, the variations of the durability of rubber due to repeated deformations are mentioned. The authors primarily made experiments with technical butadiene-styrene synthetic rubber (SKS-30A) as well as parallel experiments with natural rubber (NK). According to the recommendations of B. A. Dolgoplosk, Corresponding Member, AS USSR, the following substances were added: Benzoyl peroxide (I), dioxy-diphenyl disulphide (II),

Card 1/3

On Mechano-chemical Phenomena in Polymers. II. The Effect of Initiators and Inhibitors of Radical Chain Processes

SOV/76-33-3-23/41

dinitrile of azoisobutyric acid (III), di-tert-butyl hydroquinone (IV), tri-tert-butyl phenol (V), polyethylene polyamine (VI), Diproxid (VII), Santovar 0 (VIII), chloro paraffin (IX), benzoquinone (X), hydroquinone (XI), quinhydrone (XII), acetonyl (XIII),  $\beta\beta'$ -dinaphthyl disulphide (XIV). The substances were rolled in cold state by means of rollers (405 x 146 mm) with a friction of 1:1.22 for one hour at a temperature of 20-30° of the rubber mixture as well as at higher temperatures (for the purpose of vulcanizing the mixtures which were subjected to fatigue tests). The deformation was measured by means of a plastometer according to Gudrich (Ref 2), and the durability was tested by several sample elongations. The authors determined a particularly strong effect on the properties of SKS-50A due to additions of (I) (Fig 1), while NK exhibited the strongest sensitivity to (III) (Fig 2). It was remarkable in this connection that by the variation of the amount of additions opposite effects were obtained. A prolongation of the rolling time considerably increases the effect of additions (Fig 1). (IV) and the other

Card 2/3

On Mechano-chemical Phenomena in Polymers. II. The  
Effect of Initiators and Inhibitors of Radical Chain Processes

SOV/76-33-3-23/41

quinones exercised only an insignificant influence upon the  
the raw mixtures but strongly affected the properties of  
fatigue of the vulcanizates (Figs 3-6). Therefrom it re-  
sults that a mechano-chemical mechanism of polymer processing  
as well as of the fatigue tests also indicate merely me-  
chano-chemical processes, which consist in the mechanical  
destruction of chain molecules with the formation of free  
radicals producing secondary chemical processes. The initia-  
tors and inhibitors added considerably change the course  
of these mechano-chemical processes (Table) and are therefore  
capable of affecting both the properties of polymers and the  
durability of the finished products. There are 6 figures, 1  
table and 2 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti  
Moskva (Scientific Research Institute of the Tire Industry,  
Moscow)

SUBMITTED: August 8, 1957

Card 3/3

RETIRED, Y.V., (MIRA 17:19), Gulya, (MIRA 17:19).

Mechanical and chemical phenomena occurring in the processing  
of synthetic rubbers. Zhurnal khim. fiz. 44, no. 12, 1974, p. 163.  
(MIRA 17:19)  
.. Natsionalno-issledovatel'skiy tsentr khimicheskoy promyshlennosti.



15 (9)

AUTHORS:

Slonimskiy, G. L., Kargin, V. A.,  
Reztsova, Ye. V. (Moscow)

SOV/76-33-5-5/33

TITLE:

On Mechano-chemical Phenomena in Polymers (O mekhano-khimicheskikh yavleniyakh v polimerakh). 4. The Modification of ~~Latex~~ and Vulcanized Rubber (4. Modifikatsiya kauchukov i rezin)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 5,  
pp 988-991 (USSR)

ABSTRACT:

Data from publications (Refs 1-7) indicate that free radicals are formed from mechanical action on raw- or vulcanized rubber and that it is therefore possible to start polymerization processes by mechanical treatment. The authors carried out their investigations in a modifcator which had been designed at the Institut plastmass (Institute of Plastics). It consisted of two spirally grooved plates. The upper plate was fixed, the lower plate rotated with 30 rpm. The plates were cooled; and the treatment could take place in air as well as in nitrogen atmosphere. Microcylinders with a friction of 1:1.11 were used in a different series of experiments. Technical products of butadien styrene and sodium butadien were investigated.

Card 1/2

On Mechano-chemical Phenomena in Polymers.  
4. The Modification of Natural and Vulcanized Rubber

SOV/76-33-5-5/33

Vulcanization was carried out according to standard recipes. The mechanically treated samples were tested after vulcanization, and by fatigue tests of the raw product, and partly by determining the solubility and viscosity of the solutions. Equally, tests were carried out with vulcanized rubbers which were swelled into monomers (imitation of regeneration). Tables 1 and 2 give the investigation results and show that chemical processes are brought about by mechanical treatment which can be used for an improvement of the properties and for technical application contrary to earlier assumptions. There are 2 tables and 8 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti  
Moskva (Scientific Research Institute of the Tire Industry,  
Moscow)

SUBMITTED: August 8, 1957

Card 2/2

REZTSOVA, Ye.V.; CHUBAROVA, G.V.; SLONIMSKIY, G.L.

Mechanical-chemical phenomena observed in the fatigue of rubbers.  
Vysokom.soed. 6 no.8:1483-1486 Ag '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

REZTSOVA, Ye.V.; VILENTS, Yu.Ye.

Processing of isoprene rubber in an inert medium. Kauch. i rez.  
24 no.11:14-15 '65. (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

L 32754-66 EWP(j)/EWT(m)/T LJP(c) IM

SOURCE CODE: UR/0190/66/008/004/0569/0572 42

ACC NR: AP6012706

AUTHOR: Zharikova, Z. F.; Reztsova, Ye. V.; Berestneva, Z. Ya.; Kargin, V. A. B

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: The effect of supramolecular structure in rubbers on their mechanical properties

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 4, 1966, 569-572

TOPIC TAGS: natural rubber, synthetic rubber, vulcanization, molecular structure

ABSTRACT: The dependence of the mechanical properties of structures in thiuram vulcanizates with natural rubber and synthetic polyisoprene, polybutadiene, and sodium butadiene rubbers, on its supramolecular structures was investigated. Vulcanized rubber with more ordered structure was found to possess superior mechanical properties. Change in mixing temperature (in the range of 25-70C) does not significantly affect the structure and properties of the rubber. Structure formation in thiuram polyisoprene vulcanized rubber subjected to stretching was investigated by electron microscopy. Ribbon-like structures were found to be perpendicular to the applied force during stretching of vulcanized rubbers. Orig. art. has: 4 figures and 1 table. [NT]

SUB CODE: 11/ SUBM DATE: 05Feb65/ ORIG REF: 007/

UDC: 678.043+678.43

Card 1/1 JS

L 12805-66 (A) EWT(m)/EWP(j)/EWP(t)/EWP(b) IJP(c) JD/RM

ACC NR: AP5028900

SOURCE CODE: UR/0138/65/000/011/0014/0015

AUTHOR: Reztsova, Ye. V.; Vilents, Yu. Ye.

ORG: Scientific Research Institute of the Tire Industry (Nauchno-issledovatel'skiy institut shinnoy promyshlennosti) 55  
8

TITLE: Processing of isoprene rubbers in inert media 15.44

SOURCE: Kauchuk i rezina, no. 11, 1965, 14-15

TOPIC TAGS: isoprene, rubber, argon, thermomechanical property, vulcanization

ABSTRACT: / A study was made of the effect of the inert medium (argon) used during processing and mixing on the properties of vulcanizates prepared from NK<sup>2</sup> and SKI-3 isoprene rubbers. The experiments showed that the rate of degradation was substantially reduced by the argon. As the medium is changed from air to argon, the relative viscosity  $\eta_0$  after 10 min of plastication increases from 3.0 to 9.0 for NK and from 4.1 to 6.4 for SKI-3. This was confirmed by thermomechanical investigations. The inert medium decreases the deformability of the rubber, increases the intermolecular interaction, and shifts the yield temperature from 20 to 60C. The plasticity of NK-base mixtures decreases from 0.803 to 0.678, and that of SKI-3-base mixtures, from 0.837 to 0.742. When the mixtures are processed in argon, the tensile strength of the vulcanizates increases. The mechanism of the processes responsible for this improvement in properties is discussed. Orig. art. has: 2 figures.

Card 1/2

UDC: 678.762.3-678.023.3:541.12

L 12805-66

ACC NR: AP5028900

SUB CODE: 11 / SUBM DATE: none / ORIG REF: 003 / OTH REF: 005

0

jw  
Card 2/2

L 00748-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5020965

UR/0190/65/007/008/1335/1338

24  
20  
B

AUTHOR: Reztsova, Ye. V.; Chubarova, G. V.

TITLE: Investigation of the degradation of rubbers using stable radicals

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 8, 1965, 1335-1338

TOPIC TAGS: natural rubber, synthetic rubber, rubber chemical, stable radical, depolymerization

ABSTRACT: The degradation of polyisoprene rubbers by stable radicals in an inert medium was investigated. Stable radicals (oxidized 2,2,4-trimethyl-6-ethoxy -1,2-dihydroquinoline, Santoflex AW) were introduced into natural rubber or synthetic isoprene SKI-3 mixes to follow the reactivity of the molecules.

EPR data showed that the stable radicals were spent during mechanical processing. This was attributed to the interaction of the radicals with the rubber macroradicals formed by rupture of the molecules. This interaction affects the nature of the rubber degradation and of the structuration process. Addition of a stable radical changes the direction of the secondary chemical reactions, inter-

Card 1/2



L 00748-66

ACCESSION NR: AP5020965

fering with the recombination of the rubber macroradicals and the formation of three dimensional structures, thus affecting the properties of crude and vulcanized rubbers. This work further confirmed the radical mechanism of polymer degradation. "The authors thank G. L. Slonimsk for assistance and advice in the work." Orig. art. has: 3 figures <sup>44</sup>

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promy\*shlennosti (Scientific Research Institute of the Tire Industry)

SUBMITTED: 03Sep64

ENCL: 00

SUB CODE: MT, GC

NR REF SOV: 006

OTHER: 001

Card <sup>sp</sup> 2/2

KARGIN, V.A., akademik; ZHARIKOVA, Z.F.; BERESTNEVA, Z.Ya.; REZTSOVA, Ye.V.

Structure of crude and vulcanized rubbers studied by replica grating techniques. Dokl. AN SSSR 158 no.3:697-698 S 164.

(MIRA 17:10)

I. Fiziko-khimicheskiy institut im. L.Ya.Karpova i Nauchno-issledovatel'skiy institut shirnoy promyshlennosti.

ACCESSION NR: AP4043787

S/0190/64/006/008/1483/1486

AUTHOR: Reztsova, Ya. V., Chubarova, G. V., Slonimskiy, G. L.

TITLE: Mechanical induced chemical processes in rubber fatigue

SOURCE: Vy\*sekomolekulyarny\*ye soyedineniya, v. 6, no. 8, 1964, 1483-1486

TOPIC TAGS: rubber, rubber fatigue, rubber mechanical treatment, rubber rolling, fatigue prevention, vulcanate

ABSTRACT: The fatigue resistance of unsaturated vulcanates of natural rubber containing 0.5 wt. % stearic acid, 5 wt. % zinc oxide, 0.7 wt. % Kaptax, and 3 wt. % sulfur was investigated in nonmachined or rolled samples, using phenyl- $\beta$ -naphthylamine, N-phenyl-N'-cyclohexyl-p-phenylenediamine, 2,2,4-trimethyl-6-ethoxydihydroquinoline, and 2,2'-methylene-bis-(4-methyl-6-butylphenol) as anti-fatigue agents. The agents were introduced into nonmachined samples by absorption from benzene solution, and into machined samples before they were rolled together for 5 1/2 hrs. The fatigue resistance was measured on a specially designed laboratory device, described in an earlier paper, which permitted repeated stretching of samples in various media and in a vacuum. The results of the tests (see Fig. 1 in the Enclosure) show that anti-fatigue agents introduced without machining

Card 1/4

ACCESSION NR: AP4043787

exert a greater positive effect on fatigue resistance than agents introduced by rolling. This effect is linked to consumption of the agent by chemical reactions with the macroradicals of the rubber, induced by mechanical treatment. Orig. art. has: 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promy\*shlennosti (Scientific Research Institute of the Tire Industry).

SUBMITTED: 02Oct63

ENCL: 0X2

SUB CODE: MT

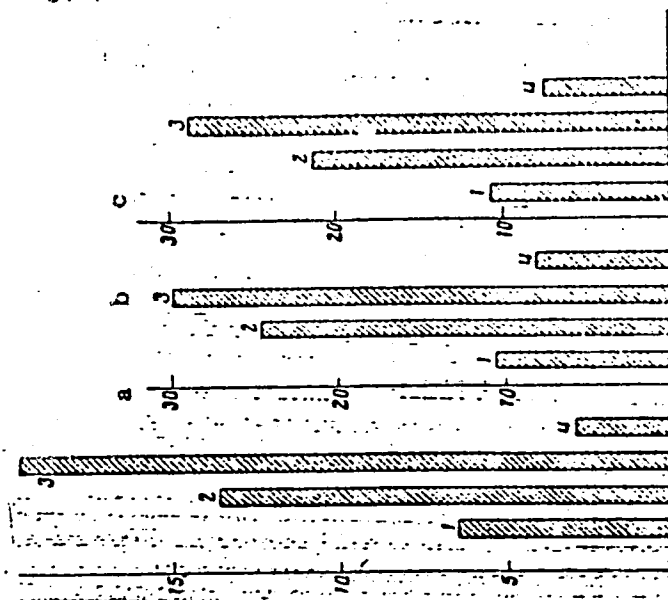
NO REF SOV: 006

OTHER: 000

Card 2/4

ACCESSION NR: AP4043787

ENCLOSURE: 01



Card 3/4

ACCESSION NR: AP4043787

ENCLOSURE: 02

Fig. 1. Fatigue resistance of unsaturated NK rubber after introduction of anti-fatigue agents (a - N-phenyl-N'-cyclohexyl-p-phenylenediamine; b - 2, 2, 4-trimethyl-6-ethoxydihydroquinoline; c - 2, 2'-methylene-bis-(4-methyl-6-tert. butylphenol)) by various methods: 1 - no anti-fatigue agent; 2 - 1% anti-fatigue agent added on the rollers; 3 - 1% anti-fatigue agent introduced by swelling; 4 - control sample not containing an anti-fatigue agent but allowed to swell in pure solvent. (Ordinate = thousands of cycles.)

Card 4/4

S/138/63/000/003/007/008  
A051/A126

AUTHORS: Reztsova, Ye. V., Slonimskiy, G. L., Kargin, V. A.

TITLE: Mechano-chemical phenomena in natural rubber (NR) processing

PERIODICAL: Kauchuk i rezina, no. 3, 1963, 27 - 30

TEXT: A study was made to determine the individual effects of mechanical and chemical phenomena on the properties of an NR-base multi-component system with rubber mix ingredients during the mixing process. The effect of process duration and medium (oxygen, nitrogen, argon) on the properties was investigated. The processing effect was recorded by the number of cycles. The properties of non-vulcanized film after processing under various conditions were studied as to tensility, elasticity and swelling; creep and recovery curves were plotted and the thermomechanical method of investigation was applied. The Polany dynamometer or a stress machine was used to determine the tensile and elastic properties. The latter are found to change sharply during processing. Experimental data proved that the mixing of rubber mixes is a mechano-chemical process. Submitted information proved the necessity for taking into consideration the change in

Card 1/2

Mechano-chemical phenomena in natural...

S/138/63/000/003/007/008  
A051/A126

properties of the raw mix during processing and the possibility of regulating these changes by creating a rational technological process of raw mix preparation. The processing of the systems in an inert medium (nitrogen, argon) and the sharp reduction of the rolling duration ensures a substantial modification of the rubber by chemical reagents and the production of systems with high tensile properties. There are 4 figures.

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

Card 2/2



REZTSOVA, Ye.V.; SLCHIMSKIY, G.L.; CHUBAROVA, G.V.

Laboratory apparatus for repeated load tests of elastic  
materials in various media. Zav.lab. 28 no.4:496-497 '62.

(MIRA 15:5)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.  
(Elastomers--Testing)

S/032/62/028/004/020/026  
B124/B101

AUTHORS: Reztsova, Ye. V., Slonimskiy, G. L., and Chubarova, G. V.

TITLE: Laboratory setup for repeated stressing of elastic materials  
in various media

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 4, 1962, 496 - 497

TEXT: A simple device was used to stretch a rubber sample kept in an inert atmosphere 120 times per minute to twice its original length. Stretching is effected by means of a core to which the rubber sample has been attached; this core is drawn into a coil when the circuit is closed. Interruption of current is performed by a Warren motor at a frequency of 120 times per minute. The rubber samples were repeatedly stretched to 50% of their original length in argon. Fatigue strength is given as the number of cycles leading to destruction of the sample. After destruction, residual strain and the character of the rupture were determined. The mean number of cycles causing destruction was  $5.6 \cdot 10^4$  in argon and  $2.6 \cdot 10^4$  in air which indicates the effect of chemically active substances, chiefly atmospheric oxygen, on the examined properties of the material. There  
Card 1/2 ✓

Laboratory setup for ...

S/032/62/028/004/020/026  
B124/B101

are 1 figure and 1 table.

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

Card 2/2

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L 16392-65 EWT(m)/EWP(j) Pc-4 SSD/AFWL/ASD(a)-5/ASD(m)-3/AS(mp)-2/AFETR RM  
ACCESSION NR: AP5002049 S/0020/64/158/003/0697/0698

AUTHOR: Kargin, V A. (Academician); Zharikova, Z. F.; Berestneva, Z. Ya.;  
Reztsova, Ye. V. E  
B

TITLE: Study of the structure of crude and cured rubbers by the replica method

SOURCE: AN SSSR. Doklady, v. 158, no. 3, 1964, 697-698, and insert facing p. 698

TOPIC TAGS: rubber, crystallography, electron microscopy, vulcanization,  
molecular structure

Abstract: Isotactic <sup>15</sup>polyisoprene and <sup>16</sup>polybutadiene crude rubbers, sodium-  
butadiene rubber vulcanizates of these rubbers with 3% thiuram, 5% zinc

oxide, and 1% stearic acid, and vulcanizates of natural rubber of the same  
composition with various degrees of vulcanization (5, 40, and 110 min) were  
studied by the electron microscopic replica method (carbon replicas for the  
vulcanizates; two-stage lacquer-carbon replica for the crude rubbers).

The investigation of the crude rubbers revealed the presence in the elastomers  
of structural formations in the form of random ribbons, finer for isoprene  
than polybutadiene. Spherulite-like structures were observed in the precooled  
rubbers, while in previous works only ribbon structures were observed in  
films prepared at room temperature indicating a promotion of crystallization

Card 1/2