

19

cr

Using urtite in glass making. V. V. VARGIN AND N. B. ZHUK. *Keram. Steklo* 8, No. 8, 6-6(1932).--Urtite contains 88% nephelinite, 5% apatite, and 10% dark colored minerals; and it is obtained in large quantities in the working of apatite deposits of the Mourman (North Russia). The alkali content is 17-21%, whereas nephelite syenite contains only 11-15%. The ratio of the alumina to the alkali content averages about 1.43 in urtite (nephelite syenite, 1.60). Two series of 9 exptl. melts each and having a compn. as similar as possible to that of industrial nephelite glasses were made. It was found that urtite glasses melt more rapidly than nephelite, the glass is less viscous and is refined more easily, and that urtite dissolves in the melt better than nephelite; also, that urtite glasses tend to devitrify much less.

M. V. KONDOYD

ASB.35A METALLURGICAL LITERATURE CLASSIFICATION

FROM BOWLING

COLLECTOR

FROM BOWLING

19

CA

Corrosion of frog brick by glasses. V. V. Vargilov, *Ognespoy 4*, 762-70(1936).—The glass samples were melted in frog crucibles in a carefully controlled furnace. Detns. were made of loss of wt. of the crucible during the melt; the amt. of sesquioxides absorbed by the glass; the coloring of the glass by Co oxide introduced into the frog mass. The corrosion of frog crucibles from different clays was detd. for heavy Ba crown glass, 1100-1475°, and for val 1100-1400°, for heavy flat glass, 1100-1475°, and for borosilicate, 1100-1500°. In all cases the corrosion increased progressively with increase in temp. Frog made from clays of a higher refractoriness, higher in Al₂O₃, showed greater resistance to corrosion, especially by heavy glasses. E. E. Stefanowsky

ASTM A11.1 METALLURGICAL LITERATURE CLASSIFICATION

1936-1940

1941-1945

1946-1950

1951-1955

1956-1960

1961-1965

1966-1970

1971-1975

1976-1980

1981-1985

1986-1990

1991-1995

1996-1999

PROCESSES AND PROPERTIES INDEX

19

1 The influence of water vapor and of arsenic on the process of fusion of the charge of heavy baryta crown glass. V. V. Vargin and A. A. Kefeli. *Optiko-mekh. Prom.* 6, No. 1, 3-5 (Jan., 1930); *Chem. Zvest.* 1937, 1, 2427-8. — The action of steam on the fused frit promotes the evapn. of H_2O and thus changes the compn. of the glass. At normal pressure the formation of Ba borates, which occurs at low temps., is accelerated, as is also the formation of borosilicates at temps. above 700°. As_2O_3 alone or in the presence of steam accelerates somewhat the decompn. of the $BaCO_3$, as well as the soln. of SiO_2 and the formation of borosilicates. The effects of the As_2O_3 and the steam are additive. The acceleration of the fusion process through their combined effects is essentially less than that produced by an increase of 100° in the furnace temp.

M. G. Moore

A.S.T.M. METALLURGICAL LITERATURE CLASSIFICATION

EIGHTH EDITION

REVISED ONE ONLY LIST

117 AND 2ND CROSS

118 AND 4TH CROSS

PROCESSES AND PROPERTIES INDEX

19

ca

The destruction of glass pot walls by optical glass. *Optiko-mekh. Prom. 6, No. 2, 3-9(1936); Chem. Zvest. 1937, 1, 2427; cf. C. A. 31, 4783f.* Samples of the furnace walls were made into small crucibles and the glass was melted in them in an elec. furnace. The wall material contained about 0.3% Co_2O_3 . When the wall material was attacked this dissolved and permitted the attack to be followed colorimetrically. Small stirrers were also made of the wall material so that the effect of stirred and unstirred glass could be studied. A heavy barite crown, a heavy flint and a borosilicate glass were studied. The attack-temp. curve showed a break for the barite crown glass at 1200° and for the flint at 1200° which probably corresponded to the dissociation of silicates and borosilicates and the formation of free oxides of Pb and Ba. Eschassow-jar clay was more easily corroded than Lut-naja clay. Stirring increased the attack on the borosilicate glass and decreased it on the crown and flint.

Iver Igelrud

COMMON ELEMENTS

COMMON VARIETIES INDEX

6-27-58

438-35A METALLURGICAL LITERATURE CLASSIFICATION

FROM SYMBOLS

117 AND 2ND CROSS

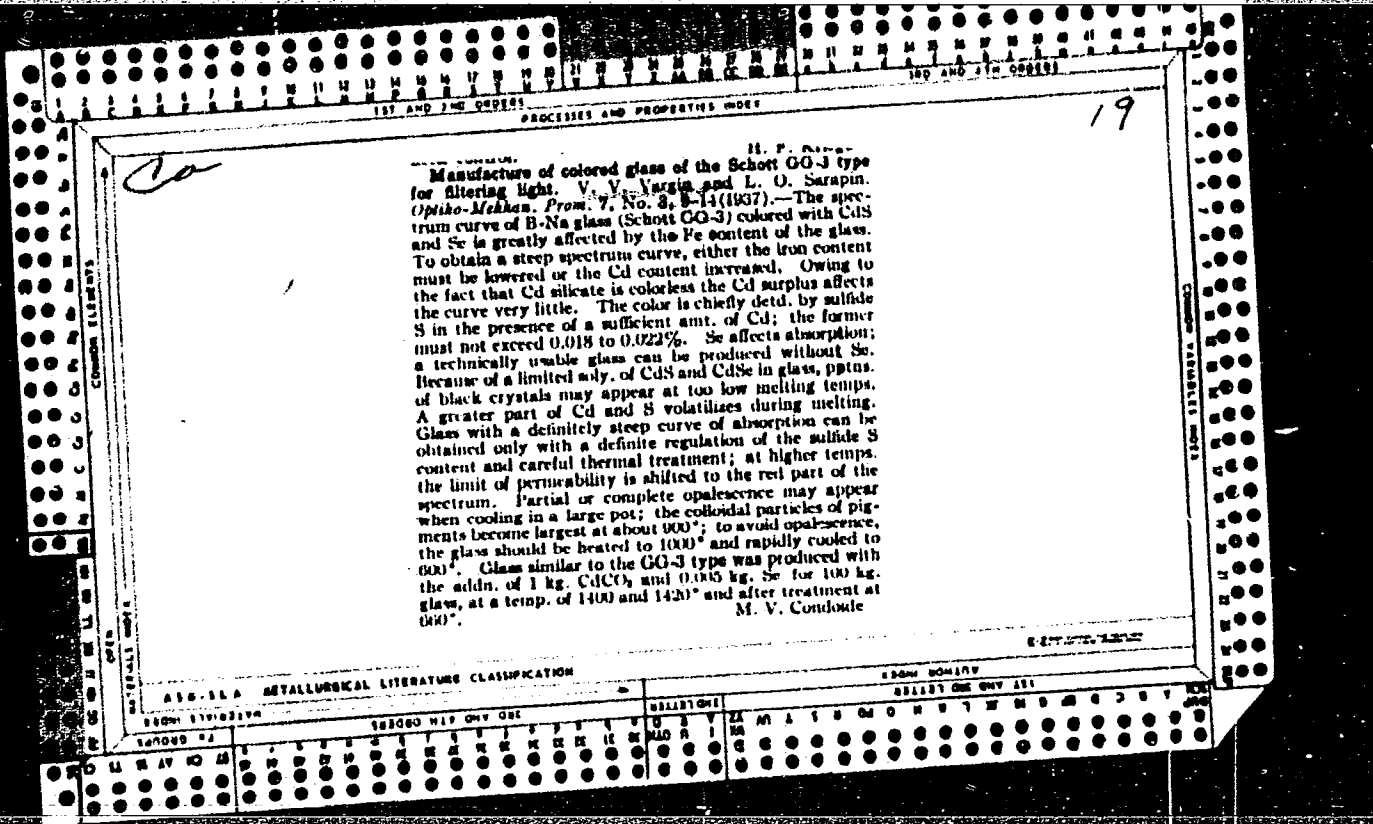
118 AND 4TH CROSS

COMMON ELEMENTS

COMMON VARIETIES INDEX

6-27-58

FROM SYMBOLS



17

PROCESSES AND PROPERTIES INDEX

ca

Effect of various factors on the color of copper ruby. V. V. Vargin and N. P. Kozhin. *Keram. i Staklo* 13, No. 11, 31-6(1937).—The practical results for the production of copper ruby flash glass are: (1) Fourcalt duction of copper ruby flash glass with a suitable amt. of Cu and Pb. The glass is of high quality. (2) The glass can be improved to a certain extent by increasing the silica content for that of soda, or replacing 3 parts of CaO by PbO and introducing a small amt. of B₂O₃. CaO considerably lowers the quality of the ruby glass by lowering its transparency in the red part of the spectrum. (3) The quality of ruby glass and intensity of its color (concn. of pigment) do not change equally. Each of them has a max. which depends on the concn. of Cu and Pb in the glass. (4) The most suitable content of Cu (when introduced into the batch as oxide) and Pb is 1% Cu and 0.5% Sn, or 0.5 to 1.5% Cu and 1.0% Sn. The best glass was obtained with 1.0% Cu and 1.0% Pb. When melting in a large pot, the quantity of Pb should be lowered. The quality of ruby glass is considerably diminished by a relatively high concn. of Pb and by a large general concn. of Cu and Pb. (5) The temp. of annealing is of great importance. For a glass of the Fourcalt type, the best annealing temp. is about 625°. Higher or lower temps. impair the quality of glass. (6) The increase of the duration of annealing improves the ruby at first, then, has no effect. (7) Defective glass is manufd. apparently by a too great reduction of Cu or a too high ratio of Sn to Cu.

M. V. C.

ABB-56A METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

COMMON VARIABLE ELEMENTS

1ST AND 2ND CROSS

170 AND 4TH CROSS

1ST AND 2ND CROSS

COMMON ELEMENTS

COMMON VARIABLE ELEMENTS

1ST AND 2ND CROSS

170 AND 4TH CROSS

PROPERTIES AND PROPERTIES INDEX

Dissociation of silicates and purification of glass. V. V. Vargin. *Optiko-Mekhan. Prom.* 8, No. 4, 8-12 (1955); cf. C. A. 33, 1984. Bubbles in optical glass are due chiefly to secondary seeds formed during the cooling of the glass. The main source of secondary seeds is CO₂ absorbed by the glass during cooling. CO₂ and some other gases are absorbed by free basic oxides (R₂O, BaO) with the formation of compds. stable in the furnace atm. at high temps. The formation of free basic oxides is accounted for by a thermal disson. of silicates. On cooling, a reverse process of formation of silicates takes place with a sepn. of CO₂ or other gases absorbed in the formation of secondary seeds. The rational conditions of melting consist in a short-time increase in temp. in order to effect thermal disintegration of remnants of carbon compds. and the purification of glass, and a sharp decrease of temp. lower than that of silicate disson. M. V. Condule

METALLURGICAL LITERATURE CLASSIFICATION

1950-1959

1960-1969

1970-1979

1980-1989

1990-1999

2000-2009

2010-2019

2020-2029

2030-2039

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2060-2069

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2090-2099

2100-2109

2110-2119

2120-2129

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2150-2159

2160-2169

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2200-2209

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7

PROCESSING AND REPRODUCTION

19

CR

Dissociation of silicates and refining of glass. V. V. Virgin. *Steklovoys Prom.* 14, No. 7, 15-17 (1938).

(1) Bubbles present in optical glass are caused principally by "secondary seeds" which are sepd. during the cooling of the glass. (2) The chief cause of "secondary seeds" is carbonic acid absorbed by the glass during cooling. (3) Carbonic acid and some other gases are absorbed by the free basic oxides (Na₂O, BaO) and form chem. compds. which are stable at the high temps. of the furnace atm. (Na₂CO₃, BaO.BaCO₃). (4) Free basic oxides are formed during the disson. of silicates: R₂(Ba)SiO₃ → R₂BaO + SiO₂. When temps. decrease, a reversed process of silicate formation takes place with a sepn. of carbonic acid in the form of "secondary seeds" of carbonic acid or other absorbed gases. (5) A rational melting should include a short-time increase of temp. for the thermal disson. of the remaining carbonic compds. and the refining of the glass and a sharp lowering of the temp., below the temp. of silicate disson.

M. V. Cudovik

ASS. ILL. METALLURGICAL LITERATURE CLASSIFICATION

REGIONAL BUREAU

SERIALS DIVISION

SERIALS DIVISION

A. E. S.

Glass

Manufacturing Colored Glass. V. Y. YAKOVLEV. Edited
by I. V. Grebenshchikov. Gosizdatizdat. Izdatel'stvo Leg-
kot Prom., Moscow, 1940. 294 pp. Price 12.65 R.
Reviewed in *Khim. Referat. Zhur.*, 4 [7-8] 93 (1941).
See "Manufacture . . ." *Ceram. Abs.*, 17 [6] 216 (1938).
M.Ho.

PROCESSES AND PROPERTIES INDEX

3

Luminescence of glasses. V. V. Yargin and T. I. Vainberg. *Bull. Acad. Sci. U.R.S.S., Ser. phys.* 9, 503 74 (1945).—The active spots in luminescent glasses can be neutral mol., atoms, or ions. To the first group belong CdS and CdS-CdSe glasses. The luminescence appears during annealing, CdS being formed from Cd silicate and ZnS. Coagulation of CdS stops the luminescence. In the second group are Ag-cv. etc. glasses. In glasses cooled rapidly Ag is present partially as an ion and partially as an atom. Annealed to 150-200° in H such glasses become strongly luminescent. Here also, coagulation at higher temp. decreases the luminescence. Glasses contg. Pb, Sb, or Bi as atoms are luminescent. Most luminescent glasses belong to the third group, where conditions are comparable to those in solids. To this group belong glasses contg. rare earth metals. Variations of the chem. compn. of these glasses greatly affect their luminescence spectra. The luminescent compd. in U glasses is the uranyl ion UO_2^{++} . In silicate and borate glasses of the compn. $R_2O \cdot 3SiO_2$ and $R_2O \cdot 3B_2O_3$, where R = Li, Na, K, Rb, or Cs, the quantum efficiency increases from Li to Cs very considerably. This is attributed to the diminish-

ing action of the elec. field of heavier alkali ions on the uranyl ion. Increase of acidity favors uranyl-ion formation and increases the luminescence. In 3-component glasses of the type $R_2O \cdot RO \cdot 5SiO_2$, RO being replaced by alk. earth metals, increase of the at. wt. of the bivalent metal increases the uranate formation and decreases the luminescence. In phosphate glasses the weak luminescence is due to the quadrivalent state of U. Polarization of the luminescence in U glasses indicates the presence of orienting lattice forces. In Mn glasses luminescence is attributed to the Mn^{2+} . The difference in color (green in silicate, red in borate and phosphate glasses) is attributed to differences in the coordination number (4 and 6). Glasses show a shorter afterglow than do crystals.

S. Paksver

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM STV.03110

FROM BOWLING

FROM STV.03110

FROM BOWLING

1ST AND 2ND SERIES PROCESSES AND PROPERTIES INDEX NO. AND 4TH SERIES

CA 19

Lining for glass-melting pots. V. V. Vargin, V. P. Danilov, and Ts. A. Inffe. U.S.S.R. 65,774, Jan. 31, 1946. A mixt. of dry sand 60, hydrated $Al_2O_3 \cdot 2H_2O$, B_2O_3 , Ba carbonate or nitrate 2, and Na_2CO_3 2% is made into a thick slip and is applied on the inside of the pot. To insure good adherence with the walls of the pot, a layer of a mixt. of the slip and the fireclay of which the pot is made is applied before the slip. Starch paste is used as bonding agent for the slip. M. Huseh

Common Elements

Common Standards Index

ASD-31A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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19

CA

The influence of the iron content on the transparency of glasses to ultraviolet radiations. F. V. Bulbarinova and V. V. Vargin. *Doklady Akad. Nauk S.S.S.R.* 57, 171-3 (1947); *Chem. Zentr.* (Russian Zone Ed.) 1948, II, 997. Measurements were made with 4 types of glasses: B, Na B, Na Ba silicate, and Na B silicate. These were specially purified and then fused with small amts. of Fe (0.004-0.07%). The optical densities of the glasses for the Hg lines 313 and 284 m μ were measured by using a Hg arc spectrograph with Piche photometer. All 4 of the glasses showed a sharp increase in absorption for the line 284 m μ with increasing Fe content. They showed sharp differences, however, for the 313-m μ line. The absorption of the pure B glasses for this line was very sensitive to the increase in Fe content. The other 3 glasses showed only a very slight increase in absorption for this line with increasing Fe content. Thus in the production of glass transparent to ultraviolet 10 times as much Fe can be tolerated in silicate glasses as in pure B glasses. M. G. M.

USSR/Chemistry - Protective Coatings 21 Jun 52

"The Effect of Composition on Eliminating Transparency of Enamel by Titanium Dioxide," V. V. Vargin, V. Ya. Senderovich, Leningrad Technol Inst Imeni Lenolet

"Dok Ak Nauk SSSR" Vol LXXXIV, No 6, pp 1213-1216
Titanium dioxide is a new medium of high effectiveness which permits use of a single coat of enamel of only 0.1 mm thickness. Simple sodium silicates containing TiO2 crystallize with separation of TiO2 as crystals only if they contain little Na2O or SiO2. Only 20% TiO2 is required to give a transparency

223726

eliminating effect to these melts. Partial replacement of SiO2 or Na2O with boric anhydride, ZnO and especially Al2O3 increases the transparency eliminating power and causes the melt to crystallize with a lower TiO2 content. CaO and BaO reduce this power and cancel the effect of the above substances. Melts containing boric anhydride have high surface luster. The index of reflection of white enamels of this type, produced on an industrial scale and applied on steel, was 70 - 75%. Presented by Acad I. V. Grebenshchikov 7 Apr 52.

223726

VARGIN, V. V.

VARGIN, V. V.

USSR/Miscellaneous

Card 1/1 Pub. 104 - 4/10

Authors : Kachalov, N. N., Mem. Corresp. of the Acad. Sci. of the USSR; Vargin, V. V.,
Dr. Tech. Sci. and Prof.

Title : Early Russian glasses

Periodical : Stek. i ker. 11/12, 11-13, Dec 1954

Abstract : The prevailing idea that the making of glass in Russia dates from the year 1935 is challenged by excavations which reveal that the working in glass and the making of ornamental articles were already at a high level of development in the period from the 10th to the 12th centuries, particularly, in the City of Kiev. Samples of this ancient glassware were recently analyzed in the laboratory of the Leningrad Technological Institute and the results of the analysis are given. Two Russian references (1947 and 1948). Table.

Institution : ...

Submitted : ...

VARGIN, V. V.

USSR/ Chemistry - Chemical Technology

Card : 1/1

Authors : Kachalov, N. N., Memb. Corresp. of Acad. of Sc. USSR, and Vargin, V. V.

Title : Study of certain ancient Russian glass

Periodical : Dokl. AN SSSR, 96, Ed. 5, 1033 - 1036, June 1954

Abstract : Twenty seven excavated ancient glass specimens or samples of the X- XII centuries were investigated. The high chemical stability of these glass samples is attributed to their high alumina content and very high content of magnesium oxide. Some glass samples contained up to 25% calcium and magnesium oxides. The investigation tends to prove that a high-level glass industry existed already in pre-Mongolian Russia. Three references. Tables.

Institution :

Submitted : April 14, 1954

15-57-2-1778

A Study of the Crystallization of Titanium Oxide (Cont.)

complicated by the introduction of B_2O_3 , Al_2O_3 , ZnO , CaO , MgO , K_2O , and BaO . The introduction of K_2O , BaO , and CaO hindered the crystallization of TiO_2 . On the other hand, the introduction of ZnO , MgO , and, especially, B_2O_3 and Al_2O_3 favored this crystallization. Quoting sources from the literature, the authors show that, for a majority of natural silicates, the coordination number of titanium is six. It is possible that titanium with a coordination number of 4 is present in pyroxenes and amphiboles, where the element isomorphously replaces silicon. It is suggested that titanium in glasses may be found with coordination numbers of both four and six. The ease of separating rutile from enamel that contains Mg and Zn indicates that the TiO_2 has not undergone any fundamental change in the enamel, i.e., the titanium preserves its coordination number of six without change. When the melt contains Mg, Zn, and, especially, B, i.e., substances that have a strong R-O bond of sufficient magnitude and which tend to increase the coordination number, titanium oxide begins to crystallize with smaller amounts of it in the melt.

N. N. K.

Card 2/2

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001858620008-3

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001858620008-3"

VARGIN, V. V.

USSR/ Chemistry - Chemical technology

Card 1/1 Pub. 22 - 28/46

Authors : Vargin, V. V.

Title : Color characteristics of titanium glass

Periodical : Dok. AN SSSR 103/1, 105-106, Jul. 1, 1955

Abstract : Two series of glass founding were carried out to establish the causes for the coloration of Ti-containing glass. Results indicate that glasses containing no Ti, into the batches of which no Fe was added, are practically colorless. It is recommended that industrial manufacture of Ti containing glass should be realized from raw materials possibly free of any Fe contents and that the founding should be carried out under oxidizing conditions. Six references: 3 USSR, 2 Germ. and 1 USA (1927-1953). Table; graph.

Institution :

Presented by : Academician A. N. Terenin, March 28, 1955

VARGH, V. V., IS USSR

"Titanium Dioxide in Glass (Phase Diagram and Properties of Titanium Glasses)," a paper submitted at the 4th International Congress on International Commission on Glass, Paris, 2-6 Jul 56.

VARGIN, V. V., and VEINBERG, T. I., AS USSR

"The Quantitative Estimation of the Influence of Colouring Impurities on the Light Absorption in Glass," a paper submitted at the 4th International Congress of International Commission on Glass, Paris, 2-6 Jul 56.

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001858620008-3

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001858620008-3"

VARGIN, V. V.

USSR / Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31496

Author : Vargin V.V., Antonova Ye. A.

Title : Electric Conductivity of Crystallized Silicate
Glasses

Orig Pub: Zh. prikl. khimii, 1956, 29, No 11, 1749-1753

Abstract: A determination was made of the electric resistance of sodium-silicate glass (G), titanium - containing silicate glasses and fluoride G, before and after their crystallization. In most cases the electric conductivity of crystallized G is determined by the composition of residual vitreous phase. Under specific conditions melts

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USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31496

were obtained which contained large crystals of TiO_2 and partially reduced TiO_2 . In the case of these melts the electric conductivity is higher than that of the assumed vitreous phase, which can be utilized to prepare G, having a low resistance.

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"APPROVED FOR RELEASE: 08/09/2001

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APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001858620008-3"

MARGIN, V.V., professor; KR. SOTAINA, N.I.

Causes of cracks in superposed milk glass products. Stek. i ker.
14 no. 7: 2-11 JI '57. (MIRA 10: 2)
(Glass--Testing) (Glass manufacture--Chemistry)

VARGIN, V.V.; ANTONOVA, Ye.A.

Electrical conductivity of crystallized silicate glasses. Zhur.
prikl. khim. 29 no.11:1749-1753 J1 '57. (MLRA 10:9)
(Glass--Electric properties)

15(2)

PHASE I BOOK EXPLOITATION

SOV/2071

Vargin, V. V., Ye. A. Antonova, L. L. Gutorova, Ye. I. Litvinova, V. V. Luchinskiy, Yu. V. Mazurek, V. Ya. Senderovich, and M. V. Serebryakova

Tekhnologiya emali i emalirovaniya metallov (Technology of Enamel and Enameling of Metals) Moscow, Gosstroyizdat, 1958. 397 p. Errata slip inserted. 5,000 copies printed.

Reviewers: G. I. Belyayev, Chief (Dnepropetrovsk Chemical and Technological Institute, Division of Silicate Technology), Candidate of Technical Sciences, Docent, and V. P. Vaulin, Candidate of Technical Sciences; Ed.: V. V. Vargin, Doctor of Technical Sciences;

Ed. of Publishing House: N. A. Gomozova; Tech. Eds: E. M. El'kina, and L. Ya. Medvedev.

PURPOSE: This book is intended for students of technological institutes and may also be useful to engineers and technicians.

Card 1/~~2~~₃

Technology of Enamel and Enameling of Metals

SOV/2071

COVERAGE: In this book the physicochemical, mechanical, thermal, optical, chemical, and electrical properties of enamels and enamel coating are described. General information on raw materials, classification and calculation of enamel compositions and processing methods is given. This book is for the most part a collective effort of faculty members of the Glass Department, Leningradskiy tekhnologicheskoy institute imeni Lensovet (Leningrad Technological Institute imeni Lensovet). Chapters I, X and XV, and the section Adherence of Enamel to Metal in Chapter III were written by M. V. Serebryakova; Chapters II and III by Ye.A. Antonova, Candidate of Technical Sciences; Chapter IV by V. Ya. Senderovich, Candidate of Technical Sciences; Chapter V and the section Chemical Stability in Chapter III by Professor V. V. Vargin; Chapter VI by Yu. V. Mazurek, Candidate of Technical Sciences; Chapters VII and XVI by Ye. I. Litvinova; Chapters VIII and IX and the section Stress in an Enamel Layer in Chapter III by Engineer V. V. Luchinskiy, and Chapters XVII, XVIII, XIX, and the section Baseless Enamel Coating in Chapter XII by Senior Scientific Worker L. L. Gutorova. Ye. V. Kuklin, V. Ya. Lokshin, N. N. Kholodilin, K. P. Azanov, K. K. Tikhomivov, and V. P. Vaulin are mentioned as having contributed to the development of the Soviet enamel industry. The uses of enamel coatings for protection against corrosion, electric insulation,

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Technology of Enamel and Enameling of Metals

SOV/2071

and for combustion chambers and other parts of jet engines are treated briefly in the introduction. Basic research on enamel is being conducted at Leningrad Technological Institute; Novoche~~r~~erk~~a~~sskiy politekhnicheskii institut imeni S. Ordzhani~~k~~idze (Novoche~~r~~erk~~a~~ssk Polytechnical Institute imeni S. Ordzhani~~k~~idze), Khar'kovskiy politekhnicheskii institut imeni Lenina (Khar'kov Polytechnical Institute imeni Lenin), Dnepropetrovskiy khimiko-technologicheskii institut (Dnepropetrovsk Institute of Chemical Technology), Khar'kov Branch Nauchno-issledovatel'skiy institut khimicheskogo mashinostroyeniya (Scientific Research Institute of Chemical Machinery) and others. There are 9 references; 5 Soviet, 3 German and 1 English.

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Introduction

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PART I. PHYSICOCHEMICAL PROPERTIES OF ENAMEL AND ENAMEL COATING

Card 3/9

VARGIN, V.V., prof.

Producing chemical and heat-resistant enamels. Khim. nauka i prom.
3 no.1:76-82 '58. (MIRA 11:3)

(Enamel and enameling)

AUTHORS: Vargin, V. V., Veynberg, T. I. 72-58 5-8/18

TITLE: The Effect of Contaminating Additions on the Light
Absorption and Color of Glasses (Vliyaniye zagryaznyayushchikh
primesey na svetopogloshcheniye i okrashennost' stekol)

PERIODICAL: Steklo i Keramika, 1958, Vol. 15, Nr 5, pp 25-29 (USSR)

ABSTRACT: Color and light absorption of glasses are dependent on the addition of coloring metals which are introduced by the charge as well as by the products of the corrosion of refractories. In order to investigate the possibility of reducing the light absorption of industrial types of glass it is necessary to find out the composition of the contaminating additions and their sources. For this purpose the method of the analysis of the curves of spectral absorption was used. The concentrations of the coloring matter can be determined by means of a mentioned scheme of formulae when some conditions are met. Investigations showed that in spectrophotometric glass analyses only the following 6 color additions may be expected: Fe_2O_3 , FeO , Cr_2O_3 , $V_2O_5 + VO_2$, H_2O and CoO . In figure 1 the curves of the coefficients of the specific absorption of the

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The Effect of Contaminating Additions on the Light Absorption and Color of Glasses 72-58 5-8/18

six mentioned coloring oxides are listed and then described in detail and explained. In figure 2 the curve of the optical density of a boron silicate type of glass is shown. The concentration of the coloring oxides, the light absorption of each of them and their share in total light absorption are shown on table 1. On table 2 the coefficients of the specific absorption of the six coloring oxides in the glasses of the "Avtosteklo" factory are mentioned and on table 3 the same values for lead-potassium glasses which correspond to crystal glass. The distribution of the absorption between the coloring oxides in the calcareous sodium window glass of the "Avtosteklo" factory is shown in figure 3, and on table 4 the concentration of the coloring oxides, of light absorption and its share in it is found. In this investigation the charge materials were found to be the main source of contamination. Analyses of some sand types, of the Armavir potash and the Chasov Yar clay are carried out in collaboration with I. S. vorova, Engineer (ref. 2). The results of the analysis of a potash charge produced from vegetable ashes are shown in figure 4 and on table 5. As can be seen from the above, a number of practical problems can be solved by

Card 2/3

The Effect of Contaminating Additions on the Light
Absorption and Color of Glasses

72-58-5-3/18

means of the method of spectrophotometric glass analysis;
this can be taken to promote the increase of the transparency
and the reduction of the color of industrial types of glass.
There are 4 figures, 5 tables and 4 references, 1 of which
is Soviet.

AVAILABLE: Library of Congress

1. Glass--Absorption
2. Glass--Color
3. Glass--Contamination
4. Glass--Test methods
5. Spectrophotometers--Applications

Card 3/3

AUTHORS: Vargin, V.V., Podushko, Ye.V.

72-58-6-6/19

TITLE: The Melting of Glass in a High-Frequency Electric Field
(Verka stekla v elektricheskom pole vysokoy chastoty)

PERIODICAL: Steklo i Keramika, 1958, Vol. 15, Nr 6, pp. 16-19 (USSR)

ABSTRACT: The melting of glass by means of a high-frequency electric current can be carried out in crucibles of any shape; the glass mass does not come into contact with the electrodes, which improves the quality of production and simplifies the construction of furnaces. There are two methods of using high frequencies for the purpose of melting glass: the method of the electric field and that of the magnetic field. For the method of the electric field a frequency of 20-25 kc will be sufficient, and melting can be carried out at room temperature without any preheating. For the method of the magnetic field additional furnaces with an additional equipment for preheating the layer is necessary, which renders this method less valuable. The idea of melting glass by the method of the electric field was first developed in the USSR by A.V.Makarov, who, in 1941, succeeded in obtaining glass by means of a high-frequency system of 10 kv and 75 kc frequency in a crucible having a cubic capacity of 100 cm³. Two apparatus of this type, UVCh-80 and

Card 1/2

The Melting of Glass in a High-Frequency Electric Field

72-58-6-6/19

UVCh-200, are at present in operation in the USSR; their power output is 80 and 200 kW respectively. Fig. 1 shows the apparatus UVCh-80, which is also described. A double quartz crucible with interspace, filled up with crushed fire clay was found to be the most suited. Fig. 2 shows the cooling of the plates by means of a spiral tube which is soldered on. Control of the smelting process can be carried out according to efficiency and temperature. In the high-frequency systems a number of multicolored as well as of optical types of glass, and of such as are particularly difficult to smelt was smelted, the temperature attained amounting to up to 1800°. By the smelting method of the electric field it is possible to obtain glass with a very low degree of light absorption. In the case of smelting carried out in an electric field the crucible is less liable to become corroded than in a reverberatory furnace. The entire process of glass smelting takes place in an atmosphere of oxidation, which fact exercises a favorable effect upon light absorption. The degree of efficiency of these plants is considerably higher than that of reverberatory furnaces, and the quality of glass is partly better. These systems can be used with good success both in production and in experiments. There are 2 figures, and 1 reference, 0 of which is Soviet.

Card 2/2

1. Glass--Melting
2. High frequency currents--Thermal effects

15(2)

AUTHOR:

Vargin, V.V.

SOV/72-58-12-22/23

TITLE:

Conference on Enamels and Metal Enameling
(Soveshchaniye po emalyam i emalirovaniyu metallov)

PERIODICAL:

Steklo i keramika, 1958, Nr 12, pp 47-48 (USSR)

ABSTRACT:

The organizers of the conference were: Leningradskoye oblastnoye nauchno-tekhnicheskoye obshchestvo promyshlennosti stroitel'nykh materialov (Leningrad Oblast Scientific and Technical Society of the Industry of Building Materials); Leningradskiy sovnarkhoz (Leningrad Council of National Economy) and Leningradskiy tekhnologicheskii institut imeni Lensovet (LTI) (Leningrad Technological Institute imeni Lensovet (LTI)). The program of the conference included: the most important problems of enamel synthesis, enameling of metal products and industrial apparatus. About 250 experts took part in the conference: representatives from works in the UkrSSR, Ural, Novosibirsk, Ulan-Ude, Kuznetsk, Dzerzhinsk, as well as functionaries of the universities, of the scientific research and design institutes in Leningrad, Moscow, Novocherkassk, Dnepropetrovsk, Sverdlovsk, Riga, Khar'kov, and other towns. More than 40 reports were given and discussed. Professor K.S. Yevstrop'yev, director of the LTI imeni Lensovet, in his opening speech stressed the great economic importance of the problem of enameling

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Conference on Enamels and Metal Enameling

SOV/72-58-12-22/23

metal products and apparatus.

Besides, the following lectures were given:

V.V. Vargin (LTI imeni Lensovet) reported on the development in the enameling industry.

K.P. Azarov, S.I. Goncharov, Novocherkasskiy politekhnicheskiy institut (Novocherkassk Polytechnical Institute), reported on mechanization in the manufacture of enameled products.

V.P. Vaulin (Giprosteklo) spoke on mechanization in the manufacture of sanitary-technical products.

Ye.I. Litvinova (LTI imeni Lensovet) reported on the influence of metal quality on the formation of "fish-scales" in enameling.

A.A. Appen, Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry of the AS USSR), spoke on the present stage of the problems of calculating the properties of glass and enamels according to their composition.

M.V. Serebryakova (LTI imeni Lensovet) gave a survey of foreign literature on enamels and metal enameling.

M.N. Lifshits, Nauchno-issledovatel'skiy institut sanitarnoy tekhniki (Scientific Research Institute of Sanitary Engineering) reported on the enameling of products in the electric field of a corona discharge.

I.G. Petrunya, Luganskiy zavod imeni Artema (Luganskiy ~~W~~Artema)

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Conference on Enamels and Metal Enameling

SOV/72-58-12-22/23

spoke of new types of enameled steel products made in this factory. Yu.P. Nikitin, Ural'skiy politekhnicheskiy institut (Ural'skiy Polytechnical Institute) reported on the character of interaction between metals and melted enamels.

N.S. Smirnov, Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov (Ural'skiy Scientific Research Institute of Ferrous Metals) reported on the influence of the condition of the steel surface on the formation of the enamel coat.

A.I. Borisenko, Institute of Silicate Chemistry of the AS USSR, spoke on the new method of obtaining thin silicate coats of semi-colloid solutions.

Ye.N. Podkletnov spoke on a new enameling method with heating of the products by high-frequency currents.

P.A. Rozhdestvenskiy, Lys'venskiy metallurgicheskiy zavod (Lys'venskiy Metallurgic Works) gave informations on new enamels used by the factory.

T.I. Polyubash, Novosibirskiy metallurgicheskiy zavod (Novosibirskiy Metallurgic Works) reported on the dependence of the moistening angle and the enamel deliquescence on the correlation of boric and non-boric silts.

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Conference on Enamels and Metal Enameling

SOV/72-58-12-22/23

P.G. Pauksh, Latvyskiy gosudarstvennyy universitet (Latvian State University) reported on the investigation of fritted prime enamels for coating cast iron.

V.Ya. Lokshin, Scientific Research Institute of Sanitary Engineering, spoke on the influence of chemical composition on some properties of easily fusible powder enamels.

By the LTI imeni Lensovet the following reports were given:

L.L. Gutorova on prime-less steel and aluminum enameling.

M.V. Serebryakova on non-plumbic silicate enamels for aluminum.

G.A. Kudryavtseva on slightly colored antimony enamels.

Yu.V. Mazurek on the investigation of a systematic series of oxides for obtaining blue and brown pigments.

The Novochoerkassk Polytechnical Institute gave the following reports:

K.P. Azarov on new methods of enamel testing, and on the influence of iron oxide on the physico-chemical properties of the prime coat.

V.G. Zerin on the importance of the gas phase in the burning process of the prime coat.

Ye.M. Chistova on phosphate enamels.

Ye.I. Podroykina on prime-less coats.

Collaborators of the Dnepropetrovsk Chemical-Technological Institute reported:

G.I. Belyayev on the acid content and basicity of enamels, and on

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Conference on Enamels and Metal Enameling

SOV/72-58-12-22/23

the influence of the composition on some properties of prime enamels. Yu.D. Barinov on the damping of enamels by antimony.

L.V. Purin, Leningradskiy khimiko-pishchevoy kombinat (Leningrad Chemical Foodstuff Kombinat) and S.I. Solyanik (NIIKhIMMASH) on the experiment of manufacturing enameled chemical apparatus of steel.

A.M. Semenova spoke on the causes of blistering of prime enamels at the Zaporozhskiy "Metiznyy" zavod (Zaporozh'ye "Metiznyy" Works) and the methods of preventing this fault.

V.I. Savchenko, Luganskiy Works imeni Artem, reported on the successful application of vibration grinding for crushing sand and non-boric enamel layers, as well as on the experiment of using white titanium enamels.

V.G. Zuyev reported on the improvement in the burning technology of enamel coats in connection with the change-over of furnaces to gas, as well as on prospects of muffle-less burning.

V.A. Oborin reported on the work of the design office of the enamel manufacture at the Lys'venskiy Metallurgic Works.

D.I. Yegorov, representative of the State Office for Planned Economy, on the planned production volume for the next years, as well as on the standard specifications of borax consumption provided.

Card 5/6

Conference on Enamels and Metal Enameling

SOV/72-58-12-22/23

The members of the conference passed resolutions for obtaining an improvement in the quality of enameled products, as well as for increasing their production and creating a new technology and new production methods.

Card 6/6

VARGIN, V.V.; KIND, N.Ye.

Glass pots made of opaque fused quartz. Opt.-mekh.prom. 25 no.6:50-51
Je '58. (MIRA 11:10)
(Glass manufacture--Equipment and supplies) (Quartz)

30V/61-59-15-51170

Translation From: Referativnyy Zhurnal. Khimiya, 1959, Nr 15, p 323 (USSR)

AUTHOR: Vargin, V.V., Antonova, Ye.A.

TITLE: Electrical Properties of Glasses Containing Titanium Dioxide

PERIODICAL: Zh. Leningr. tekhnol. in-ta im. Lensoveta, 1958, Nr 49, pp 55 - 53

ABSTRACT: The specific volume electric resistance (ER) has been investigated in the interval of $10^3 - 10^6$ °C, as well as the dielectric losses (DL) and the dielectric permeability (ϵ) at room temperature and 10^5 cycles for approximately 50 glasses. The glasses belonged to the $\text{Na}_2\text{O}-\text{TiO}_2-\text{SiO}_2$ system with a SiO_2 content of 70 - 90 weight %, TiO_2 (-33%) and Na_2O 1 - 10%. The glasses were molten in chamotte crucibles at a temperature of $1,200 - 1,500$ °C in an oxidizing medium (3% Na_2O was introduced in the form of NaNO_3) and were carefully burnt. The temperature dependence of ER obeys the exponential law. An increase in the Na_2O content reduces the temperature coefficient of ER. The substitution of SiO_2 by TiO_2 at a Na_2O content of up to 25% increases somewhat ER and reduces DL, which at a high Na_2O content, does not practically manifest itself in the properties of the glasses. At a substitution of SiO_2 by Na_2O the ER of

Cont. /3

Electrical Properties of Glasses Containing Titanium Dioxide (KV/2-3/15-3-11)

titanium dioxide glasses decreases, but ϵ rises approximately in the same degree as in silicate glasses. The substitution of Na_2O by TiO_2 considerably increases R and reduces E_g . For all glasses ϵ grows with an increase in the Na_2O and TiO_2 content and E_g drops sharply with an increase in the frequency. The obtained data support the introduction of TiO_2 into the compositions of electrotechnical glasses.

Yu. Shmidt ✓

c 10 2/2

VARGIN, V.V.; ANTONOVA, Ye.A.

Electric properties of crystallized silicate glasses. Trudy
LTI no.49:64-73 '58. (MIRA 15:5)
(Glass--Electric properties)

VARGIN, V.V.; KRASOTKINA, N.I.

Investigation of the crystalline phases of fluorine
containing sodium calcium silicate glasses. Trudy LTI
no.49:113-118 '58. (MIRA 15:5)
(Glass)

VARGIN, V.V.; SENDEROVICH, V.Ya.; KUDRYAVTSEVA, G.A.

Comparative characteristics of some titanium enamels.
Trudy LTI no.49:122-132 '58. (MIRA 15:5)
(Enamel and enameling)
(Titanium)

VARGIN, V.V.; SEREBRYAKOVA, M.V.

Silicate leadless enamels for aluminum. Trudy LTI no.49:133-148
'58. (MIRA 15:5)

(Enamel and enameling)
(Aluminum)

15 (2)

AUTHORS:

Vargin, V. V., Aslanova, M. S.

SOV/72-59-12-16/19

TITLE:

The Fifth International Congress on Glass

PERIODICAL:

Steklo i keramika, 1959, Nr 12, pp 42-43 (USSR)

ABSTRACT:

This Congress was held in Summer of 1959 in Munich. 600 delegates of 30 countries including USSR participated in it and dealt with the following problems in their reports: Control of quality of glass; investigation of melt- and finishing processes; mechanical properties and behavior of glass; corrosion of refractories and glass flows in glass melting furnaces; the physics and chemistry of glass; structure of glass; diathermancy of glass. Further reports of a Dutch delegate as well as of Americans are briefly mentioned. Professor A. A. Appen (USSR) reported on "Alumino-boron anomaly of some properties of silicate glasses". M. A. Bezborodov (USSR) dealt with "the method of recognizing cords and nonvitreous inclusions in glass". 17 reports on history, technology, design and use of glass were delivered at the Congress. Soviet delegates participated in discussions with delegates of the USA, the German Federal Republic and France concerning the

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The Fifth International Congress on Glass

SOV/72-59-12-16/19

resistance of glass¹ and glass fiber¹⁵ and the properties of
glasses and enamels. ✓

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Card 17/22			

15.2120

1142, 3109, 3309

23349 3/058/61/000/005/03/063
AD0174101AUTHORS: Vargin, V.V., Veynberg, T.I.

TITLE: Color of glasses in connection with their structure

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1961, 224, abstract 6D273 (V sb. "Steklocbrazn. sostoyaniye", Moscow-Leningrad, AN SSSR, 1960, 372 - 377, Discus. 377 - 379)

TEXT: The authors investigated absorption spectra of Co^{2+} in alkali aluminophosphate and alkali zinc-phosphate glasses and Ni^{2+} in potassium lead silicate glasses. It was found out that coordination equilibria of Co^{2+} ions reflect the coordination state of ions of Zn^{2+} and Al^{3+} in phosphate glasses. On the basis of the investigation conducted, the authors arrive at the conclusion that ions of Al^{3+} and Zn^{2+} in metaphosphates of Al and Zn are mainly in the quadruple coordination. It was found out that coordination equilibrium of Ni^{2+} ions in silicate lead glasses is mainly due to the ratio of alkaline oxide to PbO . At the value of this ratio being equal to 1, the whole content of Ni in glass is in the quadruple coordination. There are 17 references.

T. Veynberg

[Abstracter's note: Complete translation]

Card 1/1

PORAY-KOSHITS, Ye.A., doktor fiz.-matem.nauk, red.; AVGUSTINIK, A.I., red.;
BARZAKOVSKIY, V.P., red.; BEZBORODOV, M.A., red.; BOFVININ, O.K.,
red.; VARGIN, V.V., red.; VLASOV, A.G., red.; YEVSTROP'YEV, K.S.,
red.; LEBEDEV, A.A., akademik, red.; MATVEYEV, M.A., red.; MOLCHANOV,
V.S., red.; MYULLER, R.L., doktor tekhn.nauk, red.; TOROPOV, N.A.,
red.; FLORINSKAYA, V.A., red.; YAKHKIND, A.K., red.; SUVOROV, I.V.,
red.izd-va; BOCHEVER, V.T., tekhn.red.

[Vitreous state; transactions of the Third All Union Conference on
the vitreous state] Stekloobraznoe sostoianie; trudy Vsesoiuznogo
soveshchaniia po stekloobraznomu sostoianiiu. Moskva, Izd-vo Akad.
nauk SSSR, 1960. 534 p. (MIRA 13:10)

1. Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 3d,
Leningrad, 1959.

(Glass--Congresses)

15 (2)

AUTHORS:

Vargin, V. V., Professor, Doctor of
Technical Sciences, Osadchaya, G. A.S/072/60/000/02/007/021
B015/B003

TITLE:

Cerium Dioxide as a Clarifying and Decolorizing Agent of Glass

PERIODICAL:

Steklo i keramika, 1960, Nr 2, pp 22 - 26 (USSR)

ABSTRACT:

In order to investigate thoroughly the decolorizing effect of cerium dioxide, the authors studied the absorption-spectrum curves of glasses. At the same time also the clarifying effect of cerium was investigated. Further, papers by V. V. Pollyak, R. I. Grichanskaya, P. A. Stabrovskaya, K. T. Bondarev, and ~~M. A. Dabrovskiy~~ were mentioned in ~~the~~ of glass decolorization by means of cerium dioxide. For their investigation the authors chose glasses of the types Nr 23 and 10 the composition of which is given in table 1. Results are indicated in table 2 and figures 1 and 2. The absorption spectra were recorded by a photoelectric Beckmann spectrophotometer. Figure 3 shows the distribution of the optical density in the spectrum of glass Nr 10, and figure 4 indicates the relative content of ferrous oxide in glasses which were molten by the addition of various decolorizing agents.

Card 1/2

Cerium Dioxide as a Clarifying and Decolorizing
Agent of Glass

S/072/60/000/02/007/021
B015/E003

In conclusion, the authors state that cerium dioxide in pure state and in the form of "Polyrit" is considered a good clarifying agent of glass and is not inferior to arsenic trioxide. Cerium dioxide is mentioned as the best-known chemical decolorizing agent of glass, which transforms up to 99% of iron in glasses into Fe_2O_3 . The amount of CeO_2 necessary for clarifying and decolorizing glass fluctuates between 0.15% and 0.40% (in the case of "Polyrit", 0.30 - 0.80%) and depends on melting conditions, glass composition, and its content of iron oxides. There are 4 figures, 2 tables, and 3 references, 1 of which is Soviet. ✓

Card 2/2

S/072/60/000/010/003/004
B021/B058

AUTHORS: Vargin, V. V., Gutorova, L. L.

TITLE: Glasses of the System $\text{Na}_2\text{O} - \text{TiO}_2 - \text{SiO}_2$ as Basis of Enamels
for Aluminum ¹⁷

PERIODICAL: Steklo i keramika, 1960, No. 10, pp. 22 - 25

TEXT: The authors worked out lead enamels for aluminum, which met all requirements. Leadless enamels should, however, be preferred because of the deleterious action of lead compounds. V. V. Vargin and M.V.Serebryakova also worked in this field. The present paper deals with further investigations of leadless, thinly liquid silica glasses and the preparation of high-quality industrial enamels for aluminum. Titanium dioxide reduces the viscosity, increases the resistance against water and acid and increases the light refraction and reflection. For their experiments, the authors melted a number of glasses of the composition $\text{Na}_2\text{O} \cdot 2(\text{SiO}_2 + \text{TiO}_2)$ and with varying TiO_2 content. A. V. Senderovich, Candidate for Diploma, and A. F. Kurbatova, Laboratory Assistant, participated in these
Card 1/3

Glasses of the System $\text{Na}_2\text{O} - \text{TiO}_2 - \text{SiO}_2$ as
Basis of Enamels for Aluminum

S/072/60/000/010/003/004
B021/B058

experiments. The fusibility was determined by the method of the Chair for Glass of the Leningradskiy tekhnologicheskii institut imeni Lensovet (Leningrad Technological Institute imeni Lensovet) (Fig. 1). Glass No. 13 was synthetically produced on the basis of the results. At a temperature of 570°C , it has a good flow on aluminum and has a sufficient resistance against water, acetic acid (4%) and citric acid (10%). The results of the determination of chemical stability and the fusibility of the glasses are shown in Figs. 2 and 3. Enamel compositions for aluminum were worked out on this basis for the practice, and they are tabulated as follows:

Oxide	Percent by weight	Molecular percent
SiO_2	36.6	38.0
TiO_2	24.7	19.3
B_2O_3	4.0	3.5
Na_2O	30.7	30.8
Li_2O	4.0	8.4

The introduction of lithium oxide and boric anhydride in limited

Card 2/3

Glasses of the System $\text{Na}_2\text{O} - \text{TiO}_2 - \text{SiO}_2$ as
Basis of Enamels for Aluminum

S/072/60/000/010/003/004
B021/B058

quantities improved the fusibility and did not affect the chemical stability. A partial replacement of Na_2O with K_2O (up to 20 mol percent) increased the fusibility, but had a deleterious effect on the water and acid resistance. The opaque appearance of the enamel was improved by the replacement of a small quantity of TiO_2 with Al_2O_3 , although this resulted once again in a decrease of chemical resistance. There are 3 figures, 1 table, and 4 references: 3 Soviet. ✓

Card 3/3

0/000/60/033/012/002/024
7200/D305

AUTHORS: Vargin, V.V., and Tsekhomskaya, T.S.

TITLE: Metaphosphates in low temperature enamels

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960,
2633-2637

TEXT: In the present work the authors studied glasses with a high P_2O_5 content, corresponding to the metaphosphate composition, in order to produce low temperature enamels for aluminum and aluminum-base alloys. The glasses were prepared by fusion of technically pure materials at 1000 - 1300°C depending on the glass composition. Basic oxides were introduced into the charge as carbonates, aluminum oxide as the hydroxide, ZnO and PbO as the oxides and P_2O_5 as orthophosphoric acid. After 1 - 3 hrs. firing the melts were cast onto steel plates and cooled in air. The plates thus prepared were then tested for chemical resistance to water and for their fusibi-
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D209/D305

Metaphosphates in low ...

lity since those two properties determine the character of the enamels. The fusibility was determined in terms of temperature at which glass powder - water mixtures gave smooth flowing melts. Amongst those tested were glasses containing 20 % less and 20 % more of P_2O_5 as compared with the metaphosphate. Almost all glasses with P_2O_5 deficiency tended to crystallize while those with P_2O_5 excess, although they did not crystallize, exhibited low chemical resistance. Chemical analysis has shown that in glasses with a P_2O_5 content exceeding that of metaphosphates, the phosphoric anhydride vaporized at a rate proportional to the temperature. All those glasses were unstable when fixed on the metal and caused foaming of enamels. It was found that simple metaphosphates, excluding lead metaphosphate, do not form glasses suitable for use in low melting enamels. On the other hand glasses containing two or three metaphosphates (e.g. aluminum and alkali metal metaphosphates) and especially systems containing metaphosphates of Li, Na, Al; Na, Ba, Al, and Na, Zn, Al give enamels of exceptional chemical stabi-

Card 2/3

Metaphosphates in low ...

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D209/D305

lity. The content of alkali metal metaphosphate should not, however, exceed 50 % and that of aluminum metaphosphate should not be less than 40 - 50 %. Chemical stability or fusibility of glasses based on metaphosphates may be improved by adding small quantities of B_2O_3 , TiO_2 and NaF. The metaphosphate-base enamels for aluminum are more stable to water action than silicate enamels. There are 2 tables, 1 figure and 9 references: 2 Soviet-bloc and 7 non-Soviet-bloc. The references to the English-language publications read as follows: W.A. Weyl, N.I. Kreidl, J. Am. Cer. Soc., 24, 11, 372, 1941; L.R. Blair, M.D. Beals, J. Am. Cer. Soc., 34, 110, 1951; USP 2,866,713 30.12.58; and B.K. Niklewski, R.H. Ashby, Sheet Met. Ind., 29, 1037 1952. ✓

SUBMITTED: June 8, 1960

Card 3/3

VARGIN, V V

PHASE I BOOK EXPLOITATION

SOV/5583

Podkletnov, Ye. N., Stalin Prize Winner, ed.

Emal' i protsessy emalirovaniya (Enamels and Enameling Processes) Moscow, Mashgiz, 1961. 113 p. 4,000 copies printed.

Sponsoring Agency: Gosudarstvennyy nauchno-tehnicheskiy komitet Soveta Ministrov UkrSSR. Institut tekhnicheskoy informatsii.

Ed.: N. P. Onishchenko; Tech. Ed.: M. S. Gornostaypol'skaya; Chief Ed.: Mashgiz (Southern Dept.): V.K. Serdyuk, Engineer.

PURPOSE: This book is intended for engineering and technical personnel concerned with the research, production, and uses of enamel.

COVERAGE: This collection of articles on enamels and enameling processes is based on material presented at the first Ukraine-wide conference on the production of enamel and enameled equipment, organized by the State Scientific Technical Committee of the Ukrainian SSR, the Kiyev Sovnarkhoz, Chemical

Card 1/4

Enamels and Enameling Processes

SOV/5583

Society imeni Mendeleev, Scientific Technical Society of the Machine-Building Industry, and other sovnarkhozes, scientific research institutes, and planning organizations. [The name, place, and date of the conference are not given.] The following are discussed: old and new types of enamels, their composition, properties, uses, and methods of production; the production of enameled equipment (chemical apparatus, pipes, cisterns, etc.), and their use in the coal, chemical, food, and other industries; latest advances in the mechanization of enameling processes and techniques; the effect of underlying surfaces on the quality of enamel coatings; and methods of modifying the properties of enamel coatings, e.g., increasing their chemical stability. American and Chinese practices and production are also briefly discussed. No personalities are mentioned. There are 32 references: 22 Soviet, 7 English, and 3 German.

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AVAILABLE: Library of Congress

Card 4/4

JA /dfk/mas
10-6-61

KITAYGORODSKIY, I.I., doktor tekhn. nauk, prof.; KACHALOV, N.N., prof.;
VARGIN, V.V., doktor tekhn. nauk, prof.; YEVSTROP'YEV, K.S.,
doktor tekhn. nauk, prof.; GINZBURG, D.B., doktor tekhn. nauk,
prof.; ASLANOVA, M.S., doktor tekhn. nauk, prof.; GURFINKEL', I.Ye.,
inzh.; ZAK, A.P., kand. tekhn. nauk; KOTLYAR, A.Ye., inzh.; PAVLUSH-
KIN, N.M., doktor tekhn. nauk, prof.; Sentyurin, G.G., kand. tekhn.
nauk; SIL'VESTROVICH, S.I., kand. tekhn. nauk, dots.; SOLINOV, F.G.,
kand. tekhn. nauk; SOLOMIN, N.V., doktor tekhn. nauk, prof.; TEMKIN,
B.S., kand. tekhn. nauk; GLADYSHEVA, S.A., red. izd-va; TEMKINA, Ye.L.,
tekhn. red.

[Glass technology] Tekhnologiya stekla. Izd.3., perer. Moskva, Gos.
izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 622 p.
(MIRA 14:10)

1. Chlen-korrespondent AN SSSR (for Kachalov).
(Glass manufacture)

25398

S/080/61/034/002/020/025

A057/A129

15 2670

AUTHORS: Vargin, V.V., Yakovleva, K.A.

TITLE: On the effect of water and acid on vitreous sodium aluminosilicates

PERIODICAL: Zhurnal Prikladnoy Khimii, v 34, no 2, 1961, 446-447

TEXT: Destructibility of sodium aluminosilicate glasses with a ratio of $Al_2O_3/Na_2O > 1$ was investigated in water and aqueous hydrochloric acid solutions. Vitreous alkali aluminosilicates are used in the production of various technical glasses. Recently properties of these glasses were studied, but only glasses with a ratio of $Al_2O_3/Na_2O \leq 1$ were investigated. On the other hand a wider change in Al_2O_3 content should demonstrate some interesting properties, since the coordination number and the position of aluminum in the glass structure should change at a ratio of $Al_2O_3/R_2O > 1$. I.O. Isard (Ref 5: J.Soc. Glass Technol., 43 (211), 113-T (1959)) de-

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25398

S/090/61/034/002/020/025
A057/A:29

On the effect of water and acid ...

monstrated that activation energy and specific resistance of sodium aluminosilicate glasses have a sharp minimum at the ratio of $\text{Al}_2\text{O}_3/\text{Na}_2\text{O} = 1$. In the present experiments glasses with the following composition were used: 13% Na_2O , 87% ($\text{SiO}_2 + \text{Al}_2\text{O}_3$) with a ratio of $\text{Al}_2\text{O}_3/\text{Na}_2\text{O}$ up to 3 (39% Al_2O_3).

Glasses with higher Al_2O_3 content could not be obtained because of the high crystallizability. Chemical stability was determined with glass powder samples (sieved through 62-144 openings/ cm^2) by boiling the samples for 100 hrs in water or for 4 hrs in 20% hydrochloric acid and measuring the loss in weight of the sample. It can be seen from the obtained results (Tab., Fig.) that the high destructibility of vitreous sodium silicate decreases sharply already with small Al_2O_3 admixtures. The minimum is at about 3-5% Al_2O_3 . The sharp decrease in glass stability in the acid solution above 13% Al_2O_3 can be explained only by alteration of the coordination number of alumina from 4 to 6. Aluminum with coordination number 6 modifies the glass lattice and can be easily leached out by the acid, while aluminum with the coordination number 4 is firmly fixed in the lattice. This effect is not observed in water, since water dissolves

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On the effect of water and acid ...

25398
S/080/61/034/002/020/025
A057/A129

principally alkalis, while Al_2O_3 is not soluble. Besides, Al_2O_3 is apparently part of the protecting surface film. There is 1 figure, 1 table and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

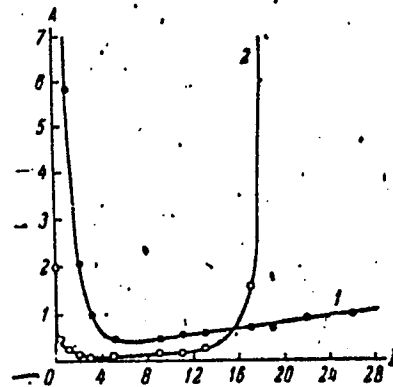
SUBMITTED: July 8, 1960

Figure:

Loss in weight of glasses in treatment with water (100 hrs) and 20% HCl solution (4 hrs)

A - losses in weight (%), B - content of Al_2O_3 (mole %).

Losses in weight by the treatment with:
1 - water, 2 - 20% HCl solution



Card 3/4

VARGIN, V.V., prof.

Enamels for metal coating. Zhur. VKhO 6 no.6:649-656 '61.

(MIR# 14:12)

(Enamels and enameling) (Metals--Finishing)

BONCH-BRUYEVICH, A. M. VARGIN, V. V. EMAS, Ya. A. KARAPETYAN, G. O.
KARIS, Ya. E. TOLSTOY, M. N. and PEOFILOV, P. P.

"Luminescence and induced radiation of a glass activated by neodymium."

The report gives the absorption and luminescence spectra of glass containing 0.1--10% neodymium. Stimulated emission in the region of 1.06 μ , observed in specimens, was investigated at room and nitrogen temperatures.

Report presented at the 11th conference on Luminescence (Molecular luminescence and luminescence analysis) Minsk, 10-15 Sep 1962

PHASE I BOOK EXPLOITATION

SOV/6060

Vargin, V. V., Professor, ed.

Emalirovaniye metallicheskih izdeliy (Enameling of Metal Articles). Moscow, Mashgiz, 1962. 546 p. Errata slip inserted. 7500 copies printed.

Reviewer: A. S. Ragozin, Engineer; Ed.: M. V. Serebryakova, Engineer; Eds. of Publishing House: I. A. Borodulina, A. I. Varkovetskaya, and T. L. Leykina; Tech. Ed.: L. V. Shchetinina; Managing Ed. for Literature on Machinery Manufacture (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for specialists in enameling, technical personnel of plants, and personnel of scientific research laboratories and institutes. It can also be used by teachers and students of schools of higher education.

COVERAGE: The book provides a brief discussion on raw materials and processes for melting enamels, describes in detail furnaces for melting enamels,

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Enameling of Metal Articles

SOV/6060

and offers some recommendations for selection and calculation of furnaces. A special section [Ch. IV, sect. 8] on heat-resistant coatings is included. A flowsheet is given for centralized production of enamels. The properties and preparation of slips are also comprehensively described. The production of new enameled products such as pipelines, architectural and building materials, and aluminum articles is described. Individual chapters were written both by plant personnel and by technical personnel of scientific research institutes and schools of higher education. [See: Table of Contents.] No personalities are mentioned. There are 638 references, mainly Soviet, with many English and some German.

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AVAILABLE: Library of Congress
SUBJECT: Metals and Metallurgy

Card 4/4

BN/pw/jk
10-31-62

VARGIN, V.V.

Conference on enamel and the enameling of metals. Stek. i ker. 19
no.1:46-47 Ja '62. (MIRA 15:3)
(Enamel and enameling--Congresses)

VARGIN, V.V., doktor tekhn.nauk, prof.; ZOLOTOVA, I.N.

Alkali-resistant enamels. Stek. i ker. 19 no.2:23-26 F '62.
(MIRA 15:3)

(Enamel and enameling)

VARGIN, V.V., doktor tekhn.nauk, prof.; SMIRNOVA, G.P.

Titanic enamels with a low TiO₂ content. Stek. i ker. 19
no.8:35-37 Ag '62. (MIRA 15:9)
(Enamel and enameling) (Titanium)

VARGIN, V.V.

Nickel ion as an indicator of the structure of sodium
aluminosilicate glasses. Zhur.prikl.khim. 35 no.7:1613-
1620 J1 '62. (MIRA 15:8)
(Sodium aluminosilicate) (Nickel)

43257

S/080/62/035/011/001/011
D444/D307

15.2120

AUTHORS: Vargin, V.V., and Tsekhomskaya, T.S.

TITLE: Glasses of the system $\text{Na}_2\text{O}-\text{ZnO}-\text{Al}_2\text{O}_3-\text{P}_2\text{O}_5$ as bases for enamels on aluminum

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 11, 1962, 2363 - 2368

TEXT: The aim of the investigation was to see if such glasses were suitable for this purpose. Considering the system as a tetrahedron with Na_2O at its apex the glasses studied were on five sections with Na_2O contents of 10, 15, 20, 25 and 30 mol % (the maximum for adequate chemical stability). Chemical stability in water and 4 % acetic acid, and covering properties were investigated. The best composition (mol %) was: Al_2O_3 7.5 - 10, ZnO 20 - 25, Na_2O 15 - 25, P_2O_5 45 - 60. Annealed at 520°C such an enamel lost 1.17 and 1.47 % of its weight after 1 hr.'s boiling in water and acid respectively, the corresponding figures for an imported enamel for aluminum being Card 1/2

Glasses of the system ...

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D444/D307

2.2 and 5.7. With increasing Na_2O content the stability range becomes narrower. Stability is very sensitive to the Zn content and with a definite oxide ratio $(\text{P}_2\text{O}_5 + \text{Al}_2\text{O}_3)/(\text{Na}_2\text{O} + \text{ZnO}) < 1$ zinc can change its coordination number from 6 to 4 and partly enter the glass lattice. As regards coating quality, these phosphate glasses were not much improved by increasing the alkali content; high (over 10 mol %) alumina contents gave poor coatings. There are 4 figures and 1 table. X

SUBMITTED: July 12, 1961

Card 2/2

VARGIN, V.V.; STEPANOV, S.A.

Effect of gamma rays on glasses of the system $\text{Na}_2 - \text{Al}_2\text{O}_3 - \text{SiO}_2$.
Dokl. AN SSSR 147 no.3:609-611 N '62. (MIRA 15:12)

1. Predstavleno akademikom A.N. Tereninym.
(Glass) (Gamma rays)

VARGIN, Vladimir Vladimirovich; GUTOROVA, Lyubov' L'vovna;
MAZURIN, Oleg Vsevolodovich; KHODIKEL', Yevgeniya
Pavlovna; PEVZNER, B.Z., red.

[Steel enameled electroluminescent panels developed by
the Leningrad Technological Institute in 1963] Stal'nye
emalirovannye elektroluminestsentnye paneli LTI 1963
goda. Leningrad, 1963. 20 p. (Leningradskii dom nauchno-
tekhnicheskoi propagar ly. Obmen peredovym opytom. Seria:
Zashchita metallov ot korrozii, iznosostoikie antifriktsion-
nye i dekorativnye pokrytiia, no.8) (MIRA 17:5)

VARGIN, V.V., prof., doktor tekhn.nauk; SENEROVICH, V.Ya., starshiy
nauchnyy sotrudnik

The color of titanium enamels. Stek. 1 ker. 20 no.4:23-25 Ap
'63. (MIRA 16:3)

1. Leningradskiy tekhnologicheskii institut imeni Lensoвета.
(Titanium) (Enamel and enameling)

VARGIN, V. V.
AID Nr. 995-19 21 June

LUMINESCENCE AND STIMULATED EMISSION OF NEODYMIUM-
ACTIVATED GLASS (USSR)

Feofilov, P. P., A. M. Bonch-Bruyevich, V. V. Vargin, Ya. A. Imas,
G. O. Karapetyan, Ya. Ye. Kriss, and M. N. Tolstoy. IN: Akademiya
nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 4, Apr 1963,
466-472. S/048/63/027/004/002/026

Studies of luminescence and induced emission of neodymium-doped glass have been carried out, and optimum glass composition was determined. Glasses were developed which are superior to those used by E. Snitzer. Absorption and luminescence spectra were obtained, and the dependence of the duration of luminescence on concentration was determined. Induced emission was observed both in glass fibers encased in glass and in highly homogeneous glass cylinders. The dependence of time characteristics and spectral composition of induced emission on pumping energy was established. The prospects of application of the material to practical lasers and to study of induced emission phenomena are discussed.

[BB]

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ACCESSION NR: AT4019297

S/0000/63/003/001/0107/0112

AUTHOR: Vargin, V. V.

TITLE: An investigation of the crystallization process by the methods of color indicators and leaching agents

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy'p. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 107-112

TOPIC TAGS: glass, glass crystallization, color indicator leaching, hydrochloric acid, spodumene, eucryptite, absorption spectrum, heat treatment, glass extraction, catalyzed crystallization

ABSTRACT: The crystallization of glasses of the $\text{Na}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$ system was investigated by extraction with different leaching agents such as HF, HCl, and NaOH solutions at different temperatures. The absorption spectra of glass 13, using Co^{2+} (0.03%) and NiO (0.1%) as indicators at different temperatures of thermal treatment and without thermal treatment, showed that the extractibility of glasses depends markedly on the temperature of thermal treatment. In lithium-alumino-

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ACCESSION NR: AT4019297

silicate glass containing titanium dioxide as a catalyst as well as color indicators, the structure changes in the precrystallization period with thermal treatment at temperatures of 620-655C. However, the color of glass containing Co^{2+} and Ni^{2+} changes only slightly and its chemical stability increases. The crystalline phase formed in the glass without a loss of transparency at 727-760C is obviously β -eucryptite or β -spodumene (transition of Co^{2+} and Ni^{2+} into the tetrahedron coordination). With further temperature increases during the thermal treatment, when the glass becomes opal (850C) and milky (900-1000C), compounds of lithium and aluminum are formed which can be readily extracted by acids. "The absorption spectra were determined by V. I. Skorospelova while the chemical analysis was performed by K. A. Yakovleva." Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 17May63

DATE ACQ: 21Nov63

ENCL: 00

SUB CODE: MT

NO REF SOV: 006

OTHER: 001

Card 2/2

VARGIN, V. V.

"The position of titanium in glass structure."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,
16-21 Mar 64.

ALEKSEYEV, A.G.; VARGIN, V.V.; VERTSNER, V.N.; KIND, N.Ye.;
KONDRAT'YEV, Yu.N.; PODUSHKO, Ye.V.; SEREBRYAKOVA, M.V.;
TIKHOMIROV, G.P.; TUDOROVSKAYA, N.A.; FLORINSKAYA, V.A.;
LIBERMAN, N.R., red.

[Controlled catalyzed crystallization of glasses of the
lithium aluminosilicate system] Katalizirovannaia regu-
liruemaia kristallizatsiia stekol litievoaliumosilikatnoi
sistemy. Leningrad, Khimiia. Pt.1. 1964. 119 p.
(MIRA 18:4)

VARGIN, V. V.

"Catalyzed crystallization of glasses of $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2$ system."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,
16-21 Mar 64.

VARGIN, V.V.; PEVZNER, B.Z.

Effect of the content and crystallization of TiO_2 on the
chemical stability of titanium enamels. Zhur. prikl. khim.
37 no. 4:749-755 Ap '64. (MIRA 17:5)

ACCESSION NR: AP4040528

8/0080/64/037/006/1366/1368

AUTHOR: Vargin, V. V.; Stepanov, S. A.

TITLE: Absorption centers in gamma-irradiated glasses of the Na₂O-ZnO-SiO₂ system

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 6, 1964, 1366-1368

TOPIC TAGS: sodium zinc silicate glass, gamma irradiation, glass absorption, spectrum, gamma induced absorption, glass lattice structure

ABSTRACT: The effect of the glass-forming Zn⁺² ion on the absorption spectra and thermal bleaching of gamma-induced absorption bands has been studied in gamma-irradiated sodium-zinc-silicate glasses. It was established that: 1) the appearance of a new absorption band at 4.6 eV on the irradiation of ZnO-containing glasses with a total dose of 5×10^6 r is caused by the presence of the Zn⁺² ion with coordination number 6; 2) the introduction of up to 35 mol% ZnO causes a decrease in the intensity of the 2- and 2.8-eV bands, which is correlated with the formation of ZnO₄⁻² tetrahedrons at the expense of

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ACCESSION NR: AP4040528

unbridged oxygen; 3) in the $\text{Na}_2\text{O}-\text{ZnO}-\text{SiO}_2$ glasses Zn^{+2} ions having coordination number 4 are always in equilibrium with Zn^{+2} ions having coordination number 6, regardless of the ZnO content; and 4) in glasses with 35% Na_2O and over 5% ZnO anomalous changes in the intensity and the thermal stability of absorption bands take place owing to the presence of two unbridged oxygen atoms in some SiO_4 tetrahedrons. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 26Sep62

DATE ACQ: 06Jul64

ENCL: 00

SUB CODE: MT

NO REF SOV: 000

OTHER: 003

ATD PRESS: 3042

Card 2/2