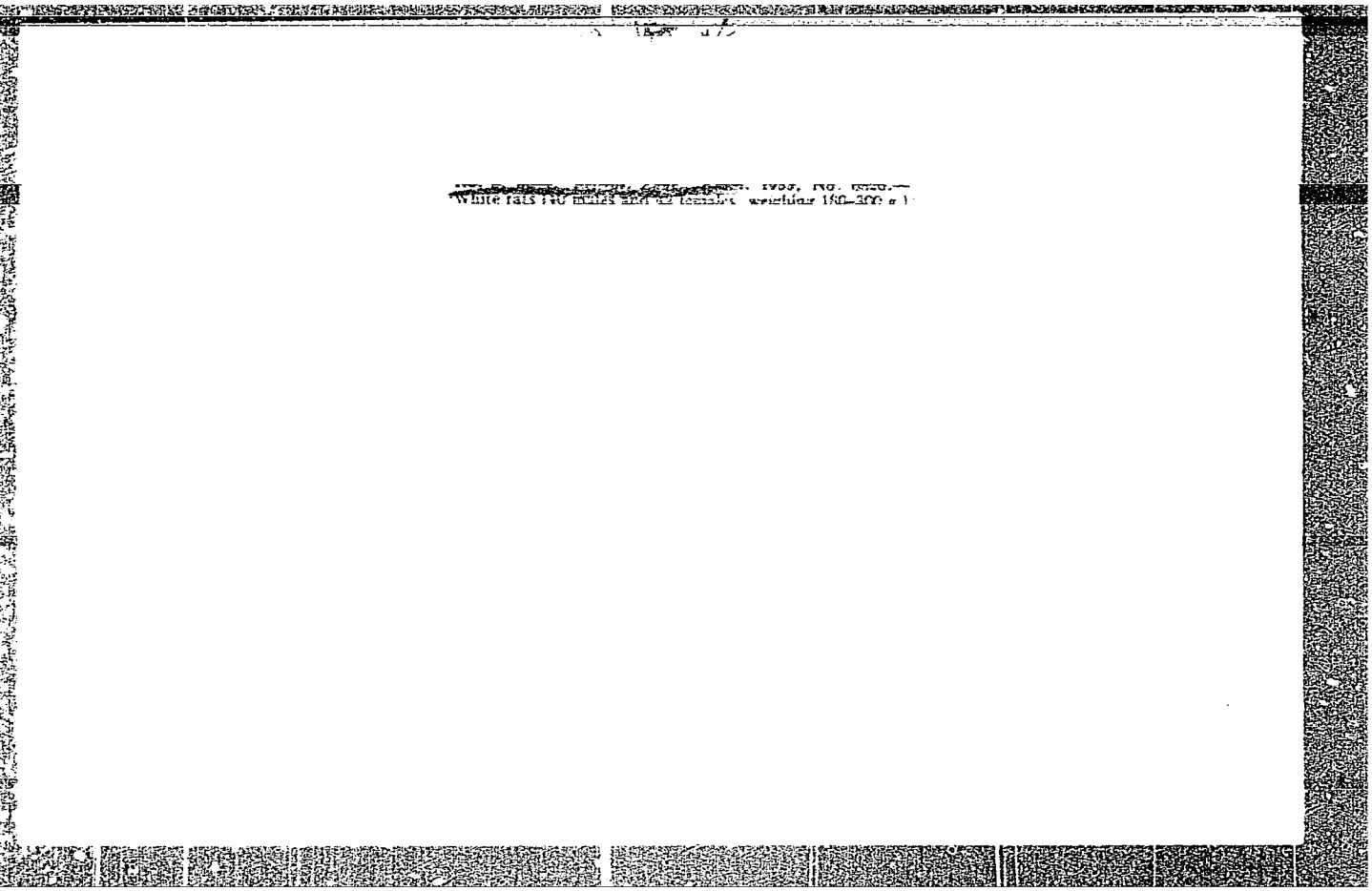

L 14642-66 EWT(d)/EWA(m)/EWP(w)/EWP(v)/EWP(k)/EWA(h)/EWG(m)-6 IJP(c)
ACC NR: AP6003187 WW/EM SOURCE CODE: UR/0147/65/000/004/0090/0096

AUTHOR: Karnozhitskiy, V. P.; Tydykov, P. G. 53 B

ORG: none

TITLE: Thermal stresses in a cylindrical shell with an annular-cross-section core

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 4, 1965, 90-96

TOPIC TAGS: thermal stress, cylindrical shell

ABSTRACT: Sometimes it is advantageous to use in aircraft design a sandwich-like construction consisting only of a skin with a core of annular cross section, e.g., a sandwich plate or shell without an inner face layer. During high-speed flights, thermal stresses will be generated due to the temperature variation over the thickness of the shell. These thermal stresses are determined in a long cylindrical shell with a tubular core, assuming that the temperature in the skin is constant, and varies linearly in radial direction in the core, but the variation is not too strong, so that the modulus of elasticity can be considered constant. The hypothesis of straight normals is applied to the skin, and the general stress-strain relationships of the theory of elasticity are used in the treatment of the core. Expressions are derived for determining the stresses, strains, and displacements in the core produced by the difference of temperatures on its inner and outer surfaces, and by the radial pressure exerted by the skin on the core. The skin is treated as a thin cylindrical shell

Card 1/2 UDC: 539.3+621.438

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ACC NR: AP6003187

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acted upon by the radial pressure developed by the core, and expressions are also derived for stresses, strains, and displacements. The resulting distribution of thermal stresses in the shell is obtained by summation of two component states of stresses obtained from the above-mentioned expressions by introducing into them boundary conditions associated with temperatures at the inner and outer shell surfaces. A numerical example illustrating thermal-stress analysis in a shell of the discussed type is given. Orig. art. has: 1 figure and 28 formulas. [VK]

SUB CODE: 20/ SUBM DATE: 03Dec64/ ORIG REF: 002/ ATD PRESS: 4198

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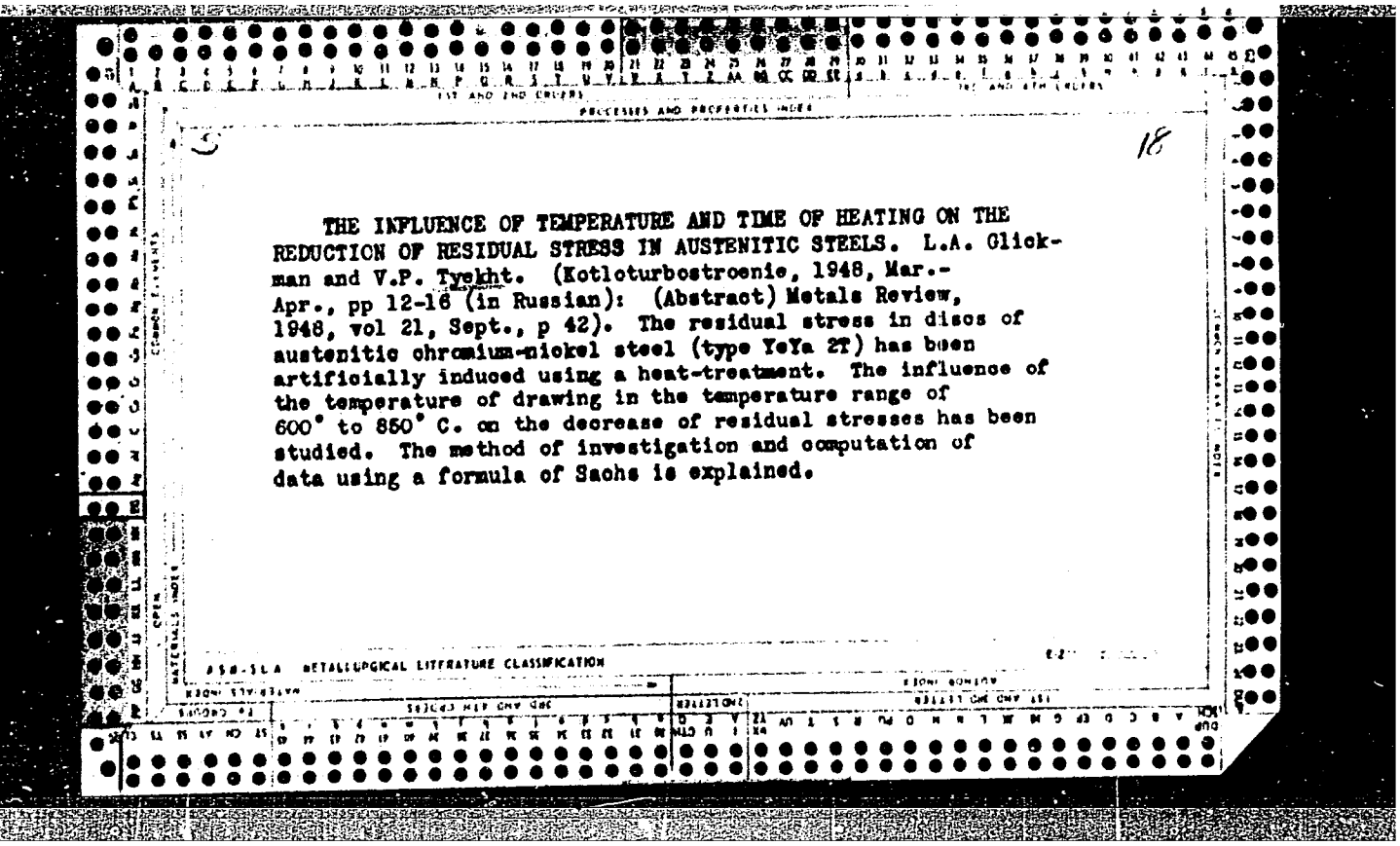


18

THE INFLUENCE OF TEMPERATURE AND TIME OF HEATING ON THE REDUCTION OF RESIDUAL STRESS IN AUSTENITIC STEELS. L.A. Glickman and V.P. Tyekht. (Kotloturbostroenie, 1948, Mar.-Apr., pp 12-16 (in Russian): (Abstract) Metals Review, 1948, vol 21, Sept., p 42). The residual stress in discs of austenitic chromium-nickel steel (type YeYa 2T) has been artificially induced using a heat-treatment. The influence of the temperature of drawing in the temperature range of 600° to 850° C. on the decrease of residual stresses has been studied. The method of investigation and computation of data using a formula of Sachs is explained.

Tyeld'yeshi

CZECHOSLOVAKIA/General Problems E-1

Abs Jour : Ref Zhur - Khimiya, No 3, 1958, No 7562

Author : Tyeld'yeshi, Maier, Shiller
Inst : Not Given
Title : Radiometric Analytical Methods

Orig Pub : Farmacia (Ceskosl.), 1957, 26, No 2, 41-47

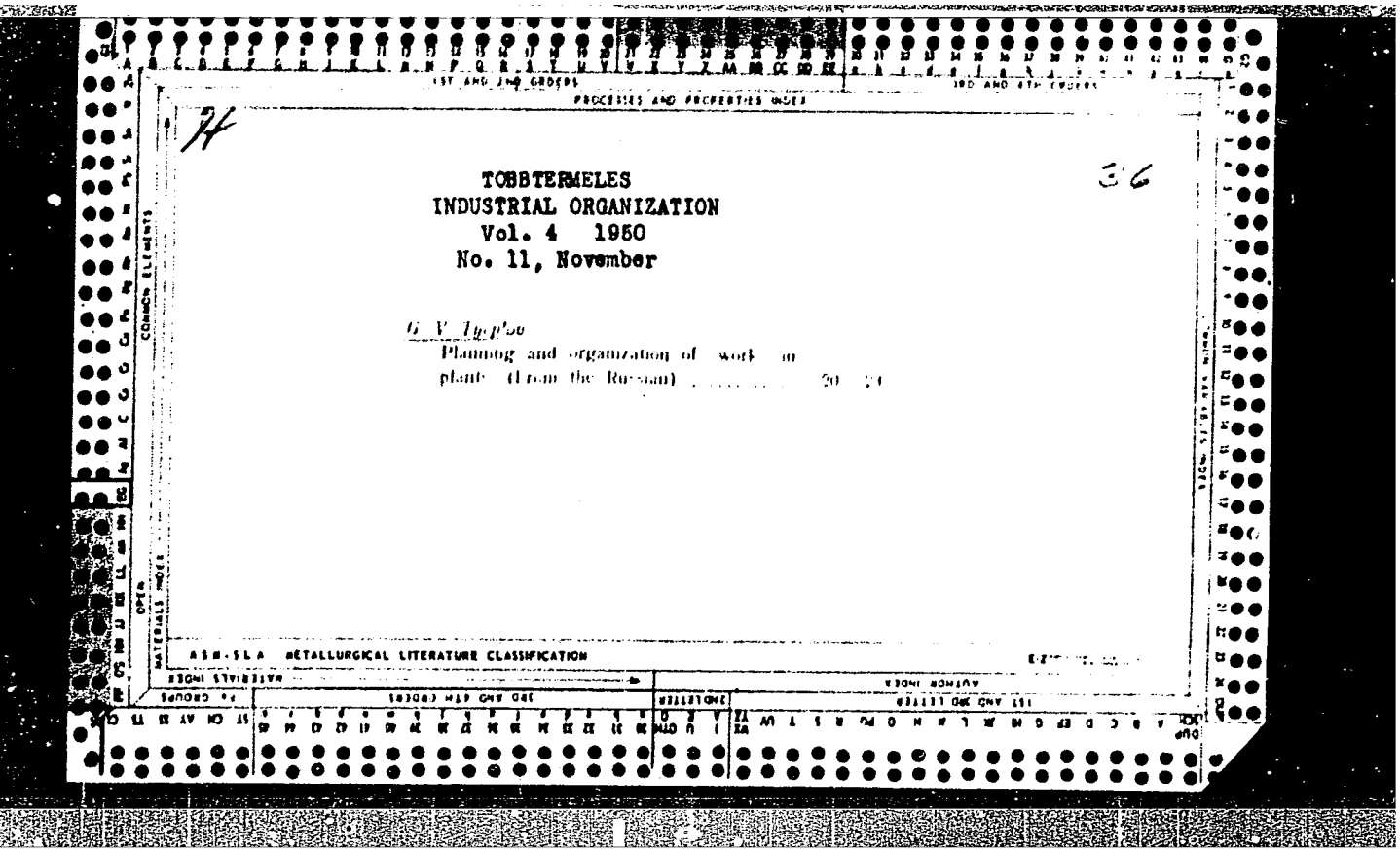
Abstract : Review of the papers pertaining to radiometric titration. Six library titles.

Card : 1/1

ZUBOK, V.N., inzhener, redaktor; UMNYAGIN, M.G., inzhener, redaktor; KASSATSIER, M.S., inzhener, redaktor; SHIFRIN, S.M., redaktor; TYEMKIN, A.V., redaktor; TIKHONOV, A.Ya., tekhnicheskiy redaktor.

[Experience in introducing advanced technology in factories engaged in heavy machine building] Opyt vnedreniia peredovoi tekhnologii na zavodakh tiazhelogo mashinostroeniia. Pod obshchei red. V.N.Zubok, M.G.Umniagina. Moskva, Gos. nauchno-tekhn. izd-vo machinostroit. lit-ry. 1955. 306 p. (MLRA 9:4)
(Machinery--Construction)

1. Moscow. Vsesoyuznyy proyektno-tekhnologicheskiy institut.



TOBBTERMELES
INDUSTRIAL ORGANIZATION
Vol. 4 1950
No. 11, November

G. V. Tyglov
Planning and organization of work in
plant (From the Russian) 30 34

TYEPLOV, G. [Teplov, G.] a kozgazdasagi tudomanyok doktora

Economic terminology. Szabvany kozl 14 no.1:13-14 Ja '62.

TYERDOKHLEB, G.

23402 Popoki konsistentsii masla i ikh kharakeristika. Moloch. Prom-st', 1949, No. 7, c. 24-27/

SO: LETOPIS NO. 31, 1949.

CA

138

The causes of clover failure in the Moscow region and methods of fighting these. D. L. Tyrskol, K. P. Zhukova, and B. S. Navsuts. *Doklady Vsesoyuz. Akad. Nauk Selsko-khoz. Nauk im. V. I. Lenina* 15, No. 5, 22-9 (1950).—Additn. of lime and mineral fertilizer, especially PK and NPK, or heavy applications of manure reduce the disease incidence of red clover seedlings and thereby prolong the life of the clover stand. The quantity of fertilizer most effective is that equiv. to 40-50 tons of manure per ha. Dusting the seed with granosan, 1 g. per kg. of seed (more of the fungicide reduces the yield), helps to combat the disease.

J. S. Joffe

TYFCZYNSKA-JASKIEWICZ, J.

Poland/Analytical Chemistry - Analysis of Organic Substances, G-3

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61909

Author: Tyfczynska-Jaskiewicz, J., Gawrych, Z.

Institution: None

Title: Colorimetric Determination of Ergot Alkaloids

Original Periodical: Kolorymetryczne oznaczanie alkaloidow sporyszu, Acta polon. pharmac., 1955, 11, Dodatek: Pam. II. Ogolnopolsk. Zjazdu nauk. towarz. farmac. Lodzi, 90; Polish; Russian and English resumés

Abstract: There are proposed stable standards (solutions of crystal violet (I) in dilute H_2SO_4 of pH 2.33) for colorimetric determination of ergot alkaloids by means of Allport's reagent. It has been found that 0.0377% I corresponds to 0.4% ergotamine tartrate, 0.05% I to 0.4% ergometrine maleate, 0.0417% I to 0.4% neohynergene, 0.0606% I to 0.4% basergene, 0.0364% I to 0.4% dihydroergotamine. All the alkaloids were used as solutions in 1% tartaric acid.

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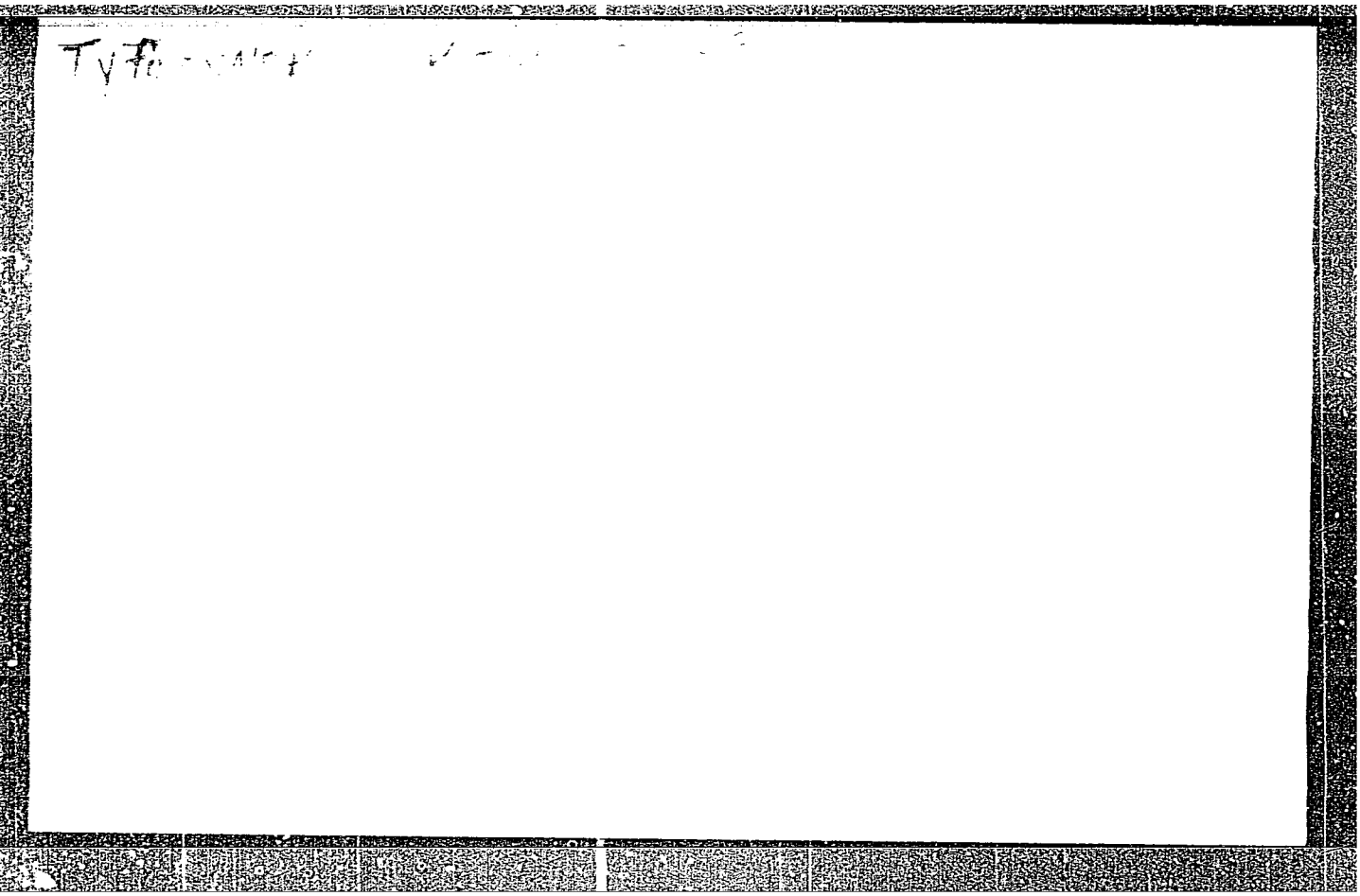

TYI, I.

An economicalmethod for compensating polygons and polygon networks in mines.

P. 197 (Veodeticky A Kartograficky. Vol. 3, no. 10, Oct. 1957 Praha, Czechoslovakia)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2, February 1958

IYIMAK, E.

(24) (271)

Berlin, Die Pharmazie, Vol 17, No 5, May 1962.

1. "The Proteins. Their Structure and Function," F. SORM of the Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences, Prague; pp 257-269.

2. "Phenothiazine Bases as Spasmolytic Agents," Dr. Helmuth [illegible], Dresden; pp 269-276.

3. "On a Modified Murexide Reaction for the Qualitative Detection of Barbituric-Acid- and Thiobarbituric-Acid Derivatives," Dr. H.P. [illegible] and H. [illegible] of the Institute of Pharmacology (Pharmakologisches Institut) of Rostock University (Universitat Rostock); Director: Prof. Dr. E. RUICKOLDT; pp 277-280.

4. "Contribution to the Determination of 1,8-Dihydroxyanthranone (Cignolin) and Chrysarobin in Pharmaceutical Preparations," Dr. T. [illegible] of the Institute of Pharmacology of the Ernst Moritz Arndt University (Ernst-Moritz-Arndt Universitat), Greifswald (Director: Prof. Dr. R. [illegible]); pp 280-282.

5. "Considerations Regarding the Chemical Constitution and Biological Action of Methylquinolines. Part I." Docent Dr. G. [illegible] of the Institute of Organic Chemistry (Institut fur Organische Chemie) of the College of Chemical Engineering (Technische Hochschule fur Chemie) in Leuna-Merseburg (Director: Prof. Dr. W. LANGENBECK); pp 283-289.

6. "Studies on the Equilibrium States in the System Drug-Liquid. Part 2. Absorption of Extracted Substances on the Powdered Drug Skeleton," Dr. Milos [illegible] of the Pharmaceutical Faculty in Brno (Czechoslovakia) and the Medical Faculty in Olomouc (Czechoslovakia); pp 290-294.

7. "Contributions to the UV-Spectrophotometric Investigation and to the 'Beam Coloring Values' of Hungarian and Indian Hemp. Part 3." Prof. Dr. I. NOVAK, A. [illegible] and E. [illegible] of the Institute of Pharmacology of the Medical University at Szeged (Hungary); pp [illegible].

8. "On Alkaloids Giving a Red Coloration of the Genus Papaver," Docent Dr. S. PFEIFER of the Institute of Pharmacology of the Humboldt University (Humboldt-Universitat), Berlin; pp 298-301.

9. "Plant-Chemical Investigation of the Apigenin Glycosides of True Camilla (Matricaria Chamomilla L.)," E. [illegible], I. [illegible] and G. [illegible] of the Institute of Medicinal Plant Research (Director: Dr. P. [illegible]) and the Institute of Applied Botany and Histogenetics of the Eotvos Lorand University of Science (Eotvos Lorand Tudomanyegyetem) (Director: Prof. Dr. B. SARKANY), Budapest (Hungary); pp 301-304.

1/1

TYIHAK, Erno; SARKANY SANDORNE KISS, Iren

Distribution of volatile oil components in camomile plants.
Botan kozl 50 no.4:175-178 D'63.

1. Gyogynoveny Kutato Intezet, Budapest, XII., Daniel ut 40.

TYIHAK, Erno (Budapest,XII.,Daniel ut 40); SARKANY SANDORNE KISS, Iren (Budapest,XII.,Daniel ut 40)

Histochemical analysis of prochamazulene content of camomile. Botan kozl 49 no.3/4:209-213 '62.

VAGUJFALVI, Dezso; TYIHAK, Erno

Essential oil components as universal plant substances. Botan kozl 51 no.1:41-49 '64

1. Medicinal Plant Research Institute, Budapest, XII., Daniel ut. 40.

VAGUJFALVI, Dezso; TYIHAK, Erno

Daily change in the prochamazulene content of camomile (Matricaria chamomilla L.) Botan kozl 49 no.1/2:64-70 '61.

1. Gyogynovenykutato Intezet, Budapest XII., Daniel ut 40.

S/081/62/000/017/048/102
B158/B186

AUTHORS: Tyka, R., Płażek, E.

TITLE: Triaroylphosphides

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1962, 257, abstract 17Zh330 (Bull. Acad. polon. sci. Sér. sci. chim., v. 9, no. 9, 1961, 577-584 [Ger.; summary in Russ.])

TEXT: $(ArCO)_3P$ (Ia-e, where a Ar = C_6H_5, b Ar = m-$CH_3C_6H_4$, c Ar=n-$CH_3C_6H_4$, d Ar = a-$C_{10}H_7$, e Ar = β-$C_{10}H_7$) is obtained by the action of PH_3 on 25% solutions of ArCOCl in dry pyridine at 25°C (sometimes heating is necessary at the end of the reaction). I is separated by pouring the reaction mixture into water (I and m.p. in °C are given): a, 149; b, 136; c, 137; d, 163; e, 190. The reaction does not have any common value and when substituted ArCOCl is used it proceeds in another direction. I is stable to water and dilute acids. I acylates CH_3OH and C_2H_5OH with many hours' heating at 140-160°C. giving ~100% yields of $ArCOOR$. When reacted

Card 1/2

Triaroylphosphides

S/081/62/000/017/048/102
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with NH_3, $C_6H_5NH_2$ and a solution of NaOH, I forms $ArCONH_2$, $ArCONHC_6H_5$ and ArCOONa respectively and PH_3. I is separated by the action of Br_2 on PBr_3 and ArCOBr. I is not alkylated by RX. Reduction of Ia by the action of $LiAlH_4$ in ether gives mainly $C_6H_5CH_2OH$ and, apparently, $(C_6H_5CHOH)_3P$, m.p. 156°C. $(C_6H_5CO)_2$ is formed by heating Ia with CH_3COCl (160-180°C). Reaction of Ia with $H_2SO_4 \cdot H_2O$ (the mixture is poured into water) gives C_6H_5COOH and PH_3. Reaction of Ia with C_6H_5MgBr in ether gives $(C_6H_5)_3COH$. With α-$C_{10}H_7MgBr$, Ia gives $C_6H_5COC_{10}H_{7-\alpha}$. Curves of infra-red spectra are given for Ia-e and $(C_6H_5CO)_3N$ in paraffin oil, and also curves of U-V spectra for the same substances in $CHCl_3$. [Abstracter's note: Complete translation.]

Card 2/2

TYKA, Roman, dr.

On triaroylophosphides. Wiad chem 16 no.5:335-336 My '62.

1. Katedra Chemii Organicznej I, Politechnika, Wroclaw.

TYKA, Roman; PLAZEK, Edwin

Triaroylphosphides. Pt. 2. Rocz chemii 37 no.3:283-291 '63.

1. Katedra Chemii Organicznej I, Politechnika, Wroclaw.

Distr: 4E3d 7

Preparation of tri(2-pyridyl)phosphine and tri(2-pyridyl)-arsine. Edwin Plażek and Roman Tyka (Politech., Wroclaw, Poland). *Zeszyty Nauk. Politech. Wroclaw., Chem.* No. 4, 79–81(1957)(German summary).—To a 2-lithiopyridine soln. (obtained from 8 g. 2-bromopyridine after Wibaut, *et al.*, *C.A.* 46, 11197*d*) a mixt. of 2.3 g. PCl_3 with 20 ml. Et_2O was added dropwise during 30 min., the temp. being continuously raised from −68 to −58°. The mixt. heated to room temp., extd. with 100 ml. 2*N* H_2SO_4, the ext. alkalized, the ppt. filtered off, washed with H_2O and crystd. from 1:1 MeOH-H_2O, gave 1.7 g. tri(2-pyridyl)-phosphine, m. 114°. Similarly tri(2-pyridyl)arsine was obtained, m. 85° (cyclohexane), in 25% yield. J. Stecki

5
2-May
1

The preparation of tribenzoylphosphine. Edwin Płażek and Roman Tyka (Univ. Wrocław, Poland). *Roczniki Chem.* 33, 649-56(1959)(German summary).—Tribenzoylphosphine, PBz_3 (I), yellow, m. 147° (alc.), is formed by action of PH_3 on BzCl in anhyd. C_5H_5N at room temp. with heating at the end of reaction to 50°. I is stable in the presence of H_2O and dil. acid solns., whereas NaOH decomps. it into PH_3 and NaOBz. I reacts with EtOH to yield EtOBz, with 25% NH_3 soln. to give $BzNH_2$, and with aniline at the b.p. to give BzNHPh. A. Kreglewski

Reactions of sulfanilamide with organic derivatives of phosphoric acid. Zofia Skrowaczewska and Roman Tyka (Politech., Wrocław, Poland). *Roczniki Chem.* 33, 61–6 (1959) (English summary).—Condensation of sulfanilamide (I) with Ph phosphorochloridates and phosphoro-*N*-dimethylamidochloridic acids in anhyd. pyridine gave phosphoric acid derivs. of I substituted in the NH_2 group (N^4): 84% *p*-$H_2NO_2SC_6H_4NHPO(OPh)_2$, m. 201°; 93% (*p*-$H_2NO_2SC_6H_4NH)_2PO(OPh)$, m. 243–5°; 41% *p*-$H_2NO_2SC_6H_4NHPO(NMe_2)_2$, m. 243°; 46% (*p*-$H_2NO_2SC_6H_4NH)_2PONMe_2$, m. 235°. The same substituents were introduced into the sulfamide group (N^1) with the Na salt of I in EtCN. This reaction was successful only to yield 38% *p*-$H_2NC_6H_4SO_2NHPO(OPh)_2$, m. 221°, and 25% *p*-$H_2NC_6H_4SO_2NHPO(OH)(OPh)$ (II), m. 198°. All the compds. but II were insol. in H_2O.

A. Kręglewski

TYKA, R.; PLAZEK, E.

On triaroylphosphides. Bul chim PAN 9 no.9:577-584 '61.

1. Katedra Chemii Organicznej I., Politechnika, Wroclaw. Presented by T. Urbanski.

TYKA, Ryszard (Warszawa)

Mostostal Steel Structure Production Works. Przegl budowl i bud mieszk 35 no.4:198-200 Ap '63.

TYKA, R.

On a new case of the Friedel-Crafts reaction. Bul chim PAN 9 no.9: 565-576 '61.

1. Katedra Chemii Organicznej I. Politechnika, Wroclaw.

COUNTRY : POLAND
CATEGORY : Organic Chemistry. Synthetic Organic Chemistry

ABS. JOUR. : RZKhim., No. 1 1960, No. 1300

AUTHOR : Skrowaczowska, Z.; Cyka, R.
INST. : -
TITLE : Reactions of Sulfanilamide with Some Organic Derivatives of Phosphoric Acid

ORIG. PUB. : Roczn. chem., 1959, 33, No 1, 51-56

ABSTRACT : As a result of the reaction of sulfanilamide (I) with $(ArO)_2POCl$ (II), $ArOPOCl_2$ (III), $(R_2N)_2POCl$ (IV) and R_2NPOCl_2 (V) (everywhere Ar = C_6H_5, R = CH_3) there are formed, respectively. $Ar'NHP(O)(OAr)_2$ (VI) (everywhere Ar' = = $NH_2SO_2C_6H_4$), $(Ar'NH)_2POOAr$ (VII), $Ar'NHP(O)-(NR_2)_2$ (VIII) and $(Ar'NH)_2P(O)NR_2$ (IX). II and III with the Na-salts of I give $Ar'NHP(O)(OAr)_2$

CARD: 1/4

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COUNTRY :
CATEGORY :

ABS. JOUR. : RZKhim., No. 1 1960, No. 1300

AUTHOR :
[illegible] :
TITLE :

ORIG. PUB. :

ABSTRACT : (X) (everywhere Ar" = $NH_2C_6H_4SO_2$) and Ar"NHP(O)-
cont'd (OH)(OAr) (XI), respectively. The Na-salt of I does not react with IV or V. 0.05 mole of II is added to 0.05 mole of I in 20 ml of nonaqueous C_5H_5N, heated for 30 min, and VI is separated out, yielding 84%, m.p. 201° (from alcohol). Analogously, from 0.04 mole of I and 0.02 mole of III in C_5H_5N, VII is obtained.

CARD: 2/4

AUTHORITY :
CATEGORY :

ABS. JOUR. : RZKhim., No. 1 1960, No. 1300

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : yielding 93%, m.p. 243-245° (from CH_3OH-water, 2:1); from 0.02 mole of I and 0.02 mole of IV in C_5H_5N the yield of VIII is 41%, m.p. 343° (from alcohol). From 0.05 mole of I and 0.025 mole of V in C_5H_5N the yield of IX is 46%, m.p. 235° (from CH_3OH). From 0.02 mole of the Na-salt of I and 0.02 mole of II in 30 ml of CH_3CN the yield of X is 38%, m.p. 221° (from CH_3OH).

CARD: 3/4

COUNTRY :
CATEGORY :

ABS. JOUR. : RZKhim., No. 1 1960, No. 1300

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : The addition of 0.01 mole of III to 0.02 mole of
cont'd the Na-salt of I in 25 ml CH_3OH produces XI with
a yield of 25%, m.p. 190° (from abs. alcohol).
-- V. Gil'yarov

CARD: 1/4

TYKA, T.

Calcualtion of cubature in rural building. p. 9. (Budownictwo Wiejskie, Vol. 8, No. 7 July 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. _, No. 8, Aug 1957. Uncl.

TYKA, T.; [redacted], A.

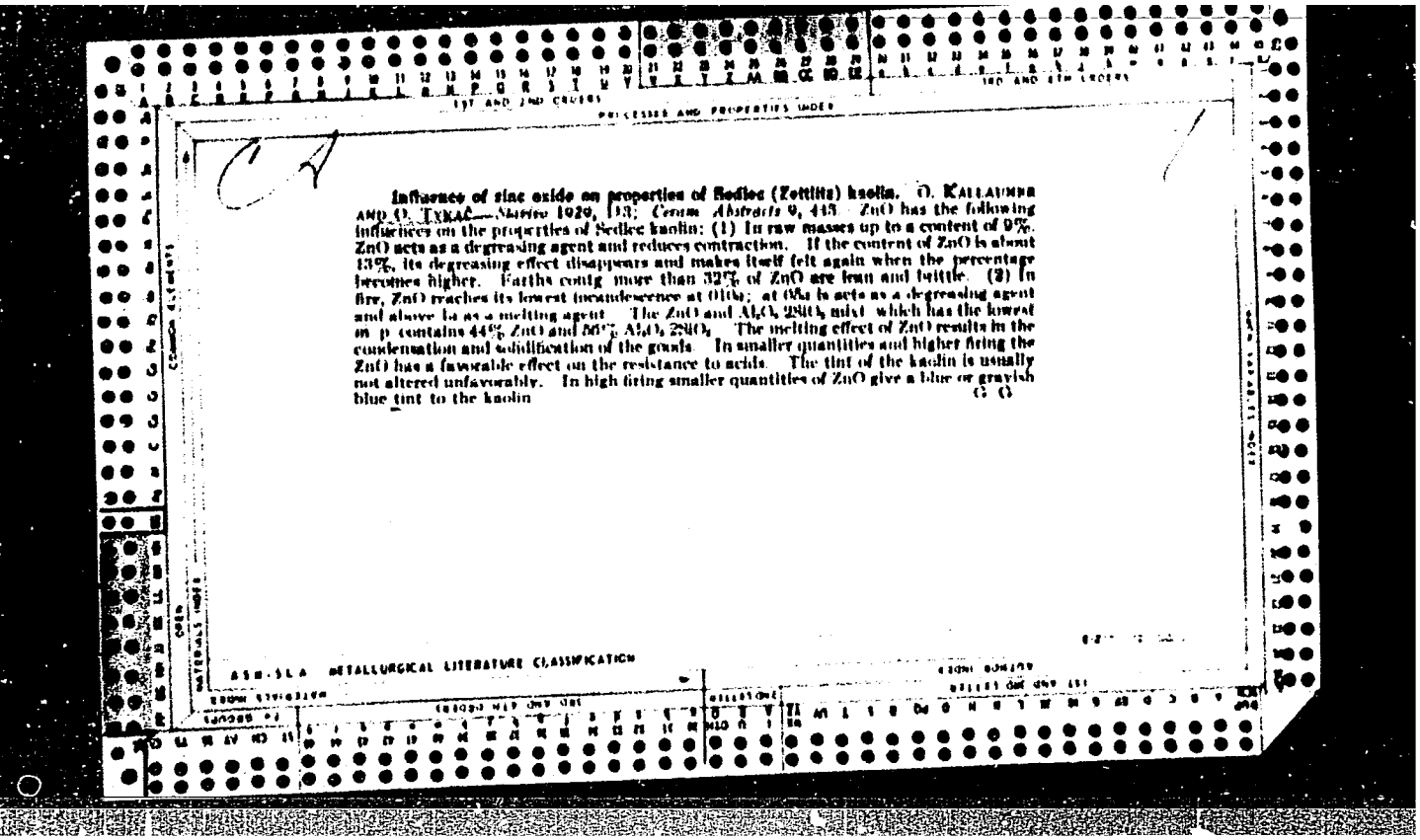
Calculation of cubature in rural building. p. 9. (Budownictwo Wiejskie, Vol. 8, No. 7, July 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 8, Aug 1957. Uncl.

TIKAC, J.

"New legal regulations for inventions and suggestions for improvement."
Uhli, Praha, Vol 4, No 1, Jan. 1954, p. 30

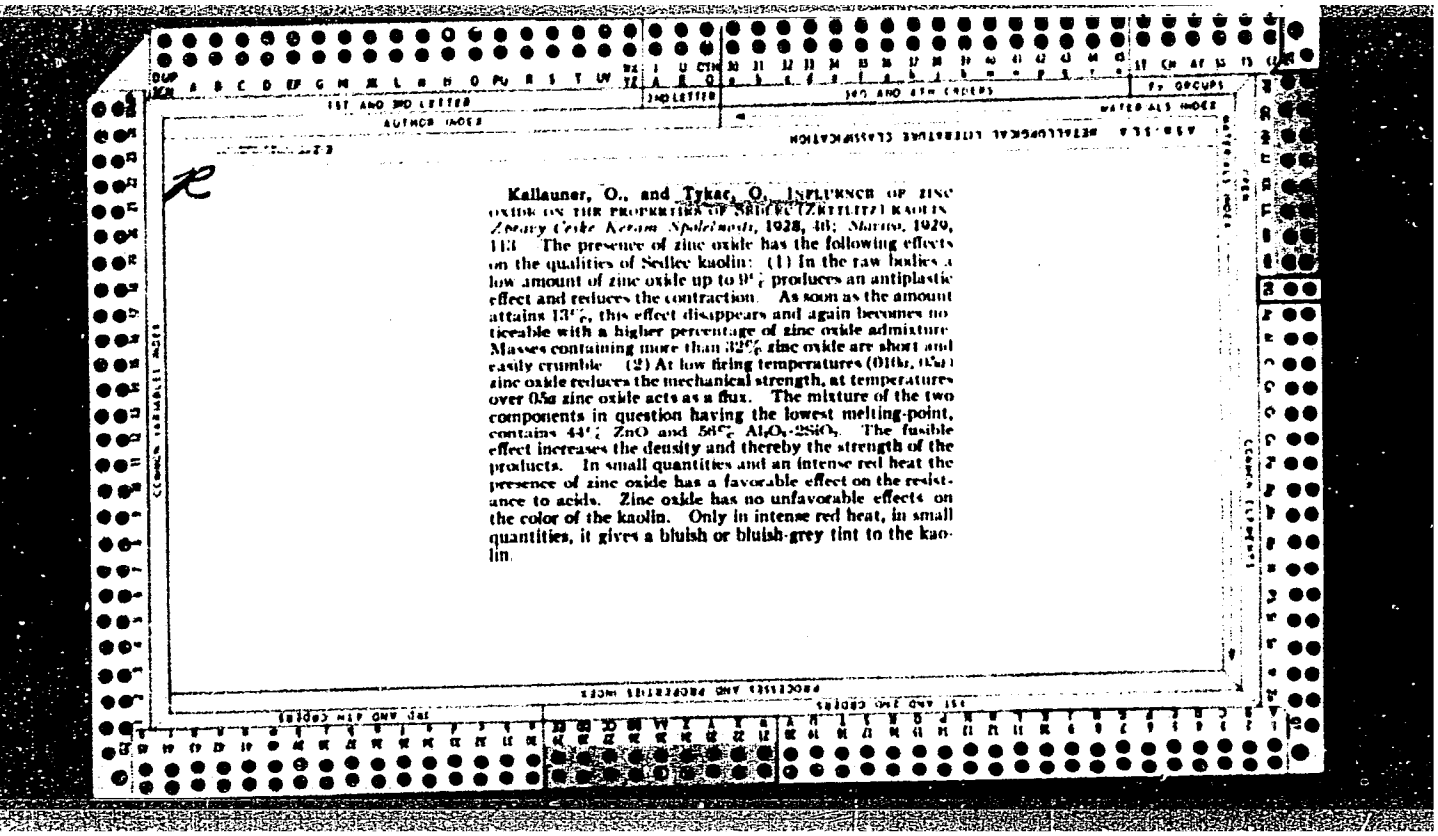
SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress



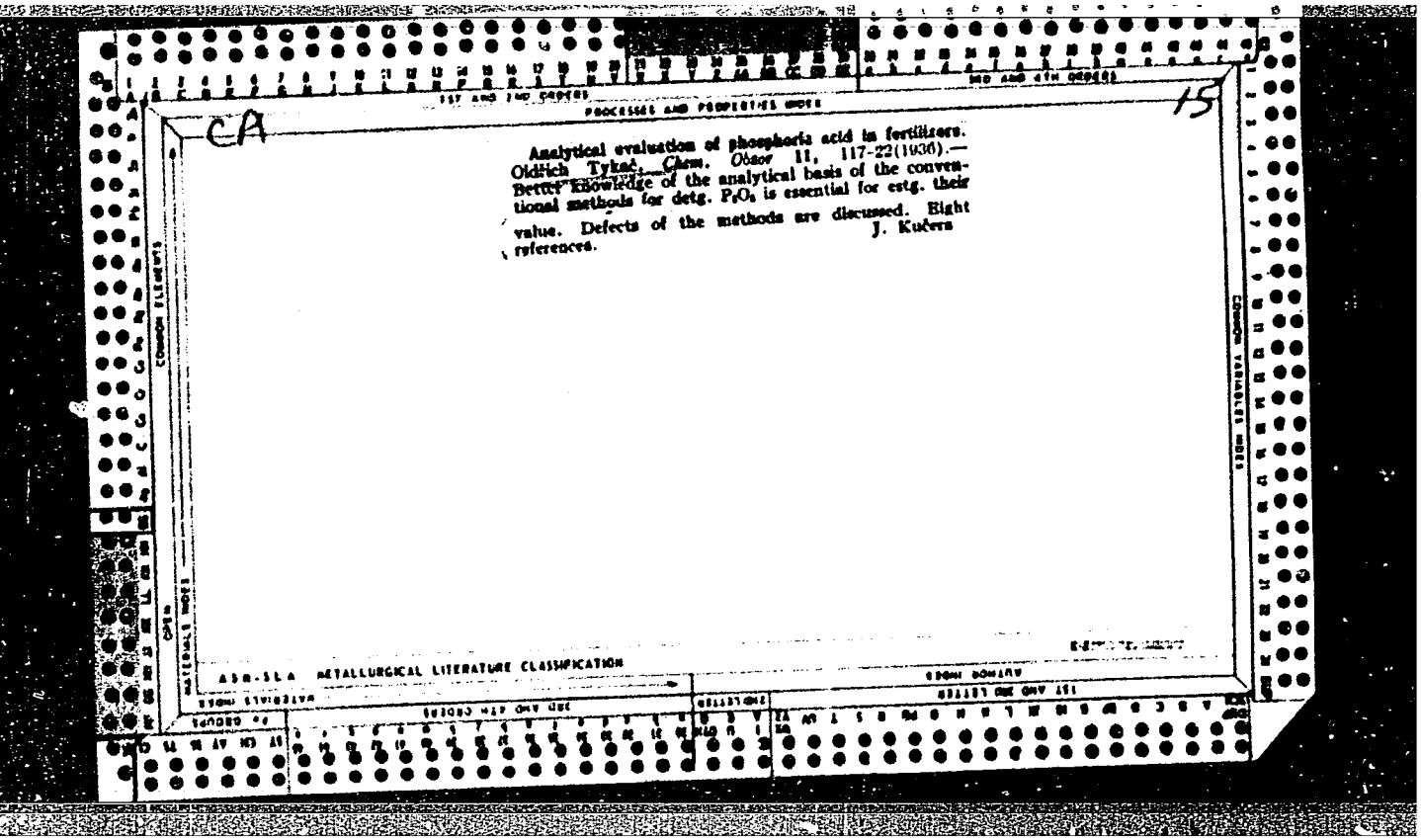
Influence of zinc oxide on properties of Sedlec (Zettlitz) kaolin. O. KALLAUNER AND O. TYRAČ—*Sklářské* 1929, 193; *Ceram. Abstracts* 9, 443. ZnO has the following influences on the properties of Sedlec kaolin: (1) In raw masses up to a content of 9% ZnO acts as a degreasing agent and reduces contraction. If the content of ZnO is about 13%, its degreasing effect disappears and makes itself felt again when the percentage becomes higher. Earths containing more than 32% of ZnO are lean and brittle. (2) In fire, ZnO reaches its lowest incandescence at 1110°; at 950° it acts as a degreasing agent and above 1° as a melting agent. The ZnO and $Al_2O_3.2SiO_2$ mixt. which has the lowest m. p. contains 44% ZnO and 56% $Al_2O_3.2SiO_2$. The melting effect of ZnO results in the condensation and solidification of the goods. In smaller quantities and higher firing the ZnO has a favorable effect on the resistance to acids. The tint of the kaolin is usually not altered unfavorably. In high firing smaller quantities of ZnO give a blue or grayish blue tint to the kaolin. G. G.

TYKAC, O.

Kallauner, O., and Tykac, O. Influence of zinc oxide on the properties of Sedlec (Zettlitz) kaolin. *Zpravy Ceske Keram. Spolecnosti*, 1928, 40; *Sprechs.*, 1929, 113.—The presence of zinc oxide has the following effects on the qualities of Sedlec kaolin: (1) In the raw bodies a low amount of zinc oxide up to 9% produces an antiplastic effect and reduces the contraction. As soon as the amount attains 13%, this effect disappears and again becomes noticeable with a higher percentage of zinc oxide admixture. Masses containing more than 32% zinc oxide are short and easily crumble. (2) At low firing temperatures (011a, 05a) zinc oxide reduces the mechanical strength, at temperatures over 05a zinc oxide acts as a flux. The mixture of the two components in question having the lowest melting-point, contains 44% ZnO and 56% $Al_2O_3 \cdot 2SiO_2$. The fusible effect increases the density and thereby the strength of the products. In small quantities and at intense red heat the presence of zinc oxide has a favorable effect on the resistance to acids. Zinc oxide has no unfavorable effects on the color of the kaolin. Only in intense red heat, in small quantities, it gives a bluish or bluish grey tint to the kaolin.



Kallauner, O., and Tykač, O. INFLUENCE OF ZINC OXIDE ON THE PROPERTIES OF SEDLEC (ZBYSLAVICE) KAOLIN. *Zpravy Ceske Keram. Společnosti*, 1928, 48; *Sprechsaal*, 1929, 113. The presence of zinc oxide has the following effects on the qualities of Sedlec kaolin: (1) In the raw bodies a low amount of zinc oxide up to 9% produces an antiplastic effect and reduces the contraction. As soon as the amount attains 13%, this effect disappears and again becomes noticeable with a higher percentage of zinc oxide admixture. Masses containing more than 32% zinc oxide are short and easily crumble. (2) At low firing temperatures (010b, 05a) zinc oxide reduces the mechanical strength, at temperatures over 05a zinc oxide acts as a flux. The mixture of the two components in question having the lowest melting-point, contains 44% ZnO and 56% $Al_2O_3 \cdot 2SiO_2$. The fusible effect increases the density and thereby the strength of the products. In small quantities and an intense red heat the presence of zinc oxide has a favorable effect on the resistance to acids. Zinc oxide has no unfavorable effects on the color of the kaolin. Only in intense red heat, in small quantities, it gives a bluish or bluish-grey tint to the kaolin.



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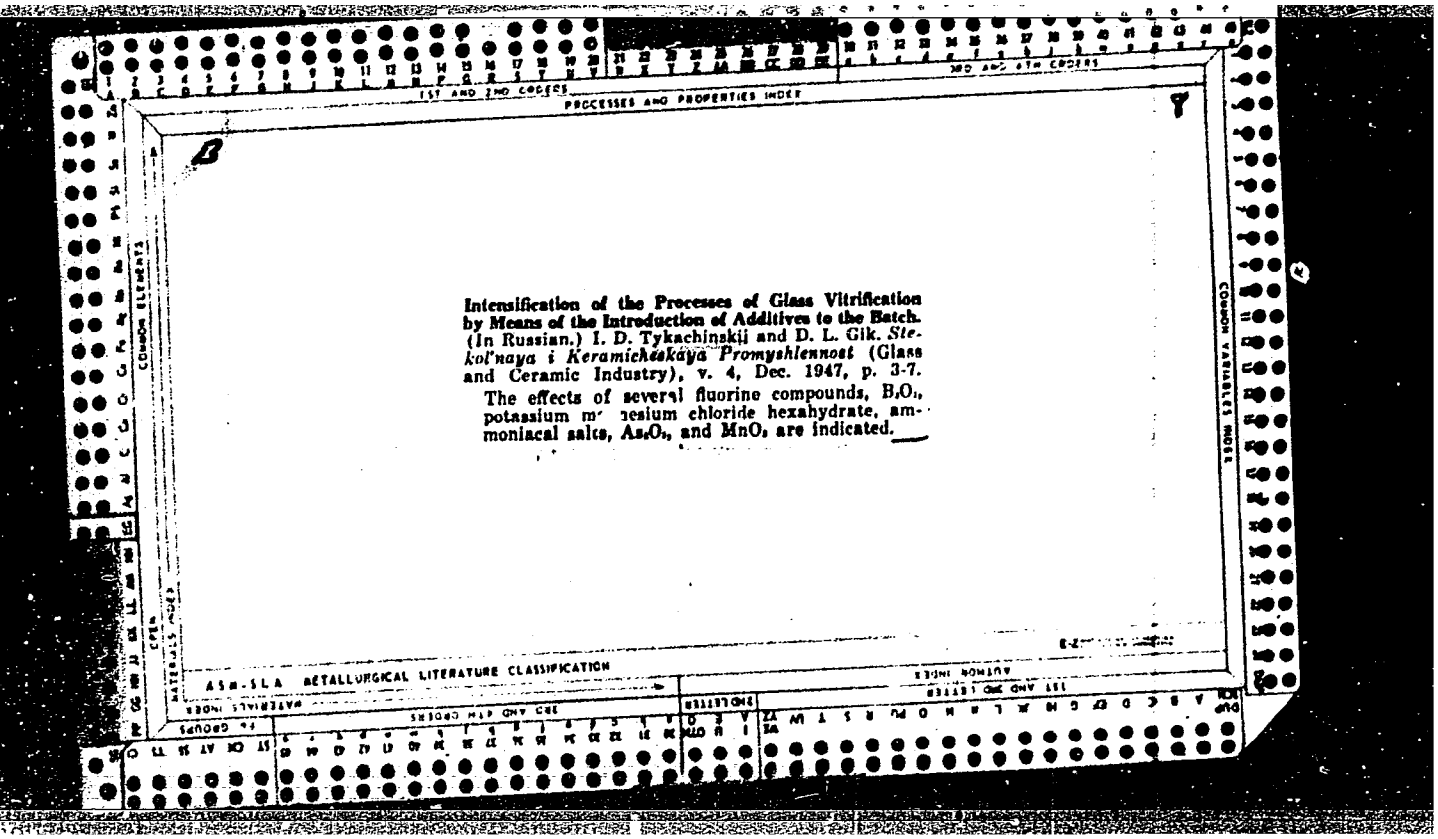
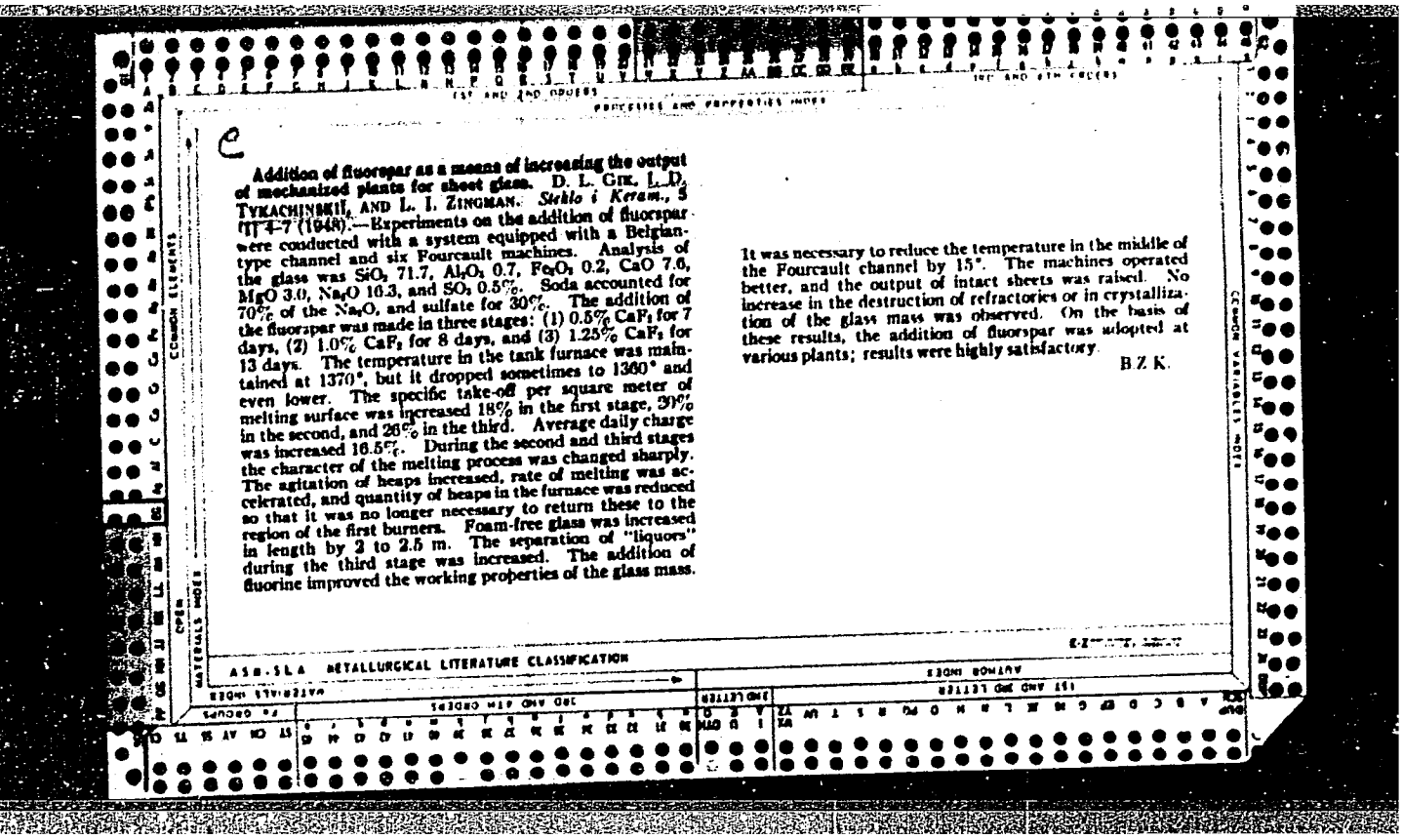
Analytical evaluation of phosphoric acid in fertilizers. Oldřich Tykač.—Chem. Obzor 11, 117-22(1936).—Better knowledge of the analytical basis of the conventional methods for detg. P_2O_5 is essential for estg. their value. Defects of the methods are discussed. Eight references. J. Kučera

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Intensification of the Processes of Glass Vitrification by Means of the Introduction of Additives to the Batch. (In Russian.) I. D. Tykachinskii and D. L. Glk. *Stekol'naya i Keramicheskaya Promyshlennost* (Glass and Ceramic Industry), v. 4, Dec. 1947, p. 3-7.

The effects of several fluorine compounds, B_2O_3, potassium m[illegible]esium chloride hexahydrate, ammoniacal salts, As_2O_3, and MnO_2 are indicated.

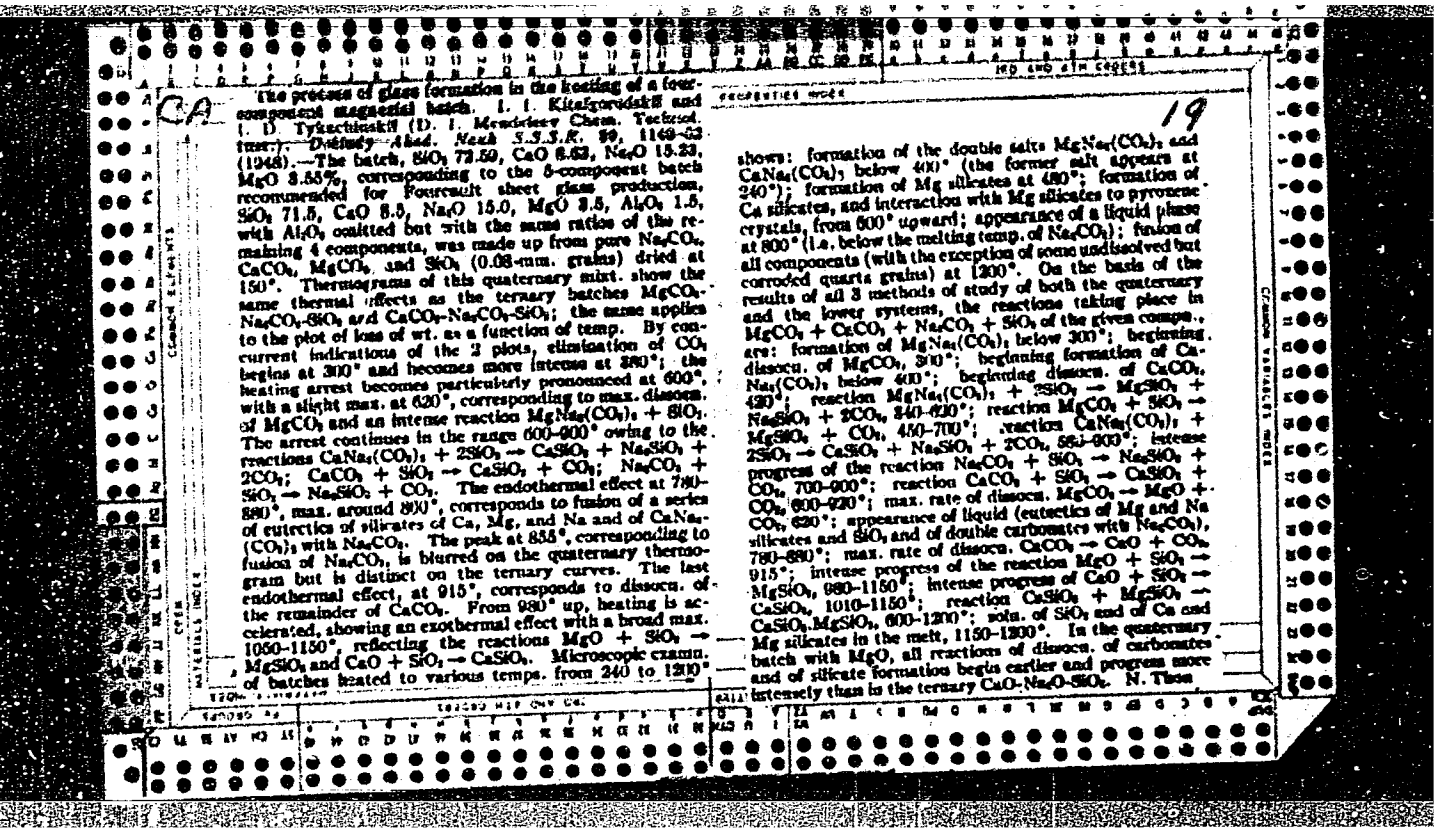


e

Addition of fluorspar as a means of increasing the output of mechanized plants for sheet glass. D. L. Gin, L. D. Tyrachinskii, and L. I. Zingman. *Steklo i Keram.*, 5 [1] 4-7 (1948).—Experiments on the addition of fluorspar were conducted with a system equipped with a Belgian-type channel and six Fourcault machines. Analysis of the glass was SiO_2 71.7, Al_2O_3 0.7, Fe_2O_3 0.2, CaO 7.6, MgO 3.0, Na_2O 16.3, and SO_3 0.5%. Soda accounted for 70% of the Na_2O, and sulfate for 30%. The addition of the fluorspar was made in three stages: (1) 0.5% CaF_2 for 7 days, (2) 1.0% CaF_2 for 8 days, and (3) 1.25% CaF_2 for 13 days. The temperature in the tank furnace was maintained at 1370°, but it dropped sometimes to 1360° and even lower. The specific take-off per square meter of melting surface was increased 18% in the first stage, 30% in the second, and 26% in the third. Average daily charge was increased 16.5%. During the second and third stages the character of the melting process was changed sharply. The agitation of heaps increased, rate of melting was accelerated, and quantity of heaps in the furnace was reduced so that it was no longer necessary to return these to the region of the first burners. Foam-free glass was increased in length by 2 to 2.5 m. The separation of "liquors" during the third stage was increased. The addition of fluorine improved the working properties of the glass mass. It was necessary to reduce the temperature in the middle of the Fourcault channel by 15°. The machines operated better, and the output of intact sheets was raised. No increase in the destruction of refractories or in crystallization of the glass mass was observed. On the basis of these results, the addition of fluorspar was adopted at various plants; results were highly satisfactory.

B Z K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

The process of glass formation in the heating of a four-component magnetial batch. I. I. Kitaigorodskiĭ and I. D. Tyutchinskiĭ (D. I. Mendeleev Chem. Technol. Inst.). *Doklady Akad. Nauk S.S.S.R.* 59, 1149–52 (1948).—The batch, SiO_2 72.59, CaO 6.53, Na_2O 15.33, MgO 3.55%, corresponding to the 5-component batch recommended for Fourcault sheet glass production, SiO_2 71.5, CaO 8.5, Na_2O 15.0, MgO 3.5, Al_2O_3 1.5, with Al_2O_3 omitted but with the same ratios of the remaining 4 components, was made up from pure Na_2CO_3, $CaCO_3$, $MgCO_3$, and SiO_2 (0.08-mm. grains) dried at 150°. Thermograms of this quaternary mixt. show the same thermal effects as the ternary batches $MgCO_3$-Na_2CO_3-SiO_2 and $CaCO_3$-Na_2CO_3-SiO_2; the same applies to the plot of loss of wt. as a function of temp. By concurrent indications of the 2 plots, elimination of CO_2 begins at 300° and becomes more intense at 380°; the heating arrest becomes particularly pronounced at 600°, with a slight max. at 620°, corresponding to max. dissocn. of $MgCO_3$ and an intense reaction $MgNa_2(CO_3)_2 + SiO_2$. The arrest continues in the range 600–900° owing to the reactions $CaNa_2(CO_3)_2 + 2SiO_2 \rightarrow CaSiO_3 + Na_2SiO_3 + 2CO_2$; $CaCO_3 + SiO_2 \rightarrow CaSiO_3 + CO_2$; $Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$. The endothermal effect at 780–880°, max. around 800°, corresponds to fusion of a series of eutectics of silicates of Ca, Mg, and Na and of $CaNa_2(CO_3)_2$ with Na_2CO_3. The peak at 855°, corresponding to fusion of Na_2CO_3, is blurred on the quaternary thermogram but is distinct on the ternary curves. The last endothermal effect, at 915°, corresponds to dissocn. of the remainder of $CaCO_3$. From 980° up, heating is accelerated, showing an exothermal effect with a broad max. 1050–1150°, reflecting the reactions $MgO + SiO_2 \rightarrow MgSiO_3$ and $CaO + SiO_2 \rightarrow CaSiO_3$. Microscopic examn. of batches heated to various temps. from 240 to 1200° shows: formation of the double salts $MgNa_2(CO_3)_2$ and $CaNa_2(CO_3)_2$ below 400° (the former salt appears at 240°); formation of Mg silicates at 480°; formation of Ca silicates, and interaction with Mg silicates to pyroxene crystals, from 600° upward; appearance of a liquid phase at 800° (i.e. below the melting temp. of Na_2CO_3); fusion of all components (with the exception of some undissolved but corroded quartz grains) at 1200°. On the basis of the results of all 3 methods of study of both the quaternary and the lower systems, the reactions taking place in $MgCO_3 + CaCO_3 + Na_2CO_3 + SiO_2$ of the given compn. are: formation of $MgNa_2(CO_3)_2$ below 300°; beginning dissocn. of $MgCO_3$, 300°; beginning formation of $CaNa_2(CO_3)_2$ below 400°; beginning dissocn. of $CaCO_3$, 420°; reaction $MgNa_2(CO_3)_2 + 2SiO_2 \rightarrow MgSiO_3 + Na_2SiO_3 + 2CO_2$, 440–620°; reaction $MgCO_3 + SiO_2 \rightarrow MgSiO_3 + CO_2$, 450–700°; reaction $CaNa_2(CO_3)_2 + 2SiO_2 \rightarrow CaSiO_3 + Na_2SiO_3 + 2CO_2$, 560–900°; intense progress of the reaction $Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$, 700–900°; reaction $CaCO_3 + SiO_2 \rightarrow CaSiO_3 + CO_2$, 800–920°; max. rate of dissocn. $MgCO_3 \rightarrow MgO + CO_2$, 620°; appearance of liquid (eutectics of Mg and Na silicates and SiO_2 and of double carbonates with Na_2CO_3), 780–880°; max. rate of dissocn. $CaCO_3 \rightarrow CaO + CO_2$, 915°; intense progress of the reaction $MgO + SiO_2 \rightarrow MgSiO_3$, 980–1150°; intense progress of $CaO + SiO_2 \rightarrow CaSiO_3$, 1010–1150°; reaction $CaSiO_3 + MgSiO_3 \rightarrow CaSiO_3.MgSiO_3$, 600–1200°; soln. of SiO_2 and of Ca and Mg silicates in the melt, 1150–1200°. In the quaternary batch with MgO, all reactions of dissocn. of carbonates and of silicate formation begin earlier and progress more intensely than in the ternary CaO-Na_2O-SiO_2. N. Thon

TYKACHINSKII, I. D.

Action of glassmelting accelerators at high temperatures. L. I. BUNEEVA, V. V. POLLYAK, and I. D. TYKACHINSKII. Steklo i Keram, 6 /2/ 3-5 (1949).--Both soda and sulfate charges were used in studying the effect of F_2, F_2 + B_2O_3 and F_2 + MnO + As_2O_3 + B_2O_3 on the rate of glassmelting at temperatures from 1350° to 1450°. With or without the use of accelerators, the process was accelerated with rising temperature. For an ordinary charge (no accelerators) a rise from 1350° to 1450° cut the time about one-fourth. The addition of 1% F_2 at 1350° and at 1450° reduced the time one half; the addition of F_2 + B_2O_3 produced similar results. Simultaneous use of high temperatures and accelerators caused a further reduction in processing time. Some reduction in the activity of the accelerators at high temperatures was caused by volatilization. Fluorine also facilitated the fining, reducing the volume of residual gases. The accelerator F_2 + MnO + B_2O_3 + As_2O_3 was tested only with a soda charge at 1350° and 1400°; the total time reduction, compared with the ordinary charge, was over one-third. B.Z.K.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Improving the construction of a mechanized charger (for tank furnaces). I. D. TYKACHINSKII, P. A. LODOCHKIN, N. E. PRODAIVODA, AND A. V. ES'KIN. *Steklo i Keram.*, 6 [10] 8-9 (1949).—The Thin Layer Feeder serving tank furnace No. 2 at the October Revolution Glass Works was modified in two stages in an attempt to increase the rate of glassmelting. At first, partitions were installed between the 6 bins of the feeder. This increased the thickness of the charge and cullet layer on the feeder table from 130 to 210 mm.; the layer was massive, without any waviness or "rows." After 10 days of operation, directing planes (knives) were installed 10 mm. above the feeder table, along the axes of the partitions. The knives did not interfere with the movement of the table. After this change, the charge and cullet began to enter the furnace in the form of separate rows (layer on table was 215 mm. thick), which were shortly joined, the spaces between the rows becoming filled with a thin layer of charge and foam. Observations made during 20 days of operation, using 16.8 to 18.1% cullet, indicate intensification of the process (melting was complete at the 2d and 3d pairs of burners). The maximum temperature was 1420°C. It is proposed to conduct extensive tests at not lower than 1450°. Further intensification of the processs is to be attained by changing the feeder to give separate rows or heaps on the melt surface with no thin layer of charge between them. Cf. *Ceram. Abstracts*, 1950, May, p. 93*j*.

B.Z.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PORTUGALOV, D. I., TYKACHINSKIY, I. D.

Glass Manufacture

Development of production and use of thick-walled glass tubes., Stek. i. ker., 9, No. 2, 1952.

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

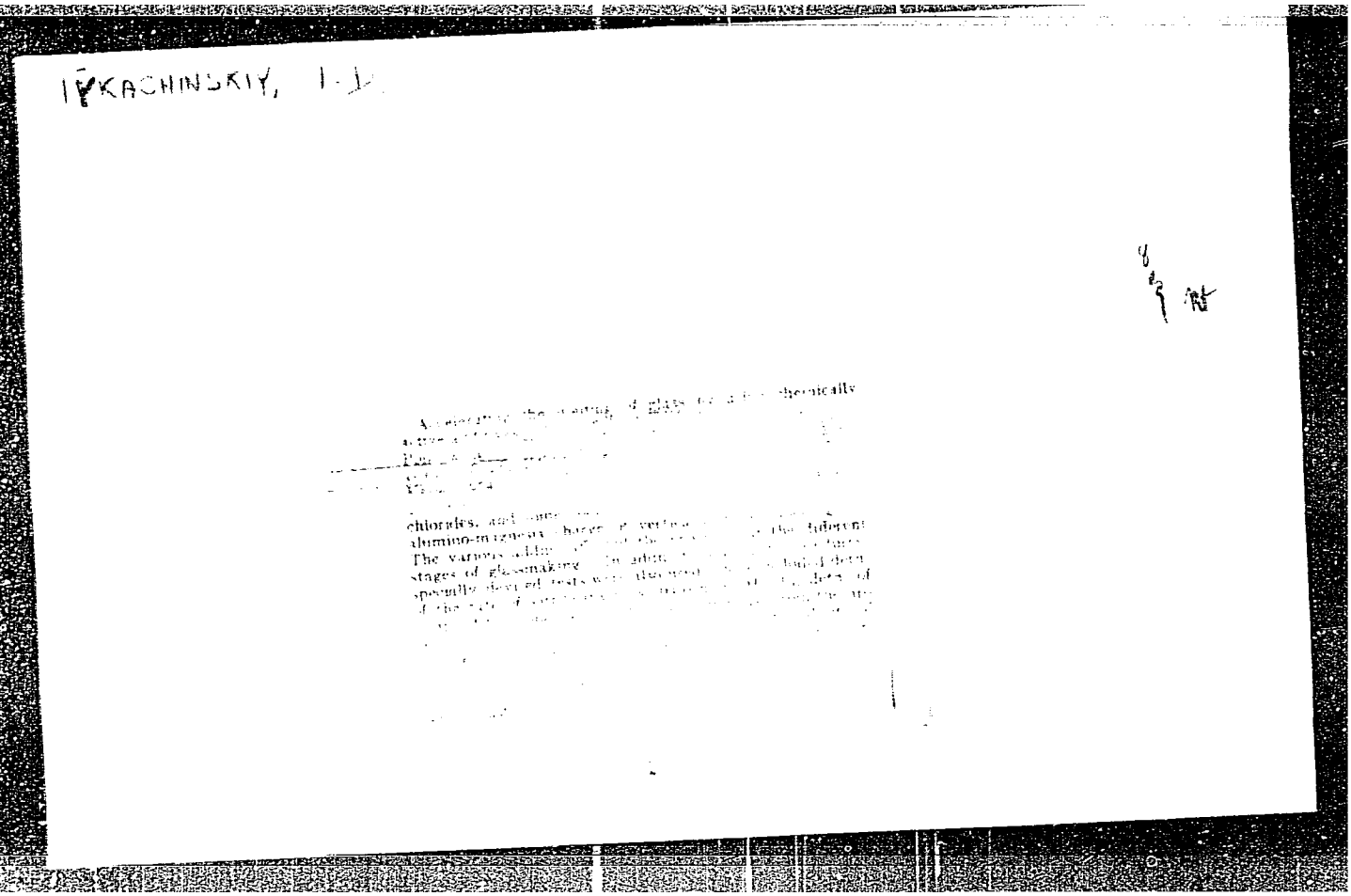
TYKACHINSKIY, I.D.; AFANAS'YEV, A.N.

Rapid determination of moisture in raw materials of glass charge by the method of thermal analysis. Steklo i Keram. 9, No.3, 6-8 '52. (MLRA 5:2)
(CA 47 no.18:9581 '53)

TYKACHINSKIY, I.D., nauchnyy redaktor; GLEZAROVA, I.G., redaktor; DVORNIKOVA, N.I., tekhnicheskiy redaktor.

[Method of drawing glass without a "débiteuse"; experience of the L'vov glass factory] Bezlodochnyi metod vytiagivaniia stekla; opyt kollektiva L'vovskogo stekol'nogo zavoda. Moskva, Gos. izd-vo lit-ry po stroitel'nym materialam, 1953. 68 p. (MLRA 7:11)
(Glass manufacture)

IVKACHINSKIY, I. I.



TYKACHINSKIY I D.

USSR/ Engineering - Glass drawing

Card 1/1 Pub. 104. - 6/9

Authors : Tomashevich, I. O., and Tykachinskiy, I. D.

Title : Construction of a machine bed for vertical drawing of plate glass

Periodical : Stek. i ker. 2, 17-21, Feb 1954

Abstract : The report presents a generalization of accumulated experimental data on the adaption of the boatless method for vertical drawing of plate glass. The advantages of this method are listed, as well as the difficulties which have to be ironed out before the method can be put to practical application. The introduction of boatless glass drawing (vertical drawing through a specially designed machine bed), is considered one of the main contributions to the quality improvement of window and technical glass. Plans for such machine bed arrangement are included. One USSR reference (1952). Diagrams; drawings.

Institution: .....

Submitted: .....

TYKACHINSKIY, I. D.

(2)

10715* (Shaping the Edges of Sheet Glass in Floatless Vertical Drawing.) Formovanie kraiov listu stekla pri bezzlobochnom vertikal'nom vytiagivanii. I. D. Tykachinskii and I. O. Tomashevich. *Steklo i Keramika*, v. 11, no. 5, May 1954, p. 7-12.

Increased capacity by edge forming plates and rollers. Diagrams.

Effect of soda-potash mixture on the crystallization and fusion of window pane glass. M. [illegible] R. S. Levina, [illegible] Bogdanova and S. [illegible] Tykachinskii. Trudy Vsesoyuz. Nauch.-[illegible] Raf. 1954, No. 34, 3-9; Referat. Zhur. Khim. 1955 No. [illegible]. The suitability of the soda-potash mixt. obtained [illegible] product in Al_2O_3 plants operating on nepheline [illegible] melting was investigated. The mixt. contained K_2CO_3 32.8 and Na_2CO_3 53.8%. Liquid glass was melted in [illegible] bles and kept for 4 hrs. at 1430°. The glass was then poured from the crucibles, annealed, and its physicochemical properties were examd. visually. It was concluded that the soda-potash mixt. could be used in batches of sheet glass to replace soda partly or entirely; in the latter case the working [illegible] of the glass was raised by 40-60°. A glass contg. [illegible] component 7.5% K_2O was in its crystn. properties [illegible] with a glass contg. only Na_2O. M. [illegible]

(4)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757710018-4"

TYKACHINSKIY, I. D.

USSR/ Engineering - Glass tube manufacture

Card 1/1 Pub. 104 - 6/11

Authors : Shapiro, I. E.; Tykachinskiy, I. D.; and Buneyeva, L. I.

Title : The manufacture of heat resistance glass pipes from alkaline-free glass by the horizontal drawing method

Periodical : Stek.i ker. 2, 18 - 21, Feb 1955

Abstract : The process of manufacturing heat resistant glass pipes from alkaline-free five-component glass (containing SiO_2, Al_2O_3, CaO, MgO and F_2) by the horizontal drawing method is described. The physico-chemical composition of such a type of glass are described and the various applications of glass pipes are listed. Tables; diagrams; drawings; graph.

Institution: .....

Submitted: .....

TYKACHINSKIY, I. D.

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5188

Author: Tykachinskiy, I. D., Botvinkin, O. K., Buneyeva, L. I., Levina, R. S., Okhotin, M. V., Rogozhin, Yu. V., Syritskaya, Z. M.

Institution: None

Title: Development of Alkali-Free and Low-Alkali Glass Compositions and of the Technology of Their Melting and Fabrication

Original Publication: Steklo i keramika, 1956, No 6, 1-6

Abstract: Presentation of the results of work on the development of boron-free, alkali-free or low-alkali glasses, suitable for mechanized manufacture of mass production articles. Selection of the compositions was based on a four component system SiO_2-Al_2O_3-CaO-MgO, and research dealt primarily with the region of ternary eutectic, of MP 1,222°, having the composition (in % by weight): SiO_2 61.9, Al_2O_3 18.5, CaO 10.2 and MgO 9.4. To facilitate melting additions of CaF_2, B_2O_3, Na_2O,

Card 1/2

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5188

Abstract: P_2O_5 were used. CaF_2 was found to be most effective. Elimination of silica crust at the surface of the glass melt was effected by incorporation of 1% CaO as calcium sulfate. A series of glasses have been developed in which the sum of alkaline-earth oxides is constant, and the proportions of MgO and CaO approximate those of dolomite. As a result of studies of crystallization and viscosity a series of glass compositions are recommended. One of them (glass No 13) contains (in % by weight): SiO_2 61.9, Al_2O_3 18.5, CaO 15.4, MgO 4.2, F' 4 (in excess of 100); it is characterized by the following properties: coefficient of linear expansion $43-45 \cdot 10^{-7}$, thermal conductivity coefficient (at 70-350°) 0.75-0.77 kcal/m degree hour, thermal capacity (at 25-360°) 0.472-0.208 kcal/kg degree, Young modulus 7,350-7,500 kg/mm^2, specific gravity 2.6 g/cm^3, flexural strength 620 kg/cm^2, microhardness 935-975 kg/mm^2. The investigated glasses show high electric insulating properties. They can be melted in pot and tank furnaces at 1,480-1,510° and fabricated by various mechanized procedures in the mass production of various kinds of glass articles (tubes, insulators, parts of machines and apparatus, glass fiber).

Card 2/2

ACCESSION NR: AT4019301 S/0000/63/003/001/0123/0126

AUTHOR: Ty*kachinskiy, I. D.; Sorkin, Ye. S.

TITLE: Investigation of the variation in the physical properties of glass of the lithium oxide-alumina-silica system during its crystallization

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, 123-126

TOPIC TAGS: glass, glass crystallization, glass physical property, aluminosilicate, lithium glass

ABSTRACT: The authors investigated the changes in the physical properties, such as density, refractive index, coefficients of thermal expansion and light transmittance, as well as the deformation under isothermal static compression, of glasses of the Li_2O-Al_2O_3- SiO_2 system during crystallization as a function of the time of exposure at different temperatures. The experimental curves show that at any temperature of exposure in the investigation range, the density and refractive index asymptotically approached the same limiting value. The coefficient of light transmittance approached zero asymptotically. Deformation curves

Card 1/2

ACCESSION NR: AT4019301

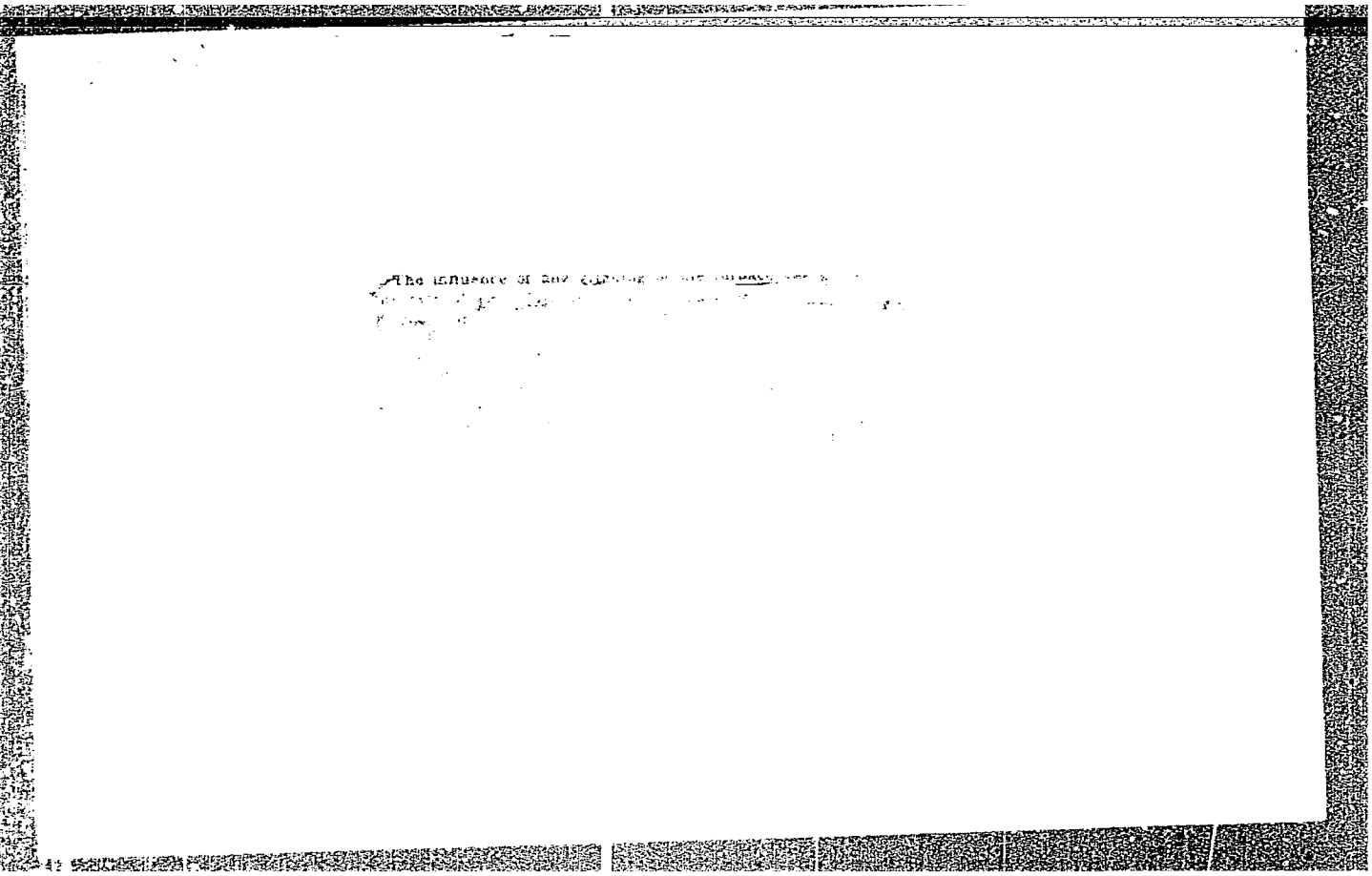
for glass under static compression at different temperatures are given, and the correlation between the character of the deformation and the changes in physical constants is plotted at a temperature of thermal treatment of 710C. On plotting the same curves at other temperatures, in the same time interval, it could be seen that the deformation curves of isothermal static compression reveal changes in the physical properties of the initial glass during its crystallization. Compression tests on samples of initial glass of the Li_2O-Al_2O_3-SiO_2 system using other mineralizers showed that the deformation curves have an analogous slope. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 17May63 DATE ACQ: 21Nov63 ENCL: 00

SUB CODE: MT NO REF SOV: 004 OTHER: 003

Card 2/2



TYKACHINSKIY, I.D.; BOTVINKIN, O.K.; BUNEYEVA, L.I.; LEVINA, R.S.; OREKHIN, M.V.; ROGOZHIN, Yu.V.; SYRITSKAYA, Z.M.

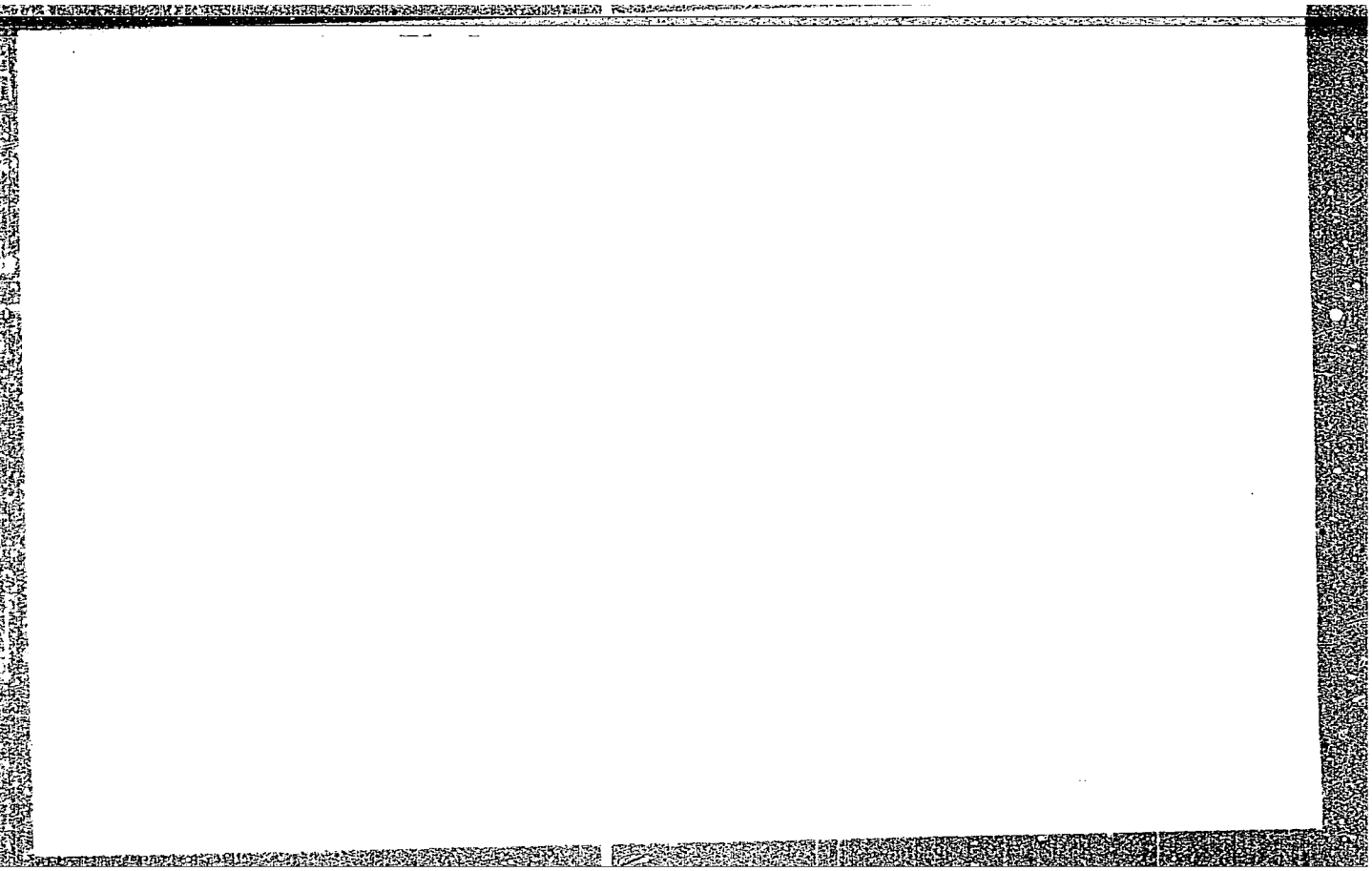
Making alkali-free and low-alkali glass compounds and the technology of their melting and shaping. Stek.i ker. 13 no.6:1-6 Je '56. (MLRA 9:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut stekla.
(Glass manufacture)

TYKACHINSKIY, I.D.

ORLOVA, M.P., kandidat tekhnicheskikh nauk; SESOROVA, V.N., kandidat tekhnicheskikh nauk; TYKACHINSKIY, I.D., kandidat tekhnicheskikh nauk.

Investigating the performance of the VVS machines at high speeds in the Bytoshevskiy and Chagodoshchenskiy glass works. Trudy VNII-Stekla no.36:82-94 '56. (MLRA 9:11)
(Glass manufacture) (Furnaces)



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757710018-4"

Tykachinskiy, I.D.

USSR/Chemical Technology - Chemical Products and Their Application. Ceramics. Glass. Binders. Concrete. H-7

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 2021

Author : Tykachinskiy I.D., Katayeva G.V.

Inst : Institute of Glass

Title : Intensification of Glass Melting Process by Incorporation of Ammonium Salts.

Orig Pub : Steklo i keramika, 1957, No 1, 3-7

Abstract : Of particular interest as accelerating agents in the process of glass melting, are the ammonium salts, which are volatilized during the process and therefore do not alter the composition of the glass. At the Institute of Glass a study was made of the effect of ammonium salts on the vitrification and clarification of industrial glasses of alkaline and alkali-free composition. An investigation

Card 1/3

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2021

was made of the effect of addition of ammonium chloride, nitrate and sulfate, in amounts ranging from 0.5 to 5%, to alkali-free glass of composition No 13 and to ordinary sheet glass made from a soda- and soda-sulfate mix. It is shown that of the three ammonium salts that were investigated the greatest acceleration of the vitrification process is produced by $(NH_4)_2SO_4$, added in amounts from 3 to 5% depending on the composition of the mix. Addition of NH_4NO_3 causes the formation of flecks, while NH_4Cl is little effective and imparts a yellow-brown color to the glass. The extent of acceleration of the melting process, in the case of a soda- and soda-sulfate batches, is of about 30% at temperatures of 1370- 1420°. A verification of the effect of the addition on the speed of melting of alkali-free glass has confirmed the results of laboratory experiments. It was ascertained that an

USSR/Chemical Technology - Chemical Products and Their Application. Ceramics. Glass. Binders. Concrete. H-7

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2021

addition of $(NH_4)_2SO_4$ has a beneficial effect on the process of clarification. Verification of the effect of addition of 1-5% $(NH_4)_2SO_4$ on the crystallization properties has shown that in the temperature interval utilized in production the crystallization properties of the investigated glasses are not made worst; on the other hand an addition of 0.5% $(NH_4)_2SO_4$ renders the crystallization properties worse, especially at low temperatures.

Card 3/3

AUTHOR: Tykachinskiy, I. D., and Katayeva, G. V.

TITLE: Intensification of Glass Founding with Ammonium Salts (Intensifikatsiya varki stekla putem vvedeniya ammoniynykh soley)

PERIODICAL: Steklo i Keramika, 1957, Vol. 14, Nr 1, pp 3-7 (U.S.S.R.)

ABSTRACT: A study was conducted at the Glass Found Laboratories of the Volga Scientific Research Institute for Comprehensive Study of Structures, Building Materials, and Sanitary Engineering (Laboratorii steklovareniya VNIIA), to determine the effect of ammonium salts on a glass found process and the clarity of commercial alkali and alkali-less glass. Two types of glass and three admixtures were used for the above mentioned purpose; an alkali-less glass, No. 13: SiO_2-62.0%; Al_2O_3-18.5%; CaO-15.3; MgO-4.2%; F'-4% above 100; and a common window pane glass: SiO_2-72.5%; Al_2O_3-2.0%; CaO-6.5%; MgO-4.0%; Na_2O-15.0%. The admixtures NH_4Cl, NH_4NO_3 and $(NH_4)_2SO_4$ were applied in the amount of from 0.5 to 5% (* the amount of admixtures is given in % according to charge weight). The study of the rate of glass found under laboratory conditions was conducted according to A. P. Zak's method, and under the semi-industrial conditions according to the quantity of admixtures. The glass founding was performed in especially designed uniform fireclay cruicible furnaces, heated to 1370 ± 50, 1420 ± 50, and 1450 ± 50 temperatures. During the experiments, the temperatures were kept constant.

Card 1/1

Intensification of Glass Founding
with Ammonium Salts

Table No. 1 shows the effect of ammonium salts on the duration of formation of the No. 13 alkali-less glass at a temperature of 1450°. Table No. 2 shows the effect of various ammonium salts on the duration of formation of a common alkali glass from soda batch at a temperature of 1370°. Table No. 3 shows the effect of various ammonium salts on the duration of formation of a common alkali glass from a sodium sulfate batch at a temperature of 1370°. Table No. 4 shows the results of investigation of the rate of formation of glass from a soda and sodium sulfate batch containing 3 -5% of ammonium sulfate admixture at a temperature of 1420°. Table No. 5 shows the results of glass founding with an admixture of 3% of $(NH_4)_2SO_4$. Graphs No. 1 & 2, show the effect of $(NH_4)_2SO_4$ admixture on crystallization characteristics of the glass. It is indicated that glass found with a 2 -4% $(NH_4)_2SO_4$ admixture is less inclined to crystallization than the glass without it. Personalities cited: A. P. Zak is referred to for his method of studying glass formation. There are no bibliographic references.

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

Card 2/2

TYKACHINSKIY, I.D.

ORLOVA, M.P.; POLLYAK, V.V.; TYKACHINSKIY, I.D.

Speeding up the melting process is a powerful means for increasing the productivity of glass furnaces. Stek. i ker. 14 no.9:1-4 S '57. (MIRA 10:10)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut stekla.
(Glass manufacture)

TYKACHINSKIY, I.D.

AUTHOR: Tykachinskiy, I.D. 72-2-1/20

TITLE: Intensification of Production Processes (Intensifikatsiya proizvodstvennykh protsessov).
Acceleration of Smelting and of the Production of Plate Glass (Uskoreniye varki i vyrabotki listovogo stekla).

PERIODICAL: Steklo i Keramika, 1958, Nr 2, pp. 1-4 (USSR)

ABSTRACT: The increase of the production output of plate glass is intended, for the greater part, to be attained by an intensification of the production process. The main factors in this connection are the smelting temperature, suitable additions to the smelt, and the fine granulation of the material of the layers. Fig. 1 shows the dependence of the time of smelting on temperature. Stepanenko found by analyzing the work of factory plants that an increase of temperature from 1430 to 1490° increases the specific production output of glass by approximately 56%, which is also confirmed by Litvakovskiy. At present Soviet plants are working with temperatures of from 1460 to 1470°. Melting temperatures of from 1490 to 1500° are permissible with the present refractory equipment of furnaces. By the work carried out at the Institute for the Utilization of Gas AN USSR

Card 1/3

it was shown that by using a combined fuel the heat transfer of the torch can be increased, which is also confirmed by the works by N.A. Zakharikov and A.I. Rozhanskiy. By works carried out by the Institute for Glass several chemical additions were determined by which the process of smelting was accelerated, among others the fluorides combined with boron-anhydride, CaF_2, ammonium-sulfate, and others. The work "Proletariy" has been using ammonium-sulfate with good success since November 1957, as shown by the papers by Engver, Katayeva and Orlova. The accelerating effect of the additions is conserved also at higher temperatures as may be seen from the illustration. The Soviet scientists Kitaygorodskiy, Myakhlov, and others as well as experiments carried out by the Institute for Glass showed that, by using a finely ground layer, the smelting process can be accelerated by 25 to 30%. The Institute for Glass, together with VNIITISM, developed a combined scheme of grinding. The influence exercised by a finely ground layer upon the time taken by smelting at different temperatures may be seen from fig. 3. Together with the increase of the efficiency of smelting furnaces it is, however, necessary to increase also the efficiency of the

machines and to provide for additional machines. The Bytoshev and Chagodoshchensk plants work with a velocity of glass production of 85-100 m per hour. For this purpose a glass mass with a content of 4% MgO, 14,8% alkali oxides, and 1,6-1,8% Al_2O_3, as well as with an addition of 0,5-2,0% K_2O, instead of the corresponding quantity of Na_2O, is suited. The present publication is part of a lecture which was delivered on December 10 - 12, 1957 during a technical conference held at the Konstantinovka plant. [Ref. 1]. There are 3 figures.

ASSOCIATION: Institute for Glass (Institut stekla).

AVAILABLE: Library of Congress

TYKACHINSKIY, I.D.

AUTHORS: Tykachinskiy, I.D., Katayeva, G.V. 72-2-2/20

TITLE: On the Effect of the Acceleration of Ammonium-Sulfate on the Process of Glass Melting (Ob uskoryayushchem deystvii sul'fata ammoniya na protsess steklovareniya).

PERIODICAL: Steklo i Keramika, 1958, Nr 2, pp. 4-5 (USSR)

ABSTRACT: The best effect is attained by an addition, with respect to weight, of 3% ammonium-sulfate. The authors describe in detail what investigations they carried out and, occasionally, also refer to a previous work. The following conclusion is drawn: Ammonium-sulfate forms chemical compounds with the layer components as well as with the layer as a whole. The existence of $(NH_4)_2SO_4$ in the layer, thanks to its being melted at a temperature of 350°, leads to the formation of a liquid intermediate layer, by which interaction among layer components is promoted. In the temperature range of 350-530° the ammonium-sulfate decomposes into the gaseous products NH_3, SO_3 and H_2O. The ammonia acts mechanically upon the layer by mixing it. Group SO_3 and steam react, owing to their high chemical activity, with the layer components and accelerate the process of melting. The addition $(NH_4)_2SO_4$ to the alkali-free layer leads to the earlier formation

Card 1/2

On the Effect of the Acceleration of Ammonium-Sulfate on the Process of Glass Melting

72-2-2/20

of a liquid phase by the formation of $CaSO_4$ and the euteotic mixture CaF_2-$CaSO_4$, which melts at a temperature of 960°, and it also leads to a more rapid formation of silicate and glass. There is 1 Slavic reference.

ASSOCIATION: Institute for Glass (Institut stekla).

AVAILABLE: Library of Congress

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TYKACHINSKIY, I.D.

72-2-18/20

AUTHOR: None Given

TITLE: The Production of Glass in the Ukrainian SSR Must be Developed (Razvivat' proizvodstvo stekla v USSR)
From the Technical Conference of Representatives of the Glass Industry (S tekhnicheskogo soveshchaniya rabotnikov stekol'noy promyshlennosti).

PERIODICAL: Steklo i Keramika, 1958, Nr 2, pp. 43-45 (USSR)

ABSTRACT: This conference was called by the Ministry for the Industry of Building Materials of the Ukrainian SSR as well as by the Ukrainian- and Stalin-Regional NTO for Building Materials and took place on December 10-12, 1957 at Konstantinovka. The minister for the building material industry of the Ukrainian SSR, Moroz, opened the conference and stressed the fact that the production of glass must be increased. The following reports were further delivered:
1.) Patenko, (Deputy Minister for the Building Material Industry) spoke about the present stage of the glass industry, and pointed out what work must be carried out in future.
2.) Solinov (Director of the Institute for Glass) gave a report concerning new kinds of glass products for dwelling- and industrial buildings and how they are to be properly used in practice.

Card 1/5

The Production of Glass in the Ukrainian SSR Must be Developed. From the Technical Conference of Representatives of the Glass Industry

3.) Dubrovskiy (Director of the Ukrainian Branch of the Institute for Glass) described the work carried out by this institute.
4.) Tykachinskiy (Institute for Glass) gave a detailed description of the part played by the factors determining the intensity of the process of glass melting.
5.) Zhirnov ("Proletariy" plant) spoke about the success achieved by this plant.
6.) Lev (Representative of the Giprosteklo Institute) spoke about the distribution of new products.
7.) Alekseyev (Academy for Building and Architecture of the USSR) spoke about the assortment, quality, and value of building glass.
8.) Il'inskiy (Head of the Pyrometric Department of the Giprosteklo) spoke about the perfecting of glass smelting furnaces during future repair work.
9.) K.I.Borisov (PKB of the Institute for Glass) spoke about improved constructions of glass smelting furnaces and flues.

The Production of Glass in the Ukrainian SSR Must be Developed. From the Technical Conference of Representatives of the Glass Industry

72-2-18/20

10.) Solomin, Professor (Institute for Glass) spoke about refractories for tank furnaces.
11.) Pronin (Lisichansk Works) reported about dinas products of high stability.
12.) Bondarev (Director of the "Avtosteklo" Works, Konstantinovka) dealt with prospects for building glass.
13.) Firer (Representative of the Gomel Plant) spoke about the production and use of glass tubes and foam glass.
14.) Zabkov (Director of the Plant imeni October Revolution) spoke about the prospects of the production of special glass products.
15.) Bazhbeyk-Melikov (Scientific Collaborator of the Institute for Glass) gave a report on building glass blocks.
16.) Abakumov (Chief Engineer of the Skopino Works) spoke about the production of glass blocks in this plant.
17.) Shatokhin (Institute for Glass), Polik (Institute for Glass Fibres), Koryagina (Ivotsk Plant) spoke about glass fibres.

Card 3/5

The Production of Glass in the Ukrainian SSR Must be Developed. From the Technical Conference of Representatives of the Glass Industry

72-2-18/20

18.) Perederiyenko (Director of the Glass Works at Lvov) spoke about plate glass of high quality.
19.) Myasnikov (Dotsent of the Polytechnic Institute of Kiyev) spoke about the production of glass tiles.
20.) Reznikov (PKB of the Institute for Glass), Minakov ("Avtosteklo" Works, Konstantinovka), Dolbin ("Proletariy" Works), Kolesnikov (Plant imeni October Revolution), Zhirnov (TsKB MPSM Ukrainian SSR) spoke about problems of mechanization.
21.) Pod"yel'skiy spoke about the packing of glass.
22.) Baklanov (Head of the Sovnarchose Stalinsk) spoke about the development of new building materials in that province.
23.) Potanin (Deputy Chief of the Department for Building Materials of the Gosplan USSR) spoke about general problems of the glass industry.

Decisions were made with a view of increasing the efficiency and the quality of the products of glass works and the works producing

Card 4/5

The Production of Glass in the Ukrainian SSR Must be Developed. From the Technical Conference of Representatives of the Glass Industry

72-2-18/20

refractories. On the basis of the Ukrainian branch it is intended that a Ukrainian Scientific Research Institute for Glass be established at Konstantinovka.

AVAILABLE: Library of Congress

Card 5/5

TYKACHINSKIY, I.D., kand. tekhn. nauk.

Theoretical fundamentals of the glass-forming process. Khim. nauka i prom. 3 no.1:65-71 '58. (MIRA 11:3)
(Glass)

TYKACHINSKIY, I. D.

25(1), 25(5) SOV/72-58-13-21/25

AUTHOR: None Given

TITLE: Conference of Functionaries of the Glass Industry (Soveshchaniye rabotnikov stekol'noy promyshlennosti)

PERIODICAL: Steklo i keramika, 1958, Nr 12, pp 45-46 (USSR)

ABSTRACT: The conference of functionaries of the glass industry of the RSFSR was held in the town of Vladimir from October 21-25, 1958. The organizing bodies were: Gosudarstvennyy nauchno-tekhnicheskiy Komitet Soveta Ministrov RSFSR (Scientific-Technical State Committee of the Council of Ministers of the RSFSR), Gosplan RSFSR (State Office for Economic Planning of the RSFSR), Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleyeva (All-Union Chemical Society imeni D.I.Mendeleyev) and Vladimirskiy sovnarkhoz (Vladimir Council of National Economy). The topic of the conference was: Perfection of production processes, introduction of general mechanization and automatic control in the factories for building and technical glass, glass fiber, glass containers and vessels. A.S.Boldyrev, Deputy Chairman of the Scientific-Technical State Committee of the Council of Ministers of the RSFSR, in his opening speech termed the elaboration of measures for further development of the glass industry by introduction of the latest technical achievements as well as the experience of leading factories to be the most important task. He stressed that the achievements of Soviet and foreign science and engineering should be considered in planning new works. The following reports were given:

Card 1/5

M.G.Stepanenko, Professor, Director of the laboratoriya Instituta Stekla (Laboratory of the Glass Institute), reported on the introduction of electric and gas-electric furnaces.

I.D. Tykachinskiy, Director of the Laboratory of the Glass Institute, spoke on methods and experiments of intensifying the glass melting process by increasing the melting temperature and using chemical accelerators.

Card 2/5

N.V. Solomin, Professor, Director of the Laboratory of the Glass Institute, spoke on measures of supplying the glass industry with high-grade refractory products.

D.S. Mitman, Chief Engineer of the Podol'skiy ogneupornyy zavod (Podol'skiy Factory of Refractory Products) spoke on the manufacturing technology and the properties of refractory products of this factory.

A.G. Minakov, Deputy Chief Engineer of the Konstantinovskiy zavod "Avtosteklo" (Konstantinovskiy Works "Avtosteklo") reported on experiments of extension of the furnace working period by artificial cooling of the furnace brick lining.

V.G. Gutop, Director of the Laboratory of the Glass Institute, reported on the development in automatic control of working conditions for glass melting furnaces.

V.V. Trimnite, Deputy Chief of the Otdel stroitel'nykh materialov Gosstroya SSSR (Section for Building Materials of the Gosstroy USSR), spoke on the demands of building experts to the glass industry.

D.I.Alegg, Chief Engineer of the Gusevskoy steklo'nyy zavod imeni Dzerzhinskogo (Gusevskoy Glassworks imeni Dzerzhinskiy), reported on the operation of tank furnaces in this factory.

The work of the conference was done in 4 sections: Building and technical glass, vessels, glass containers, glass fiber and glass plastics.

Card 3/5

15(2) SOV/72-59-4-4/21

AUTHORS: Cykachinskiy, I. D., Romanovskiy, M. B.

TITLE: On the Influence Exercised by Dolomite of Granulometric Composition on the Vitrification of the Aluminum-magnesium Layer (Vliyaniye granulometricheskogo sostava dolomita na stekloobrazovaniye alyumomagnezial'noy shikhty)

PERIODICAL: Steklo i keramika, 1959, Nr 4, pp 14 - 19 (USSR)

ABSTRACT: In the present paper the authors describe an experimental investigation of this problem. Two types of layers were used: a soda and a soda-sulphate layer as well as 4 dolomite fractions of the Ashcherinskoye deposit of a granular size of 0.22, 0.1, 0.05 and 0.02 mm (Fig 1). The rate of vitrification was determined according to A. P. Zak's method. As may be seen from the table and the figures 2 and 3 the granular size of the dolomite exercises a considerable influence on the duration of vitrification in the soda as well as in the soda-sulphate layer. In figures 4,5, and 6 the thermograms of the different layers are given and then discussed in detail. In figure 7 the curves of the weight losses in the heating of the layer are represented. It may be seen from

Card 1/2

the experimental results (Figs 4,5, and 6 and Table) that the process of silicate and glass formation at a temperature above 900° depends mainly on the granular size of the dolomite. Microsections of layer sinterings with coarse- and fine-grained dolomite were investigated (Figs 8 and 9). It may be seen from it that in the case of fine-grained dolomite the reaction between dolomite and quartz takes place more easily and more rapidly. Since 1958 dolomite is ground of a granular size of below 0.1 mm in the Gusevskiy Works imeni Dzerzhinskiy. There are 9 figures and 1 table.

15(2) SOV/72-59-5-3/23

AUTHORS: Tykachinskiy, I. D., Obidina, S. P.

TITLE: The Effect of Fluorine on Processes Taking Place in Heating an Alkaliless Layer (Vliyaniye ftora na protsessy, protekayushchiye pri nagrevanii besshchelochnoy shikhty)

PERIODICAL: Steklo i keramika, 1959, Nr 5, pp 9 - 11 (USSR)

ABSTRACT: The following publications are devoted to the investigation of the fluorine effect as an accelerator in glass melting: V. F. Zhuravlev, S. P. Vol'fson (Ref 1), N. A. Toporov, S. P. Golynko-Vol'fson, M. M. Sychev (Ref 2). I. D. Tykachinskiy and A. N. Afanas'yev (Ref 3) investigated the processes taking place in heating the following alkaliless layers: $SiO_2 + Al_2O_3 + CaCO_3 + MgCO_3$; $SiO_2+Al_2O_3+CaCO_3+MgCO_3+CaF_2$ (see footnotes). Layers with and without fluorine were investigated (Table). The rate of glass formation was determined by the A. P. Zak-method. The figure shows the investigation results. Hence it appears that the time of glass formation is reduced by half by an addition of 4% fluorine by means of CaF_2 to a layer with the composition $SiO_2+Al_2O_3+CaCO_3+MgCO_3$.

The Effect of Fluorine on Processes Taking Place in Heating an Alkaliless Layer

SOV/72-59-5-3/23

The discovery of the processes and temperatures of the individual reactions renders it possible to calculate the temperature of the layer processes and to determine the melting conditions of such glass types. There are 1 figure, 1 table, and 6 references, 5 of which are Soviet.

Card 2/2

L 46271-66 EWT(l)/EWT(m)/EWP(e) IJP(c) WH
ACC NR: AP6023922 SOURCE CODE: UR/0363/66/002/007/1277/1279

AUTHOR: Gendler, T. S.; Mitrofanov, K. P.; Plotnikova, M. V.; Tykachinskiy, I. D.; Fedorovskiy, Ya. A.

ORG: Scientific Research Institute of Nuclear Physics (Nauchno-issledovatel'skiy institut yadernoy fiziki); State Scientific Research Institute of Glass (Gosudarstvennyy nauchno-issledovatel'skiy institut stekla)

TITLE: Study of the initial stages of glass crystallization by means of the Mössbauer effect

SOURCE: AN SSSR. Izv. Neorg materialy, v. 2, no. 7, 1966, 1277-1279

TOPIC TAGS: Mossbauer spectrum, glass, catalyzed crystallization, tin compound

ABSTRACT: By combining data on gamma resonance with x-ray structural analysis, which provides information on the long-range order, new information can be obtained on the early stages of crystallization in pyroceramics. The object of the study were samples of lithium aluminum silicate glass close in composition to spodumene. The catalyst used was SnO_2 (5 wt. %) because the resonance absorption of gamma rays by Sn^{119} nuclei could be thus observed. Comparison of the Mössbauer spectra of the initial glass and of glass subjected to heat treatment (1 hr at 750°C) showed that (1) the spectrum of the initial glass is displaced by 0.06 mm/sec to the left relative to the heat-treated glass, whose spectrum coincides with that of crystalline SnO_2 (cassiterite); (2) the

UDC: 54-161.6:548.0:531

Card 1/2

ACC NR: AP6023922

spectral lines in the initial glass are broader and the splitting is greater than in the heat-treated glass. The shift observed in the spectra is apparently due to the fact that in the initial glass the ionic character of the Sn-O bond is greater than in cassiterite. The large splitting of the spectrum indicates large gradients of electric fields acting on the tin nuclei in the vitreous state of the sample. The line broadening in the initial glass is due to the lack of rigorous ordering in the arrangement of the atoms closest to tin. The heat treatment causes ordering around the tin atoms to take place, i. e., cassiterite nucleation centers are formed, and this change in the short-range order is recorded in the change of the Mössbauer effect. This is followed by a growth of cassiterite crystals, which become large enough to serve as centers for the growth of the main crystalline phase (spodumene). Further treatment causes a complete crystallization of the glass. Orig. art. has: 2 figures.

SUB CODE: 11/ SUBM DATE: 11Oct65/ ORIG REF: 006/ OTH REF: 008

Card 2/2 afs

TYKACHINSKIY, I.D.; SORKIN, Ye.S.

Investigating changes in the physical properties of glass in the system $Li_2O - Al_2O_3 - SiO_2$ in the process of the formation of pyroceramics. Stekloobr. sost. no.1:123-126 '63.

(MIRA 17:10)

ACCESSION NR: AR4015664 S/0081/63/000/021/0340/0340

SOURCE: RZh. Khimiya, Abs. 21M84

AUTHOR: Ty*kachinskiy, I. D.; Naydenov, A. P.

TITLE: Studies of the vitrification range and the crystallizability of glass from the system SiO_2-Al_2O_3-BaO

CITED SOURCE: Steklo. inform. materialy* Gos. n.-i. in-ta stekla, no. 1 (118), 1963, 47-57

TOPIC TAGS: glass softening point, glass crystallization, vitrification range, heat resistant glass, glass boiling point, silica-alumina-barium oxide system

ABSTRACT: Vitrification ranges were established for the two-component systems silica-barium oxide and silica-alumina and the three-component system silica-alumina-barium oxide. The study of the crystallization characteristics of glass from these systems indicated the existence of a large number of kinds of glass characterized by very low crystallization levels; this determines the excellent technical qualities of these materials. Types of glass which do not crystallize at various temperatures were also found in the silica-alumina-barium oxide system. These materials are of scientific and industrial importance as materials with

Card 1/2

ACCESSION NR: AR4015664

special properties. Results of studies on the crystallization characteristics of glass made it possible to evolve isotherms for peak rates of crystallization. Experimental determination of the softening points for two- and three-component glass from the alumina-silica-barium oxide system has shown their high thermal stability. Glass materials with boiling points up to 1600C, a high softening point (above 950C) and insignificant crystallizability are of major practical value. The presence of infusible compositions in the silica-alumina-barium oxide system is of major interest for the development of new heat-resistant glass materials and crystalline glass with a softening point above 1500C. Bibl. with 14 references. Authors' summary.

DATE ACQ: 09Dec63 SUB CODE: MA ENCL: 00

Card 2/2

TYKACHINSKIY, I. D.

"Planning of coordination basic research on technical sitalls"

(State Institute of Glass)

At the Division of Physical Chemistry and Technology of Inorganic Materials, Acad. Sc. USSR, a scientific council on the problem of sitalls has been established. The Council is a coordinating body for basic scientific research on sitalls, glass, fiber glass, stoneware, refractory and superrefractory materials, and coatings. The purpose of the Council is primarily to contribute to the improvement of the strength and impact resistance of existing materials. In 1963, the council held two sessions.
(Steklo i keramika, no. 6, 1964, 48-49)

TOROPOV, N. A. and TYKACHINSKIY, I. D.

"Preparation of new microcrystalline materials with reduced brittleness."

(Institute of Silicate Chemistry)

At the Division of Physical Chemistry and Technology of Inorganic Materials, Acad. Sci. USSR, a scientific council on the problem of sitalls has been established. The Council is coordinating body for basic scientific research on sitalls, glass, fiber glass, stoneware, refractory and superrefractory materials, and coatings. The purpose of the Council is primarily to contribute to the improvement of the strength and impact resistance of existing materials. In 1963, the council held two sessions.

(Steklo i keramika, no. 6, 1964, 48-49)

BEREZHNOY, A.I.; BRODSKIY, Yu.A.; BRONSHTEYN, Z.I.; VEYNBERG, K.L.; GALDINA, N.M.; GLETMAN, B.A.; GINZBURG, D.B.; GUTOP, V.G.; GUREVICH, L.R.; DAUVAL'TER, A.N.; YEGOROVA, L.S.; KOTLYAR, A.Ye.; KUZYAK, V.A.; MAKAROV, A.V.; POLLYAK , V.V.; POPOVA, E.M.; PRYANISHNIKOV, V.P.; SENTYURIN, G.G.; SIL'VESTROVICH, S.I., kand. tekhn. nauk, dots.; SOLOMIN, N.V.; TEMKIN, B.S.; TYKACHINSKIY, I.D.; SHIGAYEVA, V.F.; SHLAIN, I.B.; EL'KIND, G.A.[deceased]; KITAYGORODSKIY, I.I., zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof., red.; GOMOZOVA, N.A., red.izd-va; KOMAROVSKAYA, L.A., tekhn. red.

[Handbook on glass manufacture] Spravochnik po proizvodstvu stekla. [By] A.I.Berezhnoi i dr. Pod red. I.I.Kitaigorodskogo i S.I.Sil'vestrovicha. Moskva, Gosstroiizdat. Vol.2. 1963. 815 p. (MIRA 16:12)

(Glass manufacture)

TYKACHINSKIY, I. D.

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S/844/62/000/000/114/129
D207/D307

AUTHORS: Brekhovskikh, S. M., Vereshchinskiy, I. V., Grishina, A. D., Zelentsova, S. A., Revina, A. A. and Tykachinskiy, I. D.

TITLE: Electron paramagnetic resonance in irradiated glasses of various compositions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 660-667

TEXT: The purpose of the work was to prepare a glass for making test tubes and ampoules used in EPR studies of irradiated substances; such glass must not given an appprecіable EPR signal after being subjected to an ionizing radiation. The basic glass composition was $3SiO_2.0.5Al_2O_3.0.75CaO.0.2MgO$, which was varied by additions of Na_2O, K_2O, Li_2O, BaO, CeO_2, or Fe_2O_3, by altering the proportions of CaO or MgO, and by replacing 20 wt.% SiO_2 with the same

Card 1/3

Electron paramagnetic resonance ...

amount of B_2O_3. Samples were prepared from quartz sand and from materials of 'pure' and 'analytically pure' grades, in corundum crucibles heated to 1450 - 1570°C. The glasses were irradiated with 800 kev electrons at the rate of 10^{21} ev.cm^{-2}.hour^{-1} at room temperature, or with 80 kev x rays (10^{17} ev.cm^{-3}.sec^{-1}) at 77 - 320°K. The spectra were recorded with an apparatus based on ЭПР-2 (EPR-2) of the Institut khimicheskoy fiziki (Institute of Chemical Physics). It was found that in some cases there was no correlation between coloring and generation of paramagnetic centers by electrons and x rays. The addition of Fe_2O_3 or CeO_2 reduced the EPR signal intensity of the irradiated glasses, while the other additives either raised the original signal intensity (Al_2O_3 or alkali oxides together with B_2O_3) or produced an additional peak (B_2O_3 alone or BaO). Annealing of irradiated glasses reduced the concentration of paramagnetic centers produced by second irradiation. Using this information a glass of unstated composition, named 'A', was prepared, which gave no noticeable EPR signal after irradiation and was,

Card 2/3

therefore, suitable for making test tubes used in radiation chemistry. The work on EPR and x ray irradiation was carried out in the Laboratoriya radiatsionnoy khimii (Radiation-Chemistry Laboratory), directed by Doctor of Chemical Sciences N. A. Bakh, who took a direct part in the discussion of the results. There are 8 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut stekla (All-Union Scientific Research Institute for Glass); Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR); Institut elektrokhimii AN SSSR (Institute of Electrochemistry, AS USSR)

BUNEYEVA, L.I.; GORSHKOVA, Z.S.; GUBER, L.U.; IL'IN, A.G.; KOZHUKHOV, V.K.; PISHCHIKOV, D.P.; TYKACHINSKIY, I.D.; SHVARTSBEYN, Ye.A.; TASLITSKAYA, M.[illegible], red.; BORISOV, B.L., tekhn. red.

[Manufacture of glass insulators] Proizvodstvo elektroizoliatorov iz stekla. Moskva, Gos. nauchno-issl. in-t stekla, 1960. 73 p. (MIRA 15:1)

1. Nachal'nik laboratoriy v/v izolyatorov Vsesoyuznogo elektrotekhnicheskogo instituta im. Lenina (for Kozhukhov). 2. Nachal'nik laboratoriy steklovareniya Gosudarstvennogo nauchno-issledovatel'skogo instituta stekla (for Tykachinskiy).
(Electric insulators and insulation)

15.2120

SOV/81-59-14-50368

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 14, p 335 (USSR)

AUTHORS: Tykachinskiy, I.D., Obidina, S.P.

TITLE: The Basic Reactions Which Take Place in the Heating of the Charge $SiO_2 + Al_2O_3 + CaCO_3 + MgCO_3$

PERIODICAL: Steklo. Byul. gos. n.-i. in-ta stekla, 1958, Nr 3 (100), pp 3 - 10

ABSTRACT: For the theoretical study of the processes of melting[15] alkali-free glasses on the basis of the system SiO_2-Al_2O_3-CaO-MgO the basic reactions taking place in the heating of the charge $SiO_2 + Al_2O_3 + CaCO_3 + MgCO_3$ have been studied. This charge is the initial mixture for obtaining glass containing 61.9% SiO_2; 18.5% Al_2O_3; 15.4% CaO and 4.2% MgO. For a more complete elucidation of the reactions taking place in the heating of a 4-component charge the processes in 2- and 3-component charges containing the same components were studied preliminarily. The quantitative ratio of the individual components in all charges was the same as in the 4-components charge. The processes taking place in the heating of the charge were studied by thermal, thermal-weight, microscopic and roentgen-phase analyses. It has been established that the decomposition process of the carbonates is

SOV/81-59-14-50368

The Basic Reactions Which Take Place in the Heating of the Charge SiO_2 + Al_2O_3 + $CaCO_3$ + + $MgCO_3$

considerably accelerated in a 4-component charge. The acceleration of the dissociation is explained by the appearance of the reaction in the solid phase with the formation of silicates or aluminates of Ca and Mg. First magnesium aluminates are formed. At 575°C a recrystallization of the quartz takes place. At 600°C a noticeable formation of calcium aluminates starts, mainly in the form $3CaO \cdot Al_2O_3$ and $5CaO \cdot 3Al_2O_3$. Within the range 450 - 1,000°C (the temperature range of $CaCO_3$ dissociation) the rate of Ca aluminate formation is higher than the rate of Ca silicate formation. Magnesium silicates are detected only at 750°C. An accelerated formation of aluminates and silicates is observed at 1,014 - 1,150°C. At 1,200°C the formation of a compound of the type $CaO \cdot MgO \cdot SiO_2$ is detected roentgenographically. At 1,223°C the formation of the liquid phase takes place corresponding to the melting of the eutectics in the system forsterite-anorthite-quartz. The temperature of 1,268°C corresponds to the beginning of the melting of the eutectics of Ca and Mg silicates and aluminates. At 1,414°C the whole mixture is transformed into a smelt containing only individual insoluble quartz grain. The appearance of the liquid phase in the 4-component charge starts at a temperature by 90°C lower than in 3-components mixtures.

Card 2/2

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TITLE: A New Mechanism of Isothermal Decomposition of Alloyed Austenite

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ABSTRACT: A new mechanism is described of decomposition in the eutectoidal range, which is closely related to the non-steady process of eutectoidal decomposition of austenite. This mechanism was observed in studying precipitation of carbides in Cr-W steels, the results of which will be the subject of a separate paper. The investigated steels contained about 12.5% Cr, 0.5-0.6% C, 3 or. respectively, 5.5% W; the full composition is given in Table 1, on p 450. The steel was produced in a 10-kg medium-frequency furnace with a magnesite lining and cast into ingots weighing 7 kg. For the tests, the ingots were forged into 16 mm dia rods which, prior to manufacture, were normalised from 900 °C and tempered for 2 hours at 700 °C and then cooled in air. Austenisation was effected at 1 300 ± 10 °C for 30 min. The isothermal treatment was effected in a thermostat and a "sleeve" furnace at

Card 1/5

80268
Z/034/60/000/06/009/033
E073/E335

A New Mechanism of Isothermal Decomposition of Alloyed Austenite

650 ± 3 °C. Long-run annealing of the products of isothermal decomposition of austenite was effected in a "sleeve" furnace after cooling the isothermally transformed specimens into quartz ampoules. After heat treatment, the surface layer was removed from all the specimens to a depth of 0.5 - 0.6 mm to eliminate the influence of decarburisation. The electrolytic isolation of the carbides was effected by a method described in another paper. X-ray phase analysis of the isolated carbides was effected by the Straumanis asymptotic method, using $CoK_{\alpha 1,2}$ radiation. The average exposure time was 2.5 hours (40 kV, 18 mA). For isolating the carbides the isothermally-treated specimens were subjected to metallographic analysis. After removing a 0.5 mm thick layer from one of its faces, each specimen was ground on emery paper and polished and etched electrolytically in a bath consisting of glacial acetic acid and perchloric acid (11:1). The electrolytic polishing and etching was effected for 2 min at 0.5 A/cm^2 with intensive cooling of the

Card 2/5

80268
Z/034/60/000/06/009/033
E073/E335

A New Mechanism of Isothermal Decomposition of Alloyed Austenite

electrolyte by flowing water; most of the specimens had to be additionally etched with Vilella-Bain etching fluid. The exposures were made with magnifications of 200X and 800X. The results of X-ray study of a carbide phase of the decomposition products for a temperature of 650 °C are entered in Table 2 for isothermal soaking periods of up to 5 000 hours. It was found that the two-phase (eutectoidal) decomposition of the solid solution is not connected with concentration changes in the main non-transformed body of the original phase. A typical example of such a decomposition is the formation of pearlite in Fe-C alloys. Due to the fact that its progress involves concentration changes in the main body of the non-transformed austenite, the non-steady state eutectoidal reaction is not a two-phase decomposition in the classical sense. Whilst the two-phase decomposition (pearlitic transformation) was intensively studied for carbon and low-alloy steels, the non-steady state reactions have been studied only in individual cases and their mechanism is almost unknown.

Card 3/5

80268

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E073/E335

A New Mechanism of Isothermal Decomposition of Alloyed Austenite

The isothermal decomposition of austenite in steels containing 0.5 - 0.6% C, 12.5% Cr and 3-5.5% W begins at 650 °C and has a non-steady state eutectoidal reaction, the progress of which involves a drop in the concentration of carbon in the non-transformed austenite. As a result of that, the eutectoidal transformation will stop after a certain time and the remaining austenite will decompose, bringing about formation of ferrite and precipitations of carbides in this formed ferrite. Thus, the non-steady state eutectoidal transformation leads in the given case to qualitative changes of the mechanism of the decomposition, for instance, to an arresting of the eutectoidal transformation and to a decomposition of the remaining austenite linked with the formation of ferrite and the precipitation of carbides in the ferrite, whereby the carbide particles increase primarily as a result of the diffusion of carbon from the non-transformed austenite into the ferrite. The mechanism of the austenite decomposition, which is linked with ferrite formation and precipitation of carbides in the formed ferrite, is described in the paper in considerable

Card 4/5