85614

9,9500
3,5000

S/050/60/000/011/002/005
B012/B063

AUTHORS: Voskresenskiy, A. I. and Matveyev, L. T.

TITLE: Water Content and Turbulence of Stratocumulus Clouds in the Arctic Regions

PERIODICAL: Meteorologiya i gidrologiya, 1960, No. 11, pp. 14-19

TEXT: The first papers on the subject mentioned in the title were published by P. A. Molchanov (Ref. 8), Ye. M. Kropotov (Ref. 3), M. Ye. Shvets (Ref. 11), and L. T. Matveyev (Refs. 5 and 6). During the last 5-8 years extensive observations of stratocumulus clouds in the Arctic Regions have been made with the participation of the author. These observations were made during the flights of the Letayushchaya laboratoriya Arkticheskogo i antarkticheskogo nauchno-issledovatel'skogo instituta (Flying Laboratory of the Arctic and Antarctic Scientific Research Institute) and two special-purpose expeditions. The equipment of the planes permitted an accurate measurement of temperature, air humidity, atmospheric pressure, altitude, velocity, as well as the

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optical density and water content of the clouds, overloading of the
planes, and micropulsation of temperature. The data obtained for the
humidity and turbulence of Arctic stratocumulus clouds are presented and
analyzed. The major part cf these observations were made between July and
September over the regions, free from ice, of the Karskoye Sea,
Laptevykh Sea, and the East Siberian Sea. The water content was measured
with an СИВ-3 (SIV-3) instrument designed by V. A. Zaytsev and A. A.
Ledokhovich. Most of the measurements were made for St and Sc clouds which
have a frequency of 75-80% in the Arctic Regions. It is shown that on an
average Sc clouds have a higher water content than St clouds. The average
water content of St clouds is 0.10 g/m^3, and that of Sc clouds, 0.14 g/m^3.
The turbulence of clouds was studied in summer 1957 and 1958. The
overloading of the planes was recorded with a transmitter and an optical
self-recorder. The transmitter was placed at the center of gravity cf the
planes. The values obtained were used to calculate the coefficient of
turbulence, the vertical velocity, and the dimensions of the turbulent
formations. The calculation of k (coefficient of turbulent vertical
exchange was based on formula (1):

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$k = \frac{b\tau}{\Delta} \left|\overline{\Delta n}\right|$, where $\left|\overline{\Delta n}\right|$ is the mean absolute vertical overload of the plane; τ is the average time for which the sign of the overload does not change; $\Delta = \frac{\rho}{\rho_0}$ is the relative air density at the plane's altitude (ρ_0 is the air density on sea-level); and b is a coefficient depending on the parameters of the plane. This formula was derived by Ye. S. Lyapin (Ref. 4) and A. S. Monin (Ref. 10). This formula was used by A. S. Dubov (Ref. 2), P. A. Vorontsov (Ref. 1), and L. T. Matveyev (Ref. 7). The relationship between the vertical velocity w of the aircurrent and the overloading of the plane is given as $w = \frac{b}{v\Delta} (\Delta n)$ (2), where v is the actual speed of the plane, and Δn is the overloading of the plane. The measurements of the overloading were evaluated by the method described in Refs. 1, 2, and 7. Results are given in Tables 2, 3, and 4 and in Fig. 4. There are 4 figures, 4 tables, and 11 Soviet references.

Card 3/2 3

MATVEYEV, L.T.

Conditions of the formation and evolution of clouds in case of
vertical currents and turbulent exchange. Izv. AN SSSR. Ser.
geofiz. no.1:130-140 Ja '61.   (MIRA 14:1)
                    (Cloud physics)

NAROVLYANSKIY, Grigoriy Yakovlevich; SOLONIN, Sergey Vasil'yevich;
MATVEYEV, L.T., otv. red.; RUSAKOVA, G.Ya., red.; PRAYNINA,
M.I., tekhn. red.

[Equivalent wind and methods of calculating it]Ekvivalentnyi
veter i metody ego rascheta. Leningrad. Gidrometeoizdat, 1962.
98 p.   (MIRA 15:9)
                    (Winds)

MATVEYEV, L. T.; BARANOV, A. M.

"Cloud physics" by A. M. Borovikov and others. Reviewed by L. T.
Matveyev, A. M. Baranov. Meteor. i gidrol. no.2:42-63 F '62.
(MIRA 15:2)

(Cloud physics)
(Borovikov, A. M.)
(Gaivoronskii, I. I.)
(Zak, E. G.)
(Kostarev, V. V.)
(Masin, I. P.)
(Minervin, V. E.)
(Khrgian, A. Kh.)
(Shmeter, S. M.)

MATVEYEV, L.T. (Leningrad)

Calculating the height of the upper edge and vertical thickness
of flaky figurative cumulus. Meteor.i gidrol. no.8:3-10 Jl
[i.e.Ag.]'62.   (MIRA 15:7)
                    (Clouds)

ACCESSION NR: AT4002177   S/2922/63/005/000/0010/0020

AUTHOR: Matveyev, L. T. (Leningrad)

TITLE: Cloud inversions of dynamic origin and rising inversions in fogs

SOURCE: Vses. nauchno-meteorologich. soveshch. Trudy, v. 5, Sektsiya fiziki svobodnoy atmosfery. Leningrad, 1963, 10-20

TOPIC TAGS: meteorology, temperature inversion, cloud, fog, dynamic meteorology

ABSTRACT: The report considers problems related to the development of a temperature field during the evolution of cloud formations, with particular emphasis on the development of temperature inversions near cloud boundaries. Various ratios derived by the author are considered in generalizing an equation for local temperature variation inside a cloud to the form

$$\left(1+0.622\frac{L\bar{r}}{c_p\rho}\right)\frac{\partial T}{\partial t} = -w\left[\left(\frac{\partial T}{\partial s}+\gamma_a\right)+\frac{0.622 L}{c_p\rho}\left(\bar{s}\cdot\frac{\partial T}{\partial s}+\frac{\bar{s}}{H}\right)\right]+$$
$$+\frac{\partial}{T}\left[\frac{\partial}{\partial s}\,k\,\frac{\partial T}{\partial s}+\gamma_a\frac{\partial k}{\partial s}+\frac{k}{T}\left(\gamma_a+\frac{\partial T}{\partial s}\right)\left(\frac{\partial T}{\partial s}-\frac{k}{c_p t}\right)\right]+ \qquad (1)$$

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Formula (u)$+\frac{gL}{c_p\rho}\left[E'\frac{\partial}{\partial z}k\frac{\partial T}{\partial z}+k\left(E''-\frac{E'}{T}\right)\left(\frac{\partial T}{\partial z}\right)^2+\frac{k}{L}\left(E-\frac{2E}{T}\right)\frac{\partial T}{\partial z}\right.$
(Continued) $\left.+\frac{E}{H}\cdot\frac{\partial k}{\partial z}\right]$.

Here T is temperature, θ is potential temperature, k - coefficient of turbulence, w - velocity of nonturbulent vertical motion of air, $\gamma_k \approx 0.01$ degree/m - dry adiabatic gradient, L - specific heat of vapor formation, c_p - specific heat at constant air pressure (p=const), z - altitude, t - time, E(T) - saturation pressure, H - height of homogeneous atmosphere, g - acceleration of gravity, R - specific gas constant of air (287 m²/sec² degree). This equation is then analyzed to provide a theoretical clarification for the development of rising inversions in fogs of varied origin by applying previously obtained data to fogs and considering conditions present at zero altitude levels. Curves for temperature distribution in a fog are plotted in relation to altitude (see Figs. 1 and 2 in the Enclosure). Considering cloud inversions of dynamic origin, the authors calculate temperature increases within and above a cloud for various values of w and k. Orig. art. has: 4 figures, 1 table, and 22 formulas.

ASSOCIATION: None

SUBMITTED: 00   ATD PRESS: 3046   ENCL: 02
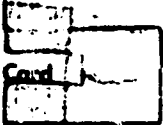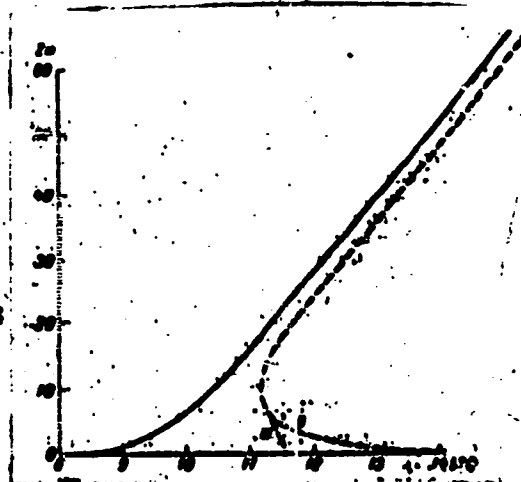SUB CODE: ES   NO REF SOV: 006   OTHER: 000
        2/4

ACCESSION NR: AT4002177

Fig. 1. Temperature distribution
in a fog, in relation to height
above ground level

I - Initial; II - derived assuming
the rate of temperature variation
as constant over 1 hour; III - cal-
culated with consideration of time-
related temperature variation rate
(for 1 hour from initial)
$m = 0.2$ m^{-1}; $T_i - T_0 = 2C$; $T = 280K$;
$k_m = 5$ m^2/sec; $n_0 = c = 0.002$. here
T_0 is air temperature immediately
above ground ($z \to 0$); T_1 is air tem-
perature at some fixed height z; m,
k_m and c - parameters.

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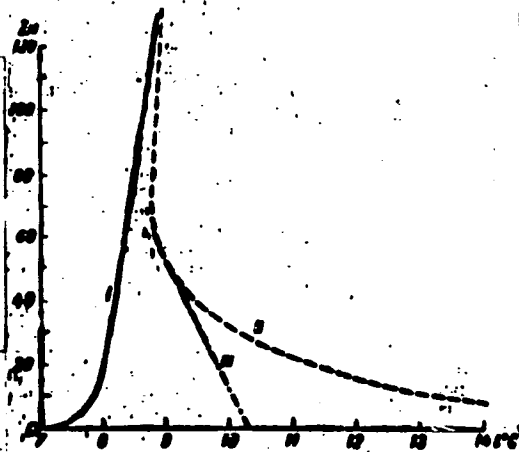
ACCESSION NR: AT4002177

Fig. 2. Temperature distribution
in a fog, in relation to height
above ground level

$m = 0.05 \; m^{-1}$; $T_1 - T_0 = 0.5C$; $T_0 = 280K$;
$k_0 = 5 \; m^2/sec$; $n_0 = e = 0.005$. balance
as above.

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ACCESSION NR: AT4030530 ⎯ ⎯   S/0000/63/000/000/0082/0091

AUTHOR: Matveyev, L. T.

TITLE: Investigation of appropriate flight conditions in stratus-like clouds

SOURCE: Nauchnaya konferentsiya po aviatsionnoy meteorologii. Moscow, 1960.
Materialy*. Moscow, Gidrometeoizdat, 1963, 82-91

TOPIC TAGS: flight condition, stratus cloud, turbulence, advection

ABSTRACT: This paper is one of 13 previously unpublished reports of the 40 papers
given at the Nauchnaya konferentsiya po voprosam aviatsionnoy meteorologii (scien-
tific conference on problems of aviaticn meteorology) that was held in June and July
of 1960 in Moscow at the Glavnoye upravleniye gidrometeorologicheskoy sluzhby* SSSR.
In recent years the author has developed questions in the theory of the formation
and evolution of stratus-like clouds. In this article, his attention is dedicated
to the development of a method for calculating the height of the upper and lower
boundaries of these clouds. These characteristics have the greatest practical
interest from the viewpoing of weather safety for aviation. In the development of
his theory, the author considers those factors which contribute to the process of
cloud formation, such as moisture and heat advection, the transfer of the latter by

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orderly vertical flows, turbulent heat and moisture exchange, and heat given off as a result of phase conversions. The method developed permits him to trace the origin of the cloud and the subsequent evolution of areas of moisture content, humidity, and temperature. An analysis of the general solution of the equation system of the unestablished transfer of moisture and heat in a turbulent atmosphere represents great technological difficulties and may be resolved by the use of computers. The author, through a series of mathematical arguments, derives equations to calculate the upper and lower boundary of clouds, and the formation of aircraft contrails. Orig. art. has: 3 figures and 28 formulas.

ASSOCIATION: none

SUBMITTED: 18Feb63   DATE ACQ: 17Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 005   OTHER: 000

Card 2/2

ACCESSION NR: AR4020753   S/0169/64/000/001/B058/B058

SOURCE: RZh. Geofizika, Abs. 1B327

AUTHORS: Kazakova, N. N.; Matveyev, L. T.

TITLE: Methods and main results of calculation of vertical motions of air
(based on the data of the drifting station "Severnyy polyus-7")

CITED SOURCE: Tr. Arkt. i Antarkt. n.-i. in-ta, v. 253. 1963, 161-171

TOPIC TAGS: Vertical air motion, pulsation air velocity, turbulent air
velocity, convective air velocity, ordered air velocity, vertical strato-
spheric air velocity, vertical tropspheric air velocity

TRANSLATION: A brief classification of vertical motions as a function of the
scale of the process (phenomenon) is given. Three categories of vertical
velocities are distinguished: pulsation (turbulent) velocities, convective
velocities, and ordered (large-scale) velocities. Calculation of vertical
velocities of the first and second category was made by using a method proposed

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ACCESSION NR: AR4020753

by P. F. Zaychikov and one proposed by one of the authors of the article. At the limits of the troposphere, the values of the vertical velocity calculated by the two independent methods are in satisfactory agreement. In the strato-sphere, the first method gives high values for vertical velocities.

L. Matveyev

DATE ACQ: 03Mar64   SUB CODE: AS, AI   ENCL: 00

Card 2/2

SHISHKIN, Nikolay Sergeyevich; MATVEYEV, L.T., otv. red.: BELEN'KAYA.
L.L., red.

[Clouds, precipitation and thundrstorm electricity] Oblaka,
osadki i grozovoe elektrichestvo. 2. perer. i dop. izd. Le-
ningrad, Gidrometeoizdat, 1964. 400 p.   (MIRA 17:5)

ACCESSION NR: AP4026238   S/0293/64/002/001/0109/0120

AUTHOR: Matveyev, L. T.

TITLE: Requirements for accuracy in the determination of the flux of infrared radiation by artificial earth satellites and a method for computation of the upper cloud boundary

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 1, 1964, 109-120

TOPIC TAGS: artificial earth satellite, meteorological satellite, cloud, cloud boundary, infrared radiation, atmospheric turbulent exchange, precipitation, turbulence coefficient, tropopause, atmospheric temperature gradient

ABSTRACT: The author has formulated the requirements which should be imposed on the accuracy of measurement of the flux of infrared radiation emanating from the atmosphere and recorded by an artificial earth satellite and presents a method for making use of data on the total flux of infrared radiation emanating from the earth's surface and atmosphere. Emphasis is on the quasi-stationary distribution of cloud cover with height; allowances are made for the effect of falling of drops under the influence of gravity and the influence of the radiation flux of heat on the formation of the cloud cover (especially its upper boundary). Formulas are derived for computation of the upper cloud boundary, the intensity of precipitation and the vertical-distribution of liquid water in a cloud.

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ACCESSION NR: AP4026238

Relationships are established between cloud cover characteristics and such values as the flux of infrared radiation at the upper cloud boundary, vertical velocity, turbulence coefficient, vertical temperature gradient and height of tropopause. All these relationships are derived in dimensionless form, appreciably facilitating their analysis. The admissible error in determination of the total flux of infrared radiation from the upper cloud boundary should not exceed 0.005 cal/cm^{-2}·min^{-1} (when the prescribed accuracy of determination of the height of the upper boundary is 250 m); a relative error in determination of the flux F of 1-2% leads to an error of computation of the upper cloud boundary not exceeding 250 m under all the conditions prevailing in the atmosphere. There is an additional error introduced by other factors which amounts to an additional 250 m; therefore, the total error in determining the upper cloud boundary by the proposed method is about ±500 m. Orig. art. has: 1 figure, 39 formulas and 3 tables.

ASSOCIATION: None

SUBMITTED: 14Feb63   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 009   OTHER: 001

Card   3/3

CHISTYAKOV, A.D.; BURKOVA, M.V.; ORLOVA, Ye.M.; GLAZOVA, O.P.;
     PED', D.A.; BERLYAND, M.Ye.; ABRAMOVICH, K.G.; POPOVA,
     T.P.; MATVEYEV, L.T.; BACHURINA, A.A.; LEBEDEVA, N.V.;
     PESKOV, B.Ye.; ROMANOV, N.N.; VOLEVAKHA,N.M.; PCHELKO,
     I.G.; PETRENKO, N.V.; KOSHELENKO, I.V.; PINUS, N.Z.;
     SHMETER, S.M.; BATRAYEVA; T.F.; MININA, L.S.; BEL'SKAYA,
     N.N., nauchn. red.; ZVEREVA, N.I., nauchn. red.;
     KURGANSKAYA, V.M., nauchn. red.; MERTSALOVA, A.N., nauchn.
     red.; TOMASHEVICH, L.V., nauchn. red.; SAGATOVSKIY, N.V.,
     otv. red.; KOTIKOVSKAYA, A.B., red.

[Manual of short-range weather forecasting] Rukovodstvo
po kratkosrochnym prognozam pogody. Leningrad, Gidro-
meteoizdat. Pt.2. Izd.2. 1965. 491 p.
                                    (MIRA 18:8)

1. Moscow. TSentral'nyy institut prognozov.

MATVEYEV, Leonid Tikhonovich; YANKOVSKIY, I.A., otv. red.;
YASNOGORODSKAYA, M.M., red.

[Principles of general meteorology: Physics of the atmos-
phere] Osnovy obshchei meteorologii: Fizika atmosfery.
Leningrad, Gidrometeoizdat. 1965. 875 p.   (MIRA 18:12)

MATVEYEV, L.T., prof.

      Vasilii Alekseevich Belinskii; on his 60th birthday. Meteor.
      gidrol. no.1:64 Ja '66.   (MIRA 19:1)

L 14469-66 EWT(1)/FCC GW

ACC NR: AP6003443 (N)   SOURCE CODE: UR/0362/66/002/001/0003/0013

AUTHOR: Imshev, Yu. G.; Makverry, L. T.

ORG: none

TITLE: A numerical model of layer cloudiness forecast

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 1, 1966, 3-13

TOPIC TAGS: _____, cloud formation, _____
weather forecasting, _____, atmospheric _____, atmospheric model

ABSTRACT: The effect of turbulent exchange on the processes of cloud formation is
explained by analyzing the system of equations of heat and humidity transfer. It is
shown that turbulent exchange plays the same role as vertical air currents. A numeri-
cal chart for the forecast of layer cloud systems is constructed. The accuracy of the
weather forecasts is briefly analyzed. Orig. art. has: 32 formulas, 4 figures, and
3 tables. [Based on author's abstract].

SUB CODE: 04/ SUBM DATE: 12Aug65/ ORIG REF: 019/ OTH REF: 00/ ATD PRESS:

Card 1/1   UDC: 551.509.324

KIRILLOV, Valerian Valerianovich; DMITRIYEV, I.N., retsenzent;
    MATVEYEV, L.T., otv. red.; YASNOGORODSKAYA, M.M., red.

[International System of Units of Measurement (SI) in
meteorology] Mezhdunarodnaia sistema edinits izmerenii
(SI) v meteorologii. Leningrad, Gidrometeoizdat, 1965.
150 p.   (MIRA 19:1)

ACC NR: AP6032070   SOURCE CODE: UR/0362/66/002/009/0905/0919

AUTHOR: Bykova, L. P.; Matveyev, L. T.

ORG: none

TITLE: Evolution of the cloud and temperature fields in a moving cyclone
(a numerical experiment)

SOURCE: AN SSSR, Izvestiya. Fizika atmosfery i okeana, v. 2, no. 9, 1966,
905-919

TOPIC TAGS: cyclone, cloud formation, atmospheric temperature, atmospheric
turbulence, cloud water content, cyclone cloudiness

ABSTRACT: A numerical experiment is performed on the simulation of conditions
for cloud and temperature field formations in a moving cyclone without taking into
account its thermal asymmetry. The vertical currents, turbulent exchange, and
latent heat were considered in the initial equations of heat and moisture transfer.
The basis of the numerical solution of the equations is a method which was
developed earlier by one of the authors. The calculations are made for a large
range of variations of the parameters involved, assuming different profiles of the

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ACC NR: AP6032070

vertical velocity and forms of the boundary conditions. Much data are obtained allowing an estimation of the influence of the vertical velocity, released latent heat, the surface temperature, the air moisture, the variation in air temperature, and the cloud water content. Some results of the similarity theory for determining the relative contribution of several parameters are also used. The results of the numerical simulation agree quite well with the experimental data. At the same time, they show that the thermal regime and cloudiness of a cyclone are formed under the influence of many factors which are quite varied. Orig. art. has: 7 figures, 10 tables, and 21 formulas. [Authors' abstract]

SUB CODE: 04/ SUBM DATE: 08Apr66/ ORIG REF: 029/ OTH REF: 003/

Card 2/2

ACC NR: AP6012919   SOURCE CODE: UR/0020/66/167/005/1042/1045

AUTHOR: Lushev, Yu. G.; Matveyev, L. T.

ORG: None

TITLE: Numerical plan for a short-term weather forecast of stratified cloudiness

SOURCE: AN SSSR. Doklady, v. 167, no. 5, 1966, 1042-1045

TOPIC TAGS: weather forecasting, cloud forecasting, stratified clouds forecasting,
atmospheric model, atmospheric cloud model, computer calculation

ABSTRACT: The authors present an atmospheric and a specific cloud model for strati-
fied cloud layers forecasts. The topic's importance is due to the influence of clouds
upon the important heat transfer and radiation balance of the atmosphere and the
earth's surface. The basis of the theory is the concept of a sufficiently complete
augmentation of the cloud elements by particles participating in the turbulent excha-
nge. The theory does not, but can be extended to account for the fallout of precipita-
tion from the cloud and for its radiative heat exchange. The basic system of cloud
equations, which for the forecasting is combined with the atmospheric equations of
motion and continuity, accounts for turbulence, humidity and the specific water con-
tent of the cloud and considers the transfer of heat and water vapor in the turbulent
cloud atmosphere. Ground boundary conditions for humidity are approximated by the use
of a statistically well correlated linear relationship between the dew point and the

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ACC NR: AP6012919

air temperature near the ground surface. Plans, aids and short-cuts for the solution of the equations with the aid of a digital computer are discussed. Computations were compared with the factual presence (or absence) of cloudiness on isobaric surfaces with their associated weather data, for 1540 points. The verification factor of the method was found to be about .79 abd the reliability criterion was over .57. This recommends the method for practical utilization. Orig. art. has 11 formulas, 2 tables.

SUB CODE: 04, 09/   SUBM DATE: 30Jun65/   ORIG REF: 014

Card 2/2

MATVEYEV, L.V., inzhener.

Construction of buildings from large-size sawed limestone blocks. Biul. stroi.tekh. 10 no.12:11-12 Jl '53.   (MLRA 6:8)

1. Moldavskoye otdeleniye Vsesoyuznogo nauchnogo inzhenerno-tekhnicheskogo obshchestva.   (Building blocks)

MATVEYEV, L.V., inzhener.

Experience with using large building blocks of natural stone.
Stroi.prom. 34 no.4:15-18 Ap '56.   (MIRA 9:8)

1. Moldgiprogorsel'stroy.
                    (Building stones)

MATVEEV, Lev Vasil'yevich; FRIK, N., red.; TEL'PIS, V., tekhn.red.

[Securing the strength of sawn-limestone structures] Voprosy obespecheniia monolitnosti kladok iz pil'nykh izvestniakov. Kishinev, Gos.izd-vo "Kartia Moldoveniaske," 1959. 102 p.
(MIRA 13:2)

(Limestone)

MATVEYEV, Lev Vasil'yevich; FITOVA, L., red.

[Large-block and large-panel construction from sawed
limestone] Krupnoblochnoe i krupnopanel'noe stroitel'-
stvo iz pil'nykh izvestniakov. Kishinev, Kartia moldo-
veniaske, 1963. 197 p.   (MIRA 18:1)

MATVEYEV, L.V., veterinarnyy vrach

Diseases of the tenoligamentous apparatus of pelvic
extremities in herd bulls. Veterinariia 41 no.11:
62-63 N '64.   (MIRA 18:11)

1. Torosovskaya stantsiya iskusstvennogo osemeneniya
sel'skokhozyaystvennykh zhivotnykh, Leningradskoy oblasti.

MATVEYEV, M. (Leningrad)

Increase of the interference rejection of synchronisation in
television. Radio no.12:37-40 D '60.   (MIRA 14:1)
                    (Television—Interference)

MATVEYEV, M.

TONEVA, V., starshiy nauchnyy sotrudnik, doktor; MATVEYEV, M., mladshiy
nauchnyy sotrudnik, doktor.

A case from practice. Veterinariia 35 no.2:43-44 F '58.
                                                      (MIRA 11:2)

1.TSentral'nyy veterinarno-bakteriologicheskiy institut, Sofiya.
             (Swine--Diseases and pests)

MATVEIEV, M. (Riga)

Economic effectiveness of concentration of flax production on the kolkhozes. Vestis Latv ak no.10:23-30 '60.

(EEAI 10:9)

(Latvia—Flax)

MATVEYEV, M. (Riga)

Economic effectiveness of rational location and concentration of commercial sugar-beet production. Vestis Latv ak no.1:25-32 '61.
(EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut ekonomiki.

(Sugar beets)

MATVEYEV, M.A., inzh.

Freezing of air ducts in mines. Gor. zhur. no.7:46-48 Jl '63.
(MIRA 16:8)

1. Moskovskiy institut radioelektroniki i gornoy elektro-mekhaniki.

Operatov, N. A., and Meteyer, M. A. Refractory articles from Siemens-Martin slag. U.S.S.R. Pat. 51,765, Sept. 30, 1937.—The ground slag is melted with Na₂CO₃ and used in amounts assuring a total content of SiO₂ in the mixture of 60 to 2%, formed into articles and heated to 900° to 50°.

Shvetsov, B. S., Matveev, M. A., and Simanov, Yu. P. Apparatus for Luminescence Analysis and Its Use for the Investigation of Silicates. *Keramika*, 1939 [8] 5-12 --The apparatus is an electric, a.-c., mercury vapor, quartz (nonvacuum), 380- to 400-watt lamp equipped with a filter transmitting ultraviolet rays and with a device for microscopic observation Stable slags give a homogeneous dark-violet or dark-brown (more rarely, bright-violet) luminescence (Older slags sometimes show isolated gold-yellow or silver-white patches de efflorescence due to weathering Unstable slags show a light break in the surface, multiple iridescent white-yellow and bright-yellow points on a bright-violet ground, and sometimes rust-brown patches with light-brown points The method can be used for determining the extent of mullitization of fused mullite ware, refractories, porcelain, etc
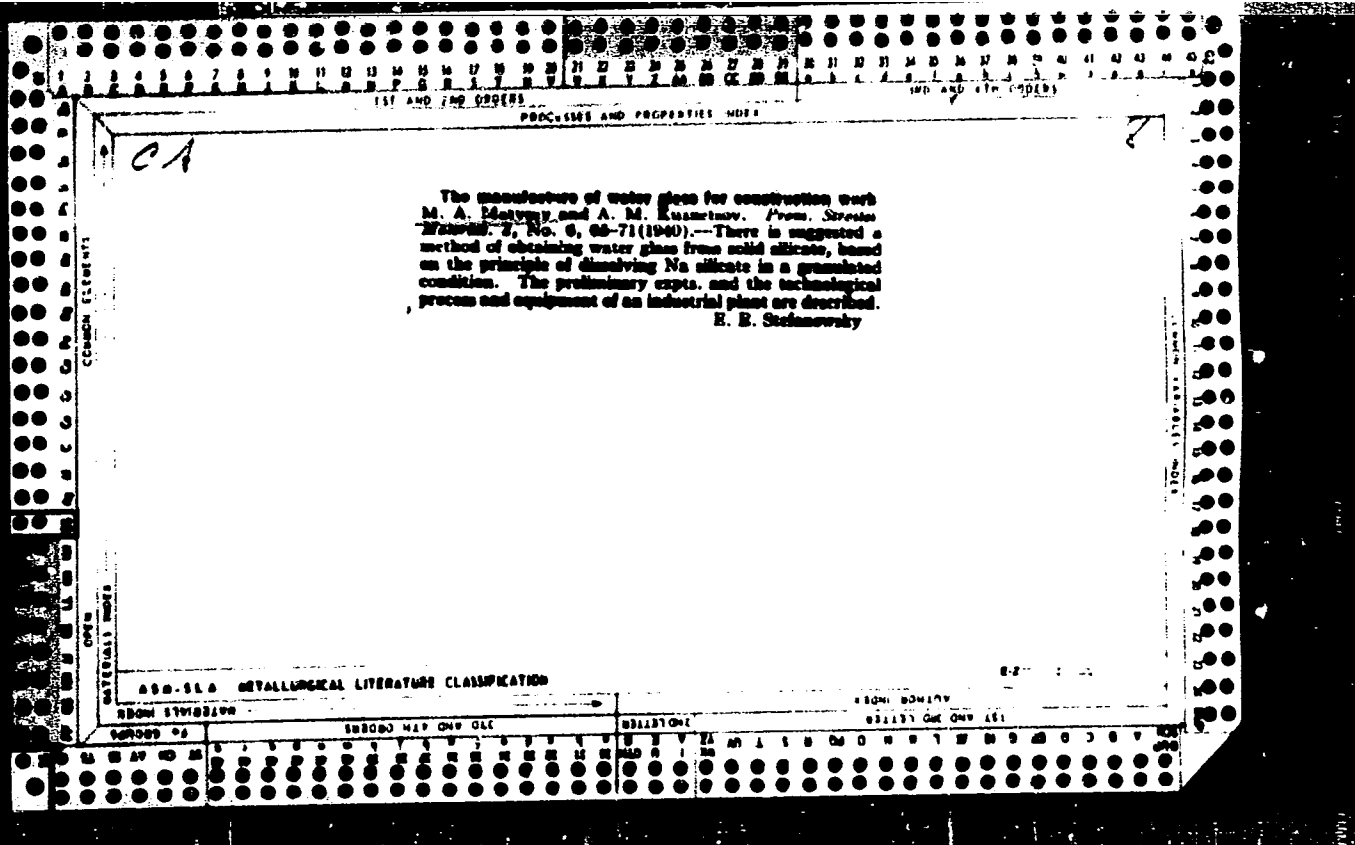
PROCESSES AND PROPERTIES INDEX

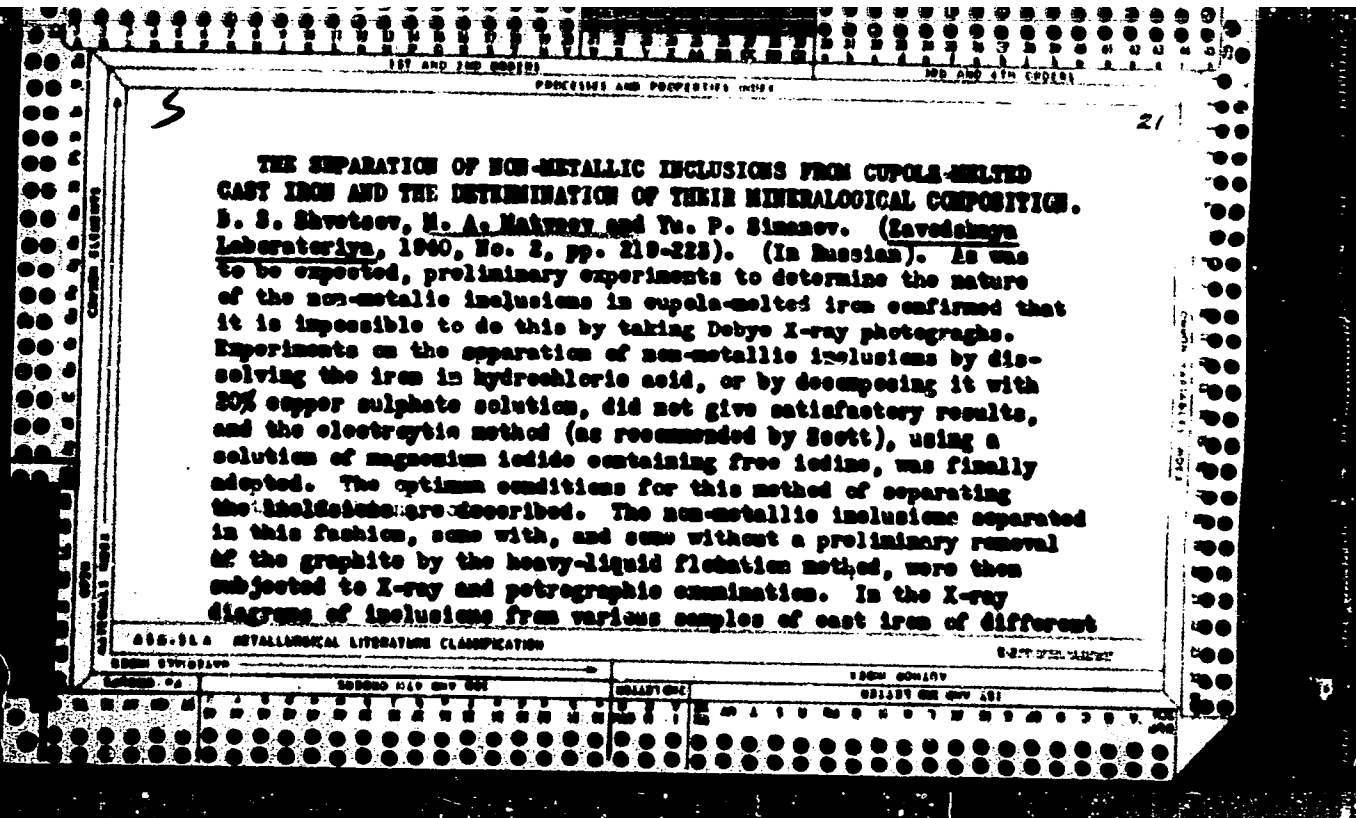The structure and composition of commercial calcium silicide. M. A. Matveev and Yu. P. Simanov. *Zhidkoe Delo* 1960, No. 10-11, 13-15; *Khim. Referat. Zhur.* 1960, No. 4, 73.—X-ray and chem. investigations of various samples of com. Ca silicide were made. A French sample contained only CaSi$_2$. A sample from the II"ich plant was similar to the imported sample, except that x-ray tests indicate the presence of cristobalite and free Si. Some samples contained also Fe silicide and large amts. of some unidentified substances. The following method was used: Place 0.5 g. of the fine-ground sample in a Würtz flask, add HCl, filter after completion of reaction, wash, treat a part of the ppt. with 33% NaOH soln., filter, wash the residue (Fe silicide), and obtain SiO$_2$ from the Na silicate soln. by HCl. These expts. indicate that Ca and Si are bound chemically and support the results of x-ray analyses. Results permit developing an analytical method for Ca silicide, from which can be detd. the amt. of free Si, Si combined with Ca and Fe, and other elements (Ca, Al, Mn, etc.).   W. R. Henn

450-510   METALLURGICAL LITERATURE CLASSIFICATION

CA

PROCESSES AND PROPERTIES NOTE

The manufacture of water glass for construction work. M. A. Matveev and A. M. Kuzmenov. *Prom. Stroitel Material.* 7, No. 6, 68-71(1940).—There is suggested a method of obtaining water glass from solid silicate, based on the principle of dissolving Na silicate in a granulated condition. The preliminary expts. and the technological process and equipment of an industrial plant are described.

E. E. Stefanowsky

METALLURGICAL LITERATURE CLASSIFICATION

THE SEPARATION OF NON-METALLIC INCLUSIONS FROM CUPOLA-MELTED CAST IRON AND THE DETERMINATION OF THEIR MINERALOGICAL COMPOSITION. S. S. Shvetsov, M. A. Makhnev and Yu. P. Simanov. (Zavodskaya Laboratoriya, 1940, No. 2, pp. 219-223). (In Russian). As was to be expected, preliminary experiments to determine the nature of the non-metallic inclusions in cupola-melted iron confirmed that it is impossible to do this by taking Debye X-ray photographs. Experiments on the separation of non-metallic inclusions by dissolving the iron in hydrochloric acid, or by decomposing it with 20% copper sulphate solution, did not give satisfactory results, and the electrolytic method (as recommended by Scott), using a solution of magnesium iodide containing free iodine, was finally adopted. The optimum conditions for this method of separating the inclusions are described. The non-metallic inclusions separated in this fashion, some with, and some without a preliminary removal of the graphite by the heavy-liquid flotation method, were then subjected to X-ray and petrographic examination. In the X-ray diagrams of inclusions from various samples of cast iron of different

compositions, lines corresponding to graphite, ferrous oxide, enstatite, magnesium metasilicate, magnesium orthosilicate, montichellite, iron silicide and pyrites were found. Lines corresponding to hematite, quartz and corundum were also observed in samples from which the graphite had been removed by ignition in oxygen. The evidence suggests that some of the inclusions are present in a highly dispersed amorphous state. The petrographic examination did not give any positive results. Some chemical analyses of the non-metallic residues after removal of the graphite by oxidation are given.

C4 19

PROCESSES AND PROPERTIES INDEX

Solution of lump sodium silicate by a process not involving autoclaves. M. A. Matveev and A. M. Kuznetsov. Prom. Stroitel Material 1943, 39-41; Chem. Zentr. 1943, II, 2204.—Lump Na silicate is dissolved in water by direct steam heating, by a paddle agitator. Lump silicate is cheaper to transport than the aq. material.
E. M. Symmes

A13..5LA METALLURGICAL LITERATURE CLASSIFICATION
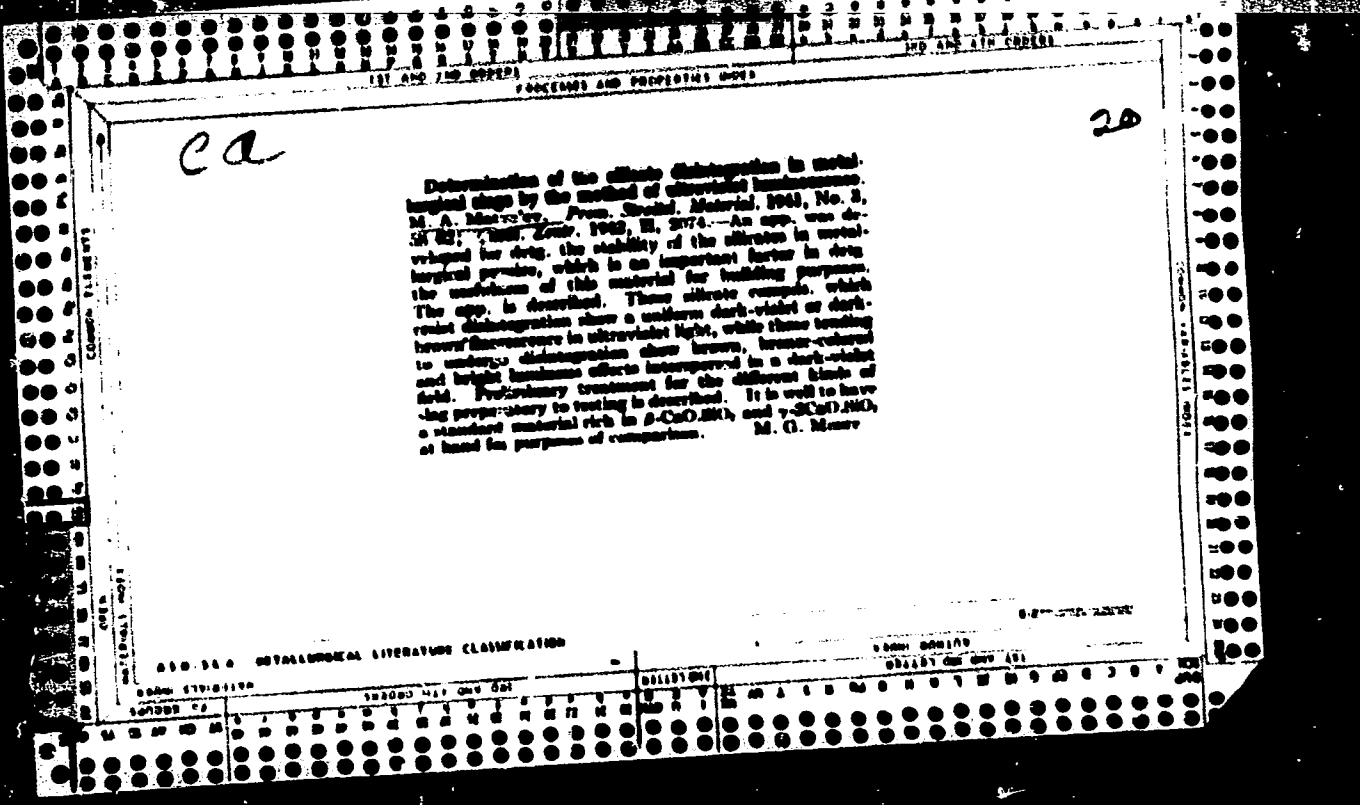
MATVEEV, M.A.

General course in technology of silicates; textbook. Moskva, 3-e.
Izd-vo stroit. lit-ry, 1945- (MI- 57-)

Microfilm A3-100

MATVEYEV, M.   A

Coshchiy Kurs Tekvnolooii Silikatov ... (General Course in the Technology
of silicat s, BY) M. A. Mat: y=v I G. G. Gen·yurin,   FCD (B, Red, S. S.
Shv=t (va, Moskv., Stray! d:t   1945

Contents: C$_h$ast' 4: Tekhirologiya Steklomass, Proizvodstvo I Obrabotka
Sterloizoeliy
Text covers physical and chemical properties of glass, its thermal properties
electrical conductivity, composition, production, and thermal, chemical and
mcahanical working.

PROCESSES AND PROPERTIES INDEX

Mending cracks in containers for transporting or storing oil products. M. A. Matveev. U.S.S.R. 66,262, Apr. 30, 1946. For mending cracks and similar defects in metal or concrete containers there is first applied a layer consisting of a mixt. of clay, cement, graphite, Na₂SiF₆, and a Na silicate soln. After this layer dries, a top layer is applied of Zn dust and clay mixed with a soln. of CaCl₂.
M. Hoseh

METALLURGICAL LITERATURE CLASSIFICATION

MATVEEV, M. A.

Budnikov, P. P. and Matveev, M. A. CAUSES OF PRE-
MATURE DESTRUCTION OF REFRACTORY LINING IN LOCOMO-
TIVE FIREBOXES. Ogneupory, 11 (6) 23-25 (1946).
Causes of the premature destruction of the refractory lin-
ing in locomotive fireboxes are (1) faulty installation of
arches, (2) use of low-grade refactories, (3) use of a binder
having a different composition from that of the brick, (4)
very rapid drying of the arches after installation, (5) leak-
age of connectors and tubes, and (6) strong jolts in service.
The temperature curve of a fuel oil fired locomotive for a
20 hr. period shows sharp variations. Linings for locomo-
tive fireboxes should have a refractoriness not lower than
1730°C. and also high resistance to thermal shock. Com-
pressive strength should be not lower than 120 kg./cm₂.
Initial softening under a load of 2 kg./cm., should be not
lower then 1350°C. Additional shrinkage at 1400 should
not be over 0.7%.

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20

Increasing the water impermeability of molded gypsum. M. A. Matveev. U.S.S.R. 66,818, July 31, 1947. Gypsum products are coated with one or two layers 1-1.5 mm. each of a mixt. of Zn dust, finely ground clay, and graphite or talc made with a soln. of CaCl₂. Another method consists in dampening the gypsum with CaCl₂ and then dusting with the dry ingredients.   M. Hessh

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13

Laboratory Guide in General Technology of Silicates (Labora tornyi praktikum po obshchei tekhnologii silikatov) Yu M Butt, M A Matveev, AND G N Dunaev. Published by Promstroiizdat, Moscow, U S S R, 1948 296 pp Price $2.5 rubles. The book covers methods of investigating clays, testing binding materials and glass, and analyzing silicates Principles of methods, description of apparatus, and instructions for labo ratory workers are given.
B Z K

CA

19

MATVEYEV, M.A.

Effect of the hydration of glassy and crystalline sodium silicates on the kinetics of their solution. Trudy MKHTI no.27:118-128 '59.
(MIRA 15:6)

(Sodium silicate) (Hydration)

MATVEYEV, M.A.

Chemical and michoscopic investigation of the structure of sodium silicates hydrated in the vitreous state. Trudy MKHTI no:27:129-136 '59.   (MIRA 15:6)

(Sodium silicate--Analysis)

MATVEYEV, M.A.; RABUKHIN, A.I.

Using soluble glass for waterproof molds in precision casting. Trudv
MKHTI no.27:156-171 '59.   (MIRA 15:6)
          (Glass)   (Molding (Founding))

MATVEYEV, M.A.; RABUKHIN, A.I.

Rapid analysis of liquid glass. Zhur.VKHO 6 no.5:592-593 '61.
                                                    (MIRA 14:10)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.
Mendeleyeva.
                        (Glass)

MATVEYEV, M. A.

Matveyev, M. A. - "The methodology for determining the solubility and the silica modulus of vitreous alkline silicates," Trudy Mosk. khim.-tekhnol. im. Mendeleyeva, Issue 15, 1949, p. 166-69

SO: U-5240, 17, Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No.25, 1949).

MATVEYEV, M.A.

35329. MATVEYEV, M.A. Poluchenie vodoustoychivykh bysokoprochnykh
stroydetaley iz gipsa. Trudy Mosk. Khim. Tekhnol. In-Ta
Im. Mendeleeva, Vyp. 16, 1949, S. 43-52

SO: Letopis' Zhurnal'nykh Statey Vol. 34, Moskva, 1949

MATVEYEV, M. A.

35328. Opredelenie Rastvorimosti Shchelochnykh Silikatov, Gidratirovannykh
V Steklovidnom Sostoyanii. Trudy Mosk Khim.-Tekhnol. In-Ta Im. Mendeleeva,
Vyp. 16, 1949, S. 110-13

SO: Letopis'Zhurnal'nykh Statey, Vol. 34, Moskva, 1949

MATVEYEV, M. A.

26416   Ustanovleniye mikrostruktury metallurgicheskikh shalakov po khimicheskomu
analizu.   Sbornik nauch.   Rabot po vyazhushchim materialam. m., 1949, s. 164-74.

SO: LETOPIS' NO. 35, 1949

MATVEYEV, M. A.

Technology

(Water resistance of gypsum building materials and its improvement). Moscow, Promstroiizdat, 1951.

brickets were then heated with steam for 4 hrs. and 8 hrs. at E atm., 2 Atm., and 1 atm. Structural strengths of several samples are given.   Murray Senkus.

MATVEYEV, M. A.   PA 197774

USSR/Metals - Foundry, Materials   Aug 51

"Sodium Hydrosilicates as Binding Material for
Molds and Cores," M. A. Matveyev, K. M. Tkachenko,
Candidates Tech Sci, TsNIIL Glavlitmash

"Litey Proiz" No 8, pp 19-21

Gives characteristics of sodium hydrosilicates,
obtained by both aqueous and vapor methods, and
discusses their binding capacity in sand-clay
mixts used in mold and core making. Addn (3%) of
silicate is sufficient for obtaining good results.

197774

MATVEYEV, M.A.

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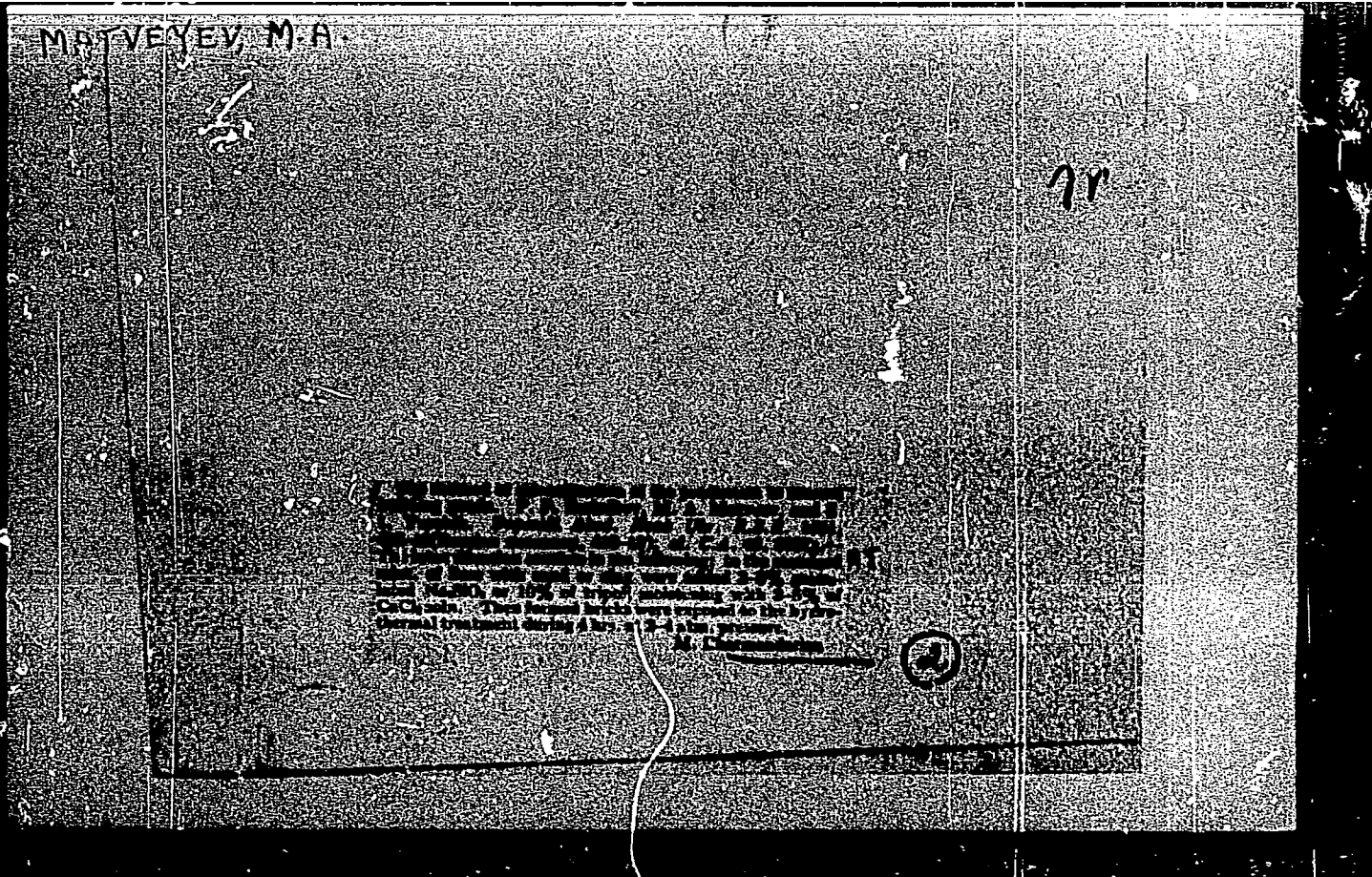
Use of alkaline hydrosilicates in unfired silicate molds for nonferrous casting. M. A. Matveev and K. M. Tkarbenko (Mendeleev Chem.-Technolog. Inst., Moscow). Ogneupory 16, 156-c9(1951).—Materials tested were corundum, clay, quartz, sand, clay grog, asbestos, kaolin grog, and Zr silicate. Optimum ratios of bond and filler were detd. by using Na hydroxilicate obtained by method of one hydration with various amts. of water; FH is the cc. of water required to hydrate 1 g. of vitreous alk. silicate. Optimum silicic modulus (M) was 2.5-3.0. Best mixes were: (a) 90% grog ground to pass sieve of 4900 openings per sq. cm. and 10 hydrosilicate, (b) 50% grog (size as in (a)), 25 powd. asbestos, 15 refractory clay, and 10 hydrosilicate, and (c) 90% kaolin grog (size as in (a)) and 10 hydrosilicate. Water was added to (a), (b), and (c) to give 16, 25, and 13 parts per 100 parts of mix, resp., on wt. basis. In all cases, M was 2.5-3.0 and FH was 25. B. Z. Kamich

MATVEYEV, M. A.

USSR/Engineering - Refractories,   Nov 51
                    Technology

"Effect of Steam Pressure on Physicomechanical Prop-
erties of Silica Brick With Addition of Granulated
Sodium Silicate," P. P. Budnikov, Corr Mem,
Acad Sci USSR, M. A. Matveyev, S. I. Yurchik

"Dok Ak Nauk SSSR" Vol LXXXI, No 2, pp 255-258

Introduction of sodium silicate into sand-lime
mixt intensifies formation of calcium hydrosili-
cates due to increased content of active silica,
and increases effect of higher steam pressure in
autoclave in respect to improving strength of

USSR/Engineering - Refractories,   Nov 51
                    Technology (Contd)

product made by hydrothermal method. In addn,
granulated sodium silicate decreases water absorp-
tion of brick, having favorable effect on its
frost-resistance.

199731

MATVEYEV, M.A.

The Committee on Stalin Prizes of the Council of Ministers USSR in the field of science and invention announced that the following scientific works, popular scientific books, and textbooks have been submitted for competition for a Stalin Prize for the years 1952 and 1953. (Vechernaya Moskva, Moscow, No. 24, 5 Feb 53, p ...)

Name	Title of Work	Nominated by
Agoshkov, M.I.	"Textbook of Mining"	Metallurgizdat
Alyamskiy, A.M.	(two books)	
Voronin, V.N.		
Gorodetskiy, P.I.		
Kaplunov, R.P.		
Matveyev, M.A.		
Polyakov, N.N.		
Tarasov, L.Ya.		
Seledkov, Yu.V.		
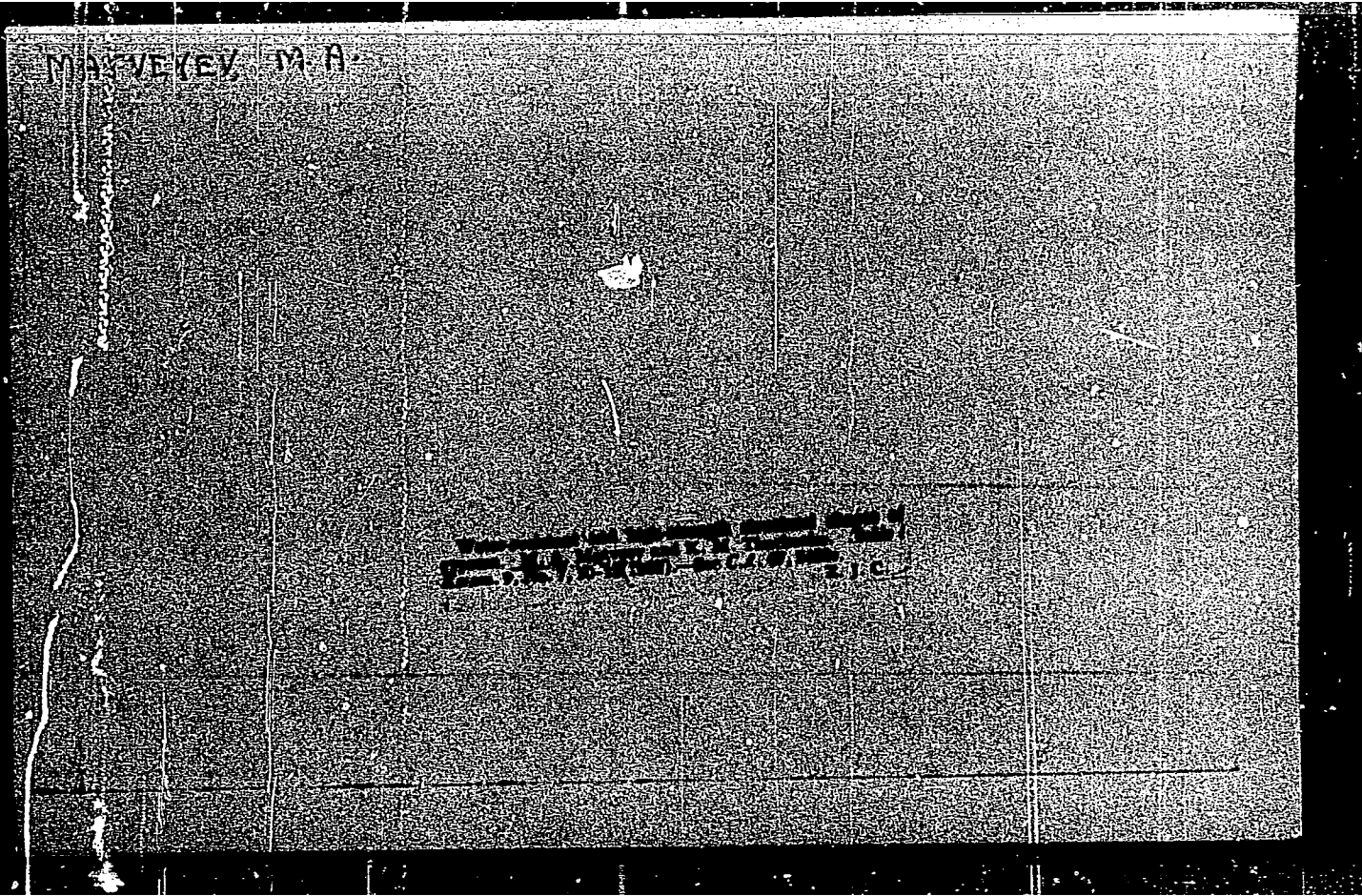
MATVEYEV, M.O.

MATVEYEV M. A.

MATVEYEV, M. A.

Improved silicate building materials by additions of crystallized hydrated salts. P. P. Budnikov, M. A. Matveev, and S. I. Yurchik (D. I. Mendeleev Inst. Chem. Technol., Moscow). *Doklady Akad. Nauk S.S.S.R.* **84**, 1031-4(1952); cf. *Ukrain. Khim. Zhur.* **11**, No. 3, 275(1938).—B. previously demonstrated that small amts. of hydrated chlorides of Na, Ca, Mg, or Na water glass solns. accelerate the hydrothermal binding reactions of free CaO in hydraulic materials if added to the mixing water. The time of the steam-curing for the production of Ca hydrosilicate bricks is abbreviated by such addns. to the batches. In the same time, the mech. properties and the H_2O stability of the bricks are improved. Particularly efficient are also natural epsomite, reichardite, astrakhanite, $FeSO_4.7H_2O$, $Na_2SO_4.10H_2O$, $CaCl_2.6H_2O$ added in amts. of 2 to 3%. $CaSO_4.3H_2O$ and $Mg(OH)_2$ are found among the reaction products, while free NaOH rapidly reacts with SiO_2 (in the quartz sand) and free CaO to form stable Ca silicate hydrates which make up the mech. strength of the products. $Mg(OH)_2$ easily reacts with activated SiO_2 to form stable Mg silicate hydrates of equal mech. character. The most effective salt addns. are granulated Na silicate and astrakhanite; the steam pressure in the autoclave is 2 to 4 atm., maintained over 4 hrs. The use of tripoli as natural activated SiO_2, besides the quartz sand, considerably increases the mech. strength data, if epsomite, astrahanite, or $Na_2SO_4.10H_2O$ (mirabilite) is added to the batch. W. E.

MATVEYEV, M A:

Microscope investigation of the structure of sodium silicates hydrated in the vitreous state. M. A. MATVEYEV and A. A. VIDINEYEV. Silik. i Krasn., 19 16, 4-7 (1953). -- The investigation was carried out by the method of direct illuminance and by the method of imprints, using the electrostatic electron microscope. Materials studied were $Na_2O \cdot 3SiO_2$, $Na_2O \cdot 3SiO_2 \cdot 14H_2O$, $Na_2O \cdot 2SiO_2 \cdot 2H_2O$, $Na_2O \cdot 2SiO_2 \cdot 5H_2O$, silica-rich soda glass, and the same glass partly hydrated. During the hydration of vitreous Na silicates, the crystalline phase appears as small crystals which increase in number with extent of hydration. The structure of the hydrated silicates is mixed amorpho-crystalline; the crystalline phase is highly developed for high hydration. It was impossible to determine the nature of the crystalline phase owing to the small size and the masking by the starting mass. In the case of hydrated hydrosilicates, the presence of the crystalline phase was established; and also the degree of crystallization is a function of the extent of hydration. It is concluded that sodium hydrosilicates crystallize faster and form crystalline aggregates.

MATVEYEV, M. A.

1168. Durable caustic-magnesia master moulds for use in the production of plaster moulds. —M. A. MATVEYEV (*Glass & Ceramics*, Moscow, 10, No. 11, 16, 1953). The manufacture is described in detail. Caustic magnesia is produced from natural magnesite by firing at 750°–900° C.: its quality is shown by its s.g., which must lie between 3·1 and 3·4; underfired material will have a lower, and overfired a higher, value. The mix for durable master moulds contains (% by wt.): caustic magnesia 60; finely ground sand (marshalite) 30–34; powdered asbestos 6–10. The maximum crushing-strength is attained by drying for 3 hr. at 100° C. The longer the time of storage of the moulds in air, the higher their mechanical strength, e.g. an increase from 32 hr. to 5 days increases the tensile strength by 500–520%. Master moulds produced according to the flow-sheet described are hard and water-resistant: after remaining in water for months, the crushing-strength had decreased by only 4% and the tensile strength by only 2%.
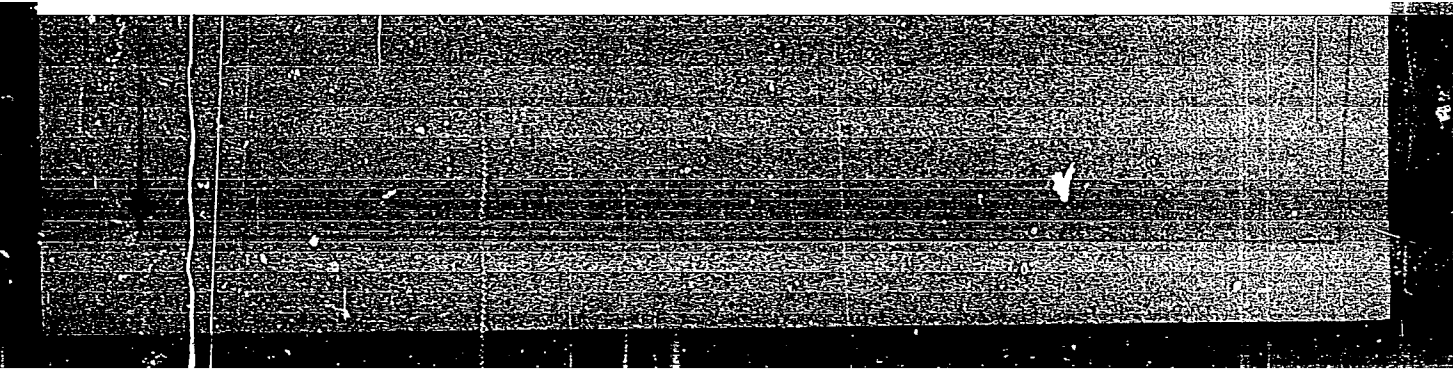
MATVEEV, H. A.

Chem (2)

Thermographic investigation of the dehydration of sodium silicates hydrated in the vitreous state.' M. A. Matveev (D. I. Mendeleev Chem.-Technol. Inst., Moscow). *Zhur. Fiz. Khim.* 27, 268-71(1953); cf. *Litelnoe proizvodstvo*, No. 8(1951).—In order to det. the temp. interval in which dehydration of vitreous Na silicates occurred, samples made from $Na_2O.3.3SiO_2$ by steaming (100°, 1 atm.) 1 (I), 2 (II), 3 (III), 4 (IV), and 5 (V) hrs. and contg. 11.88, 12.10, 12.90, 14.64, and 16.90% H_2O, resp., and an unsteamed sample (VI) were heated in a thermographic app. that recorded temp. as a function of time. VI, I, III, and IV had pairs of endothermic points at 130 and 570°, 150 and 640°, 130 and 650°, and 145-55 and 640-50°, resp. II and V were similar to I and IV, resp. The higher temps. were points of complete dehydration. The magnitude of the thermal effect increased with the degree of hydration r both temp. intervals. The steaming app. and thermal data are shown in diagrams.   J. W. Loweberg, Jr.

KISELEV, V.I.; SAVIN, G.N., professor, doktor, retsensent; MAKAROV, V.S.,
professor, doktor, retsenzent; MATVEYEV, M.A., redaktor; YEZDOKOVA,
M.L., redaktor; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Hoists for deep mines] Pod"emnye ustanovki dlia glubokikh shakht.
Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi
metallurgii, 1954. 227 p. [Microfilm]   (MLRA 7:10)

1. Vitse-president AN USSR (for Savin)
       (Mine hoisting)

MASLENNIKOV, Mikhail Alekseyevich; TROITSKIY, A.V., redaktor; PARTSEVSKIY, A.V., redaktor; EVENSON, I.M., tekhnicheskiy redaktor

[Water supply and ventilation systems in ore-dressing mills] Vodosnabzhenie i vozdukhoduvnye ustanovki obogatetel'nykh fabrik. Moskva. Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 390 p.
                                                              (MLRA 8:3)
        (Ore dressing)   (Metallurgical plants)

USSR/Chemistry - Physical chemistry

Authors   : Matveyev, M. A., and Dyatlova, V. P.

Title   : Thermodynamic study of the dissociation of Na_2SiF_6 and its solution in alkali silicate

Periodical : Zhur. fiz. khim. 28/10, 1713-1719, Oct 1954

Abstract   : The dissociation of Na_2SiF_6 (sodium fluosilicate) was measured at temperatures of 540 - 960°C and the parameters of this reaction were calculated. ... of Na_2SiF_6 formation were computed on

graph, drawing.

Institution: The D. I. Mendeleyev Chemical-Technological Institute, Moscow

Submitted: July 7, 1953

MATVEYEV, M H

)) /IT I E Y/ I, /// /H·)

BUDNIKOV,P.; MATVEYEV,M., dotsent.

Quicklime in the production of silicate building materials. Stroi.
mat., izdel. i konstr. 1 no.4:17-20 Ap'55.   (MIRA 8:10)

1. Deystvitel'nyy chlen Akademii nauk SSSR.
                  (Bricks) (Building blocks)

AID P - 4017

Subject   : USSR/Power

Card 1/1   Pub. 26 - 6/31

Authors   : Gunzburg, D. B., Dr. Tech. Sci., M. A. Matveyev, Kand.
                Tech. Sci.

Title   : On packed lining for boiler surfaces.

Periodical   : Elek. sta., 11, 20-23, N 1955

Abstract   : Authors report on research made on properties of lining
                used to improve imperviousness of waterwalls. A detailed
                description of tests made with different types of lining
                is given. Liquid glass, cement and magnesium solutions
                were used and proved to be satisfactory. The method of
                preparing these linings is described. Six diagrams.

Institution : None

Submitted   : No date

MATVEYEV, Mikhail Aleksandrovich; SMIRNOVA, Klavdiya Aleksandrovna; SIL'VESTROVICH, S.I., nauchnyy redaktor; KRUGLOV, S.A., redaktor; LYUDKOVSKAYA, B.I., tekhnicheskiy redaktor

[Porous silicate products] Poristye silikatnye izdeliia. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 106 p. (MIRA 9:10)
        (Building materials)   (Silicates)

GRIGOR'YEV, Petr Nikolayevich [deceased]; MATVEYEV, Mikhail Aleksandrovich;
KUYBYSHEVA,G.V., redaktor; GLADKIK, B.B., tekhnicheskiy redaktor.

[Soluble glass; production, properties, and use] Rastvorimoe steklo;
poluchenie, svoistvo i primenenie. Moskva, Gos. izd-vo lit-ry po
stroit. materialam, 1956. 442 p.   (MIRA 10:2)
        (Soluble glass)
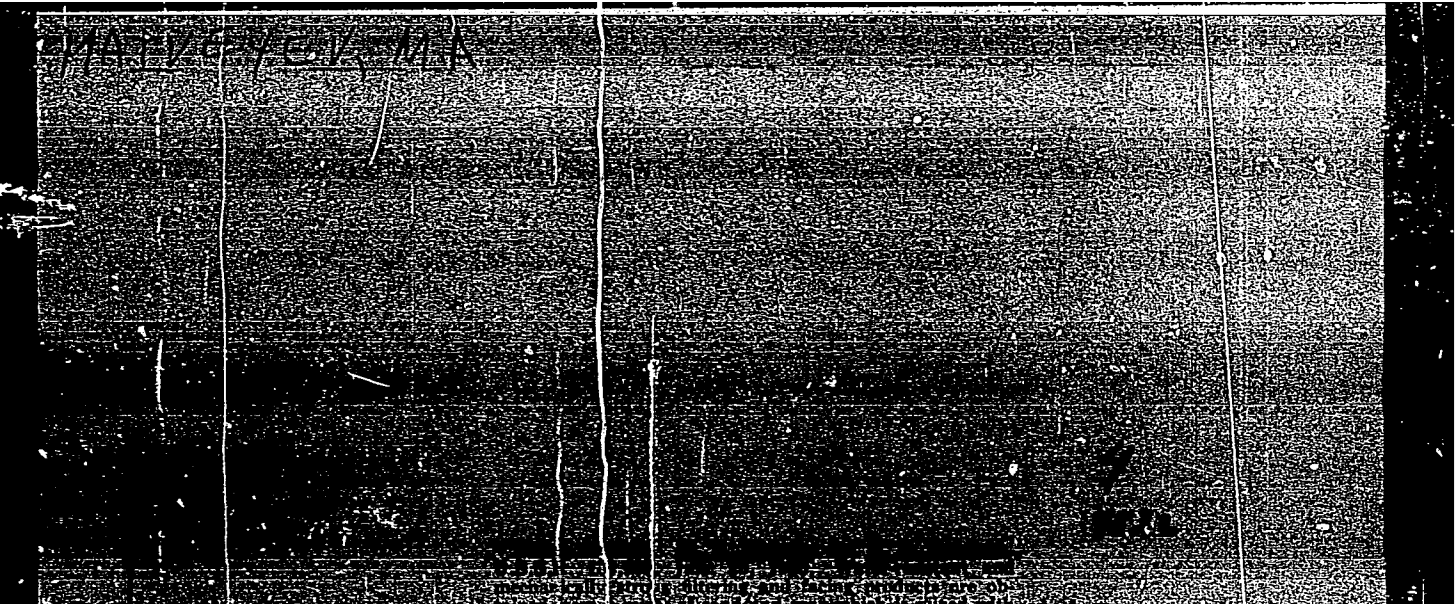
η'' η tL e/⟨/ , M.H ·

USSR/Chemical Technology. Chemical Products and Their Application.   J-12
     Glass. Ceramics. Building Materials.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27597

Author   : M.A. Matveyev.
Inst   :
Title   : Determination of Solubility and Silica Modulus of Vitreous
     Alkaline Silicates.

Orig Pub: Sb. nauch. rabot po khimii i tekhnol. silikatov. M., Promstroy-
     izdat, 1956, 333-338.

Abstract: The methods of the determination of the solubility of vitreous
     alkaline silicates of Na in an open vessel and a thermostat are
     described. It is noted that the 1st method based on the preli-
     minary hydration of the sample can be applied to alkaline sili-
     cates of any silica modulus; it is preferable to determine the
     solubility of alkaline silicates of silica moduli ≤ 3 using the
     2nd method.

Card   : 1/1   -1-

USSR/Chemical Technology. Chemical Products and their Application.   J-12
    Glass. Ceramics. Building Materials.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27596

Author : M.A. Matveyev.
Inst   :
Title   : Influence of Dissolution Duration and Water Temperature on Solu-
          bility of Hydrated Vitreous Sodium Silicates.

Orig Pub: Sb. nauch. rabot po khimii i tekhnol. silikatov. M., Promstroyiz-
          dat, 1956, 365-370.

Abstract: The methods of investigation are described and their results are
          discussed; it is noted that the solubility of high-modular hydra-
          ted vitreous sodium silicates rises insignificantly with the rise
          of water temperature. The dissolution duration increases the
          solubility of hydrosilicates of a slow degree of dispersion and
          does not influence the solubility of hydro-silicates of a raised
          dispersion degree.

Card   : 1/1   -58-

SOV/137-58-7-14202

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 34 (USSR)

AUTHORS: Matveyev, M. A. , Matveyev, G. M.

TITLE: On the Determination of the Thermodynamic Properties of Some Silicates (K opredeleniyu termodinamicheskikh svoystv nekotorykh silikatov)

PERIODICAL: V sb. : Fiz. ·khim. osnovy keramiki. Moscow, Promstroyizdat, 1956, pp 504-506

ABSTRACT: The formation of a silicate of the type $Na_2O \cdot nSiO_2$ is broken down into two processes, namely, the formations of the bonds Si-O and Na-O. Modification of thermodynamic properties of ΔZ, ΔH, and ΔS (ΔG) in the process of formation of $Na_2O \cdot nSiO_2$ is registered approximately as $\Delta G^n = \Delta G_{Na} + r \Delta G_{Si}$ where ΔG^n is the variation of the property in the formation of the given silicate, ΔG_{Si} is the variation of the entropy in the formation of Si-O bonds in the metasilicate, and ΔG_{Na} is the variation in the entropy during the formation of Na-O bonds in the metasilicate; it is assumed that ΔG_{Si} and ΔG_N does not depend on n. ΔG_{Na} and ΔG_{Si} are found with the aid of tabulated data for meta- and

Card 1/2   orthosilicates; these values are used for other compositions.

SOV/137-58-7-14202

On the Determination of the Thermodynamic Properties of Some Silicates

The calculations produced: $\Delta S^o_{Na} = -2.4$, $\Delta S^o_{Si} = -2.1$ entropy units for
$Na_2O \cdot 3SiO_2$: $\Delta S_{NaO_2 \cdot 3SiO_2} = 51.6$ entropy units, $\Delta H = -790.4$ kcal, $\Delta Z = -741.3$ kcal.

P Sh.

1. Silicates--Thermodynamic properties.

Card 2/2

MATVEYEV, M. A

US3R /Chemical Technology. Chemical Products   I-12
    and Their Application

    Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31562

Author : Matveyev M., Smirnova K.

Title   : Porous Panels for Pneumatic Transfer of
           Pulverulent Materials

Orig Pub: Stroit. materialy, izdeliya i konstruktsii, 1956,
           No 8, 28-29

Abstract: Description of the technological process of
           production, and testing procedures for air-
           permeability, of porous chamotte panels, made
           with water glass, for pneumatic transfer of
           dust-like and pulverulent materials.

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M A T V E Y E V, M A

USSR /Chemical Technology. Chemical Products   I-12
   and Their Application

   Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31497

Author : Matveyev M.A., Koyfman I.S., Grechanik L.A.

Title   : Vibratory Comminution of Sand and Its Use in the
          Making of Borosilicate Glass

Orig Pub: Steklo i keramika, 1956, No 11, 3-9.

Abstract: Grinding of sand (S) was effected in M-10 and
          M-200 vibratory mills. Degree of dispersion of
          S was evaluated on the basis of screen analysis
          data and specific surface values. It was found
          that most effective is grinding of S during the
          first 1,5 hours, when a specific surface of
          3300 cm^2/g is attained with a residue on the

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USSR /Chemical Technology.   Chemical Products   I-12
    and Their Application

    Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31497

screen of 10000 apertures/cm^2 (5%). Comparative -
study of vibratory grinding using different grind-
ing bodies has shown that greatest output capac-
ity of the mill is attained with steel balls,
which are most wear-resistant but cause contam-
ination of the S with metallic Fe. Milling
with porcelain and glass balls decreases the
output by 2-3 times. Use was also made of glass
balls manufactured at the same plant; cost of
the balls expended in vibratory comminution of 1
ton of sand is 2 times less than that of porce-
lain balls. For glass in which a Fe_2O_3 content
of more than 0.1% is permissible, milling of S

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USSR /Chemical Technology.   Chemical Products   I-12
    and Their Application

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31497

can be carried out in a housing without an in-
ternal rubber lining, which is of great prac-
tical importance since the life of the lining
does not exceed 150 hours of operation. To
reduce dust formation and improve mixing of the
batch it is advantageous to humidify the sand 5
minutes prior to termination of the mixing.
Early moistening of the S impairs the degree of
comminution. Output of a continuous operation
unit, with a feed of the aero-mixture under the
milling bodies, is 1.7 times higher than that of
an intermittent operation mill, yielding a pro-
duct of the same degree of dispersion. Most

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USSR /Chemical Technology. Chemical Products   I-12
          and Their Application

     Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31497

          advantageous is a grinding of S to a specific
          surface of 2000 cm^2/g, which is attained in a
          M-200 mill within 1 hour.

Card 4/4

MATVEYEV, M. A

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

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62238

Author: Matveyev, M. A., Gludina, N. I.

Institution: None

Title: Rapid Method of Chemical Analysis of Soluble Glass

Original
Periodical: Tr. Mosk. Khim.-tekhnol. in-ta, 1956, No 21, 49-56

Abstract: A photocolorimetric method of analysis has been developed for a
rapid determination of SiO_2 in glassy, soluble, alkaline silicates
and their solutions. It is shown that this method, in combination
with the volumetric method for determinction of the content of
alkalies, permits to determine within 1.5-3 hours the silica
modulus of glassy alkaline silicates.

Card 1/1

MATVEYEV, M A

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

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62239

Author: Matveyev, M. A.

Institution: None

Title: On Dehydration Temperature of Glassy Hydrated Sodium Silicates
and the Determination of the Degree of Their Hydration

Original
Periodical: Tr. Mosk. khim.-tekhnol. in-ta, 1956, No 21, 57-60

Abstract: The investigation has shown that the maximum temperature of de-
hydration of Na silicates is of $30-35^{\circ}$. The same interval deter-
mines the beginning of dehydration of soluble hydrosilicate glass.
Determination of hygroscopic moisture content of glassy, hydrated,
alkali silicates should be carried out at 35°. Content of hygro-
scopic and hydrate water in hydrated soluble glass of the same com-
position increases with increasing number of fractions in its
particle size range. On increase of drying temperature of hydrated

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

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62239

Abstract: soluble glass above 30-350 solubility and binding properties de-
crease. A simplified procedure is recommended for determination
of the degree of hydration of glassy alkali silicates.

Card 2/2

MATVEYEV, M.A.; SMIRNOVA, K.A.

Porous ceramic tiles for the aeration of drainage water. Gor.
khoz. Mosk. 3C no.8:30-31 Ag '56.   (MLRA 9:10)

(Tiles)

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

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5133

    Author: Budnikov, P. P., Matveyev, M. A.

Institution: Academy of Sciences USSR

     Title: Synthesis of Sodium Trisilicate in the Crystalline State and Study
             of Its Properties

   Original
Publication: Dokl. AN SSSR, 1956, 107, No 4, 547-550

  Abstract: The possibility has been ascertained of the formation in the Na_2O-
             SiO_2 system, of a new compound $Na_2O.3SiO_2$, in crystalline state,
             within the range 700-750°. There are given: rate of crystallization
             curve of vitrous $Na_2O.3SiO_2$; results of x-ray investigations (inter-
             planar distances of crystal lattice of $Na_2O.3SiO_2$); optical constants
             of $Na_2O.3SiO_2$ crystals; density, solubility and coefficient of thermal
             expansion of crystalline $Na_2O.3SiO_2$. A study has also been made of
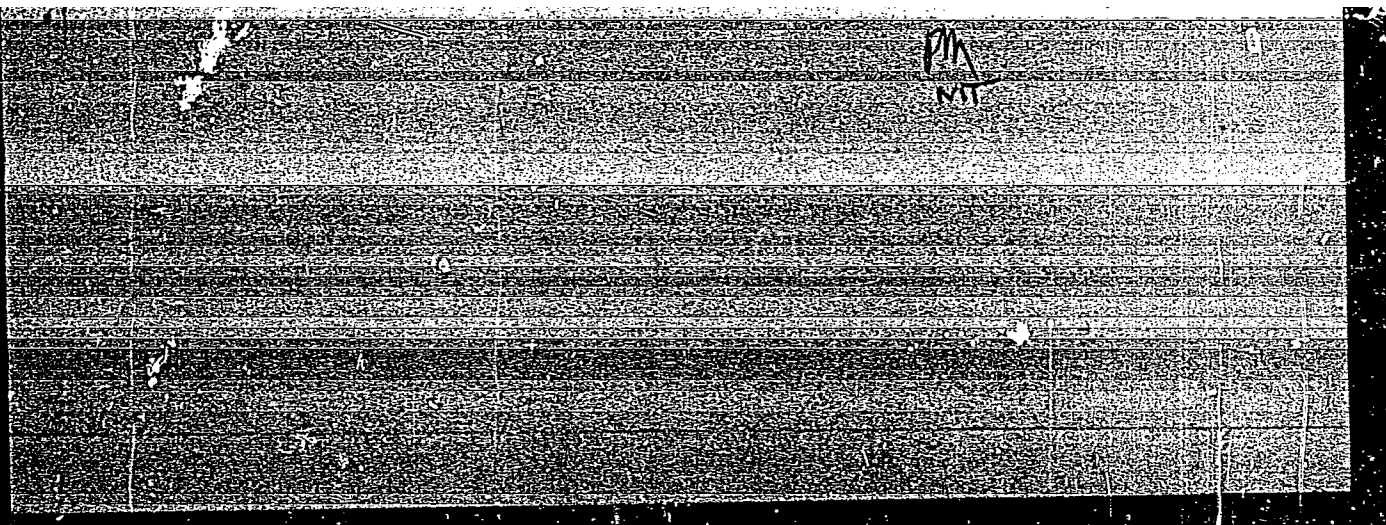   the hydration capacity of crystalline $Na_2O.3SiO_2$. It is noted that

Card 1/2

BUTT, YIL.YI; GERSHAM, N.L., MATVEYU, M.

p. 136, N. N. Tsrushva, "A sedimentation equation and derivation of particle-size