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VEYKHERT

POLAND / Chemical Technology. Ceramics, glass, cement, materials, concrete.

Abs Jour: Ref Zhur-Khimiya, No 12, 1958, 40465.

Author : Veykhert.

Inst : Not given.

Title : The Problem of Studying the Reaction Capacity of the Feed Stock in Baking Portland Cement Clinkers.

Orig Pub: Cement, Wapno, Gips., 1957, 13, No 11, 272-273.

Abstract: The reaction capacity (caking) of the raw mixture depends not only on its chemical properties, but also on the geometrical form and granulation size. It is therefore imperative to take into consideration the physical factors and to insure homogeneity of the samples in respect to their granulation and method of preparation. The author thinks that

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Card 1/2

POLAND / Chemical Technology. Ceramics, glass,
cement, materials, concrete.

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Abs Jour: Ref Zhur-Khimiya, No 12, 1958, 40465.

Abstract: a relationship between a reaction capacity of the raw material, efficiency and thermal function of a kiln can be established if the correct conditions are set up for carrying out the investigations.

Card 2/2

PROSKURNIN, I., Eng.; VEYKIDMAN, KH.

Tractors - Motors

Link and crank bearings for the D-54 engine. MTS 13, No. 2, 1953.

Monthly List of Russian Accessions. Library of Congress
June 1953. UNCL.

VEYKHMAN, Kh.A., inzh.; SEPITYY, V.T., inzh.; RYSTENKO, G.A., inzh.;
NAVARENKO, V.S., inzh.; KASHUB, B.P., glavnyy konstruktor, red.;
YEGORKINA, L.I., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[The DT-54A tractor; operation manual] Traktor DT-54A; rukovod-
stvo po ekspluatatsii. Pod red. B.P.Kashuba. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostr.lit-ry, 1959. 318 p.

(MIRA 12:10)

1. Khar'kovskiy traktoroborochnyy zavod. 2. Khar'kovskiy
traktoroborochnyy zavod (for Veykhman, Sepityy, Rystenکو, Nava-
renko, Kashub).

(Tractors)

VEYKHMAN, TS. I.

VEYKHMAN, TS. I.- "Role of Writing in the Teaching of Reading French Words in the V Class." Acad Pedagogical Sci ESFSR, Sci Res Inst of Methods of Teaching, Moscow, 1955 (Dissertations for the Degree of Candidate of Pedagogical Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

BORNOVOLOKOV, Eduard Pavlovich; VEYKMANIS, Avgust Yakubovich; ROMANOV,
Boris Aleksandrovich; SHUR, Anatoliy Abelevich; SOBOLEVSKIY, A.G.,
red.; LARIONOV, G.Ye., tekhn. red.

[Loudspeaker systems] Peregovornye ustroistva. Moskva, Gosenergo-
izdat, 1962. 38 p. (Massovaia radiobiblioteka, no.431)

(MIRA 15:7)

(Intercommunication systems)

VEYLAND, S.Kh., inzh.; LEMIE, P.F., inzh.; MARMONEN, A.N.; NEMICHENYI, V.D.

Automatic direct coal loading into railroad cars. Mech. i avtom.
proizv. 18 no.9:12-13 S '64.

(MIRA 17:11)

VEYLAND, V. I.

ZVEREV, E. I., VEILAND, V. I.

Secondary symptoms in sulfonamide therapy of dysentery. Sovst
Med. No. 11, Nov. 50. p. 24-6

1. Of the Clinical Division (Head—G. M. Kapnik), Moscow Oblast
Institute imeni Mechnikov.

GLML 20, 3, March 1951

VEVLEH, A. Ya.

Inst. Physical Chem., Acad. Sci. USSR, (-1946-)

"Colloid Suspension of Clay in Water as Lubricating
and Cooling Liquids in the Deep Drawing of Metals,"

Iz. Ak. Nauk, Otdel Tekh. Nauk, No. 4, 1946

VEYLER, S. YA.

"Structure Development in Rubber Sols by the Action of Active Fillers,"
P. A. Rebinder, G. A. Ab, and S. Ya. Veyler, Compt rend acad sci URSS,
XXXI, pp 444-7 (1941) (SEE: Inst. Insect/Fungi. in Ya. V. Samoylov)

SO: U-237/49, 8 April 1949

VEYLER, S. Ya.

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Aqueous Colloidal Clay Slurries as Lubricants and Coolants in the Deep Drawing of Metals. S. Ya. Veyler, N. N. Petrova, and P. A. Rebinder. Henry Brülcher, Translation No. 2429, 9 pages. From *Izvestiya Akademii Nauk SSSR* (Bulletin of the Academy of Sciences of the USSR), Section of Technical Sciences, no. 4, 1948, p. 625-628.

Deals with laboratory and plant studies of bentonite clays in the form of water-diluted colloidal suspensions. Describes preparation of slurries, precautions, and particle-size ranges of clay fractions. Performance data are tabulated and discussed. 11 ref.

454-31A METALLURGICAL LITERATURE CLASSIFICATION

621127 CHEM 101

621127 CHEM 101

CA

2

Measurement of anisotropic properties of dispersive systems by the method of tangential displacement of a plate. S. Ya. Volin. *Sovetskaya Lab.* 14, 432-5 (1948).
—A rectangular or round very thin plate of 50-100 μ Cu, Al, brass, or mica foil, is immersed in the liquid and suspended, by a thin metal wire, on a quartz or glass spring; for highly viscous media, a steel or W spring should be used. The container with the liquid is supported by a table that can be moved upwards or downwards at a constant rate v . The displacement λ of the plate is read with the aid of a scale fixed on the suspension wire and a horizontal microscope. With the table moving at the rate v , its displacement in t min. is vt , and the strain $\epsilon = vt - \lambda$. The shearing stress P is plotted against ϵ . With a given system, it is strictly proportional to the surface area J of the plate (between $J = 5$ and 100 sq. cm.), and is independent of its shape and of the distance x of the walls of the container (5-50 mm.). From the rectilinear portion of the stress-strain diagram, the shearing modulus E can be detd. by $E = P/(\epsilon/x)$. The method was applied to the investigation of the rate of thixotropic gelification of clay suspensions. Its feature is the large surface area of the plate, along with its small wt. N. Thon

VEYLER, S. Ya.

32545. GOL'DFARB, R. D. i VEYLER, S. ya. Vliyaniye tverdykh kolloidnykh
nainolnitateley na strukturoobrazovanie v kontsentririrovannykh klejakh zhalatiny.
Zhurnal prikl. khimii, 1949, No. 10, s. 1118-1121. -- Bibliogr: s. 1121

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

VEYLER, S.YA.

PA 45/49T18

USSR/Chemistry - Colloids
Chemistry - Relaxation

Jan/Feb 49

"Measurement of Relaxation in Structurally Colloidal System," S. Ya. Veyler, B. I. Likhtman, P. A. Re-binder, Inst Physicochem, Acad Sci USSR, 3 pp

"Kolloid Zhur" Vol XI, No 1

Subject method for measuring period of relaxation is based on tangential mixing of plates in colloidal system under conditions of limited constant deformation. Shows lack of relationship between period of relaxation and amount of initial elastic deformation in construction of hydrozol gelatin. Submitted 20 Mar 48.

45/49T18

PA 24/49T20

USSR/Engineering
Cooling, Liquid
Metallurgy

Jan 49

"The Importance of Active Lubricating and Cooling
Liquids in the Deep-Drawing of Metals," S. Ya. Veyler,
L. A. Shreyner, 14 pp

"Zhur Tekh Fiz" Vol XIX, No 1

Describes new method for evaluating lubricating effect
of active lubricating and cooling liquids in the deep-
drawing of metals. Consists of repeatedly passing
the deformed piece through a die and measuring the
corresponding forces.

24/49T20

CA

Influence of solid colloidal fillers on the structure formation in concentrated glues. R. D. Gol'farb and S. Ya. Vallovskaya. *Prilozh. Khim. (J. Applied Chem.)* 22, 1118-21 (1949).—Shearing stress-strain curves, obtained by measurements of the tangential displacement of a plate, in the app. of Veller and Rebinler (*C.A.* 40, 4063¹⁹), 25 hrs. after cooling to 20°, show the limiting shearing stress τ of a 30% glue soln. with 20% (relative to the dry glue) of highly hydrophilic clay, to be higher (11.3 g./sq. cm.) than that of the same glue soln. without filler (9.1 cm.). The corresponding shearing moduli are 26 and 15.4 g./sq. cm., resp. The filler also increases the brittleness of the

gel and accelerates setting. With increasing amt. of filler, τ passes through a max. For a 40% glue, with ZnO as filler, τ increases from 68.1 to a max. of 95.3 g./sq. cm., and to a max. of 80.7 g./sq. cm. with clay; in both cases, the max. is reached at about 40-50% of filler relative to the dry glue. Two kaolins gave max. τ of 84.1 and 70.2 g./sq. cm., resp. The max. strength of the gel thus varies with the nature of the filler. N. Thon

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CA

New principle of evaluation of the effectiveness of lubricating materials in the working of metals under pressure. S. Ya. Veller and L. A. Shreiner. *Doklady Akad. Nauk S.S.S.R.* 60, 323 (1949). A steel ball of 0.310 mm. diam. is pressed repeatedly through an oblique cylindrical 0.200-mm. bore in a metal sample (Cu or brass), and the load P is measured as a function of the penetration h , with and without lubricant. Curves of P against h show a max. P_m . The values of P diminish with each following pass, and the max. becomes flatter. If P_m is plotted against the no. n of consecutive passes, the descending curve, obtained in the presence of a lubricant (5% soln. of a soap contg. 50% fatty acids), is found to be considerably below that obtained without lubricant; thus, at $n = 1$ (1st pass), $P_m = 8$ and 138 kg., resp. The effect is evidently detd. not only by a decrease of friction but also by increased ease of plastic deformation in the surface layer, owing to the presence of surface-active substances. After a certain no. of passes, P_m becomes const.; this takes place, in the absence of a lubricant, after 14 passes, and, in its presence, after 5. This indicates that, with a surface-active substance, the process of plastic flow in the surface layer is completed sooner. N. Thon

Inst. Phys. Chem., AS USSR

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001859630006-3

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001859630006-3"

VEYLEE, S. YA.; SHREYNER, L. A.

Lubrication and lubricants

Method for investigation of the effectiveness lubricants used in treatment of metals under pressure. Trudy Inst. fiz khimii AN SSSR No. 1, 1952.

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

VELLER, S. Ya.

Journal of the Iron and Steel Institute
Vol. 176
Apr. 1954
Forging, Stamping, Drawing, and Pressing

The Influence of Lubricants on the Coefficient of Friction During the Deep Drawing of Metals. S. Ya. Veller and G. I. Epifanov. (*Doklady Akademii Nauk SSSR*, 1953, 92, (3), 593-594). (In Russian). The influence of lubricants on the coefficient of friction during deep drawing was investigated on samples of steel, copper, and brass. From changes in the coefficient during the repeated drawing of samples in various media (methyl and butyl alcohols and pelargonic acid) it is concluded that the factor lowering friction during the first pass is not the external lubricating action, but the plasticizing effect of the lubricant, i.e., its ability to facilitate the flow of metal in a very thin layer in contact with the die.—v. 9.

Inst-Phys. Chem., AS USSR

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 37/63

Authors : Veyler, S. Ya.

Title : Effect of lubricants on the surface flux of metal

Periodical : Dok. AN SSSR 99/6, 1025-1027, Dec 21, 1954

Abstract : The effect of various lubricants on the tangential forces, change in micro-structure and microhardness, was investigated during the flux of the metal in surface layers. During the treatment of metal by pressure the lubricant prevents direct contact and decreases the external friction between the metal and the machine tool. The active lubricants on the surface may act as plasticizers forming a relatively much softer layer than within the metal. Thin surface plasticized layers are capable of withstanding strong plastic deformations and assure the role of a highly viscous lubricant. The effect of lubricants, during surface and volumetric deformation, was found to be identical regardless of the different external effects. Four USSR references (1949-1953). Tables; illustrations.

Institution: Academy of Sciences USSR, Institute of Physical Chemistry

Presented by: Academician P.A. Rebinder, July 22, 1954

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001859630006-3

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001859630006-3"

Lubrication Action by Pressure Treatment of Metals.

PA - 3564

prevent an additional consolidation of the surface layer of the metal treated, and in others they promote such consolidation. (With 1 Table, 7 Illustrations, and 9 Slavic References).

ASSOCIATION: Institute for Physical Chemistry, Moscow
PRESENTED BY:
SUBMITTED: 5.7.1956
AVAILABLE: Library of Congress

Card 2/2

20-114-6-21/54

AUTHORS: Veyler, S. Ya., Likhtman, V. I.

TITLE: Laws Governing the Drawing of Metals in the Presence of Lubricants (O zakonomernostyakh volocheniya metallov v pri-sutstvii smazok)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 6, pp. 1224-1227 (USSR)

ABSTRACT: Like all other processes of the working of metals under pressure the drawing of a metal does not only depend on the overcoming of the metal's resistance to deformation, but also on the overcoming of the friction forces which develop on the contact surface metal-instrument. At high pressures the friction mainly consists of the flow of the surface layer of the softer metal. The process of drawing consists of the volume deformation of the metal and of an additional shearing deformation of the metal to be worked, which latter is due to the seizing of the metal by the instrument. The first process, i.e. the drawing itself, is necessary and useful. But the second process is harmful, because it requires the complete utilization of the deformability of the metal and because it consumes much energy. The force necessary for the volume deformation of the

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20-114-6-24/54

Laws Governing the Drawing of Metals in the Presence of Lubricants

metal (without friction) alone can be represented as $F_1 = P_m S' \sin \alpha = P_m \Delta S$. The force necessary for the additional shearing deformation of the surface layer satisfies the equation $F_2 = \tau_1 S_k$. Thus the following applies to the force necessary for drawing: $F = F_2 + F_1 = \tau_1 S_k + P_m \Delta S$. P_m here signifies a certain mean stress to which the metal is exposed on passage through the opening, $\Delta S = S_0 - S$ - means the reduction of the cross section of the metal wire or the metal strip due to drawing, α - the cone angle, τ_1 - the maximum shearing stress or the resistance to cutting, S_k - the surface area of the contact between metal and instrument. A table contains the results on the drawing of copper and brass strips. The active lubricant influences only the first term of the above-given formula for F , the second term is almost independent of the presence or the quality of the lubricant. The here obtained results may also be applied to other processes of the working of metals under pressure. There are 2 figures, 3 tables, and 7 references, 6 of which are Slavic.

Card 2/3

Laws Governing the Drawing of Metals in the Presence of Lubricants 20-114-6-24/54

ASSOCIATION: Institute for Physical Chemistry AS USSR
(Institut fizicheskoy khimii Akademii nauk SSSR)

PRESENTED: April 5, 1957, by P. A. Rebinder, Member of the Academy

SUBMITTED: March 26, 1957

Card 3/3

VEYLER, S. Ya.

20-3-18/46

AUTHORS: Veyler, S. Ya. , Likhtman, V. I. , Rebinder, P. A., Academician

TITLE: Adsorption Plastification of a Surface Layer Under the Influence of Lubricants at the Pressure Working of Metals (Adsorbtsionnoye plastifitsirovaniye poverkhnostnogo sloya pod vliyaniyem smazok pri obrabotke metallov davleniyem)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 3, pp. 415 - 418 (USSR)

ABSTRACT: The authors illustrated the following: The essential part of the effect of liquid active lubricants at pressure working of metals is not the exterior friction but the resistance of the treated metals against the flow in a quite thin surface layer. This resistance determines the intensity of the tangential stress which occurs in the surface layer of the deformed metals. The liquid active lubricants reduce strongly the additional shearing deformation of the surface layer of the treated metal. The strong reduction of the "effective" friction coefficient (of the tangential stress) is caused by the localisation of the plastic friction in a thin layer of the softer covering metal. Stronger thinner coverages (nitration, carburization, chromium plating) impair upon the drawing process by intensification of the tangential stress. The shearing resistance τ_1 of the layer as computed by the measurements

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20-3-18/46

Adsorption Plastification of a Surface Layer Under the Influence of Lubricants
at the Pressure Working of Metals

of the authors does not depend on the properties of the principal metal. Inactive metals (oktane, vaseline-oil) lead to an increase of σ at an effected increase of the degree of deformation at drawing. The surface-active lubricants cause a decrease of σ_1 at an increase of the deformation degree. A diagram illustrates these changes for aluminum bands which are drawn out in active-lubricants. These data show clearly that the effect of the surface-active liquid lubricants upon the adsorption plastification of a very thin surface layer of the treated metal is reduced. To estimate the thickness of the plastificated layers "model experiments" on the influence of thin coverage of a soft metal upon the stress of a wire which is drawn out were carried out. A diagram illustrates this influence on example of a wire which has been covered with copper before. The influence of the oxide film has to be brought into consideration on occasion of the investigation. To a large extent the adsorption plastification can explain the influence of the surface-active media at boundary friction. (Particularly at high temperatures). There are 3 figures, 1 tables, and 12 references, 11 of which are Slavic.

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20-3-18/46

Adsorption Plastification of a Surface Layer Under the Influence of Lubricants
at the Pressure Working of Metals

ASSOCIATION: Institute for Physical Chemistry of the AN USSR
(Institut fizicheskoy khimii Akademii nauk SSSR)

SUBMITTED: June 29, 1957

AVAILABLE: Library of Congress

Card 3/3

VEYLER, S.Ya., Doc Chem Sci -- (diss) "Physico-chemical ^{laws} ~~regularities~~
of the action of lubricants in the cold processing of metals by ~~means~~
pressure." Mos, 1958, 20 pp (Inst of Physical Chemistry of the Acad
Sci USSR), 150 copies (KL, 24-58,116)

Veyler, S.Ya.
AUTHOR: Solomonov, M.

SOV/24-58-4-36/39

TITLE: Application of Technological Lubricants and Special Coatings During Shaping of Metals by Applying Pressure (Primeneniye tekhnologicheskikh smazok i spetsial'nykh pokrytiy pri obrabotke metallov davleniyem)
Conference at the Institute for Mechanical Engineering of the Ac.Sc. USSR (Soveshchaniye v Institute mashinovedeniya Akademii nauk SSSR)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, p 153 (USSR)

ABSTRACT: The conference was held in December, 1957. The following papers were read: "General Relations and the Mechanism of Operation of Lubricants During Shaping of Metals by Applying Pressure" by V.I. Likhtman, S.Ya. Veyler (Institut fizicheskoy khimii AN SSSR - Institute of Physical Chemistry of the Ac.Sc.USSR); "Application of Principles of the Hydrodynamic Theory to the Process of Cold Stamping" by Ye.I. Isachenkov (NIAT); "New Stamping Lubricants for Deep and Particularly for Very Deep Drawing of Components made of Sheet Steel" by M.A. Sil'tsova (Gor'kovskiy avtozavod - Gor'kiy Automobile Works); "Lubricants for Stamping Sheet of Steel and of Various Alloys" by Yu.P. Davydov (VIAM);

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Application of Technological Lubricants and Special Coatings
During Shaping of Metals by Applying Pressure
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"New Lubricants for Wire Drawing" by A.G. Smirnova (TsNIICHERMET); "Investigation of Technological Lubricants Applied for Hot Stamping of Metal Components" by S.A. Dovnar (Minskiy politekhnicheskiy institut im. I.V. Stalina - Minsk Polytechnical Institute imeni I.V. Stalin); "Investigation and Testing of Certain Technological Lubricants and Methods of Applying these on the Dies of Presses During Hot Stamping of Aluminium Alloys" by E.R. Shor (TsNIITMASH); "Lubricants Used in Shaping of Metal by Pressure" by Ye.B. Zhuravskiy (Aviatsionnyy zavod - Aviation Works). The data given in the individual papers show the increasing use of liquid, paste and solid technological lubricants and special coatings in highly efficient processes of shaping metals by applying pressure in the production of complicated components from various heavy and light non-ferrous alloys. The undertakings of the chemical and the oil industries have so far not organised the

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SOV/24-58-4-36/39

Application of Technological Lubricants and Special Coatings
During Shaping of Metals by Applying Pressure
Conference at the Institute for Mechanical Engineering of the
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production of the appropriate lubricants and the instrument industry does not produce instruments for determining the main parameters of these lubricants. So far, investigations by individual institutes of the Ac.Sc.USSR on technological lubricants have not been carried out on a sufficiently large scale and have not been adequately co-ordinated. The same applies to other institutes.

S. Ya. Veyler (Institut fizicheskoy khimii AN SSSR - Institute of Physical Chemistry of the Ac.Sc.SSSR) reported on work in the field of lubricants for cold stamping. Since the result of this work is little known, it was proposed to devote to it a specially convened extended seminar at the Institute of Mechanical Engineering of the Ac.Sc.USSR.

Co-ordination was urged of the research work in the use of lubricants for shaping of metals by pressure and this

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SOV/24-58-4-36/39

Application of Technological Lubricants and Special Coatings
During Shaping of Metals by Applying Pressure
Conference at the Institute for Mechanical Engineering of the
Ac.Sc.USSR

task should be undertaken by the Laboratoriya obrabotki metallov davleniyem Instituta mashinovedeniya AN SSSR (Laboratory for Shaping of Metals by Pressure of the Institute of Mechanical Engineering of the Ac.Sc.USSR). The importance was pointed out of putting onto the market instruments for determining the main parameters of lubricants and also of automatic equipment for coating dies with technological lubricants. It is necessary to work out standard specifications for technological lubricants and also recipes and methods of analysis of such lubricants and to increase the manufacture by the industry of standard technological lubricants. At regular intervals, symposia should be published on technological lubricants and special coatings used in the shaping of metals by applying pressure.

Card 4/4

AUTHORS: Veyler, S. Ya., Likhtman, V. I. SOV/57-20-9-25/33

TITLE: Action of Lubricants in the Pressure Working of Metals
(Deystviye smazok pri obrabotke metallov davleniyem)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, ^{Vol 28,} Nr 9, pp. 2025-2034 (USSR)

ABSTRACT: This is a study of the action of lubricants in the drawing of wire and of strip metal. The drawing process proceeds in two stages: 1) A deformation of the metal according to the required degree of deformation and 2) additional shearing deformations in the surface layer of the worked metal. This is caused by the clutching action of the drawing tool. The first stage, the actual drawing process, is desired and necessary, whereas the second process is detrimental. The design of a device is described which permits modelling.

Octane, octyl alcohol, oleinic acid, and paraffin were used as lubricants. The forces required in drawing are exactly proportional to the degree of deformation and are under the prevailing conditions practically independent of the lubricant. This was found with aluminum- and copper strips. Hence the force required for the deformation in freely rotating rollers is only dependent upon the properties of

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Action of Lubricants in the Pressure Working of Metals SOV/57-23-9-25/33

the metal (p_m) and upon the reduction of the cross-sectional area (Δs). The force required for the additional deformation is determined from the difference in the stationary (fixed) and in the freely rotating rolls: $\tau_1 s_k = F - p_m \Delta s$, where τ_1 denotes the maximum shear stress or shear resistance, s_k the area of the contact surface between the metal and the tool, and F the force. The force required for drawing $F = F_1 + F_2 = \tau_1 s_k + p_m \Delta s$: Formula (4). When liquid lubricants are used, the predominant feature is not the viscosity but the capability of the metal to become "plastified" in the thinnest surface layers. Numerous examples show that small admixtures of surface-active layers (0,2 ÷ 0,3%) to the water and oil media considerably increase the effectiveness of these media although their viscosity is not influenced at all. The resistance of the metal to deformation exhibited by the thinnest layers of the boundary, being the essential feature as compared to external friction, determines the magnitude of the shear stresses in the surface layer. Inactive fluid media (octane, vaseline oil) lead to an increase of τ_1 when the degree of deformation

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Action of Lubricants in the Pressure Working of Metals SOV/57-28-9-25/33

in the drawing of metal strips is increased. Surface-active lubricants, however, reduce τ_1 when the degree of deformation is increased. Inactive solid lubricants (paraffin) lead to the greatest reduction of τ_1 on soft metals, because the shear is localized in the thin coating outside the metal. If, however, harder metals (steel) are drawn the external layers of the lubricant coating are broken down. Thus the surface-active fluid lubricants are most effective in this case. The experiments showed that in the investigation of the "plastification" the influence of the oxide films must be taken into account and that with tin and lead they reduce τ_1 . Conclusions: The absorption plastification of surface layers in the presence of active lubricants and the localization of plastic deformations in the thin surface layers explain the mechanism of the action of lubricants in the pressure working of metals. There are 13 figures, 4 tables, and 8 references, 7 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR, Moskva (Institute of Physical Chemistry, AS USSR, Moscow)

Card 3/4

PHASE I BOOK EXPLOITATION

ROV/4575

Veyler, S. Ya., and V.I. Likhtman

Deystviye smazok pri obrabotke metallov davleniyem (The Role of Lubricants in the Pressworking of Metals) Moscow, Izd-vo AN SSSR, 1960. 231 p. Errata slip inserted. 4,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fizicheskoy khimii.

Resp. Ed.: P.A. Rebinder, Academician.

PURPOSE: This book is intended for scientific and technical personnel. It may also be used by students of polytechnic and machine-building institutes.

COVERAGE: The book contains data on the compositions of lubricants used in the pressworking of metals. A large part of the book is devoted to the physico-chemical regularities of the lubricating process. In this connection the authors claim to have developed new ideas regarding the mechanism of the lubricating action. It is further stated that these new ideas have enabled the authors to describe quantitatively the processes of the drawing, deep drawing, and extrusion of metals and to develop physicochemical principles for the rational selection

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The Role of Lubricants in the Pressworking of Metals

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of lubricants for a number of processes in the pressworking of metals. No personalities are mentioned. There are 375 references, the majority of which are Soviet.

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SOV/20-130-2-17/69

AUTHORS: Korbut, V. M., Veyler, S. Ya., Likhtman, V. I.TITLE: The Importance of Adsorption Interactions and of the Mechanical Volume Properties of Lubricant Layers in Pressure Processing of Metals

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2, pp 307 - 309 (USSR)

ABSTRACT: The authors studied the action of solid and liquid lubricant samples by a method earlier developed in their laboratory. This method is based on the separation of the total tangential stress into two parts in consequence of deformation: a) into the stress $P_m \Delta S$ needed for the volume deformation of the metal and b) into the stress needed for the elimination of friction - resistance τS_k to the shearing. The first component of the total deformation stress depends on the mechanical properties of the metal, and the second component depends on the mechanical properties of the surface layer in which friction takes place. $F = P_m \Delta S + \tau S_k$ holds for the total drag stress, where ΔS denotes

Card 1/3

67:63

The Importance of Adsorption Interactions and of the Mechanical Volume Properties of Lubricant Layers in Pressure Processing of Metals SOV/20-130-2-17/69

the reduction of the sample cross section in dragging, S_k the contact surface between the instrument and the sample. Results of the measurement of τ in various media in the dragging of aluminum rods are listed in table 1. For aluminum, water in solid state (-20°) has a better lubricity than in the liquid state. Pure hydrocarbons - octane and dodecane at 20° - are inactive lubricants and are squeezed out in dragging. Solidified dodecane, however, has a good lubricity. Paraffin obtains its optimum lubricity at 20° . The lubricity of paraffin is rapidly reduced by melting. Alcohols are active lubricants at $+20^\circ$ and -20° (i.e. in solid and liquid state). This does, however, not apply to fatty acids the lubricity of which increases between 70 and 100° due to chemical interaction with the metal. At the melting temperature, the lubricity of cetyl alcohol deteriorates, while those of stearic acid are slightly improved. On solidification, resistance θ to the shift in the lubricant volume increases and, consequently, also τ rises. In the absence of chemical interaction τ and θ agree without being identical.

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67563

The Importance of Adsorption Interactions and of the SOV/20-130-2-17/69
Mechanical Volume Properties of Lubricant Layers in Pressure
Processing of Metals

Finally, the authors point out the influence exerted by the concentration of surface-active additions at various temperatures upon the conditions of dragging. Transformer oil at -15° and the same oil with an addition of oleic acid (20%) at $+20^{\circ}$ have the same lubricating action. The oxidation products of paraffin, cation-active substances, etc also have similar properties at $+20^{\circ}$. There are 1 figure, 2 tables, and 5 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences of the USSR)

PRESENTED: September 19, 1959, by P. A. Rebinder, Academician

SUBMITTED: September 17, 1959

Card 3/3

KANAYEV, A.A.; VEYLER, S.Ya.

Elasticokinetic phenomena due to friction in plastically deformed metals. Dokl. AN SSSR 156 no. 4:799-802 Je '64.
(MIRA 17:6)

1. Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom P.A.Rebinderom.

ACCESSION NR: AP4041148

B/0020/64/156/004/0799/0802

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.; Rebinder, P. A.

TITLE: Elastico-kinetic phenomena associated with friction under conditions of plastic deformation of metals

SOURCE: AN SSSR. Doklady*, v. 156, no. 4, 1964, 799-802

TOPIC TAGS: elastic relaxation, drawing friction, plastic deformation, metal, pressure metal working, lubrication, cold metal working

ABSTRACT: The elastic relaxation (recovery) after pressing or drawing of metals, is usually attributed to the elasticity of the working tools. However, the elastic recovery occurs even with rigid tools. The authors have previously shown that the recovery is affected by lubrication. The purpose of the present work was to obtain more information of the phenomena involved. Brass rods, partly hollow and partly solid, were pulled through a draw plate. The pulling was partway dry, and partway with a lubricant. It was found that elastic relaxation depends not only on the cold work of the surface layer of the specimen, but also on the uniformity of deformation of the inner layers. Lubrication decreases the tangential stress and

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ACCESSION NR: AP4041148

increases the normal stress. The drawing under lubrication is not accomplished by elongation of the grains, but by pressure. Orig. art. has: 4 figures.

ASSOCIATION: Institut fizicheskoy khimii, Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 10Jan64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 001

Card 2/2

ACCESSION NR: AT4014057

8/3072/63/000/000/0005/0030

AUTHOR: Korbut, V. M.; Veyler, S. Ya.; Likhtman, V. I.; Rebiner, P. A.

TITLE: Physicochemistry of the lubricating effect during wire drawing

SOURCE: Fiz.-khim. zakonmernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 5-30

TOPIC TAGS: metal lubrication, wire drawing lubrication, wire drawing, lubricant

ABSTRACT: The physicochemistry of the lubrication process is a very significant problem in the pressure treatment of metals. This problem was discussed and evaluated on the basis of: (1) effect of the media on the process of metal deformation, (2) mechanism of the lubrication effect on pressure treatment (deformation) of metals, (3) the effect of the temperature during pressure treatment and the physicochemical properties of the lubricant during wire drawing, and (4) the effect of the amount of lubricants used. It was concluded that the stresses of the treatment and the shearing strength in the thin surface layer determine the properties of the lubricant. In some cases, the surface properties of the treated metal are also of significance. Some lubricants react chemically

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ACCESSION No: AT4014057

with the treated metal. For example, as a result of the process of wire drawing of aluminum in the presence of liquid-cooling lubricants, water stains or spots are formed. Dark spots are also formed during wire drawing with dry soap powder or by lubrication with liquid salt solution at 100C. In the presence of distilled water, no water stains are formed. It was proved that formation of dark water stains on aluminum alloys can be prevented by applying lubricants based on a kerosene emulsion but the stresses due to wire drawing are not reduced by this lubricant. These lubricants proved highly valuable during rolling of aluminum but not during the process of wire drawing. The addition of calcium stearate or aluminum stearate markedly reduced the stress of wire drawing of aluminum alloys. Positive results in the drawing of aluminum wire have been obtained under technological conditions by applying a lubricant consisting of kerosene emulsion with calcium stearate. Orig. art. has: 13 figures and 9 tables.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: MM

NO REF SOV: 077

OTHER: 006

Card 2/2

ACCESSION NR: AT4014068

8/3072/63/000/000/0160/0167

AUTHOR: Sokolov, Yu. A.; Volkov, V. P.; Veyler, S. Ya.

TITLE: The influence of lubricants on the wear resistance of the diamond dies used during the drawing of molybdenum wire

SOURCE: Fiz.-khim. zakonmernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 160-167

TOPIC TAGS: lubricant, wear resistance, die diamond, die, wire drawing, molybdenum, molybdenum wire

ABSTRACT: The authors studied the influence of different lubricants such as sulfofrezol, graphite, paraffin, cetyl alcohol, lanolin, stearic acid, oleic acid, boric nitride and others on the durability of the diamond die during cold drawing of molybdenum wire. The wear to the diamond die is many times greater when the metal is not heated. Sulfofrezol appeared to be the best lubricant for cold drawing. However, even when it was applied, the wear to the die was still seven times greater than when drawing was performed after heating the metal and applying as a lubricant, a colloidal aqueous solution of graphite. It has also been suggested that molybdenum wire be drawn after covering its
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ACCESSION NR: AT4014068

surface with a plastic film of metal for example, copper. It was found that the wear to the diamond die during cold drawing results not only from the hardness of the metal but also from the adhesive interaction of the metal and diamond surfaces. With a proper selection of lubricant, however, cold drawing may replace hot drawing in industrial practice. Orig. art. has: 5 figures and 7 tables.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: MM, MT

NO REF SOV: 002

OTHER: 001

Card 2/2

BR.

ACCESSION NR: AT4014061

S/3072/63/000/000/0066/0069

AUTHOR: Veyler, S. Ya.; Likhtman, V. I.; Petrova, N. V.; Vasil'yeva, Ye. N.; Basova, I. G.; Kuznetsov, K. I.; Livanov, V. A.

TITLE: Effect of cooling and lubricating fluids upon the quality of the sheet surface during rolling of aluminum alloys

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 66-69

TOPIG TAGS: aluminum, aluminum alloy, aluminum sheet, aluminum rolling, sheet rolling, cooling-fluid, lubricating fluid, emulsol

ABSTRACT: The normal water-emulsion lubricants used during the rolling of aluminum alloys prove unsatisfactory under technological conditions because they produce water stains on the surface of the rolled metal and become impure after a few days of service. Therefore,

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In the present work, a new improved type of lubricant has been developed to prevent the formation of surface failures. Also, a procedure for regenerating the emulsion has been worked out. Emulsol, containing 84% kerosene, 10% oleic acid and 6% triethanolamine, was tested and proved satisfactory as a lubricant. Especially good results were obtained with a lubricant emulsion containing 30-40% of the above-mentioned emulsol. Using this lubricant, the surface of the rolled aluminum sheet became smooth, brighter and free of surface defects, and rolling was simplified. This lubricant was also used successfully in the cold extrusion of aluminum tubes as well as in the cutting of aluminum and its alloys. The service life of the emulsion was prolonged up to six months. Desalting with sodium chloride, calcium chloride and karnalit and separating the sedimented emulsion was found to be an effective method for regenerating the emulsion. Orig. art. has: 1 chemical equation.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: MM

NO REF SOV: 002

OTHER: 005

Card 2/2

ACCESSION NR: AT4014067

S/3072/63/000/000/0124/0135

AUTHOR: Rodionova, G. A.; Finkel'shteyn, Ya. S.; Veyler, S. Ya.; Gurovich, Ye. I.;
Novikov, V. T.; Rozenfel'd, N. B.; El'bert, S. M.; Brazilovskiy, V. I.

TITLE: Investigation of technological lubricants based on salt mixtures for hot rolling of
pipe

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem.
Moscow, Izd-vo AN SSSR, 1963, 124-135

TOPIC TAGS: lubricant, salt mixture, hot rolling, steel pipe, pipe rolling

ABSTRACT: In the hot rolling of pipe on continuous rolling mills with long frames, the
lubrication conditions are unusually difficult. Special lubrication is required to provide
for the proper processing conditions, especially temperatures, to obtain rolled products
and pipe of satisfactory quality. Of the six tested salt-lubricants containing various amounts
of K, Li, Mg or Na oxides or chlorides, the best for the hot rolling of pipe in continuous

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ACCESSION NR: AT4014067

rolling mills proved to be a lubricant containing 40% ZnCl₂, 30% KCl, 30% NaCl, and 10% MgO, plus 45% water (compared to the weight of salts and oxides). The pipe rolling process using 1Kh18N9T steel and high-carbon steel proved satisfactory with this lubricant. The top loadings in the continuous rolling mills were increased by 4.5% as compared with the graphite-mazut lubricant. Pipe rolled with the above-mentioned lubricant showed no intercrystalline corrosion. The etching time of pipe obtained by this process was half that of pipe rolled with the use of graphite-mazut lubricant. The effect of the concentration of MgO, used as a filling component in the lubricant, on its melting point and crystallization was also determined, as well as the effect of the amount of solvent on the consistency of the lubricant and its ability to protect the metal surface. Orig. art. has: 6 figures and 3 tables.

ASSOCIATION: none

SUMMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: MM, *IE*

NO REF SOV: 003

OTHER: 000

Card 2/2

ACCESSION NR: AT4014066

S/3072/63/000/000/0115/0120

AUTHOR: Gurovich, Ya. I.; Veyler, S. Ya.; Likhtman, V. I.; Voskresenskaya, N. K.

TITLE: Investigation of the lubricating properties of salt mixtures during the pressure heat treatment of metals

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 115-120

TOPIC TAGS: salt mixture, lubricant, lubricating property, heat treatment, metal, metal alloy, salt eutectic, corrosion, wire drawing

ABSTRACT: Since the usual lubricants such as graphite, liquid glass, or mineral oils prove unsatisfactory during hot pressure working of stainless steels, some new lubricants such as salt mixtures have been investigated. The following salt mixtures have been tested: (1) Nitrate-nitrite salts, applied during punching of aluminum alloys. These have proved dangerous because of their explosive properties; (2) Salts such as $MgCl_2$, KCl , $NaCl$, $ZnCl_2$ and K_2SO_4 ; (3) Melts containing $ZnCl_2$ and ZnS ; (4) Melts such as $PbCl_2$; (5) Mixtures containing salts of Sn; (6) Melts such as Cd-salts, Li-salts, and salt mixtures such as phosphates. Two groups of eutectic mixtures may be distinguished: (a) Salt mixtures forming

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ACCESSION NR: AX4014066

high viscosity liquids at high temperatures that shield the surface from friction and (b) Salt eutectics that, in contact with the hot metal, decompose and form an easily melted metal. The lubrication properties of all mixtures tested were evaluated on the basis of their corrosive action when applied as lubricants for pressure punching of Al, Fe, and Mg alloys. The corrosion tests were carried out by full immersion of the tested metal and by the drop method. It was proven that the corrosive activity of the tested lubricants increased proportionally to their hygroscopic properties. In some special mixtures of salts, their corrosive action decreased; for example, NaCl and KCl or Li-salts, which appear highly corrosive by themselves, are much less corrosive or even not corrosive when applied as a mixture. The lubrication properties of the fused salts were evaluated by various methods under semitechnological and laboratory conditions. The salt eutectics reduced the pressure necessary for extrusion or punching of low C-steel and Al by 50% as compared with no lubrication. Compared with graphite lubrication, the pressure was the same. The authors also studied the effect of salt lubrication during the process of wire drawing hot aluminum D-16 and steel. It was found that salt mixtures had the best lubrication properties in narrow temperature intervals close to their softening temperature. A plot of wire drawing pressure

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ACCESSION NR: AT4014066

versus temperature with eutectic $ZnCl_2-KCl$ applied as a lubricant showed a minimum close to 200C whereas the eutectic temperature appeared lowest near 230C. Orig. art. has: 1 figure and 3 tables.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: MM

NO REF SOV: 006

OTHER: 006

Card 3/3

BR

ACCESSION NR: AT4014058

8/3072/63/000/000/0031/0037

AUTHOR: Veyler, S. Ya.; Petrova, N. V.; Likhtman, V. I.

TITLE: Some physicochemical effects of lubricants and oxides during the thermal processing of stainless steels

SOURCE: Fiz.-khim. zakonmernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 31-37

TOPIC TAGS: lubricant, oxide coating, steel processing, wire drawing, stainless steel, steel 1Kh18N9T, heat treatment

ABSTRACT: Some of the physicochemical effects of lubricants on the thermal processing of steel 1Kh18N9T were investigated by determining the temperature dependence of the wire-drawing force in the interval from -70 to +500C. Various lubricants were applied: powders of NaCl, CaCl₂ and NaNO₃; Al-powder plus liquid glass; eutectics containing 32.55% SnCl₂ and 7.45% KCl; Al-powder; film of oil paint; soap solution plus CaSt (calcium stearate); CaCl₂ + graphite; tin coating. It was found that a thin film of Sn, developed from the salt eutectic on the surface of the treated metal, showed the highest lubrication properties. The reduction of the

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ACCESSION NR: AT4014058

wire drawing force is due to a decrease in the shear resistance in the thin layer of the lubricant. The metallic liquid film plasticizes the processed steel surface and makes it softer. Figure 1 of the Enclosure illustrates the effect of a tin layer and graphite as lubricants on wire drawing force in relation to temperature. The presence of the oxide layer inhibits the steel wire drawing process because the shear resistance in this layer becomes higher. Figure 2 of the Enclosure shows that the removal of the oxide layer substantially reduces the force required for wire drawing. Lubrication with graphite reduces the wire drawing forces but at the same time deteriorates the quality of the steel surface. Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 02

SUB CODE: MM

NO REF SOV: 007

OTHER: 001

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ACCESSION NR: AT4014058

ENCLOSURE: 01

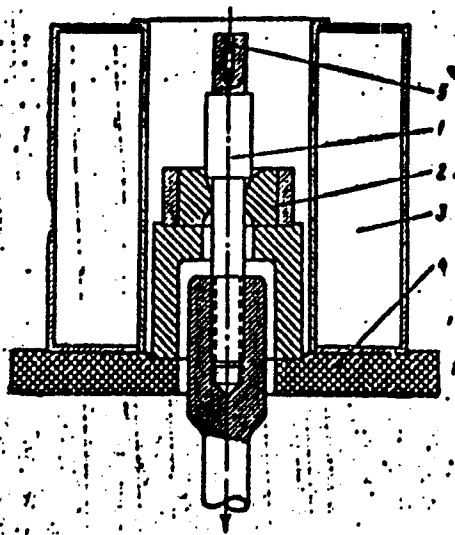


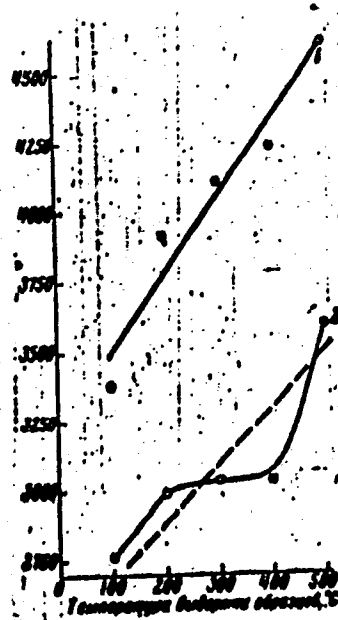
Fig. 1. Relationship between wire-drawing force in kg and temperature in $^{\circ}\text{C}$:
1-no lubricant; 2-Sn film; 3-Sn + graphite

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ACCESSION NR: AT4014058

ENCLOSURE: 02

Fig. 2. Relationship between wire-drawing force at 20°C in kg and temperature of formation of the oxide film in °C: 1-oxide film present; 2-oxide film removed.



Card 4/4

PODURAYEV, V.N., kand. tekhn. nauk, dotsent; PASTUNOV, V.A., inzh.;
VEYER, S. Ya., doktor khim. nauk

Lubricating and cooling fluids as means for increasing the
productivity in vibratory drilling of stainless and heat-res-
istant steels. Izv. vys. ucheb. zav.; mashinostr. no. 10:
194-198 '65 (MIRA 19:1)

1. Submitted February 28, 1964.

L 45607-66 EMP(m)/EMP(t)/ETI/EMP(k) IIP(c) JD

ACC NR: AP6013815

SOURCE CODE: UR/0145/65/000/010/0194/0198

55
B

AUTHOR: Podurayev, V. N. (Candidate of technical sciences, Lecturer); Pastunov, V. A. (Engineer); Veyler, S. Ya. (Doctor of chemical sciences)

ORG: None

TITLE: Coolants as a means for increasing productivity in vibration drilling of stainless and high-temperature steels 18

SOURCE: IVUZ. Mashinostroyeniye, no. 10, 1965, 194-198

TOPIC TAGS: stainless steel, high temperature steel, drilling machine, metal machining, COOLING, MECHANICAL VIBRATION

ABSTRACT: The process of vibration drilling in special media is studied to develop means for increasing the efficiency of this machining method applied to high-temperature and stainless steels and alloys. Coolants containing molybdenum disulfide were used in stability tests of conventional and vibration drilling. The results were compared with those of control tests with coolants ordinarily used for drilling heat-resistant materials in industry. The material tested was EI654 high-temperature steel. Twist drills made from R18 high-speed steel 1.5 mm in diameter were used. The vibration drilling conditions were: spindle speed--1500 rpm, feed--15 mm/min, spindle vibration frequency--125 cps and spindle vibration amplitude--0.01 mm. A microscope was

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UDC: 621.979.063

L 45607-66

ACC NR: AP6013815

used for inspection of grinding and measurement of drill wear. The compositions of the various coolants tested are tabulated. A molybdenite suspension (60% oleic acid, 30% kerosene and 10% molybdenum disulfide) was found to be most effective for vibration drilling. The effectiveness of this fluid increases considerably with a transition from conventional to vibration drilling. The effectiveness of this suspension also increases in direct proportion to drilling depth. Orig. art. has: 4 figures, 1 table, 1 formula.

SUB CODE: 13/ SUBM DATE: 28Feb64/ ORIG REF: 003/ OTH REF: 001

Card 2/2 *la*

L 06079-07 EWT(m)/EWP(w)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JG/DJ/GD

ACC NR: AT6030387

SOURCE CODE: UR/0000/66/000/000/0163/0167

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.

51
48
BT1

ORG: none

TITLE: Effect of lubricating media on the limiting shear stresses in the zone of contact between a deformed metal and an instrument

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazochnym materialam. Novoye v teorii treniya (Recent developments in the theory of friction). Moscow, Izd-vo Nauka, 1966, 163-167

TOPIC TAGS: metal friction, lubricant property, shear stress

ABSTRACT: The aim of the work was to study the effect of deformation properties of a metal and the physical and chemical properties of a lubricating medium on the rheological properties of the system. The following experiments were made. On a horizontal beam there was fixed a diamond draw plate with an opening 0.24 mm in diameter. The samples being investigated were passed through this draw plate. The samples were made of calibrated copper and molybdenum wire with a diameter of 0.26 mm. The drawing was effected by the action of a load attached to the stretched end of the wire. The weight of the load could be varied within the required limits. By varying the weight of the load and determining the drawing rate V, it is possible to construct

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L 06079-67

ACC NR: AT6030387

graphs of $V = f(\sigma)$; $\sigma = P/S$, where P is the drawing force, and S is the area of a transverse cross section of the deformed wire. Based on the experimental data, a figure shows curves of $V = f(\sigma)$ for the drawing of copper and molybdenum samples, in lubricating media and dry. It was observed that, in each case, there was a minimum stress σ_{\min} at which plastic deformation does not take place, even after a sufficiently long period of time (up to 100 hours). This value is completely determined and depends on the plastic properties of the deformed metal, as well as on the physical and chemical properties of the lubricating medium. The tests also showed that with repeated passes of the wire through the die, there is a gradual decrease in the value of σ_{\min} down to a certain minimum value which remains unchanged with further passes of the wire. This is evidently connected with the relaxation of the normal elastic stresses in the deformed metal. As the number of passes of the wire increases, the difference between the values of σ_{\min} for different lubricants decreases. Orig. art. has: 2 figures.

SUB CODE: 11/ SUEM DATE: 22Feb66/ ORIG REF: 006

Card 2/2 *epk*

I. 06080-67 FWT(m)/EWP(w)/EWP(L)/EEL/EWED

DIR EM/DI/GD

SOURCE CODE: UR/0000/66/000/000/0158/0162

ACC NR: AT6030386

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.

ORG: none

TITLE: Effect of friction conditions on elastic kinetic properties in the pressure working of metals

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazochnym materialam. Novoye v teorii treniya (Recent developments in the theory of friction). Moscow, Izd-vo Nauka, 1966, 158-162

TOPIC TAGS: metal friction, elastic deformation, solid kinetics, work hardening

ABSTRACT: It has been established previously that a change in the boundary conditions (introduction of a lubricating medium) brings about an increase in the elastic recovery in a metal after deformation, in the course of various processes for the pressure working of metals. In the present study, the effect of lubricants on the elastic recovery was investigated by drawing copper and brass (L-62) samples through a die with an opening diameter of 10 mm. The samples were made from rods with a previous deformation of 15-20%. The configuration of the samples was such that it was possible to immediately bring together two samples, solid and hollow, for a comparison of their elastic recovery, as a function of the degree of deformation. The outside diameter of

Card 1/2

46
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B+1

L 06080-67

ACC NR: AT6030386

2

the samples and the inside diameter of the opening was varied in each series of experiments. The lubricant was a sodium oleate paste containing 50% water. The elastic recovery was determined as the difference in the diameter of the sample at a corresponding cross section and diameter of the wire. The measurements showed that, in general, a drawn sample has different diameters and, consequently, a different elastic recovery at three characteristic cross sections. Curves are given, based on the experimental data, which show the dependence of the elastic recovery on degree of deformation and on friction conditions. The experiments indicate also that an increase in the elastic recovery leads to a rise in the radial stress. Orig. art. has: 3 figures.

26

SUB CODE: 11/ SUBM DATE: 22Feb66/ ORIG REF: 004/ OTH REF: 001

Card 2/2 *epk*

ACC NR: AT7004173

SOURCE CODE: UR/0000/66/000/000/0221/0226

AUTHOR: Veyler, S. Ya.; Petrova, N. V. Zalivalov, F. P.; Tomashov, N. D.; Likhtman, V. I. (Deceased)

ORG: none

TITLE: Effect of anodizing on friction in hot and cold drawing of aluminum

SOURCE: AN SSSR. Institut fizicheskoy khimii. Korroziya i zashchita konstrukt-sionnykh splavov (Corrosion and protection of structural alloys) Moscow, Izd-vo Nauka, 1966, 221-226

TOPIC TAGS: METAL drawing, ~~aluminum~~ cold drawing, ~~aluminum~~ anodic oxidation, aluminum drawing lubricant, DRAWN ALUMINUM, ALUMINUM OXIDE, METALFILM

ABSTRACT: The role of oxide films in cold and hot drawing of aluminum has been investigated. It was found that aluminum-oxide films formed on the surface of specimens by long exposure to the atmosphere at 20—300°C did not affect the process of drawing. However, aluminum-oxide films formed by anodizing prevented the sticking of metal to the die and decreased the resistance to drawing. Oxide film, 10 μ thick, decreased the cold drawing resistance from 600 to 210 kg, and the hot-drawing resistance at 300°C from 200 to 150 kg. Anodizing was particularly beneficial in hot drawing: without lubrication it was impossible to draw aluminum even at 1% reduction, but anodized aluminum was hot drawn with up to 13—15% reduction.

SUB CODE: 13/ SUEM DATE: 27Sep66/ ORIG REF: 007/

Card 1/1

UDC: none

L 2782-66 ENT(a)/EWP(w)/EWP(k)/T/EWP(t)/ETI IJP(c) JD/HM/DJ

ACC NR: AP6015612

(N)

SOURCE CODE: UR/0020/66/168/002/0328/0331

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.; Likhtman, V. I.; Rebinder, P. A. (Academician)

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Relaxation phenomena in metal plastic deformation under friction

55
54
0

SOURCE: AN SSSR. Doklady, v. 168, no. 2, 1966, 328-331

TOPIC TAGS: metal deformation, plastic deformation, stress relaxation, lubricant surface active agent

ABSTRACT: The relaxation phenomena in metal specimens, a copper²⁷ rod 10.6 mm in diameter drawn through a die 10 mm in diameter, and a copper ball 9.6 mm in diameter calibrated (i.e., forced through a tube 9 mm in diameter) have been studied. The deformation was done with and without surface-active and nonsurface-active (copper oleate, vaseline and a mixture of vaseline + 3% oleic acid) lubricants. Results showed that surface-active lubricants intensify relaxation processes in the surface layers of the deformed metal and that their effect on the relaxation kinetics depends on the stress state of the surface layer. Surface-active lubricants accelerate relaxation in drawing (compared with dry drawing). In dry calibration, practically no metal relaxation occurs. In this case, surface-active lubricants activate the relaxation and reduce residual stresses. In prolonged holding of the specimens under stress (about 200 hr) in both drawing and calibration, the axial stress (the pulling or

Card 1/2

UDC: 531.44+539.621

I. 27826-66

ACC NR: AP6015612

pushing force), under the action of relaxation, decreases to a certain minimum stress, which depends on the conditions at the contact surfaces. (This minimum stress corresponds to a minimum shear stress required for shear plastic deformation in the friction layer. The normal pressure on the die wall also slightly decreases, with the decrease approximating the relaxation curve. Orig. art. has: 3 figures. [MS])

SUB CODE: 11/ SUBM DATE: 09Feb66/ ORIG REF: 004/ ATD PRESS: 5003

Card 2/2

PB

L 1652-66 EWT(m)/EPT(c)/T/EWP(t)/EWP(k)/EWP(b)/ENA(c) IJP(c) IW/JD/IW/DJ

ACCESSION NR: AP5021583

UR/0286/65/000/013/0055/0055
665.5

52
B

AUTHOR: Veyler, S. Ya.; Petrova, N. V.; Zalivalov, F. P.; Likhtman, V. I.;
Tomashov, N. D. ^{44,55} ^{44,55} ^{44,55} ^{44,55}

TITLE: Method for applying lubricating film. Class 23, No. 172445

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 55

TOPIC TAGS: lubrication, film lubrication, solid lubricant

ABSTRACT: This Author Certificate introduces a method for hot working aluminum and
its alloys in which the anodized layer serves as the lubricant. 18 27 [AZ]

ASSOCIATION: none

SUBMITTED: 16Jul62

ENCL: 00

SUB CODE: IE,MM

NO. REF SOV: 000

OTHER: 000

ATD PRESS: 4093

Card 1/1 DP

KANAYEV, A.A.; VEYLER, S. Ya.

Effect of lubricating media on the limit shearing stress in
the drawing of metals. Dokl. AN SSSR 159 no. 3:541-543 N '64
(MIRA 18:1)

1. Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom
P.A. Rubinderom.

AUTHORS: Pilyavskiy, V. I. et al.

TITLE: Effect of lubr. films on the limiting necking stresses during the drawing of metals

SOURCE: AN SSSR Doklady, no. 159, no. 4, 1964, 641-643

ABSTRACT: Experimental results are reported on the influence of the deformation properties of a metal and of the physico-chemical properties of a lubricating medium on the rheological properties of

of the metal without account of the influence of the physico-chemical

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"APPROVED FOR RELEASE: 09/01/2001

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are observed in some projects of which the first six months of 1964

SUB CODE: MM

NR REF SCV: 005

OTHER: 000

Card 1

ACCESSION NR: AT4014062

S/3072/63/000/000/0078/0079

AUTHOR: Veyler, S. Ya.; Kanayev, A. A.

TITLE: Lubrication in the pressure processing of titanium alloys

SOURCE: Fiz. -khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 78-79

TOPIC TAGS: alloy, titanium alloy, alloy pressure processing, lubrication, titanium alloy pressure processing, stamping lubricant, rolling lubricant

ABSTRACT: Hot and cold pressure treatment of titanium alloys presents great difficulties, since these alloys show a pronounced tendency to adhere to the instrument (matrices, draw plates, stamps, rollers) leading to their premature deterioration. In the pressure treatment of titanium alloys, the selection of the lubricant is a decisive factor. The authors discuss the tests that have been made with various coating materials and previous recommendations as to the proper choice of lubricants (and their method of application). The advantages and disadvantages of these suggestions are examined and analyzed briefly. The authors themselves carried out several experiments in the cold drawing of titanium alloy (VT-14) rods. These experiments showed that wax, with admixtures of sulfur or aluminum stearate, reduces the drawing effort to a third of that of oxidized paraffin. These data

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ACCESSION NR: AT4014062

Indicate that in the pressure treatment of titanium alloys, viscous lubricants should be used in combination with high-dispersion colloidal fillers or solid films capable of withstanding high pressures. Orig. art. has: 1 table.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 19Dec63

ENCL: 00

SUB CODE: ML

NO REF SOV: 005

OTHER: 001

Card 2/2

KORBUT, V.M.; VEYLER, S.Ya.; PETROVA, N.V.

Effect of the physicochemical nature of lubricant on its effectiveness in pressure treatment of metals. Dokl. AN SSSR 140 no.5:1118-1120 0 '61. (MIRA 15:2)

1. Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom P.A.Rebinderom.

(Metalworking lubricants)

VEYLER, V. D.

SUBJECT: BOOK / TRANSLATED
 AUTHOR: GLOZINA, S. S. A.; VEYLER, V. D.; BICHUKOVA, V. I.; RUBINER R. A.
 TITLE: THE INFLUENCE EXERCISED BY ACTIVE LUBRICANTS ON THE DRAWING OF METALS.
 PERIODICAL: DOKL. AKADEM. NAUK, 120, 1950, 4, 502 - 505 (1950)
 ISSUED: 12 / 1950

Here the rules and the mechanism of the influence exercised by lubricants on the drawing of a steel wire are investigated. On this occasion a wire made of steel 0 with the diameter of 1,97 mm was reduced to the diameter of 1,02 mm by drawing. Drawing velocity was 12 cm/min; drawing stress was measured by means of a dynamometer. The influence exercised on drawing by liquid hydrocarbons, alcohols and acids was investigated at 20° and 60°. A diagram illustrates the modification of stress in dependence on the number of carbon atoms in the chain of the individual hydrocarbon. If the number of C-atoms in the molecule of the lubricant is increased, the stress caused by drawing diminishes. Hydrocarbons which are liquid at room temperature from hexane to zetane ($C_{10}H_{24}$) diminish stress by 9%. In from methyl to nonyl-alcohol: as well as from propion to pelargon acid at 20° stress is reduced by 23%. At 60° the effect of alcohols does not change, but the acids reduce stress by 40%. Mineral oils are little effective as lubricants especially at higher temperatures. The rather high efficaciousness of alcohols and acids at 20° can be explained by the rather firm adsorption binding of these substances binding them to the metal surface. This entails also a plastification of the surface layer of the metal in the presence of surface-active substances.

Such a mechanism recommends itself by numerous favorable tests with respect to the

Dokl. Akad. Nauk, 110, fasc. 4, 562 to 565 (1956)

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PA - 1639

extension of monocrystals and polycrystalline metals in the case of the existence of adsorption-active substances. Furthermore, artificially applied plastic coatings facilitate the working of steel under pressure considerably. The increase of the viscosity of the lubricant exercises a favorable influence on the process of drawing. By the addition of the viscosity-dependent lubricating properties and activity, the total effect exercised by the lubricant is obtained. The viscosity properties of the lubricant are of essential importance in connection with the working of metals under pressure only in conditions of the deformation warrant a sufficient thickness of the lubricating layer. This is e.g. the case with cold-formed drawing. If a wire is repeatedly drawn with a 0.4% soapy solution stress diminished rapidly after the first stages of the drawing process, and it remains constant in the course of further drawing processes. However, in vaseline oil stress diminishes gradually with each drawing process. Previous compression of the metal causes its solidification. The physical-chemical properties and the adsorption activity of the medium exercise decisive influence on the drawing process.

INSTITUTION : Institute for Physical Chemistry of the Academy of Sciences of the USSR.

15.6700

29122
S/020/61/140/005/019/022
B101/B110AUTHORS: Korbut, V. M., Veyler, S. Ya., and Petrova, N. V.

TITLE: Effect of the physicochemical nature of a lubricant on its efficiency in metalworking under pressure

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 5, 1961. 1118-1120

TEXT: The authors studied the effect of lubricants on the pressure deformation of metals. Object of the study was the lubricant film at the interface between metal and instrument. The stress τ in the cross section of the lubricant film was chosen as characteristic value for the lubricating effect. Hydrocarbons, alcohols, and organic acids were used as model lubricants. Deformation was performed by drawing of aluminum wire rods. Fig. 1 shows the results. Above the softening point, hydrocarbons, alcohols, and acids behave differently. Explanation: (1) Hydrocarbons are not adsorption-active, τ attains values of 8-10 kg/cm². Thus, the hydrocarbons are pressed out of the interface between metal and instrument. Deformation occurs in the outer layer of the metal itself. (2) Alcohols are reversibly adsorbable on metals and, therefore, efficient lubricants. While with liquid hydrocarbons a deformation was only possible up to 7%, up to 36%.

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Effect of the physicochemical ...

metal deformation was attained with the use of liquid alcohols. (3) Since alcohols are desorbed with increasing temperature, τ increases. (4) In acids, however, soaps are formed with increasing temperature, and τ drops. (5) In absorption-inactive lubricants, a temperature decrease may improve the lubricating effect. Thus, the drawing force in 7% deformation of aluminum and with the use of transformer oil as a lubricant was 293 kg at 150°C, and only 60 kg at -60°C. (6) While in liquid lubricants the interaction with the metal is decisive for the lubricating effect, the latter depends in solid (plastic) substances on their structural and mechanical properties. The authors thank Professor V. I. Likhtman for advice. There are 1 figure, 2 tables, and 5 Soviet references. X

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences USSR)

PRESENTED: May 18, 1961 by P. A. Rebinder, Academician

SUBMITTED: May 13, 1961

Card 2/12

FEDOTOVA, R.D.; MOROZ, V.F.; PARUTA, V.T.; VEYLINSON, L.I.;
VOROB'YEV, A.A.; DEMCHENKO, I.I., red.; IVANCHUK, P.K.,
red.; RADUL, M.M., red.; SHARGORODSKIY, T.I., red.;
DMITRENKO, N.Z., red.; MANDEL'BAUM, M.Ye., tekhn. red.

[Some problems in developing the wall materials industry
in the Moldavian S.S.R. in 1959 - 1965] Nekotorye voprosy
razvitiia promyshlennosti stenovykh materialov v Moldavskoi
SSR v 1959 - 1965.gg. [By] R.D.Fedotova i dr. Kishinev,
Izd-vo "Shtiintsa" Moldavskogo filiala AN SSSR, 1960. 229 p.
(MIRA 17:2)

VOSKRESENSKAYA, N.T.; ZVEREVA, N.F.; VEYMARN, A.B.

Geochemistry of copper in the Devonian and Carboniferous
effusives of Karkalinsk District (central Kazakhstan).
Vest.Mosk.un.Ser.4:Geol. 20 no.5:57-61 S-O '65.

(MIRA 18:11)

1. Kafedra geokhimii Moskovskogo gosudarstvennogo universiteta.

VELIKOVSKAYA, E.M.; VEYMARN, A.B.; VERGUNOV, G.P.; APRODOV, V.A.; LYUSTIKH,
Ye.N.; LIPOVETSKIY, I.A.; ROMASHOV, A.N.; FEL'DMAN, V.I.; SAVOCHKINA,
Ye.N.; GEND'ER, V.Ye.; RONENSON, B.M.; DOBROKHOTOVA, Ye.S.;
LYUBIMOVA, L.V.; KHMARA, A.Ya.; VESELOVSKAYA, M.M.; KUDRIH, L.N.;
CHERNIKOV, O.A.; SOROKIN, V.S.; IL'IN, A.N.; FLOROVSKAYA, V.N.;
ZEZIN, R.B.; TEPLITSKAYA, T.A.; BRUSILOVSKIY, S.A.; KISSIN, I.G.;
CHIZHOVA, N.I.; PAVLOVA, O.P.; SHUTOV, Yu.I.

Supplements. Biul. MOIP. Otd. geol. 39 no.4:155 J1-Ag '64.
(MIRA 17:10)

TIKHOMIROV, V.G.; VEYMARN, A.B.; ZHURAVLEV, B.Ya.; TIKHOMIROVA, E.I.;
SHCHEBUNYAYEV, M.P.

Two types of banded structures in acid igneous rocks (Karkaralinsk
District in central Kazakhstan). Vest. Mosk. un. Ser. 4; Geol.
18 no.3:25-30 My-Je '63. (MIRA 16:10)

1. Kafedra istoricheskoy i regional'noy geologii Moskovskogo
universiteta.

VEYMER, Arnel'd Tymovich [Veimer, Arnold]; KAGANOVICH, I., red.;
EYINBERG, K. [Einberg, K.], tekhn. red.

[Comprehensive development and specialization of industries
in the Estonian Economic Administrative Region] Kompleksnoe
razvitie i spetsializatsiia promyshlennosti Estonskogo ekono-
micheskogo administrativnogo raiona. Tallinn, Estonskoe
gos. izd-vo, 1961. 347 p. (MIRA 15:2)
(Estonia--Industries)

VEYMER, Arnol'd Tynuvich; TAMJARV, K., red.; SEPP, A., tekhn. red.

[Socialist industrialization of the Estonian S S.R.] Eesti
NSV sotsialistik industrialiseerimine. Tallinn, Eesti
Riiklik Kirjastus, 1958. 389 p. [In Estonian] (MIRA 15:1)
(Estonia—Industries)

KAYRIS, K.K. (Litovskaya SSR); GAYLE, G.I. [Galle, G.] (Latviyskaya SSR);
VEYMER, A.T. [Veimer, A.] (Estonskaya SSR)

Chairmen of regional economic councils are speaking....
Sov.torg. 33 no.8:25-29 Ag '60. (MIRA 13:8)
(Baltic States--Commercial products)

VEYN, A.M., dektor med. nauk

Vegetative disorders in osteochondrosis of the spine. Trudy 1-go MMI
38:197-202 '65. (MIRA 18:10)

VEIN, H. M.

Rodolob, A.S.; Vein, A.M.

Syndrome of hemathidrosis and its pathogenesis [with summary in French]. Zhur.nevr. i psikh. 57 no.7:849-851 '57. (MIRA 10:9)

1. Klinika nervnykh bolezney (zav. kafedroy - prof. H.I.Graahchenkov)
Tsentral'noye instituta Usovershenstvovaniya vrachey, Moskva.
(SWEATING,
hemathidrosis (Rus))

Veyn, A. M.

AUTHORS:

Kassil', G. N., Veyn, A. M., Kamenetskaya, B. I. 20-4-57/60

TITLE:

The State of the Haematoencephalic Barrier in the Case of Certain Experimental Influences Applied to the Organism (Sostoyaniye gemato-entsefalicheskogo bar'yera pri nekotorykh eksperimental'nykh vozdeystviyakh na organism).

PERIODICAL:

Doklady Akademii Nauk, 1957, Vol. 115, Nr 4, pp. 833-836 (USSR).

ABSTRACT:

The study of this barrier (in the following called HEB) meets with a number of difficulties in hospital practice and on the occasion of experiments. The most current methods show considerable shortcomings. In general they refer not only to the transition of the substance to be investigated from the blood into the cerebrospinal liquid and into the brain tissue but also complicated correlations in the organism which escape consideration. The use of radio isotopes makes possible a more complete and more detailed study of the permeability of the HEB although also this method shows some shortcomings. The authors aim not only at the study of the rôle of the barrier mechanisms on the occasion of the occurring and the development of pathological processes in the central nerve system but they also work out some methods of systematic action on the barrier which make possible an increase (or decrease) of their permeability for experi-

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of Certain Experimental Influences Applied to the Organism.

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mental and therapeutic purposes.

Rats of a weight of 100 g were used for the experiments. Radioactive phosphorus P^{32} was used as permeability indicator from which $2 \mu\text{Ci}$ were injected interperitoneally into a 1 ml physiological solution. After 1, 3, 24, 48 hours the animals were beheaded and a bloodsample was taken from the separated blood vessels (0,1 ml).

The P^{32} distribution between the blood and the brain in the norm (coefficient of permeability). After one hour the maximum content of P^{32} was in the hypothalamic area, then in decreasing sequence in the brain stem followed with decreasing content by the cerebral cortex, hypothalamic area, cerebellum, and the white substance (Fig. 1). Within 3 hours 15% of the P^{32} contained in the blood penetrate into the brain of the rat. HEP-permeability in the case of a closed cerebral trauma and on the occasion of spasm (experimental epilepsy). The injury was made by a dosed weight. In general the trauma was accompanied by unconsciousness and cramps. The cramp was achieved by means of a short (1 sec.) passing of line current through the head of the animal. It could be observed that after 1 hour the P^{32} content was much higher in the case of the case of the

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skull trauma than at the control. One hour after a cramp this content also increases in the brain, however much weaker. 3 hours after the epileptical fit a considerable increase of the HEB permeability could be observed. 3 hours after the trauma this permeability is also still higher than in the control but lower than after the epileptical fit. After 24 and 48 hours no difference can be observed in the content

of P^{32} between the experimental and the check animals.

The obtained results demonstrate that in the case of a skull-cerebrum-trauma and of cramps in the brain of rats the contents of the free azetylcholine and the activity of the hyaluronidase increase. Permeability of HEB in the case of some forms of the experimental therapy of the skull-cerebrum-trauma.

For this purpose anticholinergic, ganglia-blocking, sympathergic and antihistamine preparates were used. On the occasion of atropine injections the permeability increased by the trauma normalized again. The content of free azetylcholine and the activity of the hyaluronidasis decreased. Pentamine (dibromethylpentamethyldiethylentriamine, similar to pendiomide) and proserine produced similar effects. Metazon showed weaker effects. Antihistamine preparates (Dimedrol) did

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The State of the Haematoencephalic Barrier in the Case
of Certain Experimental Influences Applied to the Organism.

20-4-57/60

not produce important effects.

There are 2 figures, 1 table, and 2 Slavic references.

ASSOCIATION: The Group of the Corresponding Member of the Academy N. I.
Grashchenkov of the Department for Biological Sciences AN USSR
(Gruppa chlena - korrespondenta AN SSSR N. I. Grashchenkova pri
Otdelenii biologicheskikh nauk Akademii nauk SSSR).

PRESENTED: By A. D. Speranskiy, Academician, May 14, 1957

SUBMITTED: May 9, 1957.

AVAILABLE: Library of Congress.

Card 4/4

VEIN, A.M.

Compound therapy of erythromelalgia. Trudy 1-go MMI 24:310-3, '63.
(MIRA 17:1)

Pathogenic therapy of narcolepsy. Ibid. 315-329

VEYN,

Veyn, A.M., Grad Med Sci--(diss) "Hemato-encephalic barrier in cer-
tain diseases of the central nervous system. (Study ^{by means of} ~~on~~ the isotope
method)." Lpr, 1953. 14 pp (Min of Health USSR. Central Inst for the
Advanced Training of Physicians), 200 copies (ID, 88-58,113)

-158-

KASSIL', Grigoriy Naumovich; BONEVA, Ye.M.; VEIN, A.M.

[Treatment by acupuncture (chen-chiu)] Lechenie igloukalyvaniem;
chzhen'-tsiuterapiia. Moskva, Znanie, 1959. 30 p. (Vsesoiuznoe
obshchestvo po rasprostraneniuiu politicheskikh i nauchnykh znanii.
Ser.8: Biologiya i meditsina, no.17). (MIRA 13:6)
(ACUPUNCTURE)