

SOV/96-59-11-10/20

The Arresting of Suspended Particles Flowing Isothermally Through a Bundle of Tubes Coated with Viscous Fluid

of flow are plotted in Fig 3. It will be seen that within the range of 8 to 30 m/sec there is very little increase in the efficiency of separation of dust by the first two rows, but a somewhat greater improvement in the third and fourth rows. The influence of dust particle size on the effectiveness of separation at various rates of flow is plotted in Fig 4. The curves show that larger particles promote separation, particularly by tubes in the first two rows. The relative effectiveness of successive rows with different particle sizes is discussed. Doubling the diameter of the tube was found to slightly decrease the amount trapped by the tubes of the first and second rows. The resistance of the bundles of tubes related to the rate of flow in the narrow section between tubes for various values of Reynolds number, number of rows and pitch of tube, are plotted in Fig 5. The relationship between the resistance and Reynolds number is not clearly expressed. The factors governing the resistance are discussed. It is ✓

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usually considered that the Stokes' number alone determines the process of separation when a dusty flow passes over a cylinder. It is here shown that the Froude number also has an effect, particularly for the first two rows. Fig 6 indicates that all the experimental points can be plotted on a single curve if the efficiency of arresting is plotted as function of a complex that includes the Stokes, Froude and Reynolds numbers in the correct proportions. It will be seen from Fig 7 that the process of separation on the third and fourth rows can be described with sufficient accuracy by the Stokes' number. Fig 8 shows curves of the efficiency of arresting for various rates of flow. This graph may be used to make calculations on slag-arresting by tube bundles with a square arrangement; there can be any number of rows of tubes, their spacing across the flow being 2 - 4 diameters, and in line with the flow 2 - 3 diameters. The efficiency of arresting is given by expression (5), for particles of a particular size; when the flow contains a wide range of particle sizes, expression (7)

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should be used. Ash-removal factors for various two- and four-row arrangements of tube bundles are plotted in Fig 9 as functions of gas speed and tube arrangement. This graph also can be used for practical calculations. The ash-removal by various tube arrangements was calculated for a flow of air containing dust of the particle size distribution found at the inlet to the induced-draught fan of a power station burning Zakamsk coal. In this case there is no evident advantage to be gained by leaving a clear space between successive bundles of tubes. It is concluded that twin tubes should not be used in this type of ash arrester. In general, these ash arresters can be very effective in a cyclone furnace, and cause only a small increase in the head of draught. In particular, if four bundles, each comprising two rows, are fitted beyond the cyclone chamber the ash-removal factor can be increased from 50 to 58.5%, or from 55 to 91.4% with a draught increase of approximately 45 mm of

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water. Still better results are obtained when the ash
is coarse and there is less separation in the chamber.
There are 9 figures, 1 table and 11 references, 8 of
which are Soviet and 3 English.

ASSOCIATION: VTI - Vostochnyy filial VTI (All-Union Thermo-
Technical Institute. Eastern Branch All-Union Thermo-
Technical Institute) ✓

Card 6/6

28(5)

AUTHORS:

Maslov, V. Ye., Marshak, Yu. L.

05757

SOV/32-25-10-46/63

TITLE:

On the Initial Quantity of Dust in Working With Models of Dust Collectors

PERIODICAL:

Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1258-1259 (USSR)

ABSTRACT:

For the purpose of investigating a separation of aerosols in models of various dust-collecting devices a simple and reliable method was worked out, in which the dust-collecting surface is coated with a viscous liquid (e.g. vaseline). The quantity of dust deposited on this surface may be determined according to various physico-chemical methods (Ref 1). As the minimum size of the dust particles absorbed by a device is determined by the dimension of the latter, experiments must be carried out with the finest particles in order to attain greater efficiency of the device. Several experiments (Ref 2) showed that greater quantities of fine dust may be absorbed on a viscous surface than was stated in a paper by N. F. Dergachev (Ref 1). In order to solve this problem experiments were carried out with a model with a tube having a diameter of 50 mm and a length of 200 mm with various

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On the Initial Quantity of Dust in Working With
Models of Dust Collectors

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quantities of a fine (0-12 μ) dust of $K_2Cr_2O_7$ at a tangential air flow velocity of 7 m per second. It was found that a variation of the quantities of dust from 9.6 to 205 mg (Fig, diagram) influences neither the total degree of separation nor the distribution of the deposited particles along the model. Thus, when working with fine dust (0-12 μ), the initial quantity may be much higher than previously stated. There are 1 figure and 3 Soviet references.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskii institut (All-Union Thermal Engineering Institute)

Card 2/2

MARSHAK, Yu.L., kand. tekhn. nauk; ROMADIN, V.P., doktor tekhn. nauk.

Using VTI furnaces with high slag collection. Elek. sta. 30
no.2:2-8 F '59. (MIRA 12:3)
(Furnaces)

MARSHAK, Yu.L., kand.tekhn.nauk

Motion of a slag film and its effect on heat exchange in a lined shield. Teploenergetika 8 no.3:16-22 Mr '61. (MIRA 14:9,

1. Vsesoyuznyy teplotekhnicheskiy institut.
(Heat ~~Radiation~~ and absorption)
(Slag)

MARSHAK, Yu.L., kand.tekhn.nauk

Heat exchange in slag separator tube bundles. Teploenergetika
9 no.5:17-19 My '62. (MIRA 1962)

1. Vsesoyuznyy teplotekhnicheskii institut.
(Heat--Transmission) (Furnaces)

MARSHAK, Yu.L., kand.tekhn.nauk

Scientific and technical conference on the results of the investigation of the operation of the TP-230-6 boiler with a vertical cyclone-type furnace operating on anthracite culm and furnace system for a large 800 Mw. block. Elek. sta. 33 no.7:93-95
J1 '62. (MIRA 15:8)
(Boilers--Congresses) (Furnaces--Congresses)

VORONIN, N.I., inzh.; KRASOTKINA, N.I., inzh.; MARSHAK, Yu.L., inzh.;
SOLOV'YEV, A.M.; PSHENKO, V.A., inzh.; KULIK, A.I., inzh.

Use of carborundum packing compounds for lining furnaces with
liquid slag removal systems. Elek.sta. 33 no.12:2-5 D '62. .
(MIRA 16:2)

(Boilers)

(Furnaces)

MARSHAK, Yu.L., kand.tekhn.nauk

Increase in the durability of a dovetail shield. Elek. sta.
34 no.1:18-21 Ja '63. (MIRA 16:2)
(Furnaces)

MARSHAK, Yu.L., inzh.; SIZIN, P.R., inzh.; SOLOV'YEV, A.M., inzh.; PSHEIKO,
V.A., inzh.; KHAR'KIN, Yu.A., inzh.

Adjustment and operation of the TP-230-6 boiler with vertical cyclone
preliminary furnaces operating on anthracite culm. Elek. sta. 34 no.
6:17-22 Je '63. (MIRA 16:9)
(Boilers) (Electric power plants)

MARSHAK, Yu.L., kand. tekhn. nauk

Heat distribution in rods (pins) for fastening the lining of
furnace heat screens. Teploenergetika 10 no.10:45-51 0*63
(MIRA 17:7)

1. Vsesoyuznyy teplotekhnicheskiy institut.

MARSHAK-ROZENTSVEYG, A. M.

"Comparative evaluation of effectiveness of antibiotics during surgical interventions on stomach..."

report submitted for Antibiotics Cong, Prague, 15-17 Jun 64.

Lab for Clinical Evaluation of New Antibiotics, Inst of Surgery im A. V. Vishnyevskiy, AMS USSR.

Marshakov, I. A.

5242

ELECTRODE POTENTIAL AND CORROSION OF MOLYB-
DENUM AND TUNGSTEN. A. Ya. Shatalov and I. A.

Marshakov, Zhur, Fiz. Khim. 28, 42-50(1954) JAR (in
Russian)

A systematic measurement of the electrode potential of Mo and W in buffered solutions with different amounts of chloride ion was made. It was shown that the irreversible potential has a linear dependence on the pH and can be expressed by the equations $E_{Mo} = \begin{matrix} 0.38 \\ 0.40 \end{matrix} - 0.046 \text{ pH}$ and

$E_W = \begin{matrix} 0.28 \\ 0.33 \end{matrix} - 0.045 \text{ pH}$. Mo and W approximate the metallic

electrodes with a large shift in the fixed potential to the positive side. W occupies an intermediate position between the potentials of metallic and nonmetallic electrodes. The electrochemical behavior of Mo and W in 20 different electrolytes follows the curve E-1g N. The main influence on the potential of Mo and W is exerted by basic solutions. This dependence is caused by the change in the pH of the solution because of hydrolysis or dissociation of the electrolyte, formation of complex ions, or passivation of the surface by the action of oxidizing agents. Quantitative tests were made of the corrosion resistance of Mo and W by gravimetric and volumetric methods. A comparison of the measured corrosion loss with the quantity calculated by the volume of absorbed O₂ shows good agreement between the two if it is assumed the Mo and W are oxidized to MoO₃ and WO₃. (tr-auth)

University State Univ

ROZNFEL'D, I.L.; MARSHAKOV, I.K.

Methods for studying corrosion in gaps and openings. Zav.lab.21
no.11:1346-1353 '55. (MIRA 9:2)

1.Institut fizicheskey khimii Akademii nauk SSSR.
(Corrosion and anticorrosives)

MARSHAKOV, I. K.

18

6
4520

Metal corrosion mechanism in narrow fissures and crevices. I. The mechanism of "crevice corrosion" of iron in sodium chloride solutions. I. L. Rozenfel'd and I. K. Marshakov (Phys. Chem. Inst., Acad. Sci. U.S.S.R., Moscow) *Dokl. Akad. Nauk SSSR*, 30, 2724-27 (1955); *cf. C.A.* 50, 7705g.—The corrosive action of water, 0.5N NaCl, and a soln. contg. 30 mg. NaCl and 70 mg./l. Na₂SO₄ in narrow fissures in iron was studied when the whole exposed iron surface was in the crevice, and when only part of the iron surface was exposed to the liquid in the crevice and the rest was freely laved by the electrolyte soln. The corrosion in the second case was 2-3 times more rapid than in the first. The curves of the Fe anodic polarization are displaced towards the neg. side by reducing the fissure width. The cathode process in the narrow crevices in the iron becomes inhibited several times more than the anode process acceleration in them. W. M. Sternberg

*for Rth
4/2/56*

137-58-6-13065 D

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 269 (USSR)

AUTHOR Marshakov, I K

TITLE Investigation of the Mechanics of "Fissure Corrosion" of Metals: Issledovaniye mekhanizma "shchelevoy korrozii" metallov.

ABSTRACT Bibliographic entry on the author's dissertation for the degree of Candidate of Chemical Sciences, presented to the In-t fiz. khimii AN SSSR (Institute of Physical Chemistry, Academy of Sciences, USSR), Voronezh, 1957

ASSOCIATION In-t fiz. khimii AN SSSR (Institute of Physical Chemistry, Academy of Sciences, USSR), Voronezh

1 Metals--Corrosion 2 Corrosion--Analysis

Card 1/1

Translation from. Referativnyy zhurnal. Metallurgiya 1958 Nr 12 p. 12. (USSR) SOV 197-58-12-24850

AUTHORS: Marshakov, I. K. - Rozenfeld, I. L.

TITLE: The Process of Corrosion of Metals in Gaps and Cracks (Mekhanizm korroziy metallov v usloviyakh zazorov i shcheley)

PERIODICAL: Sb. tr. Voronezhsk. otd. Vses. khim. o-va im. D. I. Mendeleeva 1957, Nr 1, pp 117-120

ABSTRACT: Bibliographic entry

Card 1/1

80322

SOV/81-59-7-23715

12.8300

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 295 (USSR)

AUTHORS: Rozenfel'd, I.L., Marshakov, I.K.

TITLE: Corrosion of Metals in Narrow Gaps and Slits in the Presence of Corrosion Inhibitors

PERIODICAL: Sb. Kom-t po korrozii i zashchite metallov Vses. sov. nauchno-tekhn. o-v, 1957, Nr 2, pp 59 - 81

ABSTRACT: Methods were described for investigating the corrosion (C) of metals in narrow gaps (G) which make it possible to study the corrosion behavior of metals in G of various magnitude and in the case of arbitrary ratios of the surfaces of metal in G and in the electrolyte mass. Electrolyte of 0.03 g/l NaCl + 0.07 g/l Na_2SO_4 was taken as initial medium, to which various corrosion inhibitors (CI) were added. The test results have shown that the C rate of Fe in narrow G is lower than the C rate of Fe surrounded by the mass of the electrolyte. This is explained by the inhibition of the cathode process as a result of the difficult access of O_2 . With a decrease of the G width the limit diffusion current decreases

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SOV/81-59-7-23715

Corrosion of Metals in Narrow Gaps and Slits in the Presence of Corrosion Inhibitors

and in G of 0.05 - 0.35 mm it has approximately the constant value of 2.0 $\mu\text{A}/\text{cm}^2$. In the presence of a contact with the metal in the mass of the electrolyte, the C rate of Fe in G does not change with the G width. This is explained by the fact that the couples of differential aeration "metal in G-metal in the mass" are little efficient due to the high resistance of the medium. In the presence of CI it was established that NaNO_2 , $\text{K}_2\text{Cr}_2\text{O}_7$, Na_2HPO_4 cause a strong local C of the metal in G, although in the mass even small additions of these CI suppress the corrosion process completely. An increase in the NaNO_2 concentration leads to the reduction of the corrosion damages of Fe in G and in the case of a concentration of 2.0 g/l NaNO_2 C in G can be completely suppressed. The same results are observed in the case of $\text{K}_2\text{Cr}_2\text{O}_7$ and Na_2HPO_4 . ZnSO_4 does not cause C but is little effective. A temperature increase affects C of Fe in G in a double way: 1) at raised temperatures a higher concentration of CI is needed; 2) with the temperature increase the rate of CI diffusion into G rises (the first factor prevails). The whole anode current in a metal in G of 0.05-0.35 mm is concentrated on the surface of the sample located not deeper than 5 mm from

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SOV/81-59-7-23715

Corrosion of Metals in Narrow Gaps and Slits in the Presence of Corrosion Inhibitors

the beginning of G. A real polarization diagram of the corrosion macrocell Fe in G of 0.15 - Fe in the mass of the electrolyte in the case of equal surfaces was obtained. As a result of the work carried out an explanation of the mechanism of C of metals in narrow G is given. *UH*

R. Salem

Card 3/3

MARSHAKOV, I. K.

Journal of Physical Chemistry

Vol. XIII, No. 1, 1957

CREVICE CORROSION OF IRON IN SOLUTIONS OF CORROSION INHIBITORS

I. L. ROSENZELD, I. M. MARSHAKOV (Moscow)

Summary

An investigation has been made of the corrosion stability of iron crevices of various width in electrolytes containing the inhibitors NaNO_2 , $\text{K}_2\text{Cr}_2\text{O}_7$, Na_2HPO_4 , and ZnSO_4 (maximum corrosion was observed not at the crevices of minimal width, as expected, but at intermediate values, determined by the temperature, inhibitor concentration and other factors). On the basis of the corrosion and electrochemical studies, the mechanism has been elucidated of the crevice corrosion of iron in the above mentioned solutions.

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МАРШАКОВ, Л. К.

AUTHORS: Rozenfel'd, I. L., Marshakov, I. K. 76-10-24/34

TITLE: The Mechanism of Metallic Corrosion in Narrow Grevices and Slits. IV. The Corrosion of Aluminum and Some of Its Alloys (Mekhanizm korrozii metallov v uskikh zasorakh i shehelyakh. IV. Korrosiya alyuminiya i nekotorykh yego splavov).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2328-2335 (USSR)

ABSTRACT: The corrosion- and electrochemical behavior of the aluminum and of some of its alloys in narrow slits and sodium-chloride solutions was investigated. It was found that the corrosion velocity of the metal in the narrow slit is greater by circa one order of magnitude than the corrosion velocity of the same metal surrounded by an electrolyte. It is shown that an increased corrosion of the investigated metals in the slits is due to the variation of composition of the corrosion medium in the slit in consequence of the activity of the macroelements which are caused by the unequal velocity of the oxygen conduction in the slit and to the metal surrounded by the electrolyte. The phenomenon of the negative difference

CARD 1/2

The Mechanism of Metallic Corrosion in Narrow Grevices and Slits. 76-10-24/54
IV. The Corrosion of Aluminum and Some of Its Alloys

effect in aluminum in a narrow slit was investigated. It was found that in the case of an anode polarization the amount of the difference effect reaches in aluminum 40 - 47 %. It is shown that such an extraordinary increase of the difference effect is due to an acidification of the electrolyte in the slit in consequence of the hydrolysis of the anode reaction products. There are 7 figures, 1 table, 11 Slavic references.

ASSOCIATION: Institute for Physical Chemistry of the AN USSR, Moscow
(Akademiya nauk SSSR, Institut fizicheskoy khimii, Moskva).

SUBMITTED: September 29, 1956

AVAILABLE: Library of Congress

CARD 2/2

MARSHAKOV, I. K.

"Investigation of the Mechanism of Diffusion of Metals"

dissertation for the degree of Cand. of Chem. Sci. submitted at Inst. of Applied
Chem., AS USSR,
Voronezh, 1967.

Metallovedeniye i Struktura Metallov, 1967, No. 1, p. 11.

KIDIN, I.N., prof., doktor tekhn. nauk; ASTAF'YEVA, Ye.V., inzh.; MARSHALKIN,
A.N., inzh.

Special characteristics of the tempering process following high
frequency hardening. Metalloved. 1 obr. met. no.9:2-12 S '58.
(MIRA 11:10)

1. Moskovskiy institut stali.
(Steel--Hardening) (Induction heating) (Tempering)

ROZENFEL'D, I.L., doktor khim. nauk ; MARSHAKOV, I.K., inzh.

Corrosion of steels in contact with packing materials. Sudostroenie
24 no.9:46-49 S '58. (MIRA 11:11)
(Steel--Corrosion) (Ships--Equipment and supplies)

17 MARSHAKOV, I. K.

AUTHORS: Marshakov, I. K., Rozenfel'd, I. L.

76-1-10, 12

TITLE: On the Mechanism of Stainless Steel Corrosion in Narrow Slits and Crevices (Mekhanizm korrozii metallov v uzkikh zazorakh. IV. Korroziya nerzhavayuchchikh staley).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 1, pp. 66-72 (USSR)

ABSTRACT: The method of the corrosion test applied here was described by the authors in ref. 12. Investigated were: chromium steels H_π with 3% of chromium 1X13, 2X13, X17, X28, and for reasons of comparison the ordinary steel CT with 0,25 % of chromium. Besides these hardened steels also the steels 1X13 and 2X13 were investigated in an annealed state. The reaction against corrosion was investigated in 0,5 NaCl in tap water, in distilled water and in an allround washing of the sample by an electrolyte (1 cm² : 30 cm²). The experiments showed that compared with corrosion in the electrolyte, more intense corrosion in narrow slits of steel were only observed where the same steel in the electrolyte was in passive state. A passive state can be observed with ordinary steel low in carbon and with low-alloyed steel only in special cases with an especially intensive oxygen addition or with the presence

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On the Mechanism of Stainless Steel Corrosion in Narrow
Slits and Crevices

76-1-10/32

of other oxidation means. Under normal conditions in 0,5 N NaCl they are in an active state. So far as these steels corrode with the depolarization of oxygen their corrosion velocity in the electrolyte is higher than that in the slit where the approach of oxygen is rendered more difficult. High-alloyed steels (13 % of chromium and above) in the electrolyte are as a rule in a passive state. When these steels, however are in a narrow slit where the approach of oxygen to the metal surface is incomparably more difficult than in the electrolyte there is a much greater probability for a discontinuation of the passive state of steels and therefore also for the formation of destructions by corrosion. The authors established that with steels with 13-17% of chromium the passive state in slits is interrupted and pittings are formed. In the presence of a contact with the steel washed around by an electrolyte the corrosion of the steel in the slit intensifies at the expense of the formation of active-passive elements.- Some considerations on the process of a destruction by corrosion are given. If the

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On the Mechanism of Stainless Steel Corrosion in Narrow
Slits and Crevices

76-1-10/32

steel has a chromium content which is not sufficient to shift it to passive state in 0,5 N NaCl the corrosion of the metal in the slit takes place as described in ref. 14. Consequent to an abrupt slowing-down of the cathode process the velocity of corrosion of such a steel will be slower than in the electrolyte. The operation of differential ventilation is little effective under these circumstances. If the steel, however, has such a chromium content that it is shifted in the electrolyte to a passive state this steel is exposed to an increased destruction in a slit. The destruction takes place because of the fact that the entrance of oxygen to the slit is rendered more difficult and therefore the passive state of the steel in the slit is very unstable and may be disturbed at some places of the metal surface. The investigations showed that the steel is initially in a passive state and only after a certain time, which depends on the chromium content, passes over to an active state: the less chromium there is in the steel the earlier the passive state in the slit is disturbed. In fine slits the passive state can be disturbed on almost the whole

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On the Mechanism of Stainless Steel Corrosion in Narrow
Slits and Crevices

76-1-10/32

surface in the slit. With greater slits this applies only
to a limited extent.

There are 6 figures, and 15 references, 5 of which are Slavic.

ASSOCIATION: Institute of Physical Chemistry, Moscow, **AS** USSR
(Akademiya nauk SSSR. Institut fizicheskoy khimii. Moskva).

SUBMITTED: September 29, 1956

AVAILABLE: Library of Congress

Card 4/4

5(4), 18(6)

AUTHORS:

Marshakov, I. K., Rozenfeld, I. L.

SOV/76-33-1-37,45

TITLE:

The Mechanism of Metallic Corrosion in Cracks and Crevices
(Mekhanizm korrozii metallov v zazorakh i shchelyakh).
V. The Corrosion of Copper and Its Alloys
(V. Korroziya mednoi i yeye splavov)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 1, pp 219-220
(USSR)

ABSTRACT:

The corrosion mechanism of copper and its alloys in narrow cracks and crevices differs from the observations made up to now (Refs 1, 2). Publications show no uniform opinion on the copper corrosion in cracks (Refs 3, 4). Since copper and its alloys are used for the construction of vessels and heat exchangers (Refs 5, 6) the examination of this corrosion type is of special importance. The method of investigation has already been described (Ref 7). Copper, bronze, and brass (the composition is shown in a table) were tested in 0.5 n NaCl solutions. The cathode process as well as the anodic dissolution of copper (Fig 1) are stopped by the accumulation of copper ions in the cracks and thus the corrosion of copper is reduced. In the case of a contact between crack and outer

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The Mechanism of Metallic Corrosion in Cracks
and Crevices. V. The Corrosion of Copper and Its Alloys

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surface macro-elements are formed and the metal in the crack turns into the cathode, the outer metal surface into the anode (Fig 3). Thus, the corrosion does not occur inside the crack but outside, very close to the crack. The same is true of bronze, whereas brass reacts in a different way. In crevices (0.5 mm and below) of brass the corrosion is stronger in the crevices and may reach a twentyfold value, especially on contact with the outer surface (Fig 4). In this case the brass crevice acts as anode. The anodic polarization as well as the corrosion of brass lead to a selective dissolution with zinc being favorably dissolved. The strong zinc reduction in brass crevices can be explained by a more difficult oxygen access as has been found by tests in a hydrogen atmosphere (Table 2). There are 5 figures, 3 tables, and 9 references, 7 of which are Soviet.

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

SUBMITTED: July 17, 1957
Card 2/2

5(4), 18(7)
AUTHORS:

Rozenfeld, I. L., Yashkov, I. K.

TITLE:

On the Mechanism of Metal Corrosion in Narrow Slits and
Crevices (Mechanizm korrozii metallov v uskikh zazorakh i
sachelyakh) VI. Magnesium and Some of Its Alloys (VI. Magniy
i nekotoryye yego splovy)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1970, Vol 43, No 2,
pp 411 - 419 (USSR)

ABSTRACT:

Magnesium differs from other metals in its electrochemical
properties (Refs 1-3). Since magnesium alloys are used a
great deal in industry and in the construction of airplanes
investigations on its properties are especially important.
Magnesium with a high degree of purity, technical magnesium,
and ML-5 and ML-8 alloys (chemical composition (Table 1))
were studied. The method of investigation was previously
described (Ref 4). The corrosion was studied in water and
NaCl solutions and it was found that it was considerably
greater in narrow slits (under 0.5 mm) than elsewhere
(Fig 1) and that it has a local character. Functions curves
in relation to the depth and size of the slits are compli-

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On the Mechanism of Metal Corrosion in Narrow Slits
and Crevices. VI. Magnesium and Some of Its Alloys

S.W./06-14-80-0011

cated (Fig. 3) and show minima at definite values. With the MA-8 alloy no variation of the corrosion velocity in the split with the time could be observed, while it decreased with time outside the slit. Experiments involving an aeration of the electrolyte and a rotating electrode showed that the corrosion velocity increased greatly and that the character of the corrosion changed greatly (Table 2, Fig. 4). It is assumed that the hydrogen bubbles give off in the slit can be thorough and thus promote the corrosion, since they destroy and hinder the formation of protective films, thus producing the intensive pitting corrosion. The increase in corrosion in the slit is limited in the case of narrow slits by the formation of micro-elements. The macro-elements which are eventually produced have no particular effect. There are 4 figures, 2 tables and 4 Soviet references.

ASSOCIATION:

Institut fizicheskoy khimii Akademii nauk SSSR, Moskva (Institute of Physical Chemistry of the Academy of Sciences, USSR, Moscow)

SUBMITTED:
Card 2/2

July 17, 1967

MARSHAKOV, I. K

PHASE I BOOK EXPLOITATION

SOV/5225

Mikhant'yev, Boris Ivanovich, Anatoliy Yakovlevich Shatalov, and Igor'
Kirillovich Marshakov

Polimery - novyye korrozionno-stoykiye materialy (Polymers; New Corrosion-
Resistant Materials) Voronezh, Izd-vo Voronezhskogo univ., 1960. 106 p.
5,000 copies printed.

Scientific Ed.: I. Ya. Klinov, Doctor of Technical Sciences, Professor;
Ed. of Publishing House: G.F. Biryukov, Tech. Ed.: M.V. Novikov.

PURPOSE: This book is intended for teachers in higher schools of education. It
may be used by chemical engineers and technicians of plant laboratories, tech-
nologists and foremen, as well as workers who are interested in improving their
skills.

COVERAGE: The book reviews the causes and types of corrosive destruction to metals
and alloys exposed to external conditions, and discusses methods and means of
replacing nonferrous metals and alloyed steels with new corrosion-resistant

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Polymers; New Corrosion-Resistant Materials

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materials based on synthetic polymers and natural and synthetic resins. The main physicochemical properties are given for the structural plastics which have received wide practical application in the national economy, and especially in anticorrosion engineering. No personalities are mentioned. There are 68 Soviet references (including 2 translations).

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Corrosion Resistance of Polycondensed Plastics	32

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SHATALOV, A.Ya., MARSHAKOV, I.K., RUBTSOVA, T.A.

Effect of oxidizing agents on the inhibiting properties of phosphates. Zhur.prikl.khim. 33 no.5:1030-1036 My '60.
(MIRA 13:7)

(Steel--Corrosion) (Phosphates)

88712

S/076/61/035/001/016/022
B004/B060

AUTHORS: Marshakov, I. K. and Zanina, A. N.

TITLE: Mechanism of the corrosive destruction of iron along the water line

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 206-211

TEXT: The authors were concerned with the problem of the intensive corrosion of low-alloy steels along the water line, i.e., along the line separating the corroding medium from the atmosphere. According to I. L. Rozenfel'd and K. A. Zhigalova (Ref. 1) the process has a different course depending on whether the electrolyte surface remains immobile, or whether its level fluctuates. The corrosion of Armco iron was examined in various media with the surface at rest. The formation of differential aeration couples was observed. Fig. 1 shows the element "metal in water line - metal dipped in electrolyte". The following results were obtained: An intensive corrosion appeared along the water line in acid media and in neutral solutions containing inhibitors such as bichromates, nitrates, or phosphates. The iron did not undergo any intensive corrosion along the

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88712

Mechanism of the corrosive destruction ...

S/076/61/035/001/016/022
B004/B060

water line in neutral chlorides and sulfates. An intensive local destruction may take place, however, in media with a low electrical conductivity. Due to the difference in access of oxygen to the iron of the water line and iron dipped into the electrolyte, differential aeration couples are formed, the anode being provided by the iron dipped into the electrolyte. In media with a low electrical conductivity (tap water) the currents of these elements concentrate and give rise to intensified corrosion somewhat below the water line. The intensive etching of iron along the water line in acid media is not, as hitherto assumed, caused by a stronger precipitation of the corrosion products at the water - air interface, but by the action of corrosion macrocells, whose anode is the Fe in the water line. The cause of the formation of such cells is the rapid increase of the pH of the electrolyte which forms the meniscus. In neutral electrolytes containing inhibitors, the corrosion of Fe is similar to that in narrow slits and crevices. Due to an impeded access of the inhibitor to the electrolyte forming the meniscus there arise active - passive cells, which give rise to the intensive corrosion. There are 4 figures, 1 table, and 9 references: 6 Soviet-bloc and 2 non-Soviet-bloc.

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88712

Mechanism of the corrosive destruction ...

S/076/61/035/001/016/022
B004/B060

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: May 21, 1959

Legend to Fig. 1. Change of current strength with time. 1: 0.1 M Na₂SO₄; 2: 0.1 M H₂SO₄; length of water line 12 cm (at either side of the specimen; area of the specimen dipped into the electrolyte 50 cm²; a) time, min; b) anode in the electrolyte; c) anode in the water line.

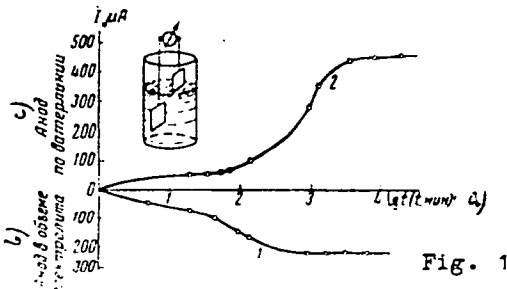


Fig. 1

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24654

S/076/61/035/006/006/013
B127/B203

188300

AUTHORS: Rozenfel'd, I. K. and Marshakov, I. K.

TITLE: Mechanism of selective linear corrosion

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 6, 1961, 1265-1269

TEXT: The object of the present paper was a study of corrosion at the boundary metal - dielectric. The authors used Armco iron, and showed its corrosion in the presence of HCl or H₂SO₄. Corrosion was most distinct in 0.2N H₂SO₄. Besides paraffin, the following substances were used as dielectrics: colophony, bitumen, organic glass, polystyrene, polymerized ~~64~~-2 (BF-2) glue, and Bakelite varnish (Fig. 1). No effect of the character of the dielectric on corrosion was observed. Linear corrosion was also observed at the contact point of two homogeneous metals. Weak corrosion was even observed with electrolytes free from O₂. The depth of corrosion increases with the metal surface outside of the paraffin drop. Thus, the free metal parts exert an influence on the covered parts. In

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S/076/61/035/006,006,013
B127/B203

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Mechanism of selective linear corrosion

the narrow interspace at the edge of the drop, the acid concentration is reduced due to interaction with the metal. The increase in pH leads to a derefinement of the steady metal potential and to an acceleration of the anodic metal ionization. The change in acid concentration on the various metal parts leads to the formation of concentration elements. The anodic processes took place at the narrow edge on the drop, the cathodic processes at a greater distance, on the metal. At sufficiently high H^+ concentration, free H_2 is formed by discharge. This produces a cathodic process causing corrosion in the absence of O_2 . A clear demonstration is given

by the following arrangement: Two Fe electrodes are taken, one of which forms a 0.3 mm wide margin between metal and polymer. An emf of 80-100 mv and 500 μ a is formed. The metal in the slit acts as anode. The pH dependence is illustrated by the following arrangement: Two Fe electrodes are put in an H-shaped vessel with glass diaphragm. A milliammeter is connected. Both wings are filled with 0.2 NH_2SO_4 . In one wing, the acid is titrated with 1N NaOH + 0.2N Na_2SO_4 . In the other one, the same quantity of acid was added to prevent a flow of the electrolyte through

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24654
S/076/61/035/006/006/013
B127/3203

Mechanism of selective linear corrosion

the diaphragm. In one wing, the pH increased steadily, in the other one, it remained constant. Only at a very strong basic pH, the metal in the acid solution can act as anode since Fe is passivated by strongly alkaline electrolytes and its potential shifts to the positive range. A similar change of pH takes place in the narrow space between metal and dielectric. The products of the anodic reaction of the corrosion element are subjected to hydrolysis, and acidify the electrolyte strongly. Finally, an equilibrium of pH 2.5-3.5 is established. Another picture results if the two electrodes are short-circuited. Corrosion of the electrode in the neutral electrolyte increases strongly. Due to the neutral environment, it becomes anodic. The potential is on a positive level. The corrosion rate of the electrode in neutral medium is increased by the 7-fold. The corrosion current is 200 μ a. If the inner and outer resistance of the element is reduced to a minimum, the current rises to the 18-fold and reaches 3.5 ma. If a drop of the dielectric is applied to iron, or if an interspace is constructed, the ohmic resistance is low, the concentration elements are very efficient, and, as a consequence, linear selective corrosion is very strong. M. K. Tikhonov (Zh. prikl. khimii, 12, 518, 1939) and V. A. Kistyakovskiy (Korroziya

Card 3/4

24054

Mechanism of selective linear corrosion

S/076/61/035/006/006/013
B127/B203

zheleza v kontakte s granitsey dvukh faz; Tr. Iun'skoy sessii AN SSSR, 9-18, Izd-vo AN SSSR, 1939) are mentioned. There are 4 figures, 1 table, and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: Culloch M., J. Amer. Soc., 47, 1940, 1925.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR). Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: September 18, 1959

Fig. 1: Corrosion of iron in contact with a dielectric.

Legend: (1) metal, (2) paraffin, (3) acid.

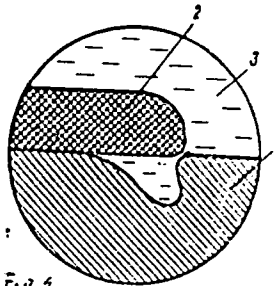


Fig. 1

Card 4/4

S/020/62/142/006/018/019
B101/B144

18.8300

AUTHORS: Shatalov, A. Ya., Marsnakov, I. K., and Kaluzhina, S. A.

TITLE: Thermogalvanic corrosion of metals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1968, 1333-1341

TEXT: Thermogalvanic corrosion was investigated on a model of thermo-galvanic cells on the basis of polarization curves. To this effect, the electrodes (Armco iron, 18/8 steel, X 13 (Kh13) steel, nickel, or zirconium) were inserted in plastic plugs at the ends of a quartz tube at 140 mm from each other. While the lower electrode was dipped into ice, the upper one was heated to 75°C. The advantages of this design are (1) internal resistance less than in H-shaped cells; (2) lower convection, since the hot solution is on top. The electrolyte consisted of 0.1 N H₂SO₄ + 0.9 N K₂SO₄; 1 N K₂SO₄; 0.1 N KOH + 1 N K₂SO₄; 1 N K₂CO₃ + 1 N K₂SO₄. Conclusions: (a) the polarity of the corrosion pair is normal in acid and neutral solutions: the hot electrode is the anode; (b) "anomalous" polarity takes place in alkaline solution: the cold

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S/C20/62/142/006/018/019
B101/B144

Thermogalvanic corrosion ...

electrode is the anode. This reversal of polarity which does not occur until after a certain time is due to passivation, rising with temperature, of the hot electrode. This was confirmed by passivating additions ($K_2Cr_2O_7$ or KOH). In Kh13 steel, anomalous polarity is already observed in neutral solution, even without addition of passivating substances. A paper by Ya. M. Kolotyркиn et al. (Sborn. Korroziya reaktornykh materialov (Coll. Corrosion of Reactor Materials) M., 1960, p. 29) is mentioned. There are 3 figures, 1 table, and 4 Soviet references.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

PRESENTED: November 4, 1961, by A. N. Frumkin, Academician

SUBMITTED: November 10, 1961

Card 2/2

X

SHATALOV, A.Ya.; MARSHAKOV, I.K.; KALUZHINA, S.A.

Thermogalvanic corrosion of metals. Part 1. Zhur. fiz. khim.
37 no.12:2721-2727 D '63. (MIRA 17:1)

1. Voronezhskiy gosudarstvennyy universitet.

MARSHAKOV, I.K.; BOGDANOV, V.P.

Mechanism of the selective corrosion of copper-zinc alloys.
Zhur. fiz. khim. 37 no.12:2767-2769 D '63. (MIRA 17:1)

1. Voronezhskiy gosudarstvennyy universitet.

MARSHALL, W.; B...

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L-9052-65 EMT(n)/EPF(n)-2/ENP(b) Pad/Pa-4 RAEM(t) MJW/JD/WB/HH/JG/WB/MLK
ACCESSION NR: AT4043072 S/0000/64/000/000/0175/0182

AUTHOR: Shatalov, A. Ya.; Marshakov, I. K.; Kaluzhina, S. A.

TITLE: Effect of temperature on the anodic behavior of metals in the case of corrosion by macroscopic pairs

SOURCE: ¹⁸Mashvuzovskaya konferentsiya po anodnoy zashchite metallov ot korrozii, 1st, Kazan, 1961. Anodnaya zashchita metallov (Anodic protection of metals); doklady* konferentsii. Moscow, Izd-vo Mashinostroyeniya, 1964, 175-182

TOPIC TAGS: thermogalvanic passivation, metal passivation, Arco iron passivation, stainless steel passivation, nickel passivation, zirconium passivation, anodic dissolution, thermogalvanic pair formation, anodic behavior

ABSTRACT: The corrosion behavior of Arco iron, ¹⁸Kh13 and ¹⁸Kh18N9T [AISI 321] stainless steels, ¹⁸nickel, ²⁷and zirconium²⁷ under conditions of a 75C temperature gradient in acid, neutral, and alkaline electrolytes, some of which contained an additional oxidizer, has been investigated. Results of experiments showed that the current of thermo-

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L 9052-65

ACCESSION NR: AT4043072

Galvanic elements depends on the nature of the metal and the electrolyte composition; in the majority of experiments, the current density did not exceed 10 mka/cm². Normal thermogalvanic elements with a hot anode were formed in acid and neutral solutions. The work of these elements is controlled by the speed of the cathodic process. With increasing alkalinity of the solution the share of the anodic control increases and, in a 1n KOH + 1n K₂SO₄ solution, reaches 69%. In this solution, the anode is the cold electrode. A similar abnormal polarity of a thermogalvanic element is also observed in neutral solutions when a strongly passivating agent (potassium bichromate) is added. Metals more susceptible to passivation (e.g., Kh13 steel) form thermogalvanic elements with an abnormal polarity (a cold anode) in neutral solutions without passivating agents. Anodic dissolution of Kh13 steel and Armco iron decelerates as the alkaline solutions are substituted for the acid ones. Analogous though somewhat more complex behavior was observed in other investigated metals. In general, normal thermogalvanic pairs with a hot anode are formed when deceleration of the anodic process is small and the thermogalvanic corrosion is controlled by the cathodic process. With a greater share of anodic control, abnormal thermogalvanic elements with a cold anode are usually

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ACCESSION NR: AT4043072

formed on metals and alloys more susceptible to passivation, or in solutions containing passivating agents (bichromate ions, hydroxyl ions). Formation of the abnormal thermogalvanic elements is ascribed to a more intense passivation of the hot electrode as compared with the cold one. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 13Mar64

ATD PRESS: 3103

ENCL: 00

SUB CODE: MN, IE

NO REF SOVI: 007

OTHER: 003

Card 3/3

MARSHAKOV, I.K.; ZAKUTSKIY, V.I.

Simple unit for potentiostatic measurements. Zhur. fiz. Khim.
38 no.1:237-238 Ja'64. (MIRA 17:2)

1. Voronezhskiy gosudarstvennyy universitet.

SHATALOV, A.Ya.; MARSHAKOV, I.K.; KALUZHINA, S.A.

Thermogalvanic corrosion of metals. Part 2. Zhur. fiz. khim.
38 no.2:180. (MIRA 17:8)

1. Voronezhskiy gosudarstvennyy universitet.

MARSHAKOV, I.K.; BOGDANOV, V.P.; ALFYRINA, S.M.

Corrosion and electrochemical behavior of alloys of the copper -
zinc system. Part 1. Zhur. fiz. khim. 38 no.7:1764-1768, 1962.
(MIRA 18:3)

1. Voronezhskiy gosudarstvennyy universitet.

MARSHAKOV, DEBRA E.

L 2624-66 EWT(m)/EPF(c)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/WB
ACCESSION NR: AP5011363 UR/0365/65/001/002/0190/0194
620.193.01

53
49
B

AUTHOR: Marshakov, I. K.; Ugay, Ya. A.; Vigdorovich, V. I.

TITLE: Mechanism of corrosion of the magnesium-zinc alloys

SOURCE: Zashchita metallov, v. 1, no. 2, 1965, 190-194

TOPIC TAGS: corrosion, magnesium alloy, zinc alloy, corrosion resistance, corrosion rate

ABSTRACT: The mechanism of corrosion of magnesium-zinc alloys was studied at room temperature in 0.5-normal NaCl, 0.5-normal NaBr, and 0.1-normal HCl solutions. In corrosion tests, 12-15 ml of electrolyte was used per cm² of sample surface. The test duration was 5 hours in neutral media and 30 minutes in acidic media. Corrosion of alloys containing up to 65% Zn is very fast and is accompanied by heavy sludge formation. An intercrystalline type of corrosion is characteristic of alloys containing 65-72% Zn. Alloys containing more than 72% Zn corrode at a low rate and in a uniform manner. The corrosion of alloys containing up to 72% Zn is determined by the work of the phase corrosion elements: α -solid solution--inter-

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L 2624-66

ACCESSION NR: AP5011363

4
metallic compound MgZn. On alloys containing 65-72% Zn, the anodic zones are small and dissolving proceeds along narrow channels between the individual grains of the intermetallic compound. Thus, the alloy material may be completely destroyed with small weight losses. Intermetallic compounds such as MgZn, MgZn₂, and MgZn₅ participate in corrosion of alloys with over 72% Zn. As a result of difference in effectiveness of the corrosion elements, the rate of corrosion in bromide solutions is smaller than in chloride solutions. The rate of alloy corrosion in 0.5-normal NaCl is shown in fig. 1 of the Enclosure. The rate of alloy corrosion in 0.1-normal HCl is shown in fig. 2 of the Enclosure. The dependence of the steady-state potentials of alloys upon their composition is shown in fig. 3 of the Enclosure. Orig. art. has: 2 tables, 5 figures.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: 26Sep64

ENCL: 02

SUB CODE: MM, GC ^{44.53}

NO REF SOV: 005

OTHER: 001

Card 2/4

L 2624-66
ACCESSION NR: AP5011363

ENCLOSURE 01

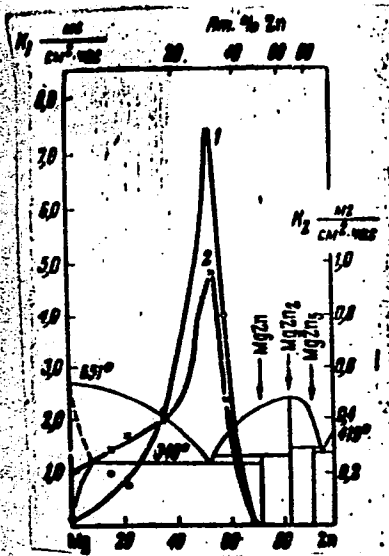


Fig. 1. 1--total material loss; 2--quantity of Mg in solution, K_1 --the ordinate for curve 1; K_2 --ordinate for curve 2.

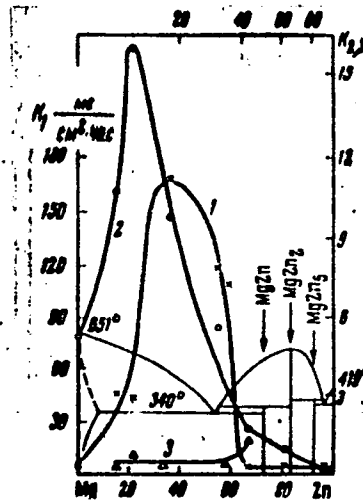


Fig. 2. 1--total material loss; 2--quantity of magnesium in solution; 3--quantity of zinc in solution;

K_1 --ordinate for curve 1; $K_{2,3}$ --ordinate for curves 2 and 3.

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L 2624-66

ACCESSION NR: AP5011363

ENCLOSURE; 02

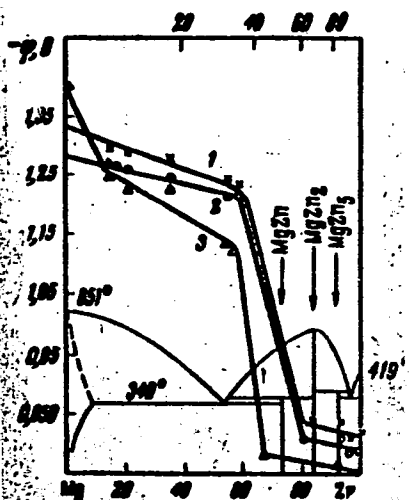


Fig. 3. 1--0.5n NaCl; 2--0.5n NaBr; 3--0.1n HCl.

Card 4/4 DP

U. 62192-65 EFF(c)/EWT(m)/EWP(b)/EWA(d)/EWP(t) IJP(c) JD/WB

ACCESSION NR: AP5017747

UR/0365/65/001/004/0406/0409

AUTHOR: Marshakov, I. K.; Ugay, Ya. A.; Vigdorovich, V. I.

48
45
B

TITLE: The mechanism of corrosion failure of alloys of the magnesium-copper system

4455 27 27

SOURCE: Zashchita metallov, v. 1, no. 4, 1965, 406-409

TOPIC TAGS: corrosion resistant metal, magnesium base alloy, magnesium containing alloy, copper base alloy, copper containing alloy, sodium chloride, sodium bromide, hydrochloric acid, corrosion resistance, intermetallic compound, electrochemistry

ABSTRACT: Fifteen samples were tested, with copper content (weight %) varying from zero to 99.9%. The corrosion tests were carried out in solutions of 0.5N sodium chloride, 0.5 N sodium bromide, and 0.1 N hydrochloric acid. The corrosion rate was calculated from the amount of magnesium and copper going into solution. The potential was calculated with respect to a standard hydrogen electrode. With an increase in the copper content in magnesium alloys, the corrosion rate increases in all the media, reaching a maximum value in the eutectic

Card 1/2

I 62492-65

ACCESSION NR: AP5017747

region. The rate of failure in bromide solutions is considerably smaller than in sodium chloride and hydrochloric acid solutions. In alloys containing more than 40% copper, the corrosion process starts to be limited by the rate of the anode reaction. For this reason, the potential of these alloys is shifted toward the positive side. The role of phase microelements, consisting of a mixture of intermetallic compounds, Mg_2Cu and $MgCu_2$ (alloys with 56-83% copper), is relatively small. The mechanism of selective solution of intermetallic compounds is explained by the fact that, with sufficiently negative stationary potentials (about -0.6 volts), only the magnesium atoms undergo ionization, and the surface layer of the intermetallic compound assumes a defective crystal lattice. The article illustrates the close connection between corrosion and electrochemical properties of magnesium-copper alloys with their phase diagram. Alloys with a copper content within the limits of 56-99.5% are subject to selective solution. The article proposes a mechanism for this process. Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: Voronezhskii gosudarstvennyi universitet (Voronezh State University)

SUBMITTED: 26Sep64

ENCL: 00

SUB CODE: MM

NR REF SOV: 003

OTHER: 001

Card 2/2 7/6

I. 12897-66 EWT(m)/ETC(F)/EWG(m)/T DS

ACC NR: AP5027581

(A)

SOURCE CODE: UR/0364/65/001/011/1374/1376

AUTHOR: Marshakov, I. K.; Ugay, Ya. A.; Vigdorovich, V. I.; Anokhina, M. I.

ORG: Voronezh State University (Voronezhskiy gosudarstvennyy universitet)

TITLE: Effect of ammonium ion on hydrogen overvoltage *7.44.55*

SOURCE: Elektrokhimiya, v. 1, no. 11, 1965, 1374-1376

TOPIC TAGS: magnesium, hydrogen, electrochemistry

ABSTRACT: The effect of ammonium ions on the rate of dissolution of magnesium and the kinetics of anodic and cathodic processes was studied. MG-1 magnesium containing 0.08% impurity was used in this study. The rate of dissolution of Mg, determined from chemical analysis of the solution for Mg, was found to be practically independent of the anion content, but increased rapidly upon the addition of ammonium ion. The corrosion of magnesium in aqueous solutions proceeds primarily with the depolarization of hydrogen. Consequently, the kinetics of the reduction of the hydrogen ion were investigated on pure resublimed magnesium and on nobler metals because in the dissolution of technical magnesium, cath-

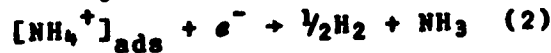
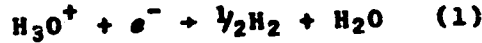
Card 1/3

UDC: 541.138.3:546.11

L 12897-66

ACC NR: AP5027581

odic reduction of the hydrogen ion proceeds primarily with respect to the noble metal impurities. Due to the high spontaneous dissolution currents of pure magnesium it was not possible to obtain the polarization of the electrode and the kinetics of hydrogen liberation could not be studied. The lowering of hydrogen overvoltage on other metals is shown in fig. 1. It is stipulated that the reduction of hydrogen proceeds by two reactions:



where adsorbed ammonium ions play the role of an intermediate complex

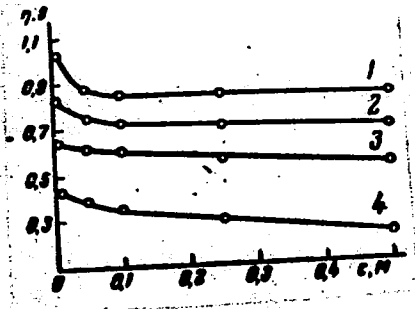


Fig. 1. Hydrogen overvoltage as a function of the concentration of ammonium ions at $i = 10^{-3}$ a/cm²: 1--Zn; 2--Sn; 3--Fe; 4--Pt.

Card 2/3

L 12897-66

ACC NR: AP5027501

which lowers the energy of activation for the reduction of hydrogen ions.
Orig. art. has: 2 figures, 1 table.

SUB CODE: 20,11/ SUBM DATE: 28Jan65/ ORIG REF: 007/ OTH REF: 001

Card 3/3

MARSHAKOV, I.K.; SAUNOVA, G.N.

Characteristics of the dissolution of copper and its alloys
in ammonia solutions. Izv. vys. ucheb. zav.; tsvet. met. 8
no.1:147-151 '65. (MIRA 18:6)

1. Voronezhskiy gosudarstvennyy universitet, kafedra fizicheskoy
khimii.

L 00936-66 EWP(e)/EWT(a)/EPT(c)/EWP(1)/EPT(n)-2/EWA(d)/EWP(t)/EWP(b) IJP(e)
JD/JG/NB

ACCESSION NR: AP5019728

UR/0153/65/000/002/0411/0415

AUTHOR: Shatalov, A. Ya.; Marshakov, I. K.; Kaluzhina, S. A.
65, 41 35, 44 65, 41

38
22
B

TITLE: Thermogalvanic corrosion of iron and steel

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 8, no. 9, 1965, 411-415

TOPIC TAGS: thermogalvanic corrosion, carbon steel, steel corrosion, iron corrosion

ABSTRACT: The cause of thermogalvanic corrosion is the difference in electrochemical potentials assumed by a metal at the boundary with a solution of a different temperature. The thermogalvanic corrosion of armco iron in solutions of various acidities with a constant total content of SO_4^{2-} , NO_3^- , Cl^- , and Br^- ions was studied, and it was shown that the most effective thermogalvanic macrocouple causing a virtually complete concentration of the weight losses on the anodic areas are formed in alkaline media. The introduction of oxidizing admixtures (HNO_3) into the solution at pH 1 led to a sharp increase in the overall thermogalvanic effectiveness of the macrocouple. A study of the thermogalvanic corrosion of carbon steels in acid sulfate solutions revealed an increase in the overall thermogalvanic effectiveness with a rise in the carbon content; this corresponded to a decline in the corrosion resistance of the alloys. Other things being equal, the intensity of the thermogal-

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L 00936-66

ACCESSION NR: AP5019728

6
vanic couples decreased in the case of alloy steels when additional alloying components (titanium, boron, molybdenum) were introduced into the alloy, and the corrosion was substantially concentrated on the Ni (80C) electrode. Orig. art. has: 5 figures and 4 tables.

ASSOCIATION: Kafedra fizicheskoy khimii, Voronezhskiy gosudarstvennyy universitet
(Department of Physical Chemistry, Voronezh State University)

SUBMITTED: 20Mar64

ENCL: 00

55,11
SUB CODE: MM

NO REF SOV: 001

OTHER: 000

Card 2/2 of 1

L 53891-65 EWT(m)/EPF(c)/EWA(d)/EPR/EWP(t)/EWP(b) Ps-4 LJP(c) JD/WB

ACCESSION NR: AP5014157

UR/0080/65/038/005/1026/1032
620:191/.193+548.3-1946'811

AUTHOR: Marshakov, I. K.; Ugay, Ya. A.; Vigdorovich, V. I.

39
29
8

TITLE: Corrosion behavior of magnesium-tin alloy systems in chloride solutions

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 5, 1965, 1026-1032

TOPIC TAGS: magnesium-tin alloy, alloy, magnesium, tin, corrosion

ABSTRACT: Corrosion behavior of magnesium-tin alloy systems was studied in chloride solutions in order to elucidate the mechanism of corrosion of binary alloys and intermetallic compounds. The relationship between corrosion behavior and phase diagrams of the magnesium-tin system was studied. Mg-Sn alloys containing from 4 to 70 wt. % of Sn were annealed at 450°C and those with 75 to 98 wt. % Sn were annealed at 180°C. All annealings lasted for 100 hours. The rate of corrosion was measured according to the amount of alloy components (Mg, Sn) which went into solution. Magnesium concentration was measured complexometrically and tin concentration was measured polarographically. Corrosion tests were made by contacting

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L 53891-65

ACCESSION NR: AP5014157

samples at room temperature with a 0.5 normal NaCl and 0.5 normal NaBr aqueous solution for 12 hours and subsequently contacting for 0.5 hour with a 0.1 normal aqueous solution of HCl. There is a strict correlation between the Mg-Sn phase diagram and its corrosion behavior. Alloys containing less than 70% Sn are composed of a practically pure magnesium phase and an intermetallic Mg₂Sn phase. Each of these phases dissolves in the corrosion medium individually and at a different rate. For such alloys the overall rate of corrosion increases with increasing Sn content of the alloy. With increasing Sn content of the alloy, contribution of the Mg₂Sn phase to the overall rate of corrosion is gradually diminished. Alloys containing more than 70% Sn are composed of a pure tin phase and of a Mg₂Sn phase. For these alloys the overall rate of corrosion is limited by the rate of dissolution of the Mg₂Sn phase. During corrosion of the Mg-Sn alloys with less than 70% Sn the outermost layer of the alloy is composed of 95% to 100% tin, while the Sn phase as such is not present in the system. Mechanistically, this Sn layer results from the decomposition of the Mg₂Sn phase according to the equation: Mg₂Sn → Mg⁺⁺ (in solution) + Sn⁺⁺. The Sn⁺⁺ is reduced to the metallic state according to the following sequence: Mg₂Sn → Mg₂Sn (lattice defect) + Mg⁺⁺ (in solution) → Mg₂Sn (in outer layer) + Sn + Mg⁺⁺ (in solution). Orig. art. has: 3 tables, 7 figures, and 2 formulas.

Card 2/3

L 53891-65

ACCESSION NR: AP5014157

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: 08May64

ENCL: 00

SUB CODE: MH, GC

NO REF SOV: 004

OTHER: 002

Card 3/3

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R001032530007-0

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R001032530007-0"

L 1660-66 EWT(1)/EWT(m)/EPP(c)/EWJ(m)/EWP(t)/EWP(b) JD/WB

ACCESSION NR: AP5021414

UR/0076/65/039/000/1880/1885
620.191/.193

AUTHOR: ^{79, 53} Shatalov, A. Ya.; ^{44, 5} Marshakov, I. K.; ^{44, 5} Kalushina, S. A. 26
23
B

TITLE: Study of the thermogalvanic corrosion of metals. Part 3. Electrochemical principles of thermogalvanic corrosion

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 8, 1965, 1880-1885

TOPIC TAGS: thermogalvanic corrosion, thermogalvanic cell ⁹

ABSTRACT: Thermogalvanic corrosion results from the combined action of a macrocouple arising upon immersion of different areas of a metal surface having different temperatures in an electrolyte, and inherent microcells operating in the hot and cold zone. In the case of couples with reversible electrodes, the rate of transfer of a substance from the anode to the cathode, which is proportional to the current intensity of the thermogalvanic cell, is related directly to the magnitude of the exchange current and may be represented by an equation of the form

$$I_e = \text{const} [M^{n+}]^0$$

Card 1/2

L 1660-66

ACCESSION NR: AP5021414

3

where I_p is the thermogalvanic current. For thermogalvanic cells with irreversible electrodes operating in acid media, the thermogalvanic current arising therein is a linear function of the product of the spontaneous dissolution rate of the isolated electrode by the shift of its potential from the initial steady-state value, a shift taking place when the couple is closed. The latter rule holds with regard to the effect of the solution composition as well as the effect of the nature of the metal itself - factors which determine the overall rate of spontaneous dissolution of isolated electrodes of a thermogalvanic cell. Orig. art. has: 5 figures and 6 formulas.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University) ⁴⁴⁵⁵

SUBMITTED: 15Jan64

ENCL: 00

SUB CODE: MM

NO REF SOV: 007

OTHER: 002

Card 2/2 DP

SHATALOV, A.Ya.; MARSHAKOV, I.K.; KALUZHINA, S.A.

Effect of temperature on the effectiveness of thermogalvanic
couples. Zhur. fiz. khim. 39 no.9:2278-2281 S '65.
(MIRA 18:10)

1. Voronezhskiy gosudarstvennyy universitet.

L 34820-06 EWT(m)/f/EWP(t)/ETI IJP(c) DS/JD

ACC NR: AP6017607

(A)

SOURCE CODE: UR/0364/66/002/002/0254/0258

AUTHOR: Marshakov, I. K.; Vigdorovich, V. I.; Vavresyuk, I. V.; Ugay, Ya. S.ORG: Voronezh State University (Voronezhskiy gosudarstvennyy universitet) ETITLE: Effect of electrolyte solution on phase transitions in intermetallic compounds

SOURCE: Elektrokimiya, v. 2, no. 2, 1966, 254-258

TOPIC TAGS: intermetallic compound, electrolyte, phase transition, magnesium alloy, x-ray analysis

ABSTRACT: Various alloys are treated in a 0.1 N HCl solution for periods ranging from 10 minutes to 6 hours to study the effect of electrolyte solutions on phase transitions of intermetallic compounds. Chemical analysis was used for studying the soluble products of the interaction, while x-ray techniques were used for analyzing the insoluble products. An RKD camera was used with copper emission ($\lambda K\alpha-1.537 \text{ \AA}$). Exposure time was 5-6 hours. The following compounds were studied: MgZn , MgZn_2 , Mg_2Cu , MgCu_2 , Mg_2Sn , Mg_3Sb_2 , In_2Bi and InBi . It was found that the intermetallic compounds MgZn and MgZn_2 dissolve uniformly, i. e. both components pass into solution in the same ratio in which they are present in the alloy. The dissolution of Mg_2Cu and MgCu_2 is selective--only the magnesium passes into solution, and the surface of the specimen is covered with a film which consists of metallic copper in the case of MgCu_2 , and of a combin-

Card 1/2

UDC: 541.13

L 34826-66

ACC NR: AP6017607

ation of metallic copper and $MgCu_2$ in case of Mg_2Cu . The formation of intermediate intermetallic compounds which are rich in the noble component may also be observed during dissolution of In_2Bi . Phase transitions with the formation of the noble component take place when Mg_2Sn and Mg_3Sb_2 are treated in hydrochloric acid, with the antimony passing into solution in quantities of 8-10% while the tin concentration in solution is only slightly less than its content in the alloy. The experimental data indicate that the formation of the new phase may be due to rearrangement of a surface layer with a defective crystal lattice, or to electrochemical reduction of the noble ions. Orig. art. has: 2 tables.

SUB CODE: 20, 11/ SUBM DATE: 19Feb65 / ORIG REF: 004/ OTH REF: 001

Card 2/2

L 06340-67 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WB
ACC NR: AP6030320 SOURCE CODE: UR/0153/66/009/003/0396/0400

AUTHOR: Vigdorovich, V. I.; Marshakov, I. K.; Ugay, Ya. A.

ORG: Physical Chemistry Department, Voronezh State University (Kafedra fizicheskoy khimii, Voronezhskiy gosudarstvennyy universitet)

TITLE: Corrosion behavior of magnesium-antimony alloys in halide solutions

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 3, 1966, 396-400

TOPIC TAGS: corrosion, magnesium alloy, antimony alloy, CORROSION RATE, Alloy PHASE DIAGRAM, HALIDE

ABSTRACT: The object of the work was a systematic study of the corrosion and electrochemical properties of magnesium-antimony alloys and their relationship to the phase diagram. The system contains the intermetallic compound Mg_3Sb_2 , a semiconductor. The composition and structure of the alloys (which all exhibited a p-type conductivity) were checked by chemical and metallographic analysis. The corrosion behavior was studied in 0.5 N NaCl, 0.5 N NaBr and 0.1 N HCl at room temperature. The corrosion rate was found to increase with decreasing pH. In alloys containing up to 77% Sb, it is determined by the work of Mg- Mg_3Sb_2 phase microcells, whose electrodes have a considerable potential difference. This work is controlled by the cathodic reaction of hydrogen reduction. The corrosion of alloys containing more than 77% Sb occurs in neutral solutions with oxygen depolarization at a slow rate which is largely determined by the spontaneous dissolution of the phase components. X-ray structural data

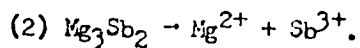
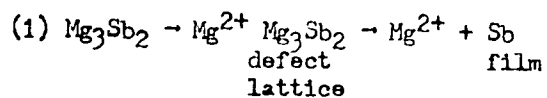
Cord 1/2

UDC: 620.193

L 06540-57

ACC NR: AP6030320

indicate that the corrosion of the intermetallic compound Mg_3Sb_2 involves two simultaneous processes:



Since the Sb content of the solution is 1.5-10%, 86 to 98% of the destruction of Mg_3Sb_2 is due to reaction (1). Orig. art. has: 4 figures and 3 tables.

SUB CODE: 11/ SUBM DATE: 11Sep64/ ORIG REF: 001/ OTH REF: 002

Card 2/2 *hlf*

LEYPUNSKIY, O.I.; KOLESNIKOV-SVINAREV, V.I.; MARSHAKOV, V.N.

Unsteady rate of powder burning. Dokl. AN SSSR 154 no.4:
907-909 F '64. (MIRA 17:3)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademi-
kom Ya. B. Zel'dovichem.

APR 1964
NW/JW/JWD
ACCESSION NR: AP4012977
S/0020/64/154/004/0907/0909

AUTHOR: Sleypunskiy, O. I.; Kolesnikov-Svinarev, V. I.; Marshakov, V. N. 31
36
B

TITLE: Unsteady combustion of powder

SOURCE: AN SSSR. Doklady, v. 154, no. 4, 1964, 907-909

TOPIC TAGS: powder combustion rate, smokeless propellant, unsteady combustion

ABSTRACT: Powder should burn at an unsteady rate when there are rather rapid changes in the flow of heat from the gaseous phase to the surface of the powder, according to Ya. B. Zel'dovich's theory on smokeless powder combustion [ZhETF, 12, v. 11-12 (1942); Zhurn. prikl. mekh. i tekhn. fiz., No 1 (1963)]. In this case the combustion should be completed in a period which is commensurate with the time for rearrangement of the heated layers at the surface of the powder. The unsteady combustion rate will be greater or less than the steady rate depending on the increase or decrease in the heat flux coming to the powder surface from the zone of chemical reaction in the gaseous phase which determines the combustion rate. For instance if there is an instantaneous pressure increase from p to p_1 , then $u_{un}(p_1)$; the unsteady combustion rate at p_1 , will be greater than $u_{st}(p_1)$. Conversely if the pressure drops sharply from p to p_1 , then $u_{st}(p_1) < u_{un}(p_1)$. The pressure p and rate of increase in pressure dp/dt were determined experimental-

Card 1/3

1-97028-65
ACCESSION NR: AP4012977

ly by burning a powder with surface S in a semiclosed volume V having an aperture of area σ . The pressure change in the chamber is given by the formula

$$\frac{f}{V} \frac{dp}{dt} = u_{un} \rho S - A p \sigma \quad (1)$$

where ρ is the density of the powder, f is the explosive force of the powder and A is the discharge coefficient for the powder gases.

Hence
$$u_{un} = \frac{f}{V \rho} \frac{dp}{dt} \frac{A p \sigma}{\rho S} \quad (2)$$

The steady combustion rate is obtained by setting (1) equal to zero (or $\frac{dp}{dt} = 0$).

$$u_{at} = \frac{A p_{at} \sigma}{\rho S} \quad (3)$$

A comparison of (2) and (3) (at $p = p_{at}$) gives

$$u_{un} - u_{st} = \frac{f}{V \rho S} \frac{dp}{dt} \quad (4)$$

The value of u_{un} may be determined from (2) or (4) by measuring dp/dt . The experiments indicated that a thick heated layer is formed at peak pressure when combustion takes place at atmospheric pressure. An unsteady combustion rate was

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L 37028-65
ACCESSION NR: AP4012977

observed under increasing pressure conditions. The actual peak pressure was half that predicted by the calculations. Peak duration was greater in some experiments than the calculated duration. These quantitative deviations are apparently due to incomplete combustion of the powder surface at atmospheric pressure. The value of u_{in}/u_{st} for this experiment was 1.23. Orig. art. has: 4 figures, 4 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 23May63

ENCL: 00

SUB CODE: MT, WA

NO REF SOV: 001

OTHER: 000

Card 3/3 / 20

GANCHARIK, M.N.; RUSETSKAYA, L.P.; MARSHAKOVA, M.I.

Photosynthetic intensity of potato leaves occupying different
levels of the plant. Sbor. nauch. rab. Bel. otd. VBC no.3:
169-173 '61. (MIRA 14:12)
(Photosynthesis)

GONCHARIK, M.N.; RUSSETSKAYA, L.P.; MARSHAKOVA, M.I.

Translocation of assimilates from potato leaves. **Biul.**

Inst. biol. AN BSSR no.6:123-129 '61.

(MIRA 15:3)

(PLANTS--ASSIMILATION)

(PHOTOSYNTHESIS).

GOROVETS, V.K.; MARSHAKOVA, M.I.

Incubation period of the causal organism of sugar beet mildew
(Peronospora Schachtii Fuck.). Dokl. AN BSSR 7 no.2:137-139 F '63.
(MIRA 16:7)

1. Beloursskiy gosudarstvennyy universitet imeni Lenina,
Predstavleno akademikom AN BSSR N.A. Dorozhkinym.
(Beet pests)

GOROVETS, V.K.; MARSHAKOVA, M.I.

Biology of the causative agent of downy mildew of sugar beets.
Bot.; issl.Bel.otsd.VBO no.7:53-59 '65.

(MIRA 18:12)

GONCHARIK, M.N.; MARSHAKOVA, M.I.; RUSetskAYA, L.P.

Characteristics of the translocation of assimilates in potato plants. Dokl. AN BSSR ^o no.2:133-135 F '65.

(MIRA 18:5)

1. Institut eksperimental'noy botaniki i mikrobiologii AN BSSR.

S/078/61/006/008/015/018
B127/B226

AUTHORS: Palkin, A. P., Marshakova, T. A., Vinokurova, A. C.

TITLE: Reactions of indium chloride with aluminum in the melt

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 8, 1961, 1971-1972

TEXT: The authors studied the system $\text{InCl}_3 + \text{Al} \rightarrow \text{AlCl}_3 + \text{In}$ by means of thermographical, chemicoanalytical, and spectroscopic methods. 99.98% chemically pure Al was used for the purpose. Anhydrous InCl_3 was produced by chlorination of indium oxide in the presence of carbon at 600°C. The indium oxide was contained in poorly meltable glass cylinders in a circular furnace; the chlorine was dried in Tishchenko cylinders by concentrated H_2SO_4 . Then, H_2SO_4 was removed, the furnace heated, and after reaction, InCl_3 was cooled in a Cl_2 -containing CO_2 flow. Working with hygroscopic InCl_3 demanded various precautions, wherefore a modified Stepanov vessel was used. The Al and In weighed-in portions were filled into the vessel, and evacuated to $5 \cdot 10^{-2}$ mm Hg. For the six reactions, a diagram was

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Reactions of indium...

S/078/61/006/000/015'010
B127/B226

recorded by the Kurnakov pyrometer. The reaction proceeded in the range of 415 - 450°C showing a high exothermic effect. The metallic regulus obtained was washed in hot water and weighed. The quantity of aluminum consumed in the reaction was calculated by the method of I. P. Polyuzh (Ref. 1: Zh. neorgan. khimii, 4, 236 (1959)), and part of the regulus was analyzed by the polarographic method. It was shown that the reaction proceeds vigorously toward the formation of indium. The regulus was melted again with InCl_3 , and by spectrum analysis, the indium obtained proved to be not absolutely free from Al. The analytical results are given in two figures (Figs. 2, 3) and a table. There are 3 figures, 1 table, and 2 Soviet-bloc references.

Submitted: December 8, 1960

24.7700

36469

S/181/62/004/003/007/045

B102/B104

AUTHORS: Usov, Ya. A., Averbakh, Ye. M., Marshakova, T. A., and Matveyev, O. V.

TITLE: Some electrical properties of the intermetallic semiconducting compound Cd_4Sb_3 doped by various impurities

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 615 - 617

TEXT: In order to determine the effect of Ag, Cd, In, Sn, Pb, Sb, and Te impurities in quantities of up to 1 at% on Cd_4Sb_3 , the temperature dependence of conductivity in the range 20 - 300 °C, the Hall constant, and the thermo-emf at room temperature were measured. d - c measurements were made with a two-probe compensation method; the thermo-emf was determined with respect to copper; the field strength in the slit of the electromagnet was 2500 oe. Cd_4Sb_3 (impurity concentration $2.1 \cdot 10^{-3}\%$) was fused together with the doping metals (purity 99.996%) in evacuated quartz ampoules. The conduction type of the stoichiometric Cd_4Sb_3 (p-type) was changed only by Te impurities.
Card 1/3

S/181/62/004/003/007,045
B102/B104

Some electrical properties ...

Composition	Thermo-emf $\mu\text{V}/\text{deg}$	Conductivity (ohm $\cdot\text{cm}$) ⁻¹	Carrier mobility $\text{cm}^2/\text{v}\cdot\text{sec}$
Cd_4Sb_3	+100	30	900
with Ag	+47	4000	200
with In	+130	80	45
with Te	+29 or -77	2500 or 5100	345 or 1035

The forbidden band width as determined from the $\log \sigma$ versus $(1/T)$ curve was 1.25 ev. Cd_4Sb_3 of stoichiometric composition has a carrier concentration of $2.10 \cdot 10^{17} \text{ cm}^{-3}$. Sb additions increase this value up to $\sim 10^{15} \text{ cm}^{-3}$, the other metals even up to $\sim 10^{19} \text{ cm}^{-3}$. The Cd-Sb alloy consists of Cd_4Sb_3 and Cd_4Sb_3 . The stoichiometric and the Te-doped samples (p-type) show rectifying properties; the Te-doped samples also show a range of negative resistivity in the back direction. If the current is raised to more than 4 ma the rectifying effect vanishes. There are 2 figures, 1 table, and 5 Soviet references.

Card 2/3

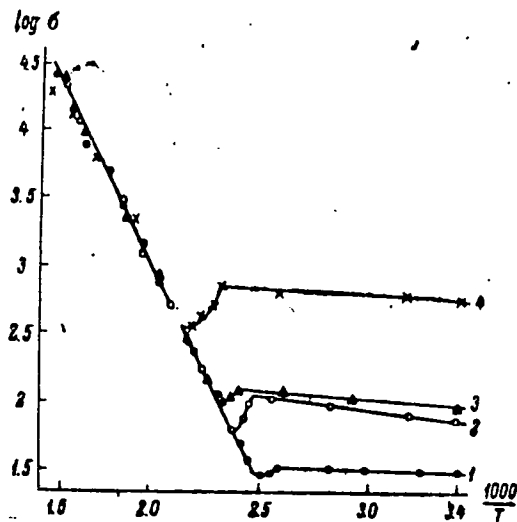
Some electrical properties ...

S/181/62/004/003/007/045
B102/B104 .

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: October 2, 1961

Legend to Fig. 1: (1) Cd_4Sb_3 ,
(2) Cd_4Sb_3+In , (3) $\sim+Sb$,
(4) $\sim+ Cd$.



Card 3/3

Marshakova, I.A.

AID Nr. 979-7 29 May

CHEMICAL BOND IN SEMICONDUCTING COMPOUNDS OF Zn AND Sb (USSR)

Ugay, Ya. A., Ye. P. Domashevskaya, and T. A. Marshakova. Zhurnal
strukturnoy khimii, v. 4, no. 2, Mar 1963, 250-253.

S/192/63/004/002/001/002

Short-range interatomic order in the semiconducting compounds Zn_3Sb_2 , $ZnSb$, and Zn_4Sb_3 has been studied by x-ray spectroscopy at the Veronezh State University. The $K\alpha_1$ and $K\alpha_2$ lines of Zn in all three compounds were observed to shift toward the short-wavelength region as compared with the same lines in Zn metal. The shift, which increased in the order $Zn_3Sb_2 < ZnSb < Zn_4Sb_3$, is attributed partly to an assymetric distribution of density in the electron cloud. This distribution is responsible for a decrease in the shielding effect of the valence electrons and, thus, for an increase in the effective charge of the cationic nucleus. The shift is ascribed in part also to the difference in valency of the cationic element in each compound. The shift of the $K\alpha_1$ and $K\alpha_2$ lines per unit of "formal" valency, that is, the ratio of the total number of valence

Card 1/2

AID Nr. 979-7 29 May

CHEMICAL BOND [Cont'd]

S/192/63/004/002/001/002

electrons in Sb to the number of Zn atoms in the compound, was shown to increase in the order $ZnSb < Zn_3Sb_2 < Zn_4Sb_3$. The contribution of the ionic bond increases in the same order and is correlated with the semiconducting properties of the compounds. The same correlation exists in the series $CdSb$, Cd_3Sb_2 , and Cd_4Sb_3 ; that is, the widths of the forbidden zone in these semiconductors increase in the same order as the ionic-bond contribution. [JK]

Card 2/2

UGAY, Ya.A.; MARSHAKOVA, T.A.; GONCHAROV, Ye.G.

Effect of the nature of the chemical bond on the solubility
of inorganic substances in the solid state. Zhur.neorg.khim.
8 no.1:177-185 Ja '63. (MIRA 16:5)
(Chemical bonds) (Solutions, Solid)

L 17734-66 BWT(m)/BWP(t) IJP(c) JD/GS

ACC NR: AT6006177

SOURCE CODE: UR/0000/65/000/000/0347/0355

AUTHOR: Ugay, Ya. A.; Donashevskaya, E. P.; Marshakova, T. A.

37
35
B+1

ORG: none

TITLE: X-ray analysis of semiconducting cadmium compounds containing antimony, oxygen, and sulfur. 27

SOURCE: Khimicheskaya svyaz' v poluprovodnikakh i tverdykh telakh (Chemical bond in semiconductors and solids). Minsk, Nauka i tekhnika, 1965, 347-355

TOPIC TAGS: x ray, semiconductor band structure, cadmium compound, antimony compound, oxygen compound, sulfur compound, x ray absorption spectrum

ABSTRACT: The location of the $L_{\beta 15.2}$ emission band of cadmium in $CdSb$, Cd_3Sb_2 , Cd_5Sb_3 , CdS , and CdO as compared to its location in metallic cadmium is studied by the Johann x-ray technique. The $3K_{\alpha 1}$ line of arsenic was also used as a reference. The location of the fundamental L_{III} absorption limit of cadmium in these compounds as compared to its location in the metal; was studied using the standard

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2