

SHIDLOVSKAYA, Yu. S.

62 ✓ Determination of iron in its various forms in natural waters. Yu. S. Shidlovskaya-Ovchinnikova (V. V. Kulyshchev Building Eng. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 90, 615-17(1953).—Fe⁺⁺⁺ and Fe⁺⁺ were detd. colorimetrically with HSC₂H₃CO₂H and α,α'-dipyridyl, resp. Complex Fe was detd. following prolonged boiling of the acidified soln. with KMnO₄ and subsequent reduction to Fe⁺⁺.
Gary Gerard

SHIDLOVSKAYA-OVCHINNIKOVA, Yu. S.

Chem ✓ Determination of the different forms of iron in natural waters. Yu. S. Shidlovskaya-Ovchinnikova (Building Eng. Inst., Moscow). *Gidromet. Zh.* 24, 33-5 (1955); cf. C.A. 49, 15515d. — Fe⁺⁺ was detd. colorimetrically by adding 0.1 ml. of 0.5% o.o'-bipyridyl in 0.001N HCl soln. at pH 4 (the buffer soln. consisted of equiv. amt. of 5.5N AcOH and N AcONa to 10 ml. water); 0.5 γ Fe⁺⁺ can be detd. The Fe⁺⁺⁺ was detd. by adding 2 ml. 10% sulfosalicylic acid soln. at pH 4 to 10 ml. water and measuring the red-violet color obtained; 1 γ Fe⁺⁺⁺ in 10 ml. can be detd. To det. colloidal and complexly bound Fe 100-50 ml. of water, 6 ml. 25% H₂SO₄, and 12 ml. 0.1N K₂MnO₄ were boiled in 1.0-1.5 hrs. to 15 ml. vol., 10 ml. 0.1N oxalic acid was added, excess oxalic acid removed by K₂MnO₄, and the soln. neutralized with 16 ml. NaOAc and dil'd. to 50 ml.; to a 10-ml. aliquot was added 1 ml. Na₂SO₄ and Fe detd. colorimetrically. N. Charmandarian

SHIDLOVSKAYA, Yu.S., dots.

Using a new method for determining the calcium ion concentration in studying cement corrosion in water-salt solutions.

Nauch.dokl.vys.shkoly; stroi. no.2:197-199 ' 58.

(MIRA 12:1)

(Corrosion and anticorrosives) (Cement) (Calcium--Analysis)

SHIDLOVSKAYA Yu. S.

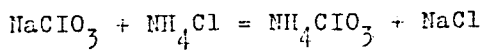
62-58-4-1/32

AUTHORS: Kapustinskiy, A. F., Shidlovskiy, A. A., Shidlovskaya, Yu. S.

TITLE: The Heat of Formation of Ammonium and Alkaline Metal Halogenates (Teploty obrazovaniya galogenatov ammoniya i shchelochnykh metallov)

PERIODICAL: Investiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 4, pp. 385-388 (USSR)

ABSTRACT: Only few experimental data have been published on the heat of formation until now. Kast started from the condition - which later on turned out not to be quite correct - that the reaction of the ion exchange between solid salts



takes place neither exothermic nor endothermic. Starting from this condition he calculated the formation of heat of ammonium chloride (approximately equal to 62,7 kkal/g-mol.). These data are the more interesting for thermochemistry as

Card 1/2

62-58-4-1/32

The Heat of Formation of Ammonium and Alkaline Metal Halogenates

some of these substances play an essential part in pyrotechnics. The authors carried out measurements with NH_4JO_3 and NaBrO_3 in order to approach the evaluation of some still unknown constants by means of the results achieved. By means of the calorimetric method the standard heats of ammonium iodide and sodium bromide were determined (NH_4JO_3 cryst. $\Delta H_{298} = -94,0 \pm 0,2$ kkal/mol and NaBrO_3 cryst $\Delta H_{298} = -76,8 \pm 0,5$). By means of the method of constant equilibria the unknown heat of formation of some ammonium salts were calculated. There are 10 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleeva (Moscow Chemical-Technological Institute imeni D. I. Mendeleev)

SUBMITTED: February 4, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Ammonium metal halogens--Heat of Formation 2. Alkaline metal halogens--Heat of Formation

KAPUSTINSKIY, A.F.; SHIDLOVSKIY, A.A.; SHIDLOVSKAYA, Yu.S.

Heat of formation of ammonium and alkali metal halogenates.
Izv. AN SSSR Otd. khim. nauk no.4:389-402 Ap '58. (MIRA 11:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i
Institut fizicheskoy khimii Akademii nauk SSSR.
(Nitrogen) (Adsorption) (Carbon, Activated)

SHIDLOVSKAYA-OVCHINNIKOVA, Yu.S.

Development of methods for a quantitative determination of dissolved nonionic iron in natural fresh waters. *Gidrokhim. mat.* 35:168-176 '63. (MIRA 16:7)

1. Moskovskiy inzhenerno-stroitel'nyy institut imeni V.V.Kuybysheva, kafedra neorganicheskoy khimii.
(Water--Composition) (Iron)

SHIDLOVSKAYA-OVCHINNIKOVA, Yu.S.

Quantitative determination of suspended iron in natural fresh-
water. *Gidrokhim. mat.* 38:131-136 '64.

(MIRA 18:4)

1. Moskovskiy inzhenerno-stroitel'nyy institut.

SHIDLOVSKIY, A. inzhener

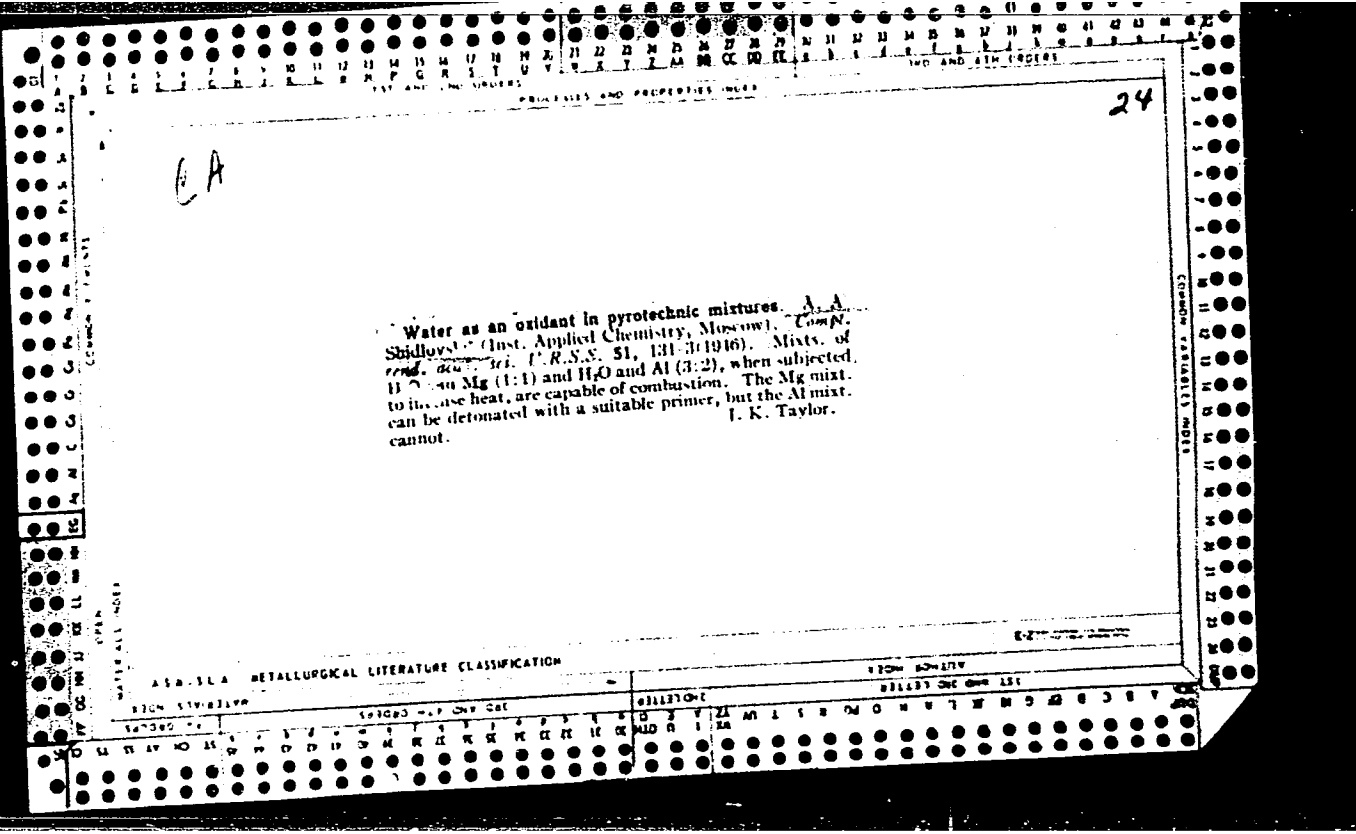
Removal of metal arched set in exhausting a drift. Mast. ugl. ⁴
no.3:21-22 Mr '55. (MLRA 8:6)
(Mine timbering)

22

M

EXPLOSIVE MIXTURES OF WATER WITH MAGNESIUM AND ALUMINIUM. A. A. SHIDLOVSKY (Zhur. Priklad. Khim., 1946, 19, 371-378; C. Abs., 1947, 41, 1105).—[In Russian]. On the basis of theoretical calculations of heat evolution, mixtures of magnesium or aluminium with water or alcohols are potentially more powerful explosives than the usual military materials, with methyl alcohol-magnesium giving max. gas evolution. The experiments were conducted in bombs or lead enclosures with tetryl detonators to set off the mixture of the powdered metal and the liquid. All mixtures were shown to be powerfully explosive, water-magnesium being most sensitive to shock; water-aluminium and methyl alcohol-magnesium were less sensitive and required a booster detonator. Photographs of the exploded vessels and bombs are presented.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



1. SHIDLOVSKIY, A. A., GRANMERSEV, S. A.
2. USSR (600)
4. Chromates
7. Investigation of the combustion of inorganic salts, ammonium dichromate and trichromate, *Zhur. prikl. khim.* 26, no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Unclassified.

SHIDLOVSKIY, A. A.

Combustion of ammonium dichromate and trichromate.
A. A. Shidlovskii and S. A. Oranzherev. *J. Appl. Chem.*
U.S.S.R. 26, 23-8 (1953) (Engl. translation). See *C.A.* 47,
6226g. H. L. H.

SHIDLOVSKIY, A.A.

[Principles of pyrotechnics] Osnovy pirotekhniki. Izd. 2., perer.,
Dopushcheno v kachestve uchebnogo posobija dlia khimiko-tekhnolgi-
chaskikh vuzov i fakul'tetov. Moskva, Gos.izd-vo oboronnoi promysh-
lennosti, 1954. 284 p. (MLRA 8:4)
(Military fireworks)

SHIDLOVSKIY, A-A.

0009

Thermochemistry of complex compounds. III. Method of determination of intramolecular combustion of inorganic salts in a calorimetric bomb. The heat of formation of ammonium bichromate and trichromate. A. F. Kapustinski and A. A. Shidlovskii (D. I. Mendeleev Chem. Technol. Inst., Moscow). *Izvest. Sektora Platiny i Drug. Blagorod. Metal.; Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 30, 31-8(1955).--"Intramol. combustion" is the oxidation by O present as a mol. component. One defect of "bomb calorimetry" when used to det. the heat of formation of org. compds. is the fact that the heat of formation appears there as a difference between large heats of combustion each of which must be exceptionally accurate for reliable results. In inorg. chemistry the method offers reliable results (*ibid.* 27, 152, 100(1952)), and may be considered accurate within $\pm 2\%$. The heat of formation of $(NH_4)_2Cr_2O_7$ and of $(NH_4)_2Cr_2O_8$ was measured by the method and -430 ± 6 and -580 ± 6 kcal./mol. were found for the 2 salts. An attempt was made to expand the homologous-series concept of org. chemistry to inorg. compds., and the heat of formation of the 3rd member of the CrO_x (hypothetical) member of the homologous series, $(NH_4)_2Cr_3O_{11}$, was calcd. to be 730 ± 10 kcal./mol. IV. The synthesis and heat of formation of cobalt chloride diacetate. A. F. Kapustinski and V. A. Solokhin. *Ibid.* 39-43.--The heat of soln. of $CoCl_2$ in water found experimentally (19.5) confirms the value obtained by Katzin and Ferraro (*C.A.* 47, 11930b) of 18.6 kcal./mol. A cryst. diacetate $CoCl_2 \cdot 2CH_3COCH_3$ was synthesized, and the heat of its formation at 18° was -11.0 kcal./mol.

W. M. Sternberg

2

RM

SHIDLOVSKIY, A.A.

6

Chem

The theory of chemical structure of isopoly and heteropoly compounds. A. F. Kamustjinski and A. A. Shidlovskij (D. I. Mendeleev Chem. Technol. Inst., Moscow). *Izvest. Sektora Plazmy i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 30, 44-66 (1955).—The Molatti-Rosenheim (M., *C.A.* 2, 2346; R. and Jänicke, *C.A.* 12, 1824) and Pfeiffer (*C.A.* 14, 241) explanations of structures of poly compds. are inadequate, and a theory is developed, based on spatial models, that eliminates the apparent contradictions existing in the structure of complex compds. It permits designing plane electron-structural formulas for structure, the conversion of spatial representations to plane projections being considered. The heat of combination of an MO_n group to a central MO_n decreased with an increase in the group no. and tends to approach a min. as it approaches the coordinational satn. On the other hand, the heat of formation in a homologous series of isopoly salts from the elements is approx. proportional to the no. of atoms in combination with the anion O. The exptl. thermochem. data thus confirm the proposed spatial model of isopoly compds. The H₂O mols. in the heteropoly crystal hydrates are distributed in the outer anion layer, H bonds being formed with the O of the complex tetrahedrons (or octahedrons) of the preceding layer. A "water-bridge" concept is introduced of a chain of (3) water mols. as the binding unit in the heteropoly anion hydrates. The nonadherence of some isopoly and heteropoly compds. to the laws of const. and multiple proportions can be explained from the viewpoint of daltonides and bertholides. The consideration of inert-gas hydrates as a highest form of oxygen acids permits prediction of the compn. of the crystal hydrates of the inert gases. The proposed structure formulas of heteropoly acids explain the experimentally found high acidity of these acids, which exceeds the acidity to be expected from stoichiometric considerations. New coordination formulas of isopoly and heteropoly compds. are proposed, which show graphically the anion-layer structure of these complex mols.

W. M. Sternberg

R/M

SHIDLOVSKIY, A. A.

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-
Chemical Analysis. Phase Transitions. B-8

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26084

Author : A.A. Shidlovskiy
Inst : Moscow Institute of Chemistry and Technology
Title : To The Thermochemical Theory of the Influence of Salt Addi-
tions on Speed of Thermal Decomposition of Ammonium Nitrate.

Orig Pub : Tr. Mosk. khim.-tekhnol. in-ta, 1956, vyp. 22, 84-88

Abstract : The influence of the addition (1 to 2%) of various inorganic substances on the speed of decomposition of NH_4NO_3 at 180 to 200° was studied. A chemical and thermochemical explanation of the accelerating action of Cr^{6+} and Cr^{3+} compounds, metal chlorides, KHalO_3 , NaNO_2 and others is given, and the kinetics of the acceleration of the thermal decomposition of salt melts by any ionized addition is investigated.

Card : 1/1

SHIDLOVSKIY, A.A., kandidat tekhnicheskikh nauk.

~~SHIDLOVSKIY, A.A.~~
Anatolii Fedorovich Kapustinskii; on his fiftieth birthday. Khim.
nauka i prom. 2 no.2:248-249 '57. (MIRA 10:6)
(Kapustinskii, Anatolii Fedorovich, 1907-)

SHIDLOVSEIY, A.A., kandidat tekhnicheskikh nauk.

Statistics of the discovery of chemical elements.
no.6:106 Je '57.

Priroda 46
(MIRA 10:7)

1. Moskovskiy khimiko-tekhnologicheskii institut im. D.I.Mendeleyeva
(Moskva).

(Chemical elements)

5(1)
AUTHOR:

Shidlovskiy, A. A.

SOV/153-58-3-19/50

TITLE:

Thermal Decomposition and Combustion of Ammonium Nitrate at Atmospheric Pressure With Various Additions (Termicheskoye razlozheniye i goreniye pri atmosfernom davlenii ammiachnoy selitry s razlichnymi dobavkami)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp 105 - 110 (USSR)

ABSTRACT:

The most effective catalysts causing the self-decomposition of ammonium nitrate, are chromium and copper compounds, among others (Ref 4). However, the reaction mechanism, especially that of various chromium salts, is not yet clear and needs further investigations (Ref 4). The author investigated the processes mentioned in the title with additions of chromium (VI), chromium (III) compounds, as well as with copper (II) chloride. Additions of ammonium, potassium and sodium chromates and bichromates (10%) were tested. The mixtures stuffed into glass tubes were ignited by a small nickel-chromium wire caused to glow by electric current. The measurement results are given in table 1. It is striking that the combustion velocity with additions of potassium

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Thermal Decomposition and Combustion of Ammonium
Nitrate at Atmospheric Pressure With Various Additions

SOV/153-58-3-19/50

salts is several times that of the combustion velocity with additions of ammonium salts. The catalytic effect is attributed to the ions CrO_4^{2-} and $\text{Cr}_2\text{O}_7^{2-}$. The potassium ion probably plays the role of the accelerator. Additions between 5 and 10% have little effect upon the combustion velocity. Additions below 2% cause no constant combustion (Table 2). The diameter of the tube (between 3,4 and 1,7 cm) is of no importance to the combustion velocity. The combustion temperature was between 350 and 410°. It was proved that the 5% addition of potassium bichromate decreased the decomposition temperature of ammonium nitrate (energetic decomposition at about 250°) down to 215°. From the analysis of the combustion products the author set up an equation of the reaction of a flameless combustion in the presence of potassium bichromate that corresponds to a heat formation of 528 cal/g of the mixture. In the calorimeter, however, this heat quantity amounted to 480 cal/g. Therefore the equation must be regarded as approximate. About 60 - 70% of the compound of hexavalent chromium may be found in an

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2

Thermal Decomposition and Combustion of Ammonium
Nitrate at Atmospheric Pressure With Various Additions

SOV/153-58-3-19/30

unchanged form in the slag residue. In the formed thick smoke water-soluble compounds of trivalent chromium were found. After an unsuccessful test of several other compounds as additions the author used such additions only which increase the velocity of the thermal decomposition of saltpeter at 200° several times. Table 4 gives the results. It may be seen from these results that besides the salts of chromium (VI) also chromium trioxide CrO_3 , copper chloride (II) and iron chloride (III) are such additions. The effect of the potassium "halogenates" KClO_3 and KBrO_3 (Fig) is low.

It has probably another mechanism (Ref 4). Table 5 shows some more compounds that form continuously burning mixtures. The catalytic effect of the efficient compounds in burning ammonium nitrate is mainly based on the acceleration of the thermal decomposition of the condensed phase of the salt-peter melt. This is shown by the equations (1) and (2). There are 1 figure, 5 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION:

Card 3/3

Moskovskiy khimiko-tekhnologicheskii institut imeni D. I.
Mendeleyeva (Moscow Institute of Chemical Technology);

Chair of General & Inorganic Chem.

SHIDLOVSKIY, A.A.

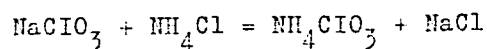
62-58-4-1/32

AUTHORS: Kapustin'skiy, A. F., Shidlovskiy, A. A., Shidlovskaya, Yu. S.

TITLE: The Heat of Formation of Ammonium and Alkaline Metal Halogenates (Teploty obranovaniya galogenatov ammoniya i shchelochnykh metallov)

PERIODICAL: Investiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 4, pp. 385-388 (USSR)

ABSTRACT: Only few experimental data have been published on the heat of formation until now. Kast started from the condition which later on turned out not to be quite correct - that the reaction of the ion exchange between solid salts



takes place neither exothermic nor endothermic. Starting from this condition he calculated the formation of heat of ammonium chloride (approximately equal to 62,7 kkal/g-mol.).

Card 1/2

These data are the more interesting for thermochemistry as

62-53-4-1/32

The Heat of Formation of Ammonium and Alkaline Metal Halogenates

some of these substances play an essential part in pyrotechnics. The authors carried out measurements with NH_4JO_3 and NaBrO_3 in order to approach the evaluation of some still unknown constants by means of the results achieved. By means of the calorimetric method the standard heats of ammonium iodide and sodium bromide were determined (NH_4JO_3 cryst. $\Delta H_{298} = -94,0 \pm 0,2$ kkal/mol and NaBrO_3 cryst $\Delta H_{298} = -76,8 \pm 0,5$). By means of the method of constant equilibria the unknown heat of formation of some ammonium salts were calculated. There are 10 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleeva (Moscow Chemical-Technological Institute imeni D. I. Mendeleev)

SUBMITTED: February 4, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Ammonium metal halogenates--Heat of Formation 2. Alkaline metal halogenates--Heat of Formation

KAPUSTINSKIY, A.F.; SHIDLOVSKIY, A.A.; SHIDLOVSKAYA, Yu.S.

Heat of formation of ammonium and alkali metal halogenates.
Izv. AN SSSR Otd. khim. nauk no.4:389-402 Ap '58. (MIRA 11:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i
Institut fizicheskoy khimii Akademii nauk SSSR.
(Nitrogen) (Adsorption) (Carbon, Activated)

Shidlovskiy, P. H.

11. P000

82107
S/153/60/003/03/02/009
B016/B055

AUTHOR: Shidlovskiy, A. A.

TITLE: Intramolecular Combustion Capacity of Inorganic ²⁷ Ammonium Salts

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i
khimicheskaya tekhnologiya, 1960, Vol. 3, No. 3, pp. 405-407

TEXT: The author discusses publication data on the intramolecular combustion of several ammonium salts (Refs. 7, 12, 13). He believes that even in these substances under certain conditions a constant propagation of the combustion process is possible. Data on the heat of formation and heat of decomposition of 11 ammonium salts are listed in Table 1. It is of interest that the heat of formation of ammonium bromate does not represent the mean value of the heats of formation of NH_4ClO_3 and NH_4IO_3 , but that it is much lower. The same holds for the heats of formation of the bromates, chlorates, and iodates of the alkali metals (Ref. 14). The author suggests the following method to bring about a constant combustion

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82107

Intramolecular Combustion Capacity of Inorganic
Ammonium SaltsS/153/60/003/03/02/009
B016/B055

of substances which do not burn at 1 atm and 20°C: 1) addition of a catalyst which accelerates the thermal decomposition of the salt, 2) an increase of external pressure, 3) an increase of initial temperature. By combustion of several ammonium salts in a manometric bomb (Table 2), the author found that at $p \geq 75$ atm ammonium nitrate tablets burn evenly without any admixture. Ammonium perchlorate burns at $p \geq 127$ atm (in agreement with Ref. 8). An admixture of 10% MnO_2 causes NH_4ClO_4 , packed into a glass tube, to burn at a rate of 0.05 cm/s at atmospheric pressure and room temperature. The author, in collaboration with L. F. Shmagin, showed that the same holds for ammonium perchlorate containing 5% $CuCl$ or $CuCl_2 \cdot 2H_2O$. It is evident from Table 1 that the heats of decomposition of NH_4IO_3 and $(NH_4)_2CrO_4$ are low. Ammonium iodate burned up completely at increased pressure (Table 2) developing a pressure of 523 atm. On ignition at increased pressure, ammonium chromate burned up incompletely. Apart from green powdery Cr_2O_3 , its combustion products contained considerable amounts of the yellow-orange initial substance. Thus NH_4NO_3 ,

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LH

Intramolecular Combustion Capacity of Inorganic
Ammonium Salts

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S/153/60/003/03/02/009
B016/B055

NH_4ClO_4 , and NH_4IO_3 are capable of a smooth intramolecular combustion. Data obtained are summarized in Table 1 giving calculated heats of decomposition. There are 2 tables and 21 references: 10 Soviet, 1 American, 4 German, 1 Italian, and 1 British.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya; Kafedra obshchey i organicheskoy khimii (Moscow Institute of Chemical Machine Construction, Chair of General and Organic Chemistry)

SUBMITTED: October 27, 1958

Card 3/3

LH

82564

S/080/60/033/06/05/006

5.4700 11.8000

AUTHORS: Shidlovskiy, A. A., Semishin, V. I., Simutin, V. I.TITLE: Thermal Decomposition and Burning of Hydrazine Nitrate

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 6, pp. 1411-1413

TEXT: The thermal stability of hydrazine nitrate and its capacity of steady burning were investigated. The formation heat of hydrazine nitrate from elements is 59.8 kcal/g-mole. At high temperatures starting from 180°C hydrazine nitrate $N_2H_4 \cdot HNO_2$ is a substance with lower thermal stability than ammonium nitrate. At 270°C its ignition is observed. The addition of potassium bichromate to hydrazine nitrate reduces its thermal stability. Under the conditions of room temperature and atmospheric pressure it cannot burn steadily in a pipe of 20 mm in diameter. In conformity with the theory of burning developed by Andreyev (Ref. 16) hydrazine nitrate acquires the ability of steady burning at atmospheric pressure in a 20mm-pipe in two cases: a) when it is heated preliminarily to a temperature of no less than 90-100°C; b) when a small quantity of a substance reducing its thermal stability and catalyzing burning is added, viz., potassium bichromate. The addition of potassium bichromate makes it possible to burn a mixture of hydrazine nitrate with

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S/080/60/033/06/05/006

Thermal Decomposition and Burning of Hydrazine Nitrate

ammonium nitrate at atmospheric pressure. There is 1 graph and 16 references:
3 Soviet, 4 French, 3 English, 2 German, 2 American, 1 Canadian and 1 Swiss. ✓

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow
Institute of Chemical Machine Building)

SUBMITTED: November 12, 1959

Card 2/2

KUDRYAVTSEV, Aleksandr Andreyevich; STEPANOV, M.N., starshiy nauchnyy sotr.,
kand. tekhn. nauk, retsenzent; SHIDLOVSKIY, A.A., doktor tekhn.
nauk, prof., retsenzent; TANANAYEV, I.V., akademik, prof., doktor
khim. nauk, red.; PLETNEVA, N.B., red.; ALAVERDOV, Ya.G., red. izd-
va; VORONINA, R.K., tekhn. red.

[Chemistry and technology of selenium and tellurium] Khimia i
tekhnologiya selena i tellura. Pod red. I.V.Tananaeva. Moskva,
Gos. izd-vo "Vysshaya shkola," 1961. 284 p. (MIRA 14:10)

1. Deystvitel'nyy chlen AN SSSR (for Tananayev).
(Selenium) (Tellurium)

SHIDLOVSKIY, A.A.; VALKINA, K.V.

Heat of formation of sodium iodate and dichromate and of ammonium
chloroplatinate. Zhur. fiz. khim. 35 no.2:294-297 F '61.

(MIRA 16:7)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.
(Sodium salts) (Ammonium salts)
(Heat of formation)

SHIDLOVSKIY, A.A.; SHMAGIN, L.F.

Thermal decomposition and combustion of ammonium perchlorate.
Izv.vys.uch.zav.; khim.i khim.tekh. 5 no.4:529-~~532~~ '62.
(MIRA 15:12)

1. Moskovskiy institut khimicheskogo mashinostroyeniya,
kafedra obshchey i organicheskoy khimii.

(Ammonium perchlorate)

(Combustion)

S/080/62/035/003/006/024
D258/D302

112100
AUTHOR:

Shidlovskiy, A. A.

TITLE:

Combustion of inorganic salts-ammonium iodate and hydroxylamine sulfate

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 3, 1962, 511-516

TEXT: The author attempted to prove that every chemical system capable of undergoing an exothermal reaction, is also able to undergo combustion under suitably chosen conditions. Ammonium iodate and hydroxylamine sulfate were chosen for demonstration because of their reduced heats of decomposition and their inertness towards ignition. Specifically, quantities of both salts were tightly packed into glass tubes and electrically ignited. Complete combustion of NH_4IO_3 under atmospheric pressure was achieved at room temperature only by admixing 10% of $\text{K}_2\text{Cr}_2\text{O}_7$ or Cu_2Cl_2 . The pure salt burned only after heating it at 60°C and more, prior to ignition.

Card 1/3

Combustion of inorganic ...

S/080/62/035/003/006/024
D258/D302

NH_4IO_3 burned within 0.27 sec when ignited in a manometric bomb under an initial pressure of 127 atm. Similarly, $(\text{NH}_3\text{OH})_2\text{SO}_4$ was ignited in 2.0 cm glass tubes and underwent complete combustion at room temperature and atmospheric pressure in the presence of 10% and less of MnO_2 , $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$, and especially Cu_2Cl_2 ; combustion without catalyst was achieved only at 100°C . These results are in agreement with the author's supposition. There are 3 tables and 13 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: J. Taylor, Ind. Chem., 24, 289, (1948); R. Friedman, R. G. Nugent, K. E. Rumbel and A. C. Scurlock, Sixth Symposium on Combustion, N.-Y., 612, (1957); W. H. Ross, Pr. Trans. Nova Scotian Inst. Sci., 11, 98, (1902/1906) cited by Gmelin's Handbuch, 23, (1936); F. Rossini, D. Wagman, W. Evans, S. Levin and J. Yaffe, Selected values of chemical thermodynamic Properties, Washington (1952).

Card 2/3

Combustion of inorganic ...

S/080/62/035/003/006/024
D258/D302

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya
(Moscow Institute of Chemical Machine Construction)

SUBMITTED: September 24, 1960

Card 3/3

3615a

S/080/62/035/004/004/022
D204/D301

11-2110

AUTHORS: Shidlovskiy, A. A., Semishin, V. I. and Shmagin, L. F.

TITLE: Thermal decomposition and combustion of hydrazine perchlorate

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 4, 1962, 756-759

TEXT: The above was studied as an extension of the authors' earlier work on NH_4^+ and N_2H_4 salts. Thermochemical and physico-chemical properties of hydrazine perchlorate were investigated and the preparation and analysis (iodometric) are described in brief. The density was found to be 1.927 g/cm^3 , heat of solution at 298°K 9.77 kcal/mole for 1:1000 dilution, heat of formation 42.9 kcal/mole and m.p. $140.5 - 141.0^\circ\text{C}$. Sensitivity to impact and friction was high (greater than NH_4ClO_4). Thermal decomposition was studied by heating the samples for 6 minutes at set temperatures, between 160°C (no decomposition) and 240°C (5.4% loss in weight). Fast

Card 1/3

X

Thermal decomposition and ...

S/080/62/035/004/004/022
D204/D501

combustion took place at 250°C. Comparative studies showed NH_4ClO_4 to be more stable to heating. Addition of 5% MnO_2 decreased the flash point of $\text{N}_2\text{H}_4\cdot\text{ClO}_4$ from 277 - 283 to 254 - 259°C and that of 5% CuCl_2 caused an explosion at ~170°C. Combustion measurements showed that pure $\text{N}_2\text{H}_4\text{ClO}_4$ burned only very slowly at room temperature and atm. pressure but the rate could be appreciably increased by 5% additions of MnO_2 , Cu_2Cl_2 or CoO . The order of effectiveness was $\text{Cu}_2\text{Cl}_2 > \text{CoO} > \text{MnO}_2$ and combustion was 2 - 3 times faster than that of NH_4ClO_4 under the same conditions. There are 1 table and 17 references: 5 Soviet-bloc and 12 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: F. Audrieth, B. A. Ogg, The Chemistry of Hydrazine, N. Y., (1951); C. Gilbert, Cobb, J. Am. Chem. Soc., 57, 39, (1935); J. Barlot, S. Marsaule, C. r., 228, 1497, (1949); L. Medard, Mem. de l'artill. Franc. 2me fasc., 447, (1954). X

Card 2/3

Thermal decomposition and ...

S/080/62/035/004/004/022
D204/D301

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya
(Moscow Institute of Chemical Machine Construction)

SUBMITTED: October 24, 1960

Card 3/3

X

SHIDLOVSKIY, A.A.

Heat of formation of ammonium selenate and ammonium hexachloro-
stannate. Zhur.fiz.khim. 36 no.8:1773-1776 Ag '62. (MIRA 15:8)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.
(Aluminium selenate) (Ammonium stannate)
(Heat of formation)

L 17949-63 EPR/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/ASD/RPL Pg-4/Pr-4 WW/

JD/JW/JWD/H
ACCESSION NR: AT3006089 S/2938/63/000/000/0401/0403

AUTHOR: Shidlovskiy, A. A. 72

TITLE: Thermal decomposition of ammonium nitrate

SOURCE: Teoriya vzyvchatykh veshchestv, sbornik statey, 1963; 401-403

TOPIC TAGS: ammonium nitrate, explosive, chromium

ABSTRACT: Conditions for effecting complete thermal decomposition of molten ammonium nitrate were studied: A 2 to 3 wt.% of catalytic hexavalent chromium- CrO_3 or $\text{K}_2\text{Cr}_2\text{O}_7$ -completely decomposed NH_4NO_3 in 3-6 min. The amount of catalyst required decreases with increased quantities of NH_4NO_3 . Addition of substances such as NaNO_3 lowers the melting and, consequently, the decomposition temperature from 200C to about 160-140C. Orig. art. has: 1 table.

ASSOCIATION: None

Card 1/2

L 17936-63 EWP(q)/EWT(m)/EDS AFFTC/ASD JD/WH/JG
ACCESSION NR: AT3006102 S/2938/63/000/000/0540/0542

AUTHOR: Shidlovskiy, A. A.

TITLE: Water as oxidizing agent in reactions with inorganic materials

SOURCE: Teoriya vzryvchatykh veshchestv, sbornik statey, 1963
540-542

TOPIC TAGS: explosive, exothermic reaction, boron, silicon, phosphorous

ABSTRACT: Continuing his work on explosive reactivity of water on metals (DAN SSSR, 1946, 51, vy*p.2, 1927) and (Zhurn. Prik. Khimii, v. 19, 1946, p. 371), the author showed water is also extremely reactive, especially at elevated temperatures, with reducing non-metals and metallic lower oxides. In exothermic reactions of water with B, Si, or P and its oxide P₂O₅, temperatures and pressures can be selected which will cause combustion or even explosion in the process. Similar reaction results from steam with SO₂, with metal or non-metal

Card 1/2

L 17936-63

ACCESSION NR: AT3006102

hydrides, borides, or silicides. Orig. art. has: 17 equations. ³

ASSOCIATION: None ²⁷

SUBMITTED: 00

DATE ACQ: 14 Jun 63 ²⁷

ENCL: 00

SUB CODE: CH

NO REF SOV: 004

OTHER: 002

Card 2/2

L 17935-63

EWP(q)/EWT(m)/BDS AFFTC JD

ACCESSION NR: AT3006103

S/2938/63/000/000/0513/0516

AUTHOR: Shidlovskiy, A. A. 52

TITLE: Expanding the area of application of thermochemical principle of constant differences. Calculation of unknown heats of formation of ammonium salts

SOURCE: Teoriya vzryvchatykh veshchestv, sbornik statey, 1963, 543-546

TOPIC TAGS: ammonium salt, ammonium perrhenate, ammonium selenate, ammonium hexachlorostannate, ammonium tetrachloropalladate, ammonium hexachloroplatinate, ammonium hexafluoroaluminate, principle of constant difference

ABSTRACT: The thermochemical rule of constant differences was used for calculating the heats of formation of crystalline salts of strong electrolytes having a common anion or cation and nearly equal heats of solution. Using potassium and ammonium salts with identical anions, the unknown heats of formation of ammonium perrhenate, selenate, hexachlorostannate, tetrachloropalladate, hexachloroplatinate and hexafluoroaluminate were calculated with an accuracy of $\pm 2\%$ (+ or - 2 kcal/gm.equiv). Orig. art. has: 2 tables and 2 equations.

Card 1/2

SHIDLOVSKIY, A.A.; VOSKRESENSKIY, A.A.

Heats of formation of strontium, lead, and silver sulfites.
Zhur. fiz. khim. 37 no.9:2062-2063 S '63. (MIRA 16:12)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.

I 05022-67 FWT(m)/EWP(j) WW/JW/JWD/RM

ACC NR: AR6032310 SOURCE CODE: UR/0081/66/000/010/V172/V173

AUTHOR: Shmagin, L. F. ; Shidlovskiy, A. A. 45
B

TITLE: The effect of the oxides of some metals on the composition of the products of thermal decomposition of ammonium perchlorate ||²

SOURCE: Ref. zh. Khimiya, Part I, Abs. 10V148

REF SOURCE: Sb. Issled. v obl. khimii i tekhnol. mineral'n. soley i okislov. M. -L., Nauka, 1965, 112-114

TOPIC TAGS: thermal decomposition, perchlorate, ammonium perchlorate

ABSTRACT: A study was made of the composition of gases emitted during the thermal decomposition of pure NH_4ClO_4 . During the decomposition at a temperature 240C, Cl_2 is liberated mainly in free form. As the temperature increases, the amount of free Cl_2 decreases and the amount of HCl increases. When the decomposition occurs in the presence of Cr_2O_3 , MnO_2 , Fe_2O_3 , Co_2O_3 , NiO and Cu_2O , the ratio between the amount of Cl_2 emitted in free form and in the form

Card 1/2

L 05022-67

ACC NR: AR6032310

of HCl depends somewhat on the chemical nature of the added oxide. An exception is ZnO, in whose presence the amount of the HCl formed sharply decreases. During the decomposition of the pure NH_4ClO_4 a significant amount of N_2O is formed. In the presence of metal oxides, the amount of N_2O decreases (except in a series of experiments with ZnO). Very little N_2O is formed in the presence of MnO_2 and Co_2O_3 , which accelerate the thermal decomposition at a greater rate than the other additives. A large part of the nitrogen is liberated in the form of NO with MnO_2 and Co_2O_3 additions. [Translation of abstract]

SUB CODE: 07/

Card 2/2 LC

L 21825-65 EPA/EPF(c)/EPF(n)-2/EPR/EPA(s)-2/EWT(m)/EWP(b)/EWP(t) pr-4/pt-10/
DU-4/Paa-4 SSD(a)/IJP(c) WH/JWD/JD
ACCESSION NR: AP5001756 S/0153/64/007/005/0862/0863

AUTHOR: Shidlovskiy, A. A.; Shmagin, L. F.; Bulanova, V. V.

TITLE: Burning of ammonium perchlorate under atmospheric pressure

SOURCE: IVUZ. Khimiya i khimicheskaya ²⁷tehnologiya, v. 7, no. 5, 1964, 862-863

TOPIC TAGS: ammonium perchlorate, catalyst, ammonium perchlorate decomposition, ammonium perchlorate burning

ABSTRACT: The catalytic effect of Cu_2O , Cu_2Cl_2 , CuO , $CuCO_3$, MnO_2 , $MnCO_3$, $MnCl_2 \cdot 4H_2O$, Co_2O_3 , ZnO , Fe_2O_3 , NiO , Ni_2O_3 , Cr_2O_3 , Cu , Cr_2O_4 , CdO , or MgO on the thermal decomposition and burning of ammonium perchlorate has been studied at atmospheric pressure. The experiments were conducted with technical-grade NH_4ClO_4 sifted through a no. 61 sieve and containing 5% of the ground pure catalysts. The mixtures were burned at 20 and 100C in glass tubes. At 20C, NH_4ClO_4 burns in the presence of Cu_2O , CuO , Cu_2Cl_2 , MnO_2 , or $MnCO_3$, and at 100C

Card 1/2

L 21825-65

ACCESSION NR: AP5001756

in the presence of CuCO_3 , $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$, Co_2O_3 or ZnO . The highest burning velocity and highest thermal coefficient of the burning velocity (0.60—0.80 mm/sec at 20C and 1.40—2.08 mm/sec at 100C) are exhibited by mixtures containing copper compounds. Mixtures with Fe_2O_3 , NiO , Ni_2O_3 , Cr_2O_3 , Cu , Cr_2O_4 , CdO as MgO do not burn under the above conditions. Orig. art. has: 1 table.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya
(Moscow Institute of Chemical Machinery)

SUBMITTED: 03Apr64

ENCL: 00

SUB CODE: GC, FP

NO REF SOV: 009

OTHER: 004

ATD PRESS: 3166

Card 2/2

ACCESSION NR: AP4041764

S/0076/64/0038/006/1703/1705

AUTHOR: Volodina, N. A. ; Shidlovskiy, A. A. ; Voskresenskiy, A. A.

TITLE: Heat of formation of alkali metal chlorates.

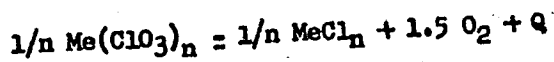
SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 6, 1964, 1703-1705

TOPIC TAGS: cesium chlorate, cesium chloride, thermodynamic function, calorimetry, alkali chlorate, alkali chloride, explosive, chlorate, fuel

ABSTRACT: The purpose of the study was to investigate the change of the difference

$$\Delta H_{298, Cl^-} - \Delta H_{298, ClO_3^-}$$

for salts with the same cation and the consideration of salts of different metals.
It was also of practical interest to evaluate Q in reactions of the type



since the explosive properties of chlorates and their mixtures with fuels depend

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ACCESSION NR: AP4041764

to a great extent on the amount of heat which is liberated in the decomposition of chlorates. Cesium chlorate was the subject of this investigation. The iodometric assay of cesium chlorate was 98.5 %. The heat of the solution of cesium chlorate in water was determined in an isothermal calorimeter. The temperature measurements were accurate to ± 0.002 C. The calorimeter was electrically calibrated and the time was measured with an accuracy of ± 0.5 %. The determined standard heat of the solution of cesium chlorate in water was $\Delta H_{298} = 11.8$ kcal/mole and the calculated heat of formation of crystalline CsClO_3 is -94.6 kcal/mole. The tabulation of the heats of formation of alkali metal chlorates indicates that the difference in heats of formation of salts with the same cation are not strictly constant (10.3 ± 1.3 kcal/mole) and it slowly decreases from Na to Cs. Orig. art. has: 3 tables.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Machine Building for Chemical Industry)

SUBMITTED: 25 Nov 63

ENCL: 00

SUB CODE: IC, TD

NO REF SOV: 006

OTHER: 001

Card 2/2

SHIDLOVSKIY, A.A.; VOSKRESENSKIY, A.A.

Heats of formation of lithium, strontium, lead, and silver
iodates and potassium metaperiodate. Zhur. fiz. khim. 39
no.6:1523-1526 Je '65. (MIRA 18:11)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.
Submitted July 22, 1964.

L 1141-66 EWT(m)/EPF(c)/ETC/ENC(m)/EWP(f)/EWP(j)/T/EWP(t)/EWP(h)/ETC(m) IJP(c)/
ACCESSION NR: AP5023685RPL RDW/EW/JD/WW/JW/WE/RM UR/0076/65/039/009/2163/2168
541.11

AUTHOR: Shidlovskiy, A. A. 44,55

TITLE: Thermochemical estimate of the ability of inorganic ammonium and hydrazinium salts to sustain combustion and explosion. 44,55

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2163-2168

TOPIC TAGS: combustion, solid propellant

ABSTRACT: A method was developed for estimating the exothermal effect of decomposition of ammonium salts whose heats of formation are not known. The authors point out that ammonium salts which decompose exothermally can, under certain conditions, sustain and propagate combustion and explosion. From the standard heats of formation of several acids it was calculated whether their ammonium salts can propagate combustion and explosion. A constant difference of 27.5 ± 1 kcal/mole between the heats of formation of corresponding ammonium and hydrazinium salts of monobasic acids was determined. The heats of formation of dihydrazinium sulfate and dihydrazinium sulfide were determined; both compounds could be able to sustain combustion. The

Card 1/2

L 1111-66

ACCESSION NR: AP5023685

possibility of exothermal decomposition of hydrazinium ^{v7} tellurate, selenite, and to a lesser extent, of hydrazinium carbonate is pointed out. Orig. art. has: 3 tables. [VS]

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Chemical Machine Building Institute)

SUBMITTED: 15May64 44, 55

ENCL: 00

SUB CODE: FP

NO REF SOV: 007

OTHER: 004

ATD PRESS: 4100

Card 2/2

L 1599-66 FSS-2/EWT(1)/EPF(c)/EWT(m)/T/EED-2/FCS(k) RPL BW/WH/JWD
AM5009848 BOOK EXPLOITATION UR/

662.1(07) 53
B+1

Shidlovskiy, Aleksandr Aleksandrovich 44, 55

Principles of pyrotechnics (Osnovy pirotekhniki) 3d ed., rev. and enl. [Moscow]
Izd-vo "Mashinostroyeniye", 64. 0338 p. illus., biblio., tables. Errata
slip inserted. 4,000 copies printed.

TOPIC TAGS: pyrotechnics, combustion, combustion product, combustion temperature,
oxidation, chemical composition oxidant, fuel, combustion mechanism, chemical
stability

PURPOSE AND COVERAGE: The book presents the basic principles of pyrotechnics, 5, 44, 55
the modern methods for formulation and calculation of various pyrotechnical
compositions and information on their properties. In detail are described
the properties of components, fuels and oxidants. The physical properties
of burning processes are examined. In a separate section the properties of
different pyrotechnical compositions (illuminating, incendiary solid rocket
fuel compositions) are considered. The book is a textbook for engineering
college students. It can also be used by scientific workers, engineers
engaged in pyrotechnics and other adjacent fields (explosives, gunpowders,
rocket design).

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AM5009848

SUB CODE: WA

SUBMITTED: 03Sep64

NO REF SOV: 189

OTHER: 125

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DP

L 3687-66	EWT(m)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b)	IJP(c)/RPL	JD/WW/JW/HW/JWD
ACC NR: AP5026424	SOURCE CODE: UR/0153/65/008/004/0533/0538		
AUTHOR: <u>Shidlovskiy, A. A.</u> ; <u>Shmagin, L. F.</u> ; <u>Bulanova, V. V.</u> 70 B			
ORG: <u>Moscow Institute of Chemical Machine Building</u> , Chair of General and Organic Chemistry (Moskovskiy institut khimicheskogo mashinostroyeniya, Kafedra obshchey i organicheskoy khimii)			
TITLE: The effect of some additives on the <u>thermal decomposition</u> of <u>ammonium perchlorate</u> 27			
SOURCE: <u>IVUZ</u> . Khimiya i khimicheskaya tekhnologiya, v. 8, no. 4, 1965, 533-538 5, 27			
TOPIC TAGS: <u>solid propellant</u> , <u>oxidizer</u> , <u>ammonium salt</u> 11			
ABSTRACT: The purpose of this work was to investigate the thermal decomposition of <u>ammonium perchlorate</u> (AP) in the presence of oxides, chlorides, carbonates, and oxalates of certain metals. The decomposition was studied gravimetrically at atmospheric pressure and 214-470C. The following values for <u>activation energies</u> were found: for the orthorhombic form, E = 40 kcal/mole; for the cubic form, E = 24-28 kcal/mole; for the residue from the low-temperature decomposition, E = 36-39 kcal/mole. Compounds of manganese and cobalt promote complete decomposition of AP at T < 240C. Compounds of iron, nickel, and chromium promote complete decomposition of AP at 270-280C. The rate of decomposition of AP is increased by the addition of compounds of <u>copper</u> , <u>manganese</u> , <u>cobalt</u> , as well as <u>zinc oxide</u> ; it is retarded by the addition of compounds of iron, 27 27			
Card 1/2	UDC: 662.2.393		

L 3687-66

ACC NR: AP5026424

bivalent nickel, chromium, and vanadium pentoxide. For the same element, the activity of the compounds added decreases in the following order: Carbonate (oxalate), oxide, chloride. Orig. art. has: 3 tables, and 3 figures. [VS]

SUB CODE: *FP* / SUBM DATE: 13May64/ ORIG REF: 006/ OTH REF: 007/ ATD PRESS: *4/20*

KE
Card 2/2

L 46203-66 EWT(m)/EWP(j)/T/EWP(t)/ETI IJP(c) JD/WW/JW/JWD/RM
ACC NR: AP6030318 (A) SOURCE CODE: UR/0153/66/009/003/0358/0361 58

AUTHOR: Fragina, A. R.; Golysheva, Ye. Ya.; Shidlovskiy, A. A. 57 B

ORG: Moscow Institute of Chemical Machine Building (Moskovskiy institut khimicheskogo mashinostroyeniya)

TITLE: Thermal decomposition of ammonium nitrate in the presence of catalysts

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 3, 1966, 358-361

TOPIC TAGS: ammonium nitrate, thermal decomposition, decomposition catalyst, combustion catalyst

ABSTRACT: A study has been made of the thermal decomposition of ammonium nitrate at 200—220C in the presence of 5% of such additives as chromates of metals of groups I and II of the periodic table, potassium dichromate, or chlorides of various metals. The highest catalytic effects on the thermal decomposition of NH₄NO₃ were produced by Li₂CrO₄, K₂Cr₂O₇, CuCl₂ and CrCl₃. Study of the effect of such binary systems as CuClO₄ or K₂Cr₂O₇ and various chlorides showed that the highest catalytic effects on the thermal decomposition of NH₄NO₃ were produced by the systems K₂Cr₂O₇ + BaCl₂, K₂Cr₂O₇ + MnCl₂, and

Card 1/2

UDC: 662.2.393

L 26203-66

ACC NR: AP6030318

CuCrO₄ + MnCl₂. It was concluded that these binary systems or Li₂CrO₄ can be used as combustion catalysts for ammonium nitrate. Orig. art. has: 3 tables. [EO]

SUB CODE: 07/ SUBM DATE: 06Jun64/ ORIG REF: 005/ OTH REF: 002

Card 2/2 fv

L 22958-00 EWP(j)/EWT(m)/ETC(m)-6/T RM/WW/JWD

ACC NR: AP6012842 SOURCE CODE: UR/0080/66/039/004/0754/0758

AUTHOR: Shidlovskiy, A. A.; Volodina, N. A.

ORG: none

TITLE: Study of the combustion of potassium chlorate-iditol mixtures with catalytic additives

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 4, 1966, 754-758

TOPIC TAGS: solid propellant, burning velocity, combustion catalyst

ABSTRACT: The burning velocities and combustion temperatures of KClO₄-phenol formaldehyde resin mixtures containing MnO₂, KMnO₄, Cr₂O₃, CoCl₂·6H₂O, Co₂O₃, and CoO as additives were determined. The burning velocity vs. resin concentration curves showed that the burning velocity and combustion temperature are maximum at a resin concentration of 14—18%. The addition of Cr₂O₃, MnO₂, and CoCl₂·6H₂O had the strongest catalytic effect among the additives tested. They considerably increased the burning velocity and permitted a low caloric mixture containing only 0.8—4% resin to burn at atmospheric pressure. The strongest catalytic effect was experienced when the additives were present in concentrations ranging from 3 to 5%. A stoichiometric

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UDC: 546.32'135+541.126+541.183

L 22958-66

ACC NR: AP6012842

mixture of NaClO_4 -resin burned considerably slower than a stoichio-
metric KClO_4 -resin mixture. This is attributed to the lower melting
point of NaClO_4 . Orig. art. has: 2 figures and 1 table. [PV]

SUB CODE: 21/ SUBM DATE: 04May64/ ORIG REF: 002/ OTH REF: 003
ATD PRESS: 4237

Card 2/2

CHUDICHOVA, A. E.

A. E. Chudichova. Association of the results of transcription of the ribosomes of Tyro
P. 1. 17.

Chair of Theology of Moscow, A. E. 3, 1951

SC: Journal of the Moscow University, Series of Physics-Mathematics and Natural Sciences,
No. 4; No. 6, 1951

SHIDLOVSKIY, A. B.

"Transcendental Quality and Algebraic Independence of the Values of Entire Functions of Several Classes." Cand Phys-Math Sci, Moscow State U, Moscow, 1953. (RZhMat, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

SHIDLOVSKIY, A.B.

Shidlovskiy, A.B.-- "Transcendence and Algebraic Independence of Values of Whole Functions of Certain Classes." Cand Phys-Math Sci, Mechanics-Mathematics Faculty, Moscow State U, 22 Jan 54. (Vechernyaya Moskva, 17 Jan 54)

SO: SUM 168, 22 July 1954

SHIDLOVSKIY, A. .

USSR/Mathematics - E - functions

Card : 1/1

Authors : Shidlovskiy, A. B.

Title : About the transcendence and algebraic independence of values of integral functions of certain classes

Periodical : Dokl. AN SSSR, 96, Ed. 4, 697 - 700, June 1954

Abstract : Siegel's method is described for arithmetical evaluation of certain classes of integral functions. The functions are called E-functions, provided they satisfy linear differential eqs; coefficients of which are polynomials in Z with numerically algebraic quantities. The author points out that Siegel's method can be applied to the E-functions, satisfying both homogeneous and heterogeneous diff. eqs., and even specifications for the E-functions can be made less restricted. Three references.

Institution : The V. I. Lenin State Pedagogical Institute, Moscow, USSR

Presented by : Academician P. S. Aleksandrov, March 26, 1954

Shidlovskiy, A.B.
USSR/ Mathematics - E functions
Card 1/2 Pub. 22 - 7/52
Authors : Shidlovskiy, A. B.
Title : ~~Shidlovskiy, A. B.~~
About the criteria for the algebraic independence of values of a certain class of whole functions
Periodical : Dok. AN SSSR 100/2, 221-224, Jan 11, 1955
Abstract : Necessary and sufficient conditions are sought for the algebraic independence of values of a class of certain functions. The E functions belong to that class. The definition of the E functions is given in the DAN 96/4. On the basis of that definition the following theorem is proved:
Institution : V. I. Lenin State Pedagogical Institute
Presented by : Academician S. L. Skobelev, November 16, 1954

Periodical : Dok. AN SSSR 100/2, 221-224, Jan 11, 1954

Card 2/2 Pub. 22 - 7/52

Abstract : If a set of E-functions $f(z) \dots$ represents a solution of m linear diff eqs of the first order

$$y_k' = Q_{k,0}(z) + \sum_{i=1}^m Q_{k,i}(z) y_i, \quad k=1, \dots, m,$$

the coefficients of which $Q_{k,i}(z)$, (where $k=1, \dots, m, i=0, \dots, m$) are rational functions of z with algebraically numerical coefficients, and α any algebraic number different from zero and the poles of the $Q_{k,i}(z)$ functions. Then, in order for numbers of $f_1(\alpha), \dots, f_m(\alpha)$ are algebraically independent. It is necessary and sufficient that the functions $f(z) \dots f_m(z)$ be algebraically independent over the field of rational functions in Z . Application of this theorem to Bessel's functions is discussed. A series of theorems is proved in order to give a more concept of the theorem. Four references: 3 Russian; 1 German (1929-1954).

SHIDLOVSKIY, A.B.

Transcendental numbers of certain classes. Dokl. AN SSSR 103 no.6:
977-980 Ag '55. (MIRA 9:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
Predstavleno akademikom P.S. Aleksandrovym.
(Numbers, Transcendental)

SHIDLOVSKIY, A. B.

Sidlovskii, A. B. On transcendentality of the values of a class of entire functions satisfying linear differential equations. Dokl. Akad. Nauk SSSR (N 5) 105 (1955)

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This is the first of a series of papers by the author [same journal, N 5, 96 (1954), 97-100, 100 (1955), 221-224 (1956), 117-120 (1957), MR 16, 117, 907; 17, 466] extending the results of Siegel's work [Transcendental numbers; Ann. Math. (2) 52, MR 11, 330] on E -functions. The following theorems are announced: I. Let the E -function $f(z)$ be a solution of the linear differential equation $P_m(z)y^{(m)} + \dots + P_1(z)y' + P_0(z)y = Q(z)$, whose coefficients $P_i(z)$ and $Q(z)$ are polynomials in z with algebraic numerical coefficients, and let α be an algebraic number different from 0 and the zeros of $P_i(z)$. Then the l numbers $f^{(i)}(\alpha)$, $i=0, 1, \dots, l-1$, $1 \leq l \leq m$, are algebraically independent if and only if the functions $f^{(i)}(z)$, $i=0, \dots, l-1$ are algebraically independent over the field of rational functions of z . II. If a function f as in I is transcendental, and if $\alpha \neq 0$ is algebraic and not a zero of $P_m(z)$, then the numbers $f^{(i)}(\alpha)$, $i=0, 1, \dots$ are transcendental and all zeros and all A -values of f and all its derivatives, except 0 and the zeros of $P_m(z)$ are transcendental for arbitrary algebraic A .

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Moscow State Univ. im M. V. Lomonosov

ŠIDLOVSKII, A. B.

These theorems are very much easier to apply than Siegel's theorem, since Siegel's condition of normality has disappeared. It follows from II, for example, that every hypergeometric E -function [cf. Siegel, op. cit., p. 54] and each of its derivatives assumes a transcendental value for algebraic argument different from 0. *W. J. LeVeque.*

2/2

smw

SHILOVSKIY, A. B.

Call Nr: AF 1108825
Transactions of the Third All-union Mathematical Congress (Cont.) Moscow,
Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.
There are 9 references, 6 of which are USSR, 2 English, and 1 German.

Freyman, G. A. (Kazan'). On one Elementary Method of the Theory
of Numbers and the Theory of Probabilities. 14

Chudakov, N. G. (Saratov). Classification of Characters of
Number Semigroups. 15-16

Mention is made of Bredikhin, V. N. and Bronshteyn, B. S.

Shidlovskiy, A. B. (Moscow). One one Class of Transcendent. 15-16

There are 4 references, 2 of which are USSR, 1 English, and
1 German.

Algebra Section 17-41

Card 6/80

SHIDLOVSKIY, A.B.

New criterion of the transcendental nature and algebraic independence of values assumed by a class of integral functions. Dokl. AN SSSR 106 no.3:399-400 Ja '56. (MIRA 9:6)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
Predstavleno akademikom L.I. Sedcvym.
(Functions) (Numbers, Transcendental)

SHIDLOVSKIY, A.B.

SUBJECT USSR/MATHEMATICS/Algebra CARD 1/2 PG - 435
 AUTHOR ŠIDLOVSKIJ A.B.
 TITLE On the algebraic independence of the transcendent numbers of
 a class.
 PERIODICAL Doklady Akad. Nauk 108, 400-403 (1956)
 reviewed 12/1956

The author proves some theorems on the algebraic independence of certain general hypergeometric E-functions (see: Šidlovskij, Doklady Akad. Nauk 105, No.1 (1955)) which are solutions of certain differential equations. The proofs base on a result of Siegel (Abh. Preuss.Akad. Wiss. No.1, 70 (1929-30)) which is improved by the author.

Let

$$\Psi_k(z) = \sum_{n=0}^{\infty} \frac{1}{(n!)^k} \left(\frac{z}{k}\right)^{kn} \quad k=1, \dots, r; r \geq 1$$

and

$$\Psi_{k,s}(z) = 1 + \sum_{n=1}^{\infty} \frac{1}{[(n-1)!]^k n^s} \left(\frac{z}{k}\right)^{kn} \quad k=1, \dots, r; r \geq 1; s=1, \dots, m_k; m_k \geq k.$$

$\Psi_{k,k}(z) = \Psi_k(z)$ and these functions are solutions of the system

$$\Psi_{k,s}^i(z) = \frac{1}{z} \Psi_{k,s-1}(z) - \frac{1}{z} \quad s=2, 3, \dots, m_k$$

SHIDLOVSKIY, A. B.

16(0) **PHASE I BOOK EVALUATION** 88W/3360

Математические матемиатическое обобщение

Trudy S. B. (Transactions of the Moscow Mathematical Society, Vol 8) Moscow, Fizmatgiz, 1979. 316 p. Errata slip inserted. 2,050 copies printed.

Ed.: A.P. Lashin; Tech. Ed.: S.S. Gerdikov; Editorial Board: P.S. Aleksandrov, I.M. Gel'fand, and G.M. Golovinskiy.

PURPOSE: This book is intended for mathematicians and theoretical physicists.

CONTENTS: This book contains a collection of articles by leading Soviet mathematicians on problems in pure and applied mathematics. All articles were written in 1977 and 1978. Among the topics discussed are: analytic operator functions, function spaces, nonstationary plane flow of a viscous non-compressible liquid, root spaces, products of groups representations, ordinary and partial differential equations, 1st and 4th order linear equations, homogeneous spaces, spectral theory of operators, and generalized random processes. References accompany many of the articles.

Page, Title, Integral Representations of Analytic-Operator Functions of One Independent Variable.

Resolvent's, E.A. Quasilinear Spaces	3
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AVAILABLE: Library of Congress	497

ОАБ 3/3

AD/880
1-19-82

SHIDLOVSKIY, A. B. Doc Phys-Math Sci -- (diss) "On one class of transcendental numbers." Mos, 1959. 12 pp (Mos Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov), 150 copies. Bibliography: pp 11-12 (^{2/} titles) (KL, 47-59, 112)

16(1)

AUTHOR: Shidlovskiy, A.B.

SOV/38-23-1-2/6

TITLE: On the Criterion of the Algebraic Independence of the Values of Entire Functions of a Class (O kriterii algebraicheskoy nezavisimosti znacheniy odnogo klassa tselykh funktsiy)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1959 Vol 23, Nr 1, pp 35-66 (USSR)

ABSTRACT: With the aid of 12 lemmas the author proves the results announced by him in [Ref 8]:
Principal theorem: Let the E-functions (compare Siegel [Ref 1, 2]) $f_1(z), \dots, f_m(z)$ be the solutions of the system

$$y'_k = Q_{k,0}(z) + \sum_{i=1}^m Q_{k,i}(z)y_i \quad k = 1, 2, \dots, m.$$

Let the $Q_{k,i}(z)$ be rational functions of z . Let α be an algebraic number different from 0 and from the poles of the $Q_{k,i}(z)$. In order that the numbers $f_1(\alpha), \dots, f_m(\alpha)$ are algebraically independent it is necessary and sufficient that $f_1(z), \dots, f_m(z)$ are algebraically independent over the

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On the Criterion of the Algebraic Independence
of the Values of Entire Functions of a Class

SOV/38-23-1-2/6

field of rational functions. Theorem: Let the E-function $f(z)$
be a solution of

$$P_m(z)y^{(m)} + \dots + P_1(z)y' + P_0(z)y = Q(z) ,$$

where $P_i(z), Q(z)$ are polynomials. Let α be an algebraic number
different from 0 and $P_m(\alpha) \neq 0$. In order that $f(\alpha), f'(\alpha), \dots$
 $\dots, f^{(m-1)}(\alpha)$ are algebraically independent it is necessary
and sufficient that $f(z), f'(z), \dots, f^{(m-1)}(z)$ are algebraically
independent over the rational function field.
There are 8 references, 3 of which are Soviet, 3 German,
1 French, and 1 American.

PRESENTED: by I.M. Vinogradov, Academician

SUBMITTED: March 20, 1958

Card 2/2

SHIDLOVSKIY, A.B.

Transcendancy and algebraic independence of the values of certain
classes of entire functions. Uch.zap.Mosk.un. no.186[a]:11-70
'59. (MIRA 13:6)

(Functions, Entire)

86187

S/055/60/000/005/003/010
C111/C222

16.1000

AUTHOR: Shidlovskiy, A.B.TITLE: On the Transcendence and Algebraic Independence of the Values of
E-Functions Connected by an Algebraic Equation in the Field of
Rational FunctionsPERIODICAL: Vestnik Moskovskogo universiteta. Seriya I, matematika,
mekhanika, 1960, No.5, pp.19-28

TEXT: The paper is based on the author's publications (Ref.1,2).
An assertion is satisfied for almost all algebraic values α if it is
satisfied for all algebraic values α with a probable exception of finitely
many ones.

Theorem 1: Let the E-functions $f_1(z), \dots, f_m(z)$, $m > 1$, be solutions of the
linear homogeneous system

$$(1) \quad y'_k = \sum_{i=1}^m Q_{k,i} y_i \quad (k=1, \dots, m).$$

Let all $Q_{k,i}$ be rational functions of z not connected by a homogeneous
algebraic equation the coefficients of which are polynomials in z . Then

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C111/C222

On the Transcendence and Algebraic Independence of the Values of E-Functions Connected by an Algebraic Equation in the Field of Rational Functions

each of the numbers $f_1(\alpha), \dots, f_m(\alpha)$ is transcendent for almost all algebraic values α if the corresponding function $f_1(z), \dots, f_m(z)$ is transcendent.

Theorem 2: Let the E-function $f(z)$ be transcendent and a solution of the equation $P_2 y'' + P_1 y' + P_0 y = 0$, where P_2, P_1, P_0 are polynomials in z . Then

$f(\alpha)$ is transcendent for almost all algebraic values α .

Theorem 3 considers E-functions $f_1(z), \dots, f_m(z)$, $m \geq 2$, which are solutions of

$$(7) \quad y_k'' = Q_{k,0} + \sum_{i=1}^m Q_{k,i} y_i, \quad k=1, \dots, m,$$

where $Q_{k,i}$ are rational functions of z ; it is assumed that the f_i are connected with each other by the relation

$$(8) \quad P[f_m(z), \dots, f_1(z)] = 0,$$

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where P is a polynomial with coefficients rational in z ; it is shown that if P satisfies certain special conditions, and α avoids certain finitely many values, then the numbers $f_1(\alpha), \dots, f_{m-1}(\alpha)$, $1 \leq l \leq m-1$ are algebraically independent.

Theorem 4: Let $f(z)$ be a solution of

$$(18) \quad P_m y^{(m)} + \dots + P_1 y' + P_0 y = Q, \quad m \geq 2,$$

where P_m, \dots, P_0 and Q are polynomials in z . Let $m-1$ be the maximal number of functions $f(z), f'(z), \dots, f^{(m-1)}(z)$ being algebraically independent over the field of rational functions where

$$(19) \quad P[f(z), f'(z), \dots, f^{(m-1)}(z)] = 0,$$

where P is an irreducible polynomial of degree $k \geq 1$ with coefficients being polynomials in z .

Then: 1) in P there exists a term with coefficients M different from zero,

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S/055/60/000/005/003/010
C111/C222

On the Transcendence and Algebraic Independence of the Values of E-Functions
Connected by an Algebraic Equation in the Field of Rational Functions

which contains $f^{(m-1)}(z)$ in the k -th power; 2) in every algebraic point α
different from zero and the zeros of P_m and M , the $m-1$ numbers $f(\alpha), f'(\alpha), \dots$
 $\dots, f^{(m-1)}(\alpha)$ are algebraically independent.

Theorem 5 generalizes theorem 2 to the case where the E-function is a
solution of an inhomogeneous equation of second order.

There are 4 references: 2 Soviet, 1 German and 1 American.

[Abstracter's note: (Ref.1) is a paper of the author in Doklady Akademii
nauk SSSR, 1955, Vol.100, pp.221-224; (Ref.2) is a paper of the author in
Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1959, Vol.23,
pp.35-66]

ASSOCIATION: Kafedra matematicheskogo analiza (Chair of Mathematical
Analysis)

SUBMITTED: January 3, 1960

Card 4/4

SHIDLOVSKIY, A.B.

Transcendence and algebraic independence of the values of
some E-functions. Vest. Mosk. un. Ser. 1: Mat., mekh. 14
no.5:44-59 S-C'61. (MIRA 14:11)

1. Kafedra teorii chisel Moskovskogo universiteta.
(Functions)

SHIDLOVSKIY, A.B.

Generalization of Lindeman's theorem. Dokl.AN SSSR 138 no.6:
1301-1304 Je '61. (MIRA 14:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom P.S.Aleksandrovym.
(Functions, Transcendental)

SHIDLOVSKIY, A.B.

On the transcendence and algebraic independence of the values
of E-functions related with any number of algebraic equations
in the field of rational functions. Izv.AN SSR.Ser.mat. 26
no.6:877-910 N-D '62. (MIRA 15:12)
(Functions, Transcendental)

MILYAKH, A.N. [Miliakh, O.M.] (Kiyev); SHIDLOVSKIY, A.K. [Shydlovs'kyi, A.K.]
(Kiyev)

A static converter of a single-phase system to a symmetrical
three-phase system. Avtomatyka 7 no.6:40-47 '62. (MIRA 16:1)
(Phase converters)

SHIDLOVSKIY, A.K.

40962

S/102/62/000/004/006/006
D201/D308

16.9100,

AUTHORS: Milyakh, O. M., and Shydlovs'kyi, A. K. (Kiev)

TITLE: A three-phase filter for symmetrical components based on a multi-phase transformer with rotating magnetic field

PERIODICAL: Aytomatyka, no. 4, 1962, 60-70

TEXT: The authors describe a three-phase filter for symmetrical components based on a multi-phase transformer acting as an asymmetrical filter. A unity transformation coefficient is assumed, a symmetrical voltage system being applied to the input and a symmetrical load at the output. Owing to the symmetry of such a system, one phase only is mathematically and experimentally analyzed and expressions derived for the determination of filter parameters. The asymmetrical filter-transformer consists of a three-phase asynchronous motor with phase braking of the rotor; the axes of the phase windings of the latter are shifted with

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D201/D308

A three-phase filter...

respect to the corresponding stator windings by 90 electrical degrees. The filter may be used for separating out symmetrical components of the direct and reversed phase sequences. A system of voltages of the separated sequence is obtained at the filter output. The symmetry of this sequence is independent of both the value and character of the symmetrical load. Owing to the magnetic symmetry of the multi-phase transformer windings acting as an asymmetrical filter, the unbalance voltage is practically independent of manufacturing errors. It is concluded that there is a possibility of designing a new class of filter for direct and reversed phase sequences. The advantages of such a filter are as follows: (a) easy and simple adjustments; (b) the possibility of reducing to zero the unbalance voltage due to the assembly inaccuracies, which makes it possible to dispense with additional elements of control; (c) stability of the filter parameters, irrespective of whether it works with direct or reversed sequence; (d) independence of the symmetry of the system of the magnitude and character of the symmetrical load; (e) easy design for any power, voltage

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A three-phase filter...

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or current, which makes it possible to apply the filter in power installations. There are 8 figures.

SUBMITTED: March 20, 1962

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Card 3/3

MIYAKE, S.H., doklady akad. nauk SSSR, 1963.

Networks for converting single-phase current to a symmetrical
multiphase one. Energ. i elektrotekh. prom. no. 438, 1963 (MIRA 17:10)

MILYAKH, A.N. [Miliakh, O.M.]; SHIDLOVSKIY, A.K. [Shydlova'kyi, A.K.]

Reciprocity of the single-phase equivalent of a three-phase
symmetrical circuit. Dop. AN URSR no.6:765-768 '63
(MIRA 17:7)

1. Institut elektrotekhniki AN UkrSSR. Predstavleno akademikom
AN UkrSSR K.K. Khrenovym [Khrienov, K.K.].

SHIDLOVSKIY, A.K. [Shydlovs'kyi, A.K.] (Kiyev)

Reciprocity and irreversibility of a transformer with a rotating
magnetic field. Avtomatyka 8 no.1:67-69 '63. (MIRA 16:3)
(Electric transformers) (Automatic control)

KAPICHIN, I.I. [Kapichyn, I.I.] (Kiyev); SHIDLOVSKIY, A.K.
[Shydlovs'kyi, A.K.] (Kiyev)

Schematic for the transformation of a single-phase system into a
two-phase system. Avtomatyka 8 no.2:76-79 '63. (MIRA 16:5)
(Automatic control) (Electric networks)

L 21008-65

ACCESSION NR: AP5003856

S/0102/64/000/004/0065/0067

AUTHOR: Barabanov, V. O. (Kiev); Shydlovs'kyi, A. K. (Kiev)TITLE: Single-phase device for control and reversal of a three-phase load BSOURCE: Avtomatyka, ⁹no. 4, 1964, 65-67

TOPIC TAGS: automation equipment, electric transformer

ABSTRACT: Whereas several automation devices in wide use for control and reversal of polyphase loads excited by a single-phase current normally include both control and phase splitting loops, a device is described here which permits the regulation of a three-phase system of currents (electrical) by a single-phase system, and thus permits the combining of both recorded functions. A transformer is used which has a phase-staggered rotor of the type used in asynchronous motors. It has a three-phase symmetrical output winding on the stator and two identical input windings on the rotor (or vice versa). The axes, and thus the phases, of the input and output windings are oriented in such a manner that control and reversal can be accomplished by properly apportioning the input voltage between the two input windings. Circuit diagrams are given, as are oscillograms showing regulation and reversal which result from using the device. Orig. art. has 2 figures and 2 formulas.

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L 21008-65

ACCESSION NR: AP5003856

ASSOCIATION: none

SUBMITTED: 03May63

ENCL: 00

SUB CODE: IE, EE

NO REF SOV: 003

OTHER: 000

JPRS

Card 2/2

MILYAKH, A.N. [Miliakh, O.M.]; SHIDLOVSKIY, A.K. [Shydlovs'kyi, A.K.]

Theory of a two-phase electric circuit. Dop. AN URSR no.8:
1046-1049 '65. (MIRA 18:8)

1. Institut elektrodinamiki AN UkrSSR. 2. Chlen-korrespondent
AN UkrSSR (for Milyakh).

MILAKH, A.N., doktor tekhn. nauk; SHIDLOVSKIY, A.K., kand. tekhn. nauk;
MUZYCHENKO, A.D., inzh.

Balancing features of current compensation networks with inverse
sequence. Energ. i elektrotekh. prom. no.4:27-29 O-D '65.
(MIRA 19:1)