[illegible], 2013, [illegible] 8, [illegible] 1

[illegible] 547. 551. 1: (678.5 + 541. 12)

[illegible] 2,4,6-[illegible]

[illegible]
[illegible] 125047 [illegible]
e-mail: valsorja@mail.ru

[illegible] 2,4,6-[illegible]
[illegible] 2,4,6-[illegible]

[illegible]

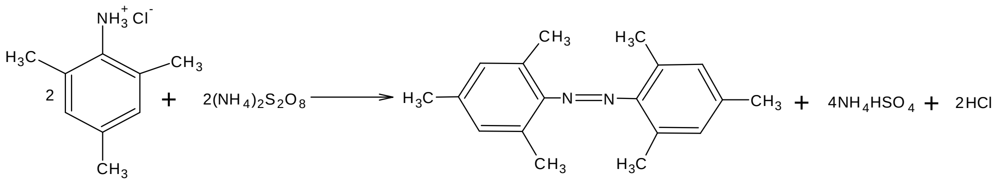
[illegible] [1–3]. [illegible] [4]. [illegible] [1–4]. [illegible]

[illegible] 2,4,6-[illegible]

[illegible] 2,4,6-[illegible] 2000». [illegible] «Aldrich» [illegible] 0.17, 0.2 [illegible] 0.21 [illegible] ($1\cdot10^{-3}$; $1.17\cdot10^{-3}$; $1.22\cdot10^{-3}$ [illegible]) [illegible] 50 [illegible] 2.28 [illegible] (0.1 [illegible]) [illegible] 50 [illegible] 2,4,6-[illegible] 30, 35 [illegible] 40 ^{0}[illegible] 30 [illegible]

[illegible]

[illegible] 2,4,6-[illegible] 1,2-[illegible] (1) [5].

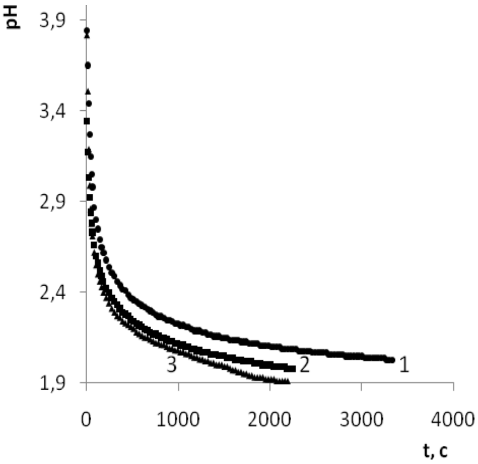


[illegible] 1. [illegible] 2,4,6-[illegible]

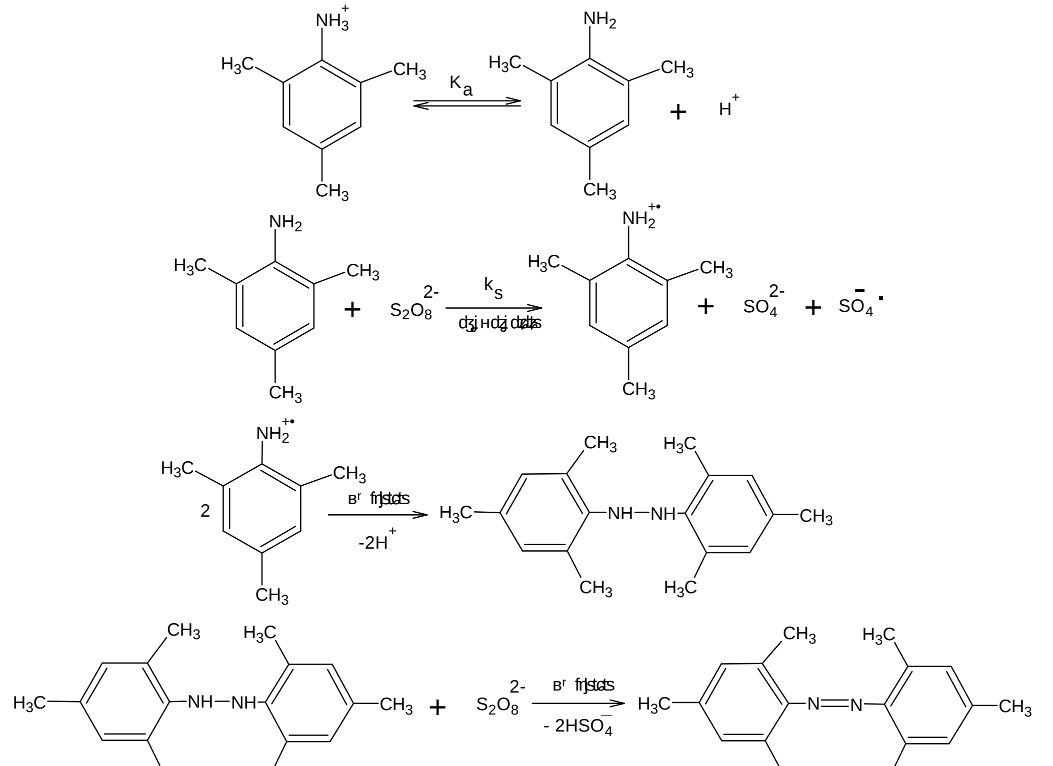
[illegible] 2,4,6-[illegible] (рис. 2).

[illegible] 2,4,6-[illegible] рис. 3 [illegible] 2,4,6-[illegible] N,N'-[illegible].

[illegible] [6]. [illegible] 2,4,6-[illegible].



[illegible] 2. [illegible] 2,4,6-[illegible] 10-[illegible]: 1 – 30°C (10^{-2} [illegible]); 2 – 35°C ($1.17 \cdot 10^{-2}$ [illegible]); 3 – 40°C ($1.22 \cdot 10^{-3}$ [illegible]).



[illegible] 3. [illegible] 2,4,6-[illegible].

[illegible] ([Ox] » [Ox]$_0$), [illegible] 2,4,6-[illegible] [7] [illegible] (1):

$$W_S = -d[\ldots]/t = k_S[\ldots][Ox]_0 = \quad (1)$$
$$= K_C k_S[\ldots H^+][Ox]_0/[H^+],$$

[illegible]: W_S – [illegible] 2,4,6-[illegible], k_S – [illegible] [illegible] – [illegible] 2,4,6-

[illegible] $[ТМАН^+]$ [illegible] 2,4,6-[illegible] $[Ox]_0$ [illegible] K_Θ [illegible] 2,4,6-[illegible] $[H^+]$ [illegible]

[illegible] 2,4,6-[illegible] (2):

$$[H^+] = [H^+]_0 + \varepsilon([ТМАН^+]_0 - [ТМАН^+]), \quad (2)$$

[illegible] $\varepsilon = ([H^+]_\varepsilon - [H^+]_0)/[ТМАН^+]_0$ [illegible] 2,4,6-[illegible] $[H^+]_0$ [illegible] $[H^+]_\varepsilon$ [illegible] $[ТМАН^+]_0$ [illegible] 2,4,6-[illegible]

[illegible] (2) [illegible] (1) [illegible] $[ТМАН^+]_0$ [illegible] $[ТМАН^+]$ [illegible] 0 [illegible] t [illegible] (3):

$$([H^+]_0+\varepsilon[ТМАН^+]_0)\ln([ТМАН^+]/[ТМАН^+]_0)+ + \varepsilon([ТМАН^+]_0 - [ТМАН^+]) = - K_\Theta k_s[Ox]_0 t \quad (3)$$

[illegible] «$([H^+]_0+\varepsilon[ТМАН^+]_0)\ln([ТМАН^+]/[ТМАН^+]_0) + \varepsilon([ТМАН^+]_0 - [ТМАН^+])$ – t» [illegible] 2,4,6-[illegible] 4.74 [8].

[illegible] 2,4,6-[illegible] «$(([H^+]_0+\varepsilon[ТМАН^+]_0)\ln([ТМАН^+]/[ТМАН^+]_0))10^6 + \varepsilon([ТМАН^+]_0 - [ТМАН^+])$ – t» [illegible] (3), [illegible] 4.

[illegible] 2,4,6-[illegible] 1.46, 2.3 [illegible] 3.17 [illegible] 30, 35 [illegible] 40^0 [illegible] 61±7 [illegible] 2,4,6-[illegible] (4):

$$\ln k = 24.68 - 7359/T \quad (4)$$

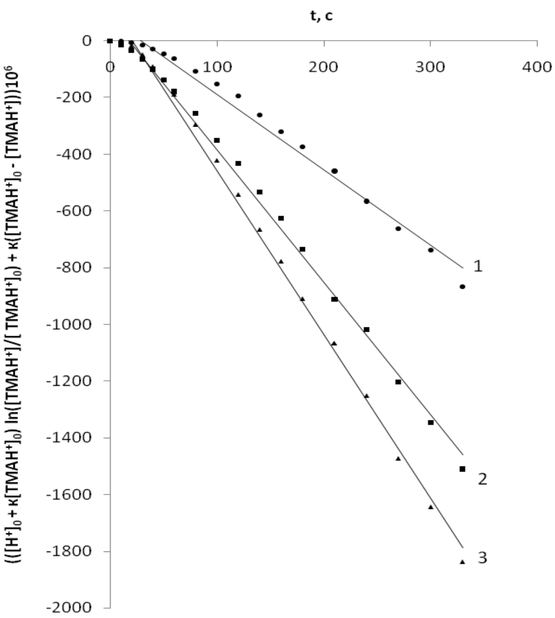
[illegible] (ж = 1) [illegible] (5) [illegible] (6):

$$\Delta H^\# = E_a - RT \quad (5)$$

$$\Delta S^\# = R\ln(Ah/k_BT) \quad (6)$$

[illegible] 58.5 [illegible] 63 [illegible]

[illegible]



[illegible] 4. [illegible] 2,4,6-[illegible] 10-[illegible]:
1 – 30^0[illegible]; 2 – 35^0[illegible]; 3 – 40^0[illegible].

[illegible] 2,4,6-[illegible] 2,4,6-[illegible] 2,4,6-[illegible] 2,4,6-[illegible] [4].

[illegible]

[illegible] 2,4,6-[illegible]

[illegible] 2,4,6-[illegible] [illegible]

[illegible] 2,4,6-[illegible] [illegible]

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KINETICS AND MECHANISM OF 2,4,6-TRIMETHYLANILINE OXIDATION

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The kinetics of oxidation of 2,4,6-trimethylaniline hydrochloride with ammonia peroxydisulfate in an aqueous solution was studied by the potentiometric method. It was shown that the reaction proceeds as the second order process. The rate constants of one-electron transfer from 2,4,6-trimethylaniline molecule to peroxydisulfate ion were determined and are 1.46, 2.3, and 3.17 l/(mol sec) at 30, 35 and 40°C, respectively. The activation energy of one-electron transfer from 2,4,6-trimethylaniline molecule to peroxydisulfate ion is 61 kJ/mol, the entropy of activation is –63 J/(mol K), and the enthalpy of activation is 58.5kJ/mol. It was determined that 2,4,6-trimethylaniline is not prone to oxidative polymerization. This indicates that cation-radicals of aromatic amines which act as active centers of aniline oxidative polymerization are formed. The fact that there is no autoacceleration during oxidation of 2,4,6-trimethylaniline hydrochloride indicates that the oxidative polymerization of aniline is an autocatalytical process.

Key words: *2,4,6-trimethylaniline, oxidation, kinetics, reaction mechanism, ammonia peroxydisulfate, rate constant.*