

<b>COMPONENTS:</b> (1) Sodium chlorate; $\text{NaClO}_3$ ; [7775-09-9] (2) 1,2-Ethandiol (ethylene glycol); $\text{C}_2\text{H}_6\text{O}_2$ ; [107-21-1]	<b>ORIGINAL MEASUREMENTS:</b> Isbin, H.S.; Kobe, K.A. <i>J. Am. Chem. Soc.</i> <u>1945</u> , <i>67</i> , 464-5.				
<b>VARIABLES:</b> T/K = 298	<b>PREPARED BY:</b> Hiroshi Miyamoto				
<b>EXPERIMENTAL VALUES:</b> <p>The solubility of <math>\text{NaClO}_3</math> in ethylene glycol at 25°C is</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>16.0g/100g solvent</td> <td>(authors)</td> </tr> <tr> <td>1.50 mol <math>\text{kg}^{-1}</math></td> <td>(compiler)</td> </tr> </table>		16.0g/100g solvent	(authors)	1.50 mol $\text{kg}^{-1}$	(compiler)
16.0g/100g solvent	(authors)				
1.50 mol $\text{kg}^{-1}$	(compiler)				
<b>AUXILIARY INFORMATION</b>					
<b>METHOD/APPARATUS/PROCEDURE:</b> The solvent and excess solid were sealed in a soft glass test-tube and rotated for at least one week in a water thermostat at 25°C. All analyses were made on a weight basis by use of weighing pipets. Both the standard gravimetric determination of chloride and the volumetric method, using dichlorofluorescein as an indicator, were used. The chlorate was reduced to the chloride by boiling with excess sulfurous acid.	<b>SOURCE AND PURITY OF MATERIALS:</b> Technical grade ethylene glycol (Carbide and Carbon Chem. Co) was used, and purified by fractionation. Analytical grade $\text{NaClO}_3$ was used.  <b>ESTIMATED ERROR:</b> Soly: precision within 0.5 %. Temp: precision $\pm 0.08$ K.  <b>REFERENCES:</b>				

<b>COMPONENTS:</b> (1) Sodium chlorate; NaClO <sub>3</sub> ; [7775-09-9] (2) 2-Aminoethanol(monoethanolamine) C <sub>2</sub> H <sub>7</sub> NO; [141-43-5]	<b>ORIGINAL MEASUREMENTS:</b> Isbin, H.S.; Kobe, K.A.  <i>J. Am. Chem. Soc.</i> <u>1945</u> , <i>67</i> , 464-5.				
<b>VARIABLES:</b>  T/K = 298	<b>PREPARED BY:</b>  Hiroshi Miyamoto				
<b>EXPERIMENTAL VALUES:</b>  The solubility of NaClO <sub>3</sub> in monoethanolamine at 25°C is  <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">19.7g/100g solvent</td> <td style="text-align: center;">(authors)</td> </tr> <tr> <td style="text-align: center;">1.85 mol kg<sup>-1</sup></td> <td style="text-align: center;">(compiler)</td> </tr> </table>		19.7g/100g solvent	(authors)	1.85 mol kg <sup>-1</sup>	(compiler)
19.7g/100g solvent	(authors)				
1.85 mol kg <sup>-1</sup>	(compiler)				
<b>AUXILIARY INFORMATION</b>					
<b>METHOD/APPARATUS/PROCEDURE:</b> The solvent and excess solid were sealed in soft glass test-tubes and rotated for at least one week in a water thermostat. All analyses were made on a weight basis by use of weighing pipets. Both the standard gravimetric determination of chloride and the volumetric method, using dichlorofluorescein as an indicator, were used. The chlorate was reduced to the chloride by boiling with excess sulfurous acid.	<b>SOURCE AND PURITY OF MATERIALS:</b> Technical grade monoethanolamine (Carbide and Carbon Chem Co) was used, and purified by careful fractionation. Analytical grade NaClO <sub>3</sub> was used.  <b>ESTIMATED ERROR:</b> Soly: precision within 0.5 %. Temp: precision ± 0.08 K.  <b>REFERENCES:</b>				

<b>COMPONENTS:</b> (1) Sodium chlorate; NaClO <sub>3</sub> ; [7775-09-9] (2) 2-Propanone (acetone); C <sub>3</sub> H <sub>6</sub> O; [76-64-1]	<b>ORIGINAL MEASUREMENTS:</b> Miravittles, Mille L. <i>Ann. Fis. Quim. (Madrid)</i> <u>1945</u> 41, 120-37.															
<b>VARIABLES:</b> T/K = 288, 293 and 298	<b>PREPARED BY:</b> H. Herrera															
<b>EXPERIMENTAL VALUES:</b> <table style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <thead> <tr> <th style="width: 30%;"></th> <th colspan="2" style="text-align: center;">Solubility<sup>a</sup></th> </tr> <tr> <th style="text-align: center;">t/°C</th> <th style="text-align: center;">mass %</th> <th style="text-align: center;">mol kg<sup>-1</sup></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">15</td> <td style="text-align: center;">0.1038</td> <td style="text-align: center;">0.009762</td> </tr> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">0.0961</td> <td style="text-align: center;">0.009037</td> </tr> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">0.0943</td> <td style="text-align: center;">0.008868</td> </tr> </tbody> </table> <p style="margin-top: 20px;"><sup>a</sup>Molalities calculated by H. Miyamoto</p>			Solubility <sup>a</sup>		t/°C	mass %	mol kg <sup>-1</sup>	15	0.1038	0.009762	20	0.0961	0.009037	25	0.0943	0.008868
	Solubility <sup>a</sup>															
t/°C	mass %	mol kg <sup>-1</sup>														
15	0.1038	0.009762														
20	0.0961	0.009037														
25	0.0943	0.008868														
<b>AUXILIARY INFORMATION</b>																
<b>METHOD/APPARATUS/PROCEDURE:</b> Saturated solutions were prepared in an Erlenmeyer flask by mixing the dried acetone with an excess of halate for two hours. The solution was constantly stirred by bubbling dry air (air was dried by passing it through CaCl <sub>2</sub> while pumping it into the solution). Air going out from the flask after bubbling in the solution carried some acetone vapor during this operation. The solution temperature was kept constant by immersing the flask in a constant temperature water bath. After two hours, the air exit was closed. The resulting pressure forced the saturated solution from the Erlenmeyer through a tube filled with cotton (which acted as a filter) and was collected in a small flask. This flask was stoppered and weighed. The halate contained in the sample was weighed after complete evaporation of acetone. In all cases, weights were reported to the fourth decimal figure.	<b>SOURCE AND PURITY OF MATERIALS:</b> Commercial redistilled acetone. This acetone was then dehydrated three times by leaving it in contact with calcium chloride for forty eight hours each time. Fresh CaCl <sub>2</sub> was used in each operation. Finally the dehydrated acetone was distilled at 56.3°C.  Source and purity of NaClO <sub>3</sub> not specified.															
	<b>ESTIMATED ERROR:</b> Nothing specified.															
	<b>REFERENCES:</b>															

<b>COMPONENTS:</b> (1) Sodium chlorate; NaClO <sub>3</sub> ; [7775-09-9] (2) 1,2-Ethanediamine(ethylene-diamine); C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> ; [107-15-3]	<b>ORIGINAL MEASUREMENTS:</b> Isbin, H.S.; Kobe, K.S. <i>J. Am. Chem. Soc.</i> <u>1945</u> , <i>67</i> , 464-5.				
<b>VARIABLES:</b> T/K = 298	<b>PREPARED BY:</b> Hiroshi Miyamoto				
<b>EXPERIMENTAL VALUES:</b> <p>The solubility of NaClO<sub>3</sub> in ethylenediamine at 25°C is</p> <table style="margin-left: 40px;"> <tr> <td>52.8g/100g solvent</td> <td>(authors)</td> </tr> <tr> <td>4.96 mol kg<sup>-1</sup></td> <td>(compiler)</td> </tr> </table>		52.8g/100g solvent	(authors)	4.96 mol kg <sup>-1</sup>	(compiler)
52.8g/100g solvent	(authors)				
4.96 mol kg <sup>-1</sup>	(compiler)				
<b>AUXILIARY INFORMATION</b>					
<b>METHOD/APPARATUS/PROCEDURE:</b> The solvent and excess solid were sealed in soft glass test-tubes and rotated for at least one week in a water thermostat at 25°C. All analyses were made on a weight basis by use of weighing pipets. Both the standard gravimetric determination of chloride and the volumetric method, using dichlorofluorescein as an indicator, were used. The chlorate was reduced to the chloride by boiling with excess sulfurous acid.	<b>SOURCE AND PURITY OF MATERIALS:</b> Ethylenediamine was dehydrated and purified by the method given in ref. 1. Analytical grade NaClO <sub>3</sub> was used.				
<b>ESTIMATED ERROR:</b> Soly: precision within 0.5 % Temp: precision ± 0.08 K.					
<b>REFERENCES:</b> 1. Putnam, G.L.; Kobe, K.A. <i>Trans. Electrochem. Soc.</i> <u>1938</u> , <i>74</i> , 609.					

<b>COMPONENTS:</b> (1) Sodium chlorate; $\text{NaClO}_3$ ; [7775-09-9] (2) Tetrahydrothiophene 1,1-dioxide (sulfolane); $\text{C}_4\text{H}_8\text{O}_2\text{S}$ ; [126-33-0]	<b>ORIGINAL MEASUREMENTS:</b> Starkovich, J.A.; Janghorbani, M. <i>J. Inorg. Nucl. Chem.</i> <u>1972</u> , <i>34</i> , 789-91.
<b>VARIABLES:</b> $T/K = 313.2$	<b>PREPARED BY:</b> Hiroshi Miyamoto
<b>EXPERIMENTAL VALUES:</b> <p>The authors reported results for two solubility determinations at <math>40^\circ\text{C}</math>:</p> <p style="text-align: center;"><math>40 \pm 2 \text{ mmol dm}^{-3}</math></p> <p style="text-align: center;"><math>33 \pm 2 \text{ mmol dm}^{-3}</math></p> <p>The mean of the two values is</p> <p style="text-align: center;"><math>36 \pm 5 \text{ mmol dm}^{-3}</math></p>	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> Excess salt and solvent were sealed in 5 ml glass ampules and equilibrated at $40^\circ\text{C}$ for 250-300 hours with periodic shaking. 1 ml aliquots were transferred in the laboratory atmosphere to 1/2 dram polyethylene vials and sealed. These 1/2 dram vials were then sealed in 2 dram vials, and the chloride content determined by neutron activation ( $^{38}\text{Cl}$ activity). Each sample was irradiated twice for 30 minutes at neutron fluxes of $2.8 \times 10^{10}$ and $5.6 \times 10^9$ neutrons $\text{cm}^{-2} \text{sec}^{-1}$ . A calibration plot of $^{38}\text{Cl}$ activity vs chloride concentration was used for the analyses.  After each activation the 1/2 dram vials were placed in new 2 dram vials, and $\gamma$ -radiation counted in a NaI(Tl) well detector coupled to a 400 channel analyzer. Both the 1.64 and 2.16 MeV peaks were used for the analyses, and were corrected for Compton scattering and decay. Where interferences were noted, only one $\gamma$ -ray was used.	<b>SOURCE AND PURITY OF MATERIALS:</b> Sulfolane (Shell Chemical Co.) was distilled twice under vacuum at temperatures less than $100^\circ\text{C}$ . The purified solvent was found to contain less than 0.02 mass % water by Karl Fischer titration.  Reagent grade $\text{NaClO}_3$ was used.  <b>ESTIMATED ERROR:</b> Soly: precision about $\pm 15\%$ (compiler). Temp: precision $\pm 0.5 \text{ K}$ .  <b>REFERENCES:</b>

<b>COMPONENTS:</b> (1) Sodium chlorate; NaClO <sub>3</sub> ; [7775-09-9] (2) Dimethylformamide; C <sub>3</sub> H <sub>7</sub> N <sub>0</sub> ; [68-12-2]	<b>ORIGINAL MEASUREMENTS:</b> Paul, R.C.; Sreenathan, B.R. <i>Indian J. Chem.</i> <u>1966</u> , 4, 382-6.
<b>VARIABLES:</b> One temperature: 298.2 K	<b>PREPARED BY:</b> Mark Salomon and Hiroshi Miyamoto
<b>EXPERIMENTAL VALUES:</b> <p>The solubility of NaClO<sub>3</sub> in HCON(CH<sub>3</sub>)<sub>2</sub> was reported as          23.4 g/100 g solvent (2.198 mol kg<sup>-1</sup>, compiler)</p> <p>The solid phase is the anhydrous salt.</p>	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> Isothermal method used. Excess salt and 10 ml of solvent were placed in a Pyrex test tube, sealed, and rotated in a constant temperature water-bath for 24-30 hours. The seal was broken in a dry box and the slurry quickly filtered. The authors state that the metal was estimated from a known quantity of the saturated (filtered) solution, but no details were given. The saturated solution was colorless, and the heat of solution estimated to be less than 10 kcal mol <sup>-1</sup> (42 kJ mol <sup>-1</sup> ): method used to estimate the heat of solution was not described.	<b>SOURCE AND PURITY OF MATERIALS:</b> Dimethylformamide (Baker "analyzed" grade) was further purified as described in (1). A.R. grade NaClO <sub>3</sub> was warmed and placed under vacuum for 6-8 hours.
	<b>ESTIMATED ERROR:</b> Soly: nothing specified. Temp: precision ± 0.1 K.
	<b>REFERENCES:</b> 1. Paul, R.C.; Guraya, P.S.; Sreenathan, B.R. <i>Indian J. Chem.</i> <u>1963</u> , 1, 335.

<b>COMPONENTS:</b> (1) Sodium chlorate; NaClO <sub>3</sub> ; [7775-09-9] (2) Hydrazine; N <sub>2</sub> H <sub>4</sub> ; [302-01-2]	<b>ORIGINAL MEASUREMENTS:</b> Welsh, T.W.B.; Broderson, H.J.  <i>J. Am. Chem. Soc.</i> <u>1915</u> , 37, 816-24.
<b>VARIABLES:</b>  Room temperature (Compiler's assumption)	<b>PREPARED BY:</b>  Mark Salomon and Hiroshi Miyamoto
<b>EXPERIMENTAL VALUES:</b>  The solubility of NaClO <sub>3</sub> in hydrazine at room temperature was given as: $0.66 \text{ g/1 cm}^3 \text{ N}_2\text{H}_4$  The authors stated that the chief object of the research was to obtain qualitative and approximate quantitative data, and the temperature was not kept constant.	
<b>AUXILIARY INFORMATION</b>	
<b>METHOD/APPARATUS/PROCEDURE:</b> The solubility vessel was a glass tube to which a U-shaped capillary tube was attached to the bottom. A stopcock at the end of the capillary permitted the adjustment of the rate of flow of dry nitrogen. About 1 cc of anhydrous hydrazine was placed in the tube, and small amounts of NaClO <sub>3</sub> added from weighing bottle. After each addition of NaClO <sub>3</sub> , a loosely fitting cork was placed in the top of the solubility tube. Nitrogen was bubbled through solution until the salt dissolved. The process was repeated until no more salt would dissolve. Temperature was not kept constant.  The accuracy in this method is very poor. In addition the authors stated that it was difficult to prevent the oxidation of hydrazine.	<b>SOURCE AND PURITY OF MATERIALS:</b> Anhydrous hydrazine was prepd by first partially dehydrating commercial hydrazine with sodium hydroxide according to the method of Raschig (1). Further removal of water by distillation from barium oxide after the method of de Bruyn (2). The distillation apparatus employed and the procedure followed in the respective distillation were those described by Welsh (3). The product was found on analysis to contain 99.7 % hydrazine. The hydrazine was stored in 50 cm <sup>3</sup> sealed tubes. Sodium chlorate was the ordinary pure chemical of standard manufacture.  <b>ESTIMATED ERROR:</b> Soly: accuracy $\pm$ 50 % at best (compilers).  <b>REFERENCES:</b> 1. Raschig, F. <i>Ber. Dtsch. Chem. Ges.</i> <u>1927</u> , 43, 1927.; Hale, C.F.; Shetterly, F.F. <i>J. Am. Chem. Soc.</i> <u>1911</u> , 33, 1071. 2. de Bruyn, L. <i>Rec. Trav. Chim. Pays-Bas.</i> <u>1895</u> , 14, 458. 3. Welsh, T.W. <i>J. Am. Chem. Soc.</i> <u>1915</u> , 37, 497.