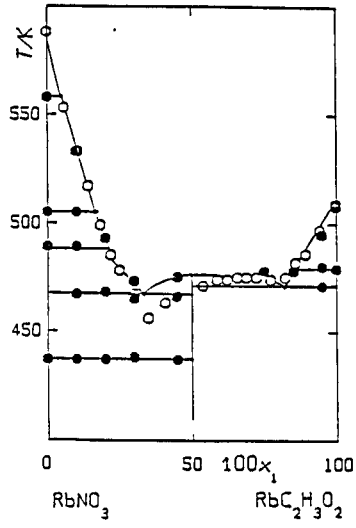
COMPONENTS:	EVALUATOR:
(1) Rubidium ethanoate (rubidium acetate); $RbC_2H_3O_2$; [563-67-7] (2) Rubidium nitrate; $RbNO_3$; [13126-12-0]	Ferloni, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This binary was studied for the first time by Gimel'shtein and Diogenov (Ref. 1) who reported the lower boundary of the isotropic liquid region in the reciprocal ternary $Na,Rb/C_2H_3O_2,NO_3$ on the basis of visual polythermal observations. They claimed the existence of the intermediate compound $Rb_3(C_2H_3O_2)_2NO_3$ (congruently melting at 475 K [202 °C]) and of two eutectics, E_1, at 471 K (198 °C) and $100x_1$= 81.5, and E_2, at 454 K (181 °C) and $100x_1$= 35.5.



In a subsequent paper on the reciprocal ternary $Cs,Rb/C_2H_3O_2,NO_3$ (Ref. 2), the same Authors reported refined values of the coordinates of the second eutectic (467 K [194 °C] and $100x_1$= 33), obtained with the same experimental approach. The new data suggest that those reported in Ref. 1 should be affected by a systematic error (as high as 13 K) in the composition range $20 \leq 100x_1 \leq 50$.

The system was once more investigated by Gimel'shtein (Ref. 3) who directly measured with D.T.A. the temperatures of the characteristic points previously inferred by the shape of the liquidus. Besides a substantial agreement with the findings of Ref. 2, he reported two more solid state transitions of pure $RbNO_3$, at 437 and 505 K. Moreover, the existence of an intermediate compound was more reliably proved by a comparison of the X-ray powder pattern of an intermediate mixture, which showed diffraction lines not pertinent to either pure component.

Finally, the composition of the compound was adjusted by Diogenov, Erlykov and Gimel'shtein (Ref. 4) during an investigation of the reciprocal ternary $Li,Rb/C_2H_3O_2,NO_3$ with coupled visual polythermal and thermographical analysis. According to this paper, the compound has a 1:1 composition and congruently melts at 476 K (203 °C) and the eutectics are at 467 K (194 °C) and $100x_1$= 33.5 and at 471 K (198 °C) and $100x_1$= 82, respectively.

In spite of the lack of any comment by the Authors on their previous results, the evaluator is inclined to recommend the last interpretation as the more reliable. The figure reports phase boundaries drawn accordingly. On the same figure, the two sets of experimental data, available in numerical form (the visual polythermal data from Ref. 1 and the thermographical data from Ref. 3), have also been plotted as open and full circles, respectively. As a further remark, the melting and transition points of component 1 reported on Ref.s 1-4 reasonably match the most recent literature data: $T_{fus}(1)$= 510, 515, 514, 514, 509; $T_{trs}(1)$= 498 (Ref. 5). For what concerns the phase transitions of component 2, reference can be made to the recent work by Kennedy et al. (Ref. 6 and the bibliography therein quoted).

REFERENCES:

(1) Gimel'shtein, V.G.; Diogenov, G.G.; **Zh. Neorg. Khim.** 1958, **3**, 1644-1649 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1958, **3** (7), 230-237.
(2) Diogenov, G.G.; Gimel'shtein, V.G.; **Zh. Neorg. Khim.** 1966, **11**, 207-209 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1966, **11**, 113-114.
(3) Gimel'shtein, V.G.; **Tr. Irkutsk. Politekh. Inst.** 1971, No. 66, 80-100.
(4) Diogenov, G.G.; Erlykov, A.M.; Gimel'shtein, V.G.; **Zh. Neorg. Khim.** 1974, **19**, 1955-1960; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1974, **19**, 1069-1073 (*).
(5) Sanesi, M.; Cingolani, A.; Tonelli, P.L.; Franzosini, P.; **Thermal Properties, in Thermodynamic and Transport Properties of Organic Salts**, IUPAC Chemical Data Series No. 28 (Franzosini, P.; Sanesi, M.; Editors), Pergamon Press, Oxford, 1980, 29-115.
(6) Kennedy, S.W.; Kriven, W.M.; **J. Mater. Sci.** 1976, **11**, 1767-1769.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Rubidium ethanoate (rubidium acetate); $RbC_2H_3O_2$; [563-67-7] (2) Rubidium nitrate; $RbNO_3$; [13126-12-0]	Gimel'shtein, V.G.; Diogenov, G.G. Zh. Neorg. Khim. 1958, 3, 1644-1649 (*); Russ. J. Inorg. Chem. (Engl. Transl.) 1958, 3 (7), 230-237.
VARIABLES:	PREPARED BY:
Temperature	D'Andrea, G.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
317	590	0	212	485	22	201	474	59	202	475	82.5
300	573	3	205	478	25	201	474	62.5	209	482	86
280	553	6	194	467	30.2	202	475	66	213	486	89.5
260	533	10.5	183	456	35	202	475	69	224	497	94.5
244	517	14.3	190	463	41	202	475	72.5	236	509	100
226	499	18.5	198	471	54	201	474	77.5			

[a] T/K values calculated by the compiler.

Characteristic point(s): Eutectic, E_1, at 198 °C and $100x_1$ = 81.5 (authors).
Eutectic, E_2, at 181 °C and $100x_1$ = 35.5 (authors).

Intermediate compound: $Rb_3(C_2H_3O_2)_2NO_3$, congruently melting at 202 °C (authors).

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured with a Chromel-Alumel thermocouple and a 17-mV-range millivoltmeter. Mixtures being hygroscopic, the method of additions with determination of the sample mass by difference was employed in order to avoid hydration.	Not stated. Component 1 undergoes a phase transition at t/°C= 216. Component 2 undergoes phase transitions at t/°C= 210, 290.
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Rubidium ethanoate (rubidium acetate); $RbC_2H_3O_2$; [563-67-7] (2) Rubidium nitrate; $RbNO_3$; [13126-12-0]	Diogenov, G.G.; Gimel'shtein, V.G. Zh. Neorg. Khim. 1966, 11, 207-209 (*); Russ. J. Inorg. Chem. (Engl. Transl.) 1966, 11, 113-114.
VARIABLES:	PREPARED BY:
Temperature	D'Andrea, G.

EXPERIMENTAL VALUES:

The paper reports - inter alia - on a refinement of the title binary, previously studied by the same authors (Ref. 1). According to the present investigation, the coordinates of the second eutectic are:

Eutectic, E_2, at 194 °C and $100x_1$ = 33 (authors).

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured with a Chromel-Alumel thermocouple.	Not stated.
	REFERENCES:
ESTIMATED ERROR:	(1) Gimel'shtein, V.G.; Diogenov, G.G. Zh. Neorg. Khim. 1958, 3, 1644-1649 (*); Russ. J. Inorg. Chem. (Engl. Transl.), 1958, 3 (7), 230-237.
Temperature: accuracy probably ±2 K (compiler).	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Rubidium ethanoate (rubidium acetate); $RbC_2H_3O_2$; [563-67-7] (2) Rubidium nitrate; $RbNO_3$; [13126-12-0]	Gimel'shtein, V.G. **Tr. Irkutsk. Politekh. Inst.** 1971, No. 66, 80-100.
VARIABLES:	PREPARED BY:
Temperature.	D'Andrea, G.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
235	508	0	202	475	55.0	195	468	80.0	164	437	90.0
206	479	0	193	466	55.0	164	437	80.0	315	588	100
222	495	5.0	164	437	55.0	260	533	90.0	285	558	100
207	480	5.0	200	473	70.0	232	505	90.0	232	505	100
198	471	5.0	192	465	70.0	216	489	90.0	216	489	100
205	478	15.0	165	438	70.0	194	467	90.0	164	437	100
205	478	25.0	220	493	80.0						

[a] T/K values calculated by the compiler.

The meaning of the data listed in the table becomes apparent by observing the figure reported in the critical evaluation.

Characteristic point(s):

Eutectic, E_1, at 198 °C (composition not reported) (author).
Eutectic, E_2, at 194 °C (composition not reported) (author).

Intermediate compound(s):

$Rb_3(C_2H_3O_2)_2NO_3$, congruently melting at 202 °C (author), and undergoing a phase transition at 65 °C (author).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Differential thermal analysis (using a derivatograph with automatic recording of the heating curves) and room temperature X-ray diffractometry (using a URS-501M apparatus) were employed. X-ray patterns were taken at $100x_2$= 40.	Not stated. Component 1 melts at t_{fus}/°C= 235, and undergoes a phase transition at t/°C= 206. Component 2 melts at t_{fus}/°C= 315, and undergoes phase transitions at t/°C= 164, 216, 232, 285.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Rubidium ethanoate (rubidium acetate); $RbC_2H_3O_2$; [563-67-7] (2) Rubidium nitrate; $RbNO_3$; [13126-12-0]	Diogenov, G.G.; Erlykov, A.M.; Gimel'shtein, V.G. **Zh. Neorg. Khim.** 1974, **19**, 1955-1960; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1974, **19**, 1069-1073 (*).
VARIABLES:	PREPARED BY:
Temperature.	D'Andrea, G.

EXPERIMENTAL VALUES:

Characteristic point(s):

Eutectic, E_1, at 198 °C and $100x_2$= 18 (authors).
Eutectic, E_2, at 194 °C and $100x_2$= 66.5 (authors).

Intermediate compound(s):

$Rb_2C_2H_3O_2NO_3$, congruently melting at 203 °C (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The data were obtained by visual polythermal and thermographic methods, supplemented with a few X-ray diffraction patterns.	Not stated. Component 1 undergoes a phase transition at $t/°C$= 206 and melts at $t_{fus}/°C$= 236. Component 2 melts at $t_{fus}/°C$= 317.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: