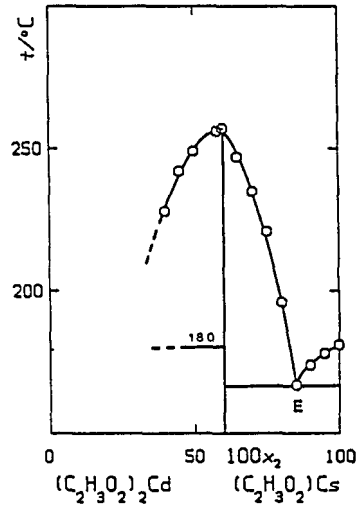
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0]	Nadirov, E.G.; Bakeev, M.I. **Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR** 1974, 25, 129-141.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$
228	501	40
242	515	45
249	522	50
256[b]	529	58
257	530	60
247	520	65
235	508	70
221	494	75
196	469	80
167	440	85
174	447	90
178	451	95
181	454	100

[a] T/K values calculated by the compiler.
[b] 456 °C in the original table (compiler).



Characteristic point(s):
Eutectic, E, at 167 °C (164 °C according to Fig. 9 of the original paper; compiler) and $100x_2$ = 85 (authors).

Intermediate compound(s):
$(C_2H_3O_2)_7Cd_2Cs_3$, congruently melting at 257 °C (255 °C, thermographic analysis), and exhibiting a polymorphic transition (at 130 °C, thermographic analysis; 133 °C, conductometry).

Note - The system was investigated at $40 \leq 100x_2 \leq 100$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple and a PP potentiometer. Additional investigations were performed by means of thermographical analysis, electrical conductometry, and X-ray diffractometry. NOTE: The occurrence of the intermediate compound is supported by X-ray diffractometry, and seems reliable. According to the authors, this compound has a density of 2.472 g cm^{-3}. Although the $T_{fus}(2)$ value (454 K) given in this paper is lower than the corresponding one from Table 1 of the Preface, i.e., 463 K, the general trend of the phase diagram should be considered as substantially correct.	Not stated. ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler). REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was studied by Lehrman and Schweitzer (Ref. 1), Il'yasov (Ref. 2), Pavlov and Golubkova (Ref. 3), and Nadirov and Bakeev (Ref. 4), with significantly discrepant results.

Lehrman and Schweitzer (Ref. 1), and Pavlov and Goblubkova (Ref. 3) claim the existence of three congruently melting intermediate compounds, and four eutectics; however, both the coordinates of the eutectics, and the compositions and the fusion temperatures of the intermediate compounds given in either paper do not allow one to reconcile the phase diagram proposed in Ref. 1 with that reported in Ref. 3.

According to Il'yasov (Ref. 2), a single eutectic should exist [at 505 K (232 °C) and $100x_2 = 75$] within the composition range he investigated, viz., $0 \leq 100x_1 \leq 43$ (the corresponding compositions given in the original paper refer to equivalent fractions of potassium ethanoate).

Finally, according to Nadirov and Bakeev (Ref. 4), a eutectic at either 461, or 469, or 476 K (188, 196, 203 °C, respectively) dependently on the method employed for the determination, and $100x_2 = 54$, and an intermediate compound, $(C_2H_3O_2)_8CdK_6$, incongruently melting at either 518, or 524, or 526 K (245C, 251C, 253 °C, respectively) dependently on the method employed for the determination, are the characteristic features of the system.

The general disagreement existing among the above mentioned authors seems not to be attributed to differences in the purity of the alkanoates they employed, although this factor might play some role in the case of Lehrman and Schweitzer (Ref. 1), inasmuch as they report a fusion temperature of component 2, $T_{fus}(2) = 565$ K (292 °C), which is significantly lower than the generally accepted value of about 579 K (578.7±0.5 K, in Table 1 of the Preface).

Indeed, it seems more likely that the formation of complex ions in the melt (Ref. 4) might affect the results obtained with techniques (e.g., the visual polythermal method) implying the observation of the system during cooling. Should these complex ions be sufficiently stable, the actual liquidus might be different as a consequence of largely different cooling rates.

Taking into account this possibility, the evaluator is inclined to consider as more reliable the phase diagram suggested by Nadirov and Bakeev (Ref. 4), as it is supported by results obtained with several investigation methods, including X-ray diffractometry which was employed to confirm the existence of the intermediate compound $(C_2H_3O_2)_8CdK_6$.

Some doubt, however, might subsist about the interpretation of the slope variation Nadirov and Bakeev (Ref. 4) observed in the plot electric conductivity vs. T, as due to an allotropic transition of potassium ethanoate at 467 K (194 °C). According to Table 1 of the Preface, inter alia, a solid state transition in this salt is to be expected only at $T_{trs}(2) = 422.2 \pm 0.5$ K.

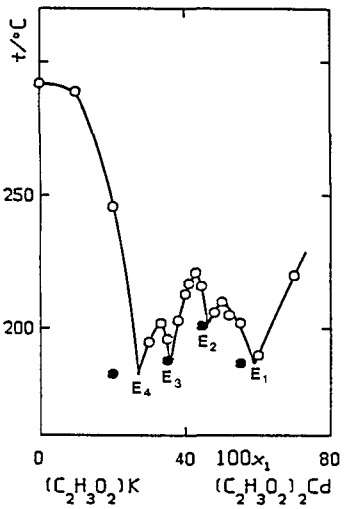
REFERENCES:

(1) Lehrman, A.; Schweitzer, D.
J. Phys. Chem. 1954, **58**, 383-384.
(2) Il'yasov, I.I.
Zh. Obshch. Khim, 1962, 32, 347-349.
(3) Pavlov, V.L.; Golubkova, V.V.
Vestn. Kiev. Politekh. Inst. Ser. Khim. Mashinostr. Tekhnol. 1969, No. 6, 76-79.
(4) Nadirov, E.G.; Bakeev, M.I.
Tr. Khim.-Metall. Inst. Akad. Nauk. Kaz. SSR 1974, 25, 129-141.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Lehrman, A.; Schweitzer, D. **J. Phys. Chem.** 1954, **58**, 383-384.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
292	565	0.0
289	562	10.0
246	519	20.0
183[b]	456	20.0
195	468	30.0
202	475	33.3
196	469	35.0
188[b]	461	35.0
203	476	38.0
213	486	40.0
217	490	41.0
221	494	42.86
216	489	44.44
201[b]	474	44.44
206	479	48.0
210	483	50.0
205	478	52.0
202	475	55.0
187[b]	460	55.0
190	463	60.0
220	493	70.0



[a] T/K values calculated by the compiler.
[b] Eutectic temperatures (filled circles in the figure).

Characteristic point(s):

Eutectic, E_1, at 187 °C (authors) and $100x_2$= 41 (compiler).
Eutectic, E_2, at 201 °C (authors) and $100x_2$= 54 (compiler).
Eutectic, E_3, at 188 °C (authors) and $100x_2$= 64 (compiler).
Eutectic, E_4, at 183 °C (authors) and $100x_2$= 73 (compiler).

Intermediate compound(s):

$(C_2H_3O_2)_3CdK$, congruently melting at 210 °C (authors).
$(C_2H_3O_2)_{10}Cd_3K_4$, congruently melting at 221 °C (authors).
$(C_2H_3O_2)_4CdK_2$, congruently melting at 202 °C (authors).

AUXILIARY INFORMATION

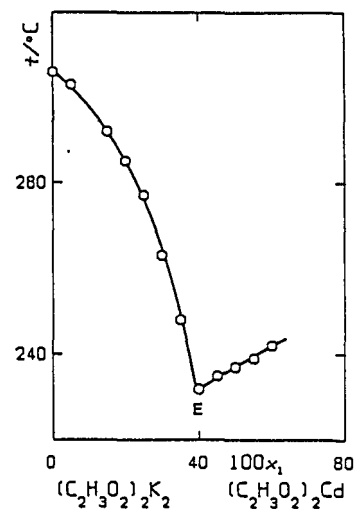
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A molten salt bath was employed to melt the mixtures placed in a 2.5x20 cm Pyrex tube. The beginning of crystallization (under stirring and by seeding) was observed visually and the corresponding temperature was measured with a potentiometer (16 mV full scale) and a Copper-Constantane thermocouple (whose emf could be read to ±0.02 mV), calibrated at the boiling points of water and benzophenone, and at the fusion points of tin and potassium nitrate.	Component 1: "C.P." material added with a few drops of glacial ethanoic acid and dried in an oven at 140 °C. Component 2: "Analytical Reagent" material dried at 140 °C for one week.
	ESTIMATED ERROR: Temperature: accuracy probably ±0.5 K (compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)_2K_2$; [127-08-2]	Il'yasov, I.I. Zh. Obshch. Khim. 1962, 32, 347-349.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
306	579	0
303	576	5
292	565	15
285	558	20
277	550	25
263	536	30
248	521	35
232	505	40
235	508	45
237	510	50
239	512	55
242	515	60

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



Characteristic point(s):

Eutectic, E, at 232 °C and $100x_2 = 60$ (author).

Note - The system was investigated at $0 \leq 100x_1 \leq 60$.

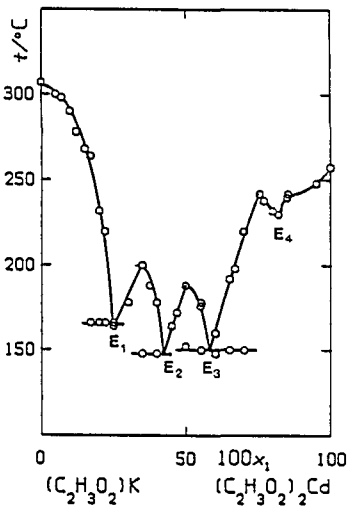
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Pavlov, V.L.; Golubkova, V.V. Vestn. Kiev. Politekh. Inst. Ser. Khim. Mashinostr. Tekhnol. 1969, No. 6, 76-79.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
300	573	5.0	152	425	49.9
298	571	7.1	176	449	55.0
290	563	9.9	178	451	55.2
278	551	11.9	150[b]	423	55.2
268	541	15.0	160	433	60.1
264	537	17.0	148[b]	421	60.1
166[b]	439	17.0	160	433	60.2
232	505	20.1	148[b]	421	60.2
166[b]	439	20.1	192	465	65.1
220	493	22.1	150	423	65.1
166[b]	439	22.1	198	471	66.9
164	437	25.0	220	493	69.7
166	439	25.1	220	493	70.1
178	451	30.1	150	423	70.1
200	473	34.9	242	515	75.5
148[b]	421	34.9	238	511	77.0
188	461	37.5	232	505	80.0
178	451	39.9	230	503	82.0
148[b]	421	39.9	240	513	85.0
164	437	45.1	242	515	85.3
172	445	46.9	248	521	95.1
188	461	49.9			



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

Characteristic point(s):

Eutectic, E_1, at 166 °C and $100x_1$= 24 (authors).
Eutectic, E_2, at 148 °C and $100x_1$= 42 (authors).
Eutectic, E_3, at 150 °C and $100x_1$= 58 (authors).
Eutectic, E_4, at 230 °C and $100x_1$= 82 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_4CdK_2$, congruently melting at 200 °C (authors).
$(C_2H_3O_2)_3CdK$, congruently melting at 188 °C (authors).
$(C_2H_3O_2)_7Cd_3K$, congruently melting at 242 °C (authors).

AUXILIARY INFORMATION

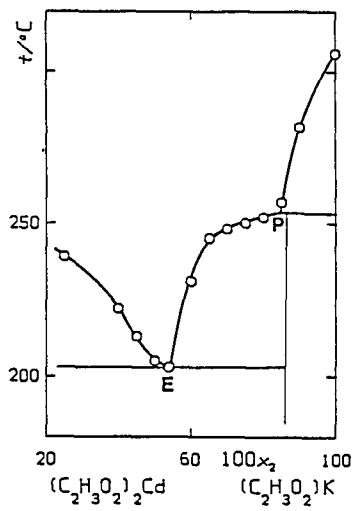
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method and time-temperature curves. Mixtures prepared in a glove-box.	Component 1 of analytical purity, dehydrated (T_{fus}(1)= 257-258°C, 530-531 K). Component 2 of analytical purity, heated at 110-140 °C to constant mass (T_{fus}(2)= 306-308°C, 579-581 K).
ESTIMATED ERROR:	
Temperature: accuracy probably ±2 K (compiler).	

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Nadirov, E.G.; Bakeev, M.I. **Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR** 1974, 25, 129-141.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$
239	512	25
222	495	40
213	486	45
205	478	50
203	476	54
231	504	60
245	518	65
248	521	70
250	523	75
252	525	80
257	530	85
282	555	90
306	579	100

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



Characteristic point(s):

Eutectic, E, at 203 °C (visual polythermal method, initial crystallization), or 196 °C (thermographical analysis, fusion temperature), or 188 °C (conductometry, fusion temperature), and $100x_2$= 54 (authors).

Peritectic, P, at 253 °C (visual polythermal method), or 245 °C (thermographical analysis), or 251°C (conductometry, Fig.3 of the original paper), erroneously reported as 215 °C in the text (compiler), and $100x_2$~ 84 (compiler).

Intermediate compound: $(C_2H_3O_2)_8CdK_6$, incongruently melting.

Note 1 - The system has been investigated at $25 \leq 100x_2 \leq 100$.

Note 2 - At about 194 °C abrupt changes (to be related to a polymorphic transition; authors) occur in the electrical conductivity of the mixtures with $100x_2$= 85, 90, 95.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple and a PP potentiometer. Additional investigations have been performed by means of thermographical analysis, electrical conductometry, and X-ray diffractometry.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).

COMPONENTS:	EVALUATOR:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was studied by Il'yasov (Ref. 1), and Pavlov and Golubkova (Ref. 2). The former author claims the diagram to be of the simple eutectic type, with the invariant at 528 K (255 °C) and $100x_2$= 68 (the eutectic composition is given in Ref. 1 as $100x_2$= 52 since it refers to the equivalent fraction of component 2), whereas Pavlov and Golubkova suggest the existence of the intermediate compound $(C_2H_3O_2)_4CdNa_2$, congruently melting at 527 K (254 °C), and, accordingly, of two eutectics, E_1, E_2, occurring at 496 K (223 °C) and $100x_2$= 75, and at 507 K (234 °C) and $100x_2$= 58, respectively.

Although the experimental data by Pavlov and Golubkova seem more detailed than those by Il'yasov, the evaluator has no arguments to definitely prefer the diagram shown in Ref. 2, ruling out that of Ref. 1.

As a comment, one may notice that the fusion temperature of the intermediate compound given in Ref. 2 is close to that of the eutectic reported in Ref. 1. This might suggest undercooling of Pavlov and Golubkova's samples. In any case, the existence of the intermediate compound suggested by the latter authors should be confirmed with X-ray diffractometry.

It is finally to be added that the fusion temperature of component 2 by Il'yasov (601 K) meets that listed in Table 1 of the Preface (601.3±0.5 K), whereas the value by Pavlov and Golubkova (595 K) is significantly lower.

REFERENCES:

(1) Il'yasov, I.I.
Zh. Obshch. Khim. 1962, **32**, 347-349.

(2) Pavlov, V.L.; Golubkova, V.V.
Vestn. Kiev. Politekh. Inst. Ser. Khim. Mashinostr. Tekhnol. 1969, No. 6, 76-79.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)_2Na_2$; [127-09-3]	Il'yasov, I.I. **Zh. Obshch. Khim.** 1962, 32, 347-349.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

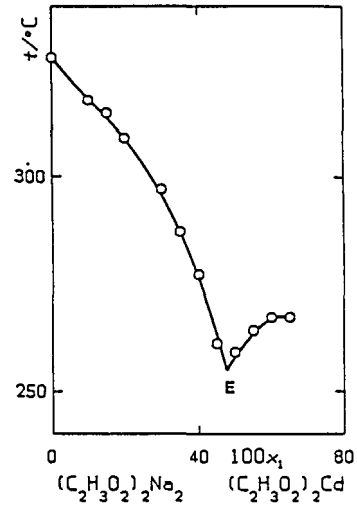
t/°C	T/K[a]	$100x_1$
328	601	0
318	591	10
315	588	15
309	582	20
297	570	30
287	560	35
277	550	40
261	534	45
259	532	50
264	537	55
267	540	60
267	540	65

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

Characteristic point(s):

Eutectic, E, at 255 °C and $100x_2$ = 52 (author).

Note - The system was investigated at $0 \leq 100x_1 \leq 65$.



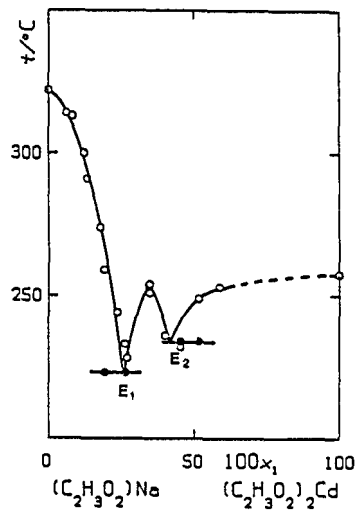
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Pavlov, V.L.; Golubkova, V.V. Vestn. Kiev. Politekh. Inst. Ser. Khim. Mashinostr. Tekhnol. 1969, No. 6, 76-79.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
322	595	0
314	587	6.2
300	573	12.3
274	547	17.9
244	517	23.6
228	501	27.1
254	527	34.8
236	509	40.2
313	586	8.2
291	564	13.2
259	532	19.2
223[b]	496	19.2
233	506	26.3
223[b]	496	26.3
251	524	34.8
232	505	45.4
234[b]	507	45.4
249	522	51.6
234[b]	507	51.6
253	526	58.7
257-258	530-531	100



[a] T/K values calculated by the compiler.
[b] Eutectic temperatures (filled circles in the figure).

Characteristic point(s):
Eutectic, E_1, at 223 °C and $100x_1$= 25 (authors).
Eutectic, E_2, at 234 °C and $100x_1$= 42 (authors).

Intermediate compound(s):
$(C_2H_3O_2)_4CdNa_2$, congruently melting at 254 °C (authors).

AUXILIARY INFORMATION

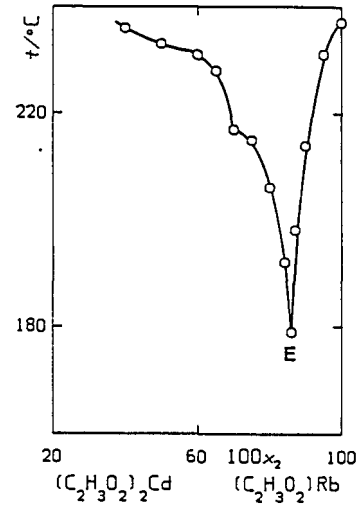
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method and time - temperature curves; temperatures measured with a Copper-Constantane thermocouple. Mixtures prepared in a glove-box and added with 1-3 drops anhydrous ethanoic acid to prevent thermal decomposition of component 1.	Component 1 of analytical purity, in part dehydrated, and in part recrystallized from aqueous (2%) ethanoic acid and then dehydrated. Component 2 of analytical purity, recrystallized and then heated at 110-140 °C to constant mass.
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cadmium ethanoate (cadmium acetate); $(C_2H_3O_2)_2Cd$; [543-90-8] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Nadirov, E.G.; Bakeev, M.I. Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR 1974, 25, 129-141.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$
236	509	40
233	506	50
231	504	60
228	501	65
217	490	70
215	488	75
206	479	80
192	465	84.1
179	452	86
198	471	87
214	487	90
231	504	95
237	510	100

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



Characteristic point: Eutectic, E, at 179 °C (visual polythermal method, initial crystallization), or 145 °C (fusion temperature by thermographical analysis), or 169 °C (fusion temperature by conductometry), and $100x_2$ = 86 (authors).

Intermediate compound: $(C_2H_3O_2)_4CdRb_2$, incongruently melting at 219 °C (visual polythermal method), 192 °C (thermographical analysis), or 206 °C (conductometry).

Note - The system has been investigated at $40 \leq 100x_2 \leq 100$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple and a PP potentiometer. Additional investigations were performed by means of thermographical analysis and electrical conductometry. NOTE: The occurrence of intermediate compounds in the binaries $C_2H_3O_2$/Cd, K and $C_2H_3O_2$/Cd, Cs was claimed by the same authors in the same paper, and supported with X-ray diffraction patterns: for the present system, on the contrary, no analogous evidence was given. Moreover, the exceedingly large differences among the eutectic temperatures obtained with different techniques is to be stressed.	Not stated. ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler). REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Cesium ethanoate (cesium acetate) $(C_2H_3O_2)Cs$; [3396-11-0] (2) Potassium ethanoate (potassium acetate) $(C_2H_3O_2)K$; [127-08-2]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

Results on this binary have been repeatedly reported by Diogenov et al. (Refs. 1-3) as a part of their investigations on ternary and reciprocal ternary systems. These authors, who carried out visual polythermal observations on the liquidus, define the system as of the eutectic type with the invariant at either 405 K (132 °C; Ref. 1), or 403 K (130 °C; Ref. 2), or 413 K (140 °C; Ref. 3), and $100x_2$= 28.5. It is not clear whether the different eutectic temperatures given in Refs. 1-3 come from different sets of measurements or depend on adjustments suggested by the general topology of the particular ternary studied in each paper. A knee in the liquidus branch richer in component 1 (Ref. 1) has been interpreted by these authors as due to a phase transition occurring in this salt at 447 K (174 °C). Diogenov et al. also claimed in a previous paper (Ref. 4) the occurrence in component 2 of a phase transition at 565-566 K (292-293 °C).

The DTA investigations by Storonkin et al. (Ref. 5) give further support to the fact that the system is of the eutectic type although the temperature (412 K) and composition ($100x_2$= 32) of the invariant have been singled out by extrapolation of the two liquidus branches. According to Fig. 3 of the original paper (Ref. 5), the authors assume that the eutectic equilibrium covers the composition range from $100x_2$= 0 to $100x_2$= 100. They do not mention, however, the occurrence of any allotropic transition in either component: according to Table 1 this ought to be correct for what concerns component 1, whereas component 2 ought to undergo a phase transition at 422.2±0.5 K.

Storonkin et al. (Ref. 5) ascribe the differences between their and Diogenov et al.'s diagram to the higher purity of the salts they employed: indeed, the fusion temperature they report for component 1 [$T_{fus}(1)/K$ = 467] is much closer to that listed in Table 1 of the Preface (463±1) than that given by Diogenov et al. (453).

As a conclusion, the following remarks should be taken into account.

(i) The phase transition temperature reported for cesium ethanoate by Diogenov et al. seems to be unreliable.

(ii) The phase transition temperature reported for potassium ethanoate in Ref. 4 (565-566 K) seems also to be unreliable, as it cannot be identified with any transition temperature found by other investigators (Ref. 6).

(iii) The eutectic temperature reported by Storonkin et al., viz., 412 K, seems satisfactorily supported by their DTA results, as well as the trend of the liquidus branch richer in cesium ethanoate. On the contrary, there is some doubt about the reliability of the other liquidus branch which, according to these authors, does not show any "knee" to be possibly matched with the expected (see above) phase transition of potassium ethanoate. Consequently, the eutectic composition (attained by extrapolation of the liquidus branches) cannot be considered more reliable than that reported by Diogenov.

(iv) Finally, the complete immiscibility in the solid state should be more carefully verified, e.g., by further DTA or DSC investigations extended to extreme compositions.

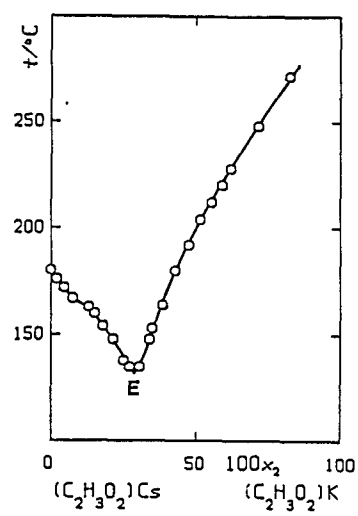
REFERENCES:

(1) Nurminskii, N.N. and Diogenov, G.G.; **Zh. Neorg. Khim.** 1960, 5, 2084-2087; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1960, 5, 1011-1013 (*).
(2) Diogenov, G.G. and Sergeeva, G.S.; **Zh. Neorg. Khim.** 1965, 10, 292-294; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1965, 10, 153-154 (*).
(3) Diogenov, G.G. and Morgen, L.T.; **Fiz.-Khim. Issled. Rasplavov Solei, Irkutsk** 1975, 59-61.
(4) Diogenov, G.G.; Nurminskii, N.N. and Gimel'shtein, V.G.; **Zh. Neorg. Khim.** 1957, 2, 1596-1600 ; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1957, 2(7), 237-245.
(5) Storonkin, A.V.; Vasil'kova, I.V. and Tarasov, A.A.; **Vestn. Leningr. Univ., Fiz., Khim.** 1977, (4), 80-85.
(6) 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.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Nurminskii, N.N.; Diogenov, G.G. Zh. Neorg. Khim. 1960, 5, 2084-2087; Russ. J. Inorg. Chem. (Engl. Transl.) 1960, 5, 1011-1013 (*).
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$
180	453	0
176	449	2
172	445	4.5
167	440	7.5
163	436	13.0
160	433	15.0
154	427	18.0
148	421	21.5
138	411	25.0
135	408	27.0
135	408	30.5
148	421	34.0
153	426	35.0
164	437	38.5
180	453	43.0
192	465	47.5
204	477	51.5
212	485	55.5
220	493	59.0
228	501	62.0
248	521	71.5
272	545	82.5



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

Characteristic point(s):
Eutectic, E, at 132 °C and $100x_2$= 28.5 (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured with a Chromel-Alumel thermocouple and a 17 mV millivoltmeter.	Not stated. Component 1 undergoes a phase transition at $t_{trs}(1)/°C$= 174 and melts at $t_{fus}(1)/°C$= 182 (Fig. 1 of the original paper), or 180 (table). Component 2 melts at $t_{fus}(2)/°C$= 310 (Fig. 1).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Diogenov, G.G.; Sergeeva, G.S. Zh. Neorg. Khim. 1965, 10, 292-294; Russ. J. Inorg. Chem. (Engl. Transl.) 1965, 10, 153-154 (*).
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

The authors refer to Ref. 1 for the experimental values, although giving a different eutectic temperature.

Characteristic point(s):

Eutectic, E, at 130 °C and $100x_2$= 28.5 (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured with a Chromel-Alumel thermocouple.	Not stated. Component 1: $t_{fus}(1)/°C$= 180 (Fig. 1 of the original paper). Component 2: $t_{fus}(2)/°C$= 310 (Fig. 1).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Nurminskii, N.N.; Diogenov, G.G. Zh. Neorg. Khim. 1960, 5, 2084-2087; Russ. J. Inorg. Chem., (Engl. Transl.) 1960, 5, 1011-1013.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Diogenov, G.G.; Morgen, L.T. **Fiz.-Khim. Issled. Rasplavov Solei, Irkutsk, 1975, 59-61.**
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

The authors refer to Ref. 1 for the experimental values, although giving a different eutectic temperature.

Characteristic point(s):

Eutectic, E, at 140 °C and $100x_1$= 71.5 (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured with a Chromel-Alumel thermocouple and a millivoltmeter.	Not stated. Component 1: $t_{fus}(1)/°C$= 187 (Fig. 1 of the original paper). Component 2: $t_{fus}(2)/°C$= 308 (Fig. 1).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Nurminskii, N.N.; Diogenov, G.G. **Zh. Neorg. Khim. 1960, 5, 2084-2087; Russ. J. Inorg. Chem., (Engl. Transl.) 1960, 5, 1011-1013.**

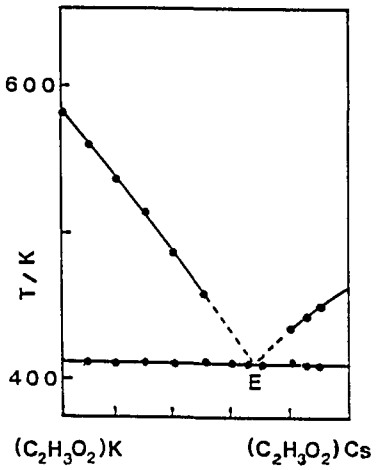
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2]	Storonkin, A.V.; Vasil´kova, I.V.; Tarasov, A.A. **Vestn. Leningr. Univ., Fiz., Khim.** 1977, (4), 80-85.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

Data reported only in graphical form (see figure).

Characteristic point(s):

Eutectic, E, at 412 K and $100x_1$= 68 (authors).



AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
DTA and "contact polythermal method" under polarized light. IR spectra were also used to state the existence of intermediate compound(s).	Component 1 synthetized from Cs_2CO_3 and ethanoic acid ($T_{fus}(1)/K$= 467; authors). Component 2 of analytical purity recrystallized twice from water and dried under vacuum ($T_{fus}(2)/K$= 584; authors). The purity of both components was checked by thermographical analysis. The mixtures were prepared in a glove box.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Franzosini, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This binary was first studied as a side of the ternary $C_2H_3O_2$/Cs, Li, Rb (Ref. 1), and re-determined by the same group ten years later (Ref. 2). Due to more accurate experimental methods (DTA and X-ray diffractometry) employed in the latter paper (Ref. 2), the phase diagram therein shown seems much more reliable than the previous one (Ref. 1).

Accordingly, the system is to be considered as characterized (Ref. 2) by the occurrence of a single intermediate compound, $(C_2H_3O_2)_3CsLi_2$, congruently melting at 563 K (290 °C), and by two eutectics, at 420 K (147 °C) and $100x_1$ = 77, and at 520 K (247 °C) and $100x_1$ = 12, respectively.

The main difference of this phase diagram with respect to that presented in the previous work (Ref. 1) is the lack of a further intermediate compound, $(C_2H_3O_2)_2CsLi$ (incongruently melting). Consequently to this lack, however, a large part of the phase diagram of the ternary $C_2H_3O_2$/Cs, Li, Rb (Ref. 1) ought to be redrawn, which, at the present time has not been done, at least as far as the evaluator knows.

The fusion temperatures of component 1 and component 2 as given in Refs. 1, 2 (458-459 K, and 561-563 K, respectively) are not far from those listed in Table 1 of the Preface (463±1 K, and 557±2 K, respectively). Moreover, no mention is made of the occurrence of phase transitions in either component, which is again in agreement with Table 1 of the Preface, although in disagreement with the fact that in other papers by the same group (see, e.g., Ref. 3) component 1 is described as undergoing a phase transition at 477 K (174 °C).

REFERENCES:

(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, **9**, 482-487; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1964, **9**(2), 265-267.

(2) Sarapulova, I.F.; Kashcheev, G.N.; Diogenov, G.G.
Nekotorye Vopr. Khimii Rasplavlen. Solei i Produktov Destrusktii Sapropelitov, Irkutsk 1974, 3-10.

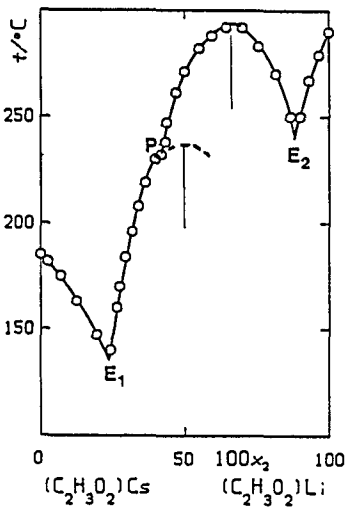
(3) Nurminskii, N.N.; Diogenov, G.G.
Zh. Neorg. Khim. 1960, 5, 2084-2087; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1960, 5, 1011-1013 (*).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Diogenov, G.G.; Sarapulova, I.F. **Zh. Neorg. Khim.** 1964, 9, 482-487; **Russ. J. Inorg. Chem.** (**Engl. Transl.**) 1964, 9(2), 265-267 (*).
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
185	458	0	247	520	44.0
182	455	2.5	261	534	47.0
175	448	7.0	271	544	50.0
163	436	12.5	282	555	55.0
147	420	19.5	288	561	59.5
140	413	24.5	292	565	64.5
160	433	26.5	292	565	70.0
170	443	27.5	283	556	75.5
184	457	29.5	270	543	81.5
196	469	32.0	250	523	86.5
208	481	34.0	250	523	90.0
219	492	36.5	267	540	93.0
230	503	40.0	279	552	96.5
232	505	42.0	290	563	100.0
238	511	43.5			

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



Characteristic point(s):
Eutectic, E_1, at 135 °C and $100x_1$= 76 (authors).
Peritectic, P, at 233 °C and $100x_2$= 42.5 (authors).
Eutectic, E_2, at 240 °C and $100x_1$= 12 (authors).

Intermediate compound(s):
$(C_2H_3O_2)_2CsLi$, incongruently melting.
$(C_2H_3O_2)_3CsLi_2$, congruently melting at 293 °C (according to the text and Fig. 2 of the original paper); at 295 °C (according to Fig. 1 of the original paper).

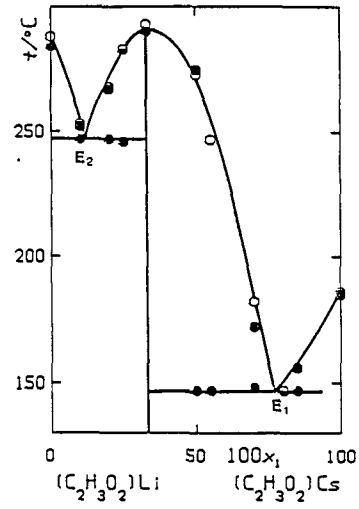
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method. Temperatures measured by means of a Chromel-Alumel thermocouple.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Sarapulova, I.F.; Kashcheev, G.N.; Diogenov, G.G. **Nekotorye Vopr. Khimii Rasplavlen. Solei i Produktov Destruktsii Sapropelitov, Irkutsk, 1974**, 3-10.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
288	561	0	275[bc]	548	50
284[bc]	557	0	147[bd]	420	50
253	526	10	247	520	55
252[bc]	525	10	147[bd]	420	55
247[be]	520	10	182	455	70
268	541	20	172[bc]	445	70
267[bc]	540	20	148[bd]	421	70
247[be]	520	20	147	420	80
283	556	25	147[bc]	420	80
283[bc]	556	25	156[bc]	429	85
246[be]	519	25	147[bd]	420	85
293	566	33	186	459	100
290[bc]	563	33	185[bc]	458	100
273	546	50	35[f]	308	100



[a] T/K values calculated by the compiler.
[b] Differential thermal analysis (filled circles
[c] Initial fusion.
[d] Eutectic stop (E_1).
[e] Eutectic stop (E_2).
[f] Solid state transition.

Characteristic points: Eutectic, E_1, at 147 °C and $100x_1$ = 77.0 (authors).
Eutectic, E_2, at 247 °C and $100x_1$ = 12.0 (authors).

Intermediate compound: $(C_2H_3O_2)_3CsLi_2$, congruently melting at 293 °C (290 °C by DTA).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A thermographical analysis was performed with a Kurnakov pyrometer mod. 1959 (reference material: Al_2O_3). Only heating traces (at the heating rate of 5-6 °C/min) were recorded due to the tendency of the melts to undercool. Supplementary visual polythermal observations are also tabulated. X-ray diffraction patterns were used to obtain information on the intermediate compound.	Not stated. Component 1 undergoes a phase transition at $t_{trs}(1)/°C$ = 35.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This binary was first investigated as a side of the ternary $C_2H_3O_2$/Cs, Na, Rb by Diogenov and Sarapulova (Ref. 1), who reported a eutectic at 388 K (115 °C) and $100x_1$= 68, on the basis of visual polythermal observations.

The liquidus by these authors shows a knee at about 585 K and $100x_1$ about 5, which might be identified with the phase transition of $(C_2H_3O_2)Na$ reported by Diogenov at 596 K (323 °C; Ref. 2), and by Gimel'shtein and Diogenov at 583-584 K (310-311 °C; Ref. 3). However, such figures do not meet any of the high temperature T_{trs} values by other authors (Ref. 4), which range between 511-513 and 527±15 K.

Substantially analogous results, including the knee (for which no explanation is offered), have been reported also by Storonkin et al. (Ref. 5) for the liquidus branch richer in component 2. The other branch by these authors, however, lies significantly above the corresponding curve by Diogenov and Sarapulova: the difference has been attributed by Storonkin et al. to the higher purity of the cesium ethanoate they employed.
According to the latter authors (Ref. 5), who carried out DTA determinations through most of the composition range, the eutectic temperature is 392 K, and the eutectic composition (which was obtained by extrapolation, due to the tendency to undercool of the melts of composition close to x_E) is $100x_1$= 64.

In the opinion of the evaluator, the following points should be remarked.

(i) Neither Ref. 1 nor Ref. 5 report the phase transition of sodium ethanoate observed by other authors (Ref. 4) at 510-530 K, i.e., well above the eutectic temperature of the binary.

(ii) No comment is explicitely made in either work on the apparent knee of the liquidus branch richer in component 2.

(iii) No experimental support is given to rule out the occurrence of solid solutions in the regions of the phase diagram close to the pure components.

(iv) The phase transition of cesium ethanoate observed by Nurminskii and Diogenov (Ref. 6) at 447 K is neither confirmed nor mentioned in the present investigation (Ref. 1) by the same group.

Accordingly, it seems justified to cast some doubts about the reliability of the upper part of the liquidus branch richer in component 2, whereas the eutectic temperature (390±2 K) and composition ($100x_2$= 66±2) seem satisfactorily supported by the data available.

REFERENCES:

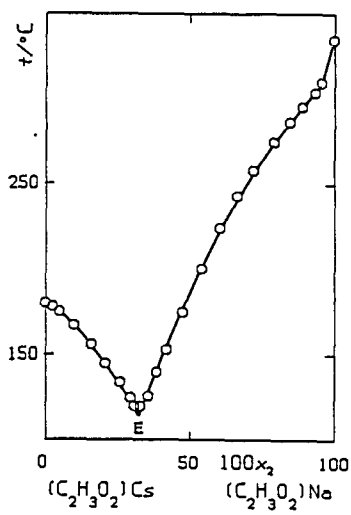
(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, 9, 1499-1502; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1964, 9,814-816.
(2) Diogenov, G.G.
Zh. Neorg. Khim. 1956, 1(4), 799-805; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1956, 1(4), 199-205.
(3) Gimel'shtein, V.G.; Diogenov, G.G.
Zh. Neorg. Khim. 1958, 3, 1644-49 ; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1958, 3(7), 230-236.
(4) 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.
(5) Storonkin, A.V.; Vasil'kova, I.V. and Tarasov, A.A.
Vestn. Leningr. Univ., Fiz., Khim. 1977, (4), 80-85.
(6) Nurminskii, N.N. and Diogenov, G.G.
Zh. Neorg. Khim. 1960, 5, 2084-2087; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1960, 5, 1011-1013.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G.; Sarapulova, I.F. Zh. Neorg. Khim. 1964, 9, 1499-1502 (*); Russ. J. Inorg. Chem. (Engl. Transl.) 1964, 9, 814-816.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
180	453	0	153	426	42.0
178	451	2.7	175	448	47.5
175	448	5.0	200	473	54.0
167	440	10.0	224	497	60.3
156	429	16.0	243	516	66.2
145	418	21.0	258	531	72.0
134	407	26.0	275	548	79.0
125	398	29.5	287	560	84.5
120	393	31.0	296	569	89.0
120	393	33.0	304	577	93.5
126	399	35.5	310	583	95.5
140	413	38.5	335	608	100

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



Characteristic point(s):

Eutectic, E, at 115 °C and $100x_1$ = 68 (authors).

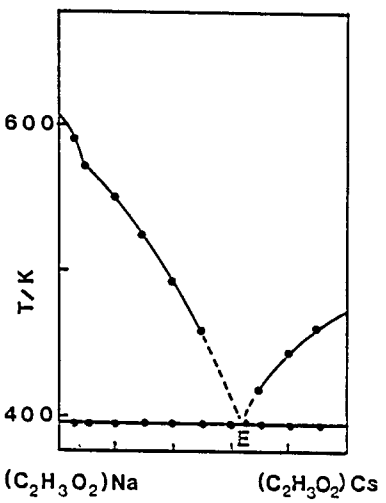
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple.	"Chemically pure" materials, recrystallized twice and dehydrated by prolonged heating (Ref. 1). Component 2 undergoes a phase transition at $t_{trs}(2)/°C$ = 335.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Diogenov, G.G.; Sarapulova, I.F. Zh. Neorg. Khim. 1964, 9, 1292-1294; Russ. J. Inorg. Chem. (Engl. Transl.) 1964, 9, 704-706.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Storonkin, A.V.; Vasil'kova, I.V.; Tarasov, A.A. **Vestn. Leningr. Univ., Fiz., Khim.** 1977, (4), 80-85.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Data presented only in graphical form (see figure).



Characteristic point(s):

Eutectic, E, at 392 K and $100x_1 = 64$ (authors).

Note - Undercooling does not allow one to draw the liquidus with accuracy at compositions close to the eutectic.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
DTA and "contact polythermal method" under polarized light. IR spectra were also used to state the existence of intermediate compound(s).	Component 1 synthetized from Cs_2CO_3 and ethanoic acid ($T_{fus}(1)/K = 467$; authors). Component 2 of analytical purity recrystallized twice from water and dried under vacuum ($T_{fus}(2)/K = 607$; authors). The purity of both components was checked by thermographical analysis. The mixtures were prepared in a glove box.
	ESTIMATED ERROR: Temperature: accuracy probably ± 2 K (compiler).
	REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This binary was studied as a side of the ternary $C_2H_3O_2$/Cs, Na, Rb (Ref. 1), and of the reciprocal ternary Cs, Rb/$C_2H_3O_2$, NO_2 (Ref. 2), respectively.

Both papers give substantially analogous results, i.e., a liquidus with a minimum at 446 K (173 °C) and $100x_1$= 72 (Ref. 1), and at 445 K (172 °C) and $100x_1$= 71 (Ref. 2), respectively. It is, however, not clear whether the slight differences in the coordinates of the minimum as given in Ref. 1 and Ref. 2, respectively, come from different sets of determinations, or from a suitable adjustment improving the overall presentation of the ternary involved. It is also to be remarked that, although coming from the same group, a significant difference exists between the $T_{fus}(2)$ values given in Ref. 1 (453.2 K) and Ref. 2 (460 K), the corresponding value given in Table 1 being 463±1 K.

Moreover, in neither paper the phase transition of rubidium ethanoate, occurring at either 489-493 K (Ref. 3), or 498±1 (Preface, Table 1) is explicitely mentioned, although, e.g., it might reasonably justify the knee observed at about 498 K (Ref. 1) in the liquidus branch richer in component 2.

The inspection of the liquidus of both ternaries mentioned above strongly supports the occurrence of solid solutions in the $C_2H_3O_2$/Cs, Rb side binary. However, the limits of the T, x_2 field covered in the binary by these solutions seem poorly defined, in particular for what concerns the compositions close to pure component 2, and for temperatures close to the transition temperature of this salt. Thence, in the evaluator's opinion, an investigation of the solidus would be desirable, in order to attain more satisfactory information about these points.

REFERENCES:

(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, **9**, 1499-1502; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1964, **9**, 814-816.

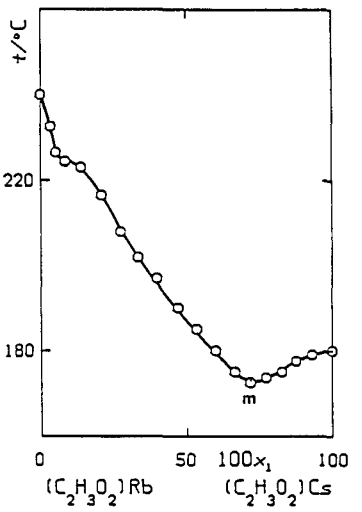
(2) Diogenov, G.G.; Morgen, L.T.
Fiz.-Khim. issled. Rasplavov Solei, Irkutsk, 1975, 62-64.

(3) Gimel'shtein, V.G.; Diogenov, G.G.
Zh. Neorg. Khim. 1958, 3, 1644-1649; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1958, **3(7)**, 230-236.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Diogenov, G.G.; Sarapulova, I.F. **Zh. Neorg. Khim.** 1964, 9, 1499-1502 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1964, 9, 814-816.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
240.0[b]	513.2	0
232.5	505.7	3.5
226.5	499.7	5.3
224.4	497.6	8.5
223.0	496.2	14.0
216.5	489.7	21.0
208.0	481.2	27.5
202.0	475.2	33.5
197.0	470.2	40.0
190.0	463.2	47.2
185.0	458.2	53.5
180.0	453.2	60.0
175.0	448.2	66.5
172.5	445.7	71.7
173.7	446.9	77.0
175.0	448.2	82.5
177.5	450.7	87.5
179.0	452.2	93.0
180.0	453.2	100.0



[a] T/K values calculated by the compiler.
[b] 238 in Fig. 1 of the original paper (compiler).

Characteristic point(s):

Continuous series of solid solutions with a minimum, m, at 173 °C and $100x_1$ about 72 (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple.	"Chemically pure" materials, recrystallized twice and dehydrated by prolonged heating (Ref. 1).
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, 9, 1292-1294;
Russ. J. Inorg. Chem. (Engl. Transl.) 1964, 9, 704-706.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Diogenov, G.G.; Morgen, L.T. Fiz.-Khim. Issled. Rasplavov Solei, Irkutsk, 1975, 62-64.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Characteristic point(s):

Continuous series of solid solutions with a minimum, m, at 172 °C (authors) and $100x_1$ about 71 (compiler).

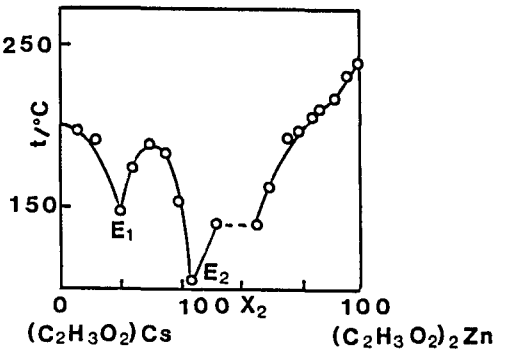
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermo couple.	Not stated. Component 1: $t_{fus}(1)/°C$= 187. Component 2: $t_{fus}(2)/°C$= 238.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Cesium ethanoate (cesium acetate); $(C_2H_3O_2)Cs$; [3396-11-0] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Pavlov, V.L.; Golubkova, V.V. Visn. Kiiv. Univ., Ser. Khim., Kiev, 1972, No. 13, 28-30.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

The results are reported only in graphical form (see figure).



Characteristic point(s):

Eutectic, E_1, at 140 °C and $100x_2 = 20$ (authors).
Eutectic, E_2, at 104 °C and $100x_2 = 45$ (authors).

Note - Glasses form at $50 \leq 100x_2 \leq 60$.

Intermediate compound(s):

$(C_2H_3O_2)_4Cs_2Zn$, congruently melting at 190 °C (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The visual polythermal method as well as time-temperature curves were employed. The temperatures were measured with a Chromel-Alumel thermocouple checked at the freezing temperatures of Zn, $K_2Cr_2O_7$, Cd, Sn, and benzoic acid.

NOTE:

The formation of glasses in this system seems likely. Accordingly, one should expect marked undercooling over a large composition range which would make the results of visual polythermal observations less reliable than usual. The lack of any further experimental evidence (e.g., from X-ray diffractometry) justifies casting doubts about the actual existence of the intermediate compound(s).

SOURCE AND PURITY OF MATERIALS:

Component 1: obtained by reacting Cs_2CO_3 and ethanoic acid, and kept in a dessiccator in the presence of P_2O_5 until constant mass.
Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity dried to constant mass at 110 °C.

ESTIMATED ERROR:

Temperature: accuracy probably ±2 K (compiler).

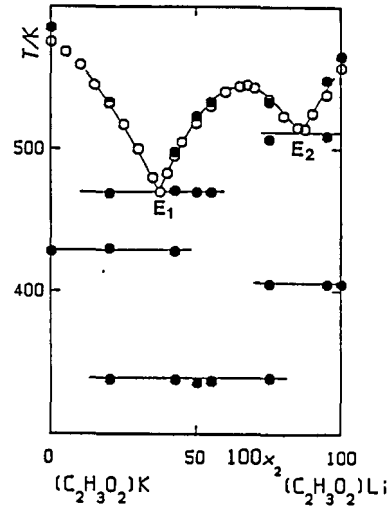
REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Spinolo, G., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

The system potassium ethanoate - lithium ethanoate was investigated by Diogenov (visual polythermal analysis, 1956; Ref. 1), Pochtakova (visual polythermal analysis, 1965; Ref. 2), Sokolov and Tsindrik (visual polythermal analysis, supplemented with DTA, 1969; Ref. 3), and Gimel'shtein (DTA, supplemented with X-ray patterns, 1970, 1971; Refs. 4, 5, respectively).

Phase transitions are reported at 571 K (298 °C) by Diogenov (Ref. 1), at 331 and 428 K (58 and 155 °C, respectively) by Sokolov (Ref. 6, quoted in Refs. 2, 3), and at 428 K (155 °C) by Gimel'shtein (Ref. 5) for component 1; at 540 K (267 °C) by Diogenov (Ref. 1), and at 405 K (132 °C) by Gimel'shtein (Ref. 5) for component 2. In Table 1 of the Preface mention is made of a transition at 422.2±0.5 K for component 1, whereas no transition is reported for component 2.



Diogenov (Ref. 1) investigated the binary concerned here as a side system of the ternary $C_2H_3O_2$/K, Li, Na, and claimed the existence of two congruently melting intermediate compounds, i.e., $(C_2H_3O_2)_2KLi$ and $(C_2H_3O_2)_3KLi_2$, respectively. The existence of the former, inferred by Diogenov from discontinuities observed in the liquidus of the binary itself and of two internal cuts of the ternary, was denied by all subsequent authors. In particular, no evidence of the existence of a crystallization field attributable to a 1:1 compound was found either by Pochtakova (Ref. 2) in her re-investigation of the ternary $C_2H_3O_2$/K, Li, Na, or by Sokolov and Tsindrik (Ref. 3), and Gimel'shtein (Ref. 4) in their studies of the topology of the reciprocal ternary K, Li/$C_2H_3O_2$, NO_3. The thermographical traces recorded by Gimel'shtein (and detailed in Ref. 5) support satisfactorily the assertion that in the mixtures of potassium and lithium ethanoates only the intermediate compound $(C_2H_3O_2)_3KLi_2$ does form, which melts congruently at 547±2 K (Refs. 2, 4, 5), and gives eutectics with each of the component salts.

In the figure, the visual data by Pochtakova (Ref. 2) are plotted, along with the thermographical ones obtained by Gimel'shtein (Ref. 5) to give a comprehensive and reasonably reliable representation of the liquidus, solidus, and subsolidus.
The main discrepancies between the two authors occur in the fusion temperatures of the pure components:

$T_{fus}(1)/K$= 575, 585 (Refs. 2, 5, respectively);
$T_{fus}(2)/K$= 557, 565 (Refs. 2, 5, respectively).

The more correct probably are those reported in Ref. 2, which are closer to $T_{fus}(1)/K$= 578.7±0.5, and $T_{fus}(2)/K$= 557±2, reported in Table 1 of the Preface. These discrepancies, however, do not affect substantially the overall features of the phase diagram.

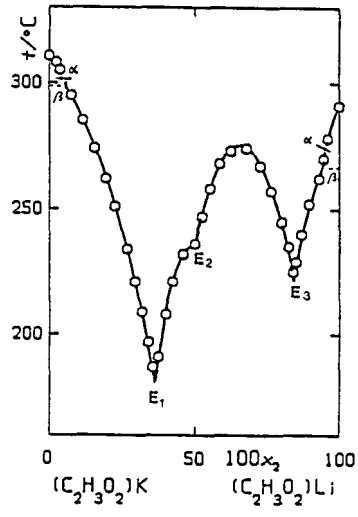
REFERENCES:

(1) Diogenov, G.G.; **Zh. Neorg. Khim.** 1956, 1, 2551-2555 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1956, 1(11), 122-126.
(2) Pochtakova, E.I.; **Zh. Neorg. Khim.** 1965, 10, 2333-2338 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1965, 10, 1268-1271.
(3) Sokolov, N.M.; Tsindrik, N.M.; **Zh. Neorg. Khim.** 1969, 14, 584-590 (*); **Russ. J. Inorg. Chem., (Engl. Transl.)** 1969, 14, 302-306.
(4) Gimel'shtein, V.G.
Symposium, "Fiziko-Khimicheskii Analiz Solevykh Sistem", Irkutsk, 1970, 39-45.
(5) Gimel'shtein, V.G.
Tr. Irkutsk. Politekh. Inst. 1971, No. 66, 80-100.
(6) Sokolov, N.M.
Tezisy Dokl. X Nauch. Konf. S.M.I. 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] 2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Diogenov, G.G. Zh. Neorg. Khim. 1956, 1, 2551-2555 (*); Russ. J. Inorg. Chem. (Engl. Transl.) 1956, 1(11), 122-126.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
310.5	583.5	0	247	520	52.5
308	581	2.5	258	531	55.2
305	578	3.7	268	541	58.5
295	568	7.5	273	546	62.5
285	558	11.5	274	547	67.8
274	547	15.5	267	540	72.5
262	535	19.3	257	530	76.3
251	524	22.5	245	518	80.0
234	507	26.7	235	508	82.3
221	494	29.5	225	498	84.0
209	482	31.7	229	502	85.0
197	470	34.0	240	513	86.7
187	460	35.5	252	525	89.4
191	464	37.5	262	535	93.0
208	481	40.0	270	543	94.5
221	494	42.5	278	551	96.0
232	505	46.0	291	564	100.0
236	509	50.0			



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

Characteristic point(s): Eutectic, E_1, at 181 °C and $100x_2$= 36 (author).
Eutectic, E_2, at 236 °C and $100x_2$= 51.5 (author).
Eutectic, E_3, at 222 °C and $100x_2$= 84.5 (author).

Intermediate compound(s): $(C_2H_3O_2)_2KLi$, congruently melting at 236 °C.
$(C_2H_3O_2)_3KLi_2$, congruently melting at 275 °C.

AUXILIARY INFORMATION

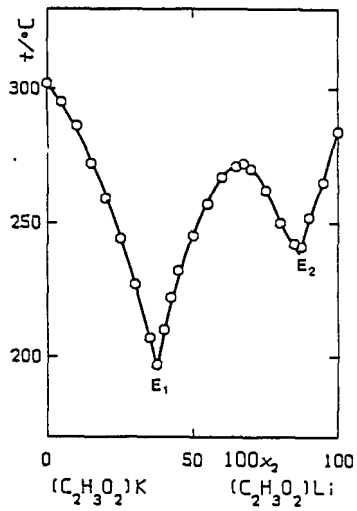
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple.	"Chemically pure" materials, recrystallized twice and dehydrated by prolonged heating. Components 1 and 2 undergo phase transitions at $t_{trs}(1)/°C$= 298 and $t_{trs}(2)/°C$= 267, respectively, according to Fig. 1 of the original paper (compiler).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Pochtakova, E.I. **Zh. Neorg. Khim.** 1965, 10, 2333-2338 (*); **Russ. J. Inorg. Chem.** (Engl. Transl.) 1965, 10, 1268-1271.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
302	575	0	257	530	55
295	568	5	267	540	60
286	559	10	271	544	65
272	545	15	272	545	67.5
259	532	20	270	543	70
244	517	25	262	535	75
227	500	30	250	523	80
207	480	35	242	515	85
197	470	37.5	241	514	87.5
210	483	40	252	525	90
222	495	42.5	265	538	95
232	505	45	284	557	100
245	518	50			

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



Characteristic point(s):

Eutectic, E_1, at 197 °C and $100x_2$= 37.6 (authors).
Eutectic, E_2, at 238 °C and $100x_2$= 87 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_3KLi_2$, congruently melting at 272 °C (authors).

AUXILIARY INFORMATION

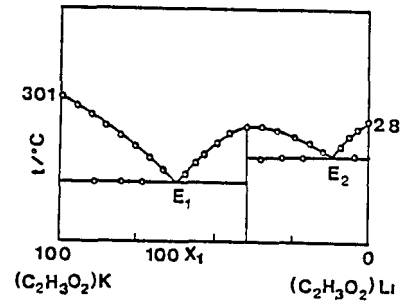
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated. Component 1 undergoes phase transitions at $t_{trs}(1)/°C$= 58, 155 (Ref. 1).
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

(1) Sokolov, N.M.
Tezisy Dokl. X Nauch. Konf. S.M.I. 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Sokolov, N.M.; Tsindrik, N.M. **Zh. Neorg. Khim.** 1969, 14, 584-590 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1969, 14, 302-306.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

The results are reported only in graphical form (see figure).



Characteristic point(s):

Eutectic, E_1, at 197 °C and $100x_1$= 62 (authors).
Eutectic, E_2, at 234 °C and $100x_1$= 13 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_3KLi_2$, congruently melting (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method, supplemented with differential thermal analysis.	Commercial materials recrystallized. Component 1 undergoes phase transitions at $t_{trs}(1)/°C$= 58, 155 (Ref. 1) and melts at $t_{fus}(1)/°C$= 301. Component 2 melts at $t_{fus}(2)/°C$= 284.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Sokolov, N.M. **Tezisy Dokl. X Nauch. Konf. S.M.I.** 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Gimel´shtein, V.G. Symposium, "Fiziko-Khimicheskii Analiz Solevykh Sistem", Irkutsk, 1970, 39-45.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Characteristic point(s):

Eutectic, E_1, at 197 °C and $100x_2$= 37.5 (author).
Eutectic, E_2, at 234 °C and $100x_2$= 87 (author).

Intermediate compound(s):

$(C_2H_3O_2)_3KLi_2$, congruently melting at 275 °C, and undergoing a phase transition at 65 °C (author).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Thermographical analysis.	Not stated. Component 2 undergoes a phase transition at $t_{trs}(2)/°C$= 132.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4]	Gimel'shtein, V.G. **Tr. Irkutsk. Politekh. Inst.** 1971, No. 66, 80-100.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
312	585	0	260	533	55.0
155	428	0	197	470	55.0
260	533	20.0	64	337	55.0
196	469	20.0	260	533	75.0
157	430	20.0	234	507	75.0
65	338	20.0	132	405	75.0
225	498	42.5	66	339	75.0
198	471	42.5	275	548	95.0
155	428	42.5	236	509	95.0
65	338	42.5	132	405	95.0
250	523	50.0	292	565	100
197	470	50.0	132	405	100
63	336	50.0			

[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 197 °C and $100x_2$= 37.5 (author).
Eutectic, E_2, at 237 °C (234 °C according to Fig. 4) and $100x_2$= 87.0 (author).

Intermediate compound:
$(C_2H_3O_2)_3KLi_2$, congruently melting at 275 °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. NOTE: The coordinates of the characteristic points were stated by the author on the basis of his own DTA measurements, and of previous literature data (Refs. 1, 2). X-ray patterns were taken at $100x_2$= 45, 70.	Not stated. Component 1 melts at $t_{fus}(1)/°C$= 312 (310 according to Fig. 4 of the original paper; compiler), and undergoes a phase transition at $t_{trs}(1)/°C$= 155. Component 2 melts at $t_{fus}(2)/°C$= 292 (291 according to Fig. 4 of the original paper; compiler), and undergoes a phase transition at $t_{trs}(2)/°C$= 132.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Pochtakova, E.I. **Zh. Neorg. Khim.** 1965, **10**, 2333-2338. (2) Sokolov, N.M.; Tsindrik, N.M. **Zh. Neorg. Khim.** 1969, **14**, 584-590.

COMPONENTS:

(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)_2K_2$; [127-08-2]
(2) Magnesium ethanoate (magnesium acetate); $(C_2H_3O_2)_2Mg$; [142-72-3]

ORIGINAL MEASUREMENTS:

Pochtakova, E.I.
Zh. Obshch. Khim. 1974, 44, 241-248.

VARIABLES:

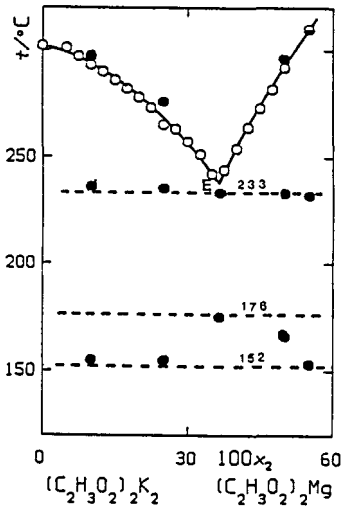
Temperature.

PREPARED BY:

Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
302	575	0	251	524	32.5
301	574	5	242	515	35
297	570	7.5	233[bc]	506	36.5
293	566	10	233[bd]	506	36.5
297[bc]	570	10	175[bf]	448	36.5
236[bd]	509	10	244	517	37.5
155[be]	428	10	254	527	40
290	563	12.5	264	537	42.5
286	559	15	273	546	45
282	555	17.5	282	555	47.5
278	551	20	292	565	50
273	546	22.5	296[bc]	569	50
265	538	25	233[bd]	506	50
276[bc]	549	25	166[bf]	439	50
235[bd]	508	25	310	583	55
155[be]	428	25	310[bc]	583	55
263	536	27.5	232[bd]	505	55
257	530	30	153[be]	426	55



[a] T/K values calculated by the compiler.
[b] Differential thermal analysis (filled circles in the figure).
[c] Initial crystallization.
[d] Eutectic stop.
[e] First transition in the system.
[f] Second transition in the system.

Characteristic point: Eutectic, E, at 238 °C (extrapolated, visual polythermal method), or 233 °C (differential thermal analysis), and $100x_2$ = 36.5 (author).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Visual polythermal method, supplemented with differential thermal analysis.

NOTE:

The system was investigated only at $0 \leq 100x_2 \leq 55$ due to thermal instability of component 2.
The fusion temperature of component 1 (575 K) is not far below that reported in Table 1 of the Preface (578.7±0.5 K), where, however, only one solid state transition (at 422.2±0.5 K) is mentioned, instead of the two ones (at 428 and 331 K, respectively) quoted by Pochtakova from Ref. 1.

SOURCE AND PURITY OF MATERIALS:

Component 1: "chemically pure" material recrystallized and dried at 200 °C to constant mass (phase transitions at $t_{trs}(1)/°C$ = 58, 155; Ref. 1). Component 2: prepared (Ref. 2) by reacting the ("chemically pure") carbonate with a slight excess of ethanoic acid of analytical purity (phase transitions at $t_{trs}(2)/°C$ = 152, 176).

ESTIMATED ERROR:

Temperature: accuracy probably ±2 K (compiler).

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Tezisy Dokl. X Nauch. Konf. S.M.I. 1956.
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Zh. Obshch. Khim. 1954, 24, 1581-1593.

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Franzosini, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system has been the most widely studied during the last 70 years. The opinions by the different authors are summarized hereafter.

(1) Baskov (1915; Ref. 1).
$T_{fus}(1)$= 568.2 K (295.0 °C); $T_{fus}(2)$= 593.2 K (320.0 °C); continuous series of solid solutions with a minimum, m, at 496.2 K (223.0 °C) and $100x_2$= 46 (method: thermal analysis; liquidus and solidus investigated).

(2) Bergman; Evdokimova (1956; Ref. 2).
$T_{fus}(1)$= 575 K (302 °C); $T_{fus}(2)$= 599 K (326 °C); T_{trs} (2)= 527 K (254 °C); eutectic, E, at 497 K (224 °C) and $100x_2$= 45 (method: visual polythermal analysis, supplemented with three DTA records; liquidus and solidus investigated).

(3) Diogenov; Erlykov (1958; Ref. 3).
$T_{fus}(1)$= 583.5 K (310.5 °C); $T_{trs}(1)$= 569 K (296 °C); $T_{fus}(2)$= 610 K (337 °C); $T_{trs}(2)$= 599 K (326 °C); continuous series of solid solutions with a minimum, m, at 501 K (228 °C) and $100x_2$= 45 (method: visual polythermal analysis; liquidus only investigated).

(4) Golubeva; Bergman; Grigor'eva (1958; Ref. 4).
Intermediate compound $(C_2H_3O_2)_3K_2Na$, incongruently melting at 513 K (240 °C) (method: visual polythermal analysis).

(5) Sokolov; Pochtakova (1958; Ref. 5).
$T_{fus}(1)$= 574 K (301 °C); $T_{fus}(2)$= 604 K (331 °C); [T_{trs} (2)= 527 K (254 °C); quoted by the authors from Ref. 2]; eutectic, E_1, at 513 K (240 °C) and $100x_2$= 38.5; eutectic, E_2, at 508 K (235 °C) and $100x_2$= 46.5; intermediate compound, $(C_2H_3O_2)_5K_3Na_2$, congruently melting at 514 K (241 °C) (method: visual polythermal analysis; liquidus only investigated).

(6) Nesterova; Bergman (1960; Ref. 6).
$T_{fus}(1)$= 579 K (306 °C); $T_{fus}(2)$= 601 K (328 °C); peritectic, P, at 511 K (238 °C) and $100x_2$= 36.5; eutectic, E, at 505 K (232 °C) and $100x_2$= 50; intermediate compound, $(C_2H_3O_2)_3K_2Na$, incongruently melting (method: visual polythermal analysis; liquidus only investigated).

(7) Il'yasov; Bergman (1960; Ref. 7).
$T_{fus}(1)$= 579 K (306 °C); $T_{fus}(2)$= 601 K (328 °C); peritectic, P, at 523-529 K (250-256 °C) and $100x_2$= 35; eutectic, E, at 513 K (240 °C) and $100x_2$= 50; intermediate compound, $(C_2H_3O_2)_3K_2Na$, incongruently melting (method: visual polythermal analysis; liquidus only investigated).

(8) Diogenov; Sarapulova (1964; Ref. 8).
$T_{fus}(1)$= 583 K (310 °C); $T_{fus}(2)$= 608 K (335 °C); eutectic, E_1, at 513 K (240 °C) (composition not reported); eutectic, E_2, at 508 K (235 °C) (composition not reported); intermediate compound, $(C_2H_3O_2)_5K_3Na_2$, congruently melting (method: visual polythermal analysis).

(9) Sokolov; Pochtakova (1967; Ref. 9).
$T_{fus}(1)$= 575 K (302 °C); $T_{fus}(2)$= 604 K (331 °C); solid state transitions at 428 and 331 K (155 and 58 °C) for component 1, at 511, 403, 391, and 331 K (238, 130, 118 , and 58 °C) for component 2; eutectic, E_1, at 513 K (240 °C) and $100x_2$= 38.5; eutectic, E_2, at 506 K (233 °C) and $100x_2$= 46.5; intermediate compound, $(C_2H_3O_2)_5K_3Na_2$, congruently melting at 513-514 K (240-241 °C) (method: thermographical analysis, supplemented with visual polythermal measurements and microscopic observations in polarized light).

(10) Diogenov; Chumakova (1975; Ref. 10).
$T_{fus}(1)$= 575 K (302 °C); $T_{fus}(2)$= 599 K (326 °C); peritectic, P, at 513 K (240 °C) (composition not reported); eutectic, E, at 510 K (237 °C) (composition not reported); intermediate compound, $(C_2H_3O_2)_5K_3Na_2$, incongruently melting (method: visual polythermal analysis).

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Franzosini, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION (cont.d):

(11) Storonkin; Vasil'kova; Tarasov (1977; Ref. 11).
$T_{fus}(1)$= 584 K (311 °C); $T_{fus}(2)$= 607 K (334 °C); eutectic, E, at 511 K (238 °C) and $100x_2$= 46 (method: differential thermal analysis and "contact polythermal method" under polarized light, supplemented with IR spectroscopy).

Information from different sources on the thermophysics of both components is conflicting, possibly due - inter alia - to hygroscopicity, and to the fact that solid state transitions are characterized by a remarkable sluggishness.

$T_{fus}(1)$ values ranging between 565 and 584 K, and $T_{fus}(2)$ values ranging between 592 and 610 K can be found in the literature (Ref. 12). The DSC data from Preface Table 1, i.e., $T_{fus}(1)$= 578.7±0.5 K and $T_{fus}(2)$= 601.3±0.5 K, are thought to be reasonably trustworthy, being supported by independent cryometric measurements by the same group (Ref. 12). Concerning in particular the T_{fus} data given in Refs. 1-11, the following remarks can be made. Poor reliability seems to be attached to the fusion temperatures from Refs. 1, 3, 8, 10, 11. Indeed: (i) Baskov (Ref. 1), who studied the system in 1915, might have not had at disposal high purity samples, thus obtaining too low T_{fus} values [$T_{fus}(1)$= 568.2 K; $T_{fus}(2)$= 593.2 K]; (ii) Diogenov et al.'s figures [$T_{fus}(1)$= 583.5 K (1958; Ref. 3), 583 K (1964; Ref. 8), and 575 K (1975; Ref. 10); $T_{fus}(2)$= 610 K (1958; Ref. 3), 608 K (1964; Ref. 8), and 599 K (1975; Ref. 10)] look as doubtful, due to excessive fluctuation; (iii) Storonkin et al.'s figures [$T_{fus}(1)$= 584 K; $T_{fus}(2)$= 607 K (1977; Ref. 11)] seem also to be doubtful and for the same reason, inasmuch as in previous papers Storonkin, Vasil'kova, and Potemin (1974; Ref. 13) gave $T_{fus}(2)$= 601 K, while Potemin, Tarasov, and Panin (1973; Ref. 14) gave $T_{fus}(1)$= 581 K, $T_{fus}(2)$= 604 K. Instead, the agreement with T_{fus} data from Preface Table 1 is satisfactory for the most recent figures by Bergman et al. (Refs. 6, 7), and still acceptable for those by Sokolov and Pochtakova (Refs. 5, 9).

As for the solid state transitions, the situation is rather puzzling, as shown in the following table.

Salt	T_{trs}/K	Method	Year	Ref.
$C_2H_3O_2K$	428, 331	Vis. pol.	1956	15
	565-566	Vis. pol.	1957	16
	569	Vis. pol.	1958	3
	423	Dilat.,DTA	1966	17
	(503, 433, 353)	-	1966	18
	428, about 348	X-ray	1972	19
	422.2±0.5	DSC	1975	Preface, Table 1
	413-423	DTA	1976	20
$C_2H_3O_2Na$	527	Vis. pol.	1956	2
	596	Vis. pol.	1956	21
	511-513, 403, 391, 331	Vis. pol.	1956	15
	599	Vis. pol.	1958	3
	583-584	Vis. pol.	1958	22
	527±15, 465±3, 414±10	DSC	1975	Preface, Table 1
	337	DTA	1976	23

Vis. pol.: visual polythermal analysis; Dilat.: dilatometry;
(...): provisional data.

Potassium ethanoate was submitted to X-ray investigation by Hatibarua and Parry (Ref. 19), who obtained evidence for a monoclinic -> monoclinic transformation at about 348 K, and for a monoclinic -> orthorhombic transformation at 428 K. Allowance being made for some fluctuations in the T_{trs} values, it can be asserted that the occurrence of the former transition is supported by Sokolov's (Ref. 15), and Hazlewood et al.'s (Ref. 18) findings, while on the occurrence of the latter transition all the authors concerned agree, but for Diogenov et al. (Refs. 3, 16). These, in turn, are alone in claiming that component 1 undergoes a transformation at a temperature as high as 560-570 K: the evaluator, however, is inclined to think that the existence of the latter

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Franzosini, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION (cont.d):

transformation is quite doubtful.

The number and location of solid state transitions in sodium ethanoate is still an open question, and the pertinent data are the most uncertain among those listed in Preface Table 1. It can only be said that the occurrence of a transition at 510-530 K seems to be reasonably supported (Refs. 2, 15, and Preface Table 1), whereas insufficient experimental evidence has been provided so far for the remaining transitions, including that reported by Diogenov et al. (Refs. 21, 3, 22) at 580-600 K.

Concerning the topology of the phase diagram, the evaluator is inclined not to take into account the findings by: (i) Baskov (Ref. 1), because reasonable doubts exist - as said above - about the purity of the salts he could have at disposal in 1915; (ii) Diogenov et al. (Refs. 3, 8, 10), for both the above made remarks on the phase transformation temperatures they report, and their conflicting assertions on the phase relations (continuous series of solid solutions in Ref. 3; congruently melting intermediate compound in Ref. 8; incongruently melting intermediate compound in Ref. 10).

Storonkin et al. (Ref. 11) quoted in their paper Refs. 1-5, 7, 8, and - inter alia - asserted correctly that it is hard to state the composition of an incongruently melting intermediate compound on the only basis of visual observations carried out on the liquidus. They asserted also that: (i) due to undercooling of the molten mixtures of composition $50 \leq 100x_1 \leq 60$, no reliable information could be drawn from their liquidus on the formation of any intermediate compound; and (ii) their supplementary IR measurements gave no evidence of the existence of such compounds. Accordingly, they claimed the occurrence of a eutectic as the only invariant, and singled out its composition ($100x_2 = 46$) by extrapolation of the part of the liquidus branches they were able to investigate. Storonkin et al. (Ref. 11), however, employed salts on the purity of which doubts - as said above - are not unreasonable, and were not aware of the more recent paper by Sokolov and Pochtakova (Ref. 9).

Bergman et al. in their oldest paper (Ref. 2) claimed the existence of a eutectic, but subsequently changed their mind (Refs. 4, 6, 7), and asserted that the incongruently melting compound $(C_2H_3O_2)_3K_2Na$ was formed. It can be observed that the fusion temperatures of the pure components given in their most recent paper (Ref. 7), i.e., $T_{fus}(1)/K = 579$ and $T_{fus}(2)/K = 601$, are in excellent agreement with the corresponding values listed in Table 1 of the Preface (578.7±0.5 K, and 601.3±0.5 K, respectively), and that they make no mention of difficulties in measuring the liquidus. The composition they stated for the intermediate compound, however, was not supported by any investigation of the solidus, and poor reliability is to be attached to the peritectic temperature they suggested (511 K in Ref. 6; 523-529 K in Ref. 7).

Finally, Sokolov and Pochtakova (Refs. 5, 9) in their more recent paper (Ref. 9) employed thermographical analysis to support the assertion already made in Ref. 5 that the intermediate compound $(C_2H_3O_2)_5K_3Na_2$ is formed in the binary. They too seem not to have met special difficulties in measuring the liquidus.

In conclusion, the evaluator is inclined to think that:

- in the composition range $40 \leq 100x_2 \leq 100$ a eutectic exists at 508±3 K and $100x_2 = 48 \pm 2$;

- an intermediate compound is likely formed: it ought to have composition $(C_2H_3O_2)_5K_3Na_2$, and melt congruently (thus giving origin to a second eutectic in the composition range $0 \leq 100x_2 \leq 40$);

- limited mutual solubility exists on both sides of the diagram;

The second conclusion is based on Sokolov and Pochtakova's (Refs. 5, 9) information, which seems the most reliable at disposal so far, although being not fully free from criticisms (see, e.g., the above made remarks on the solid state transformations occurring in pure components).

The last assertion is supported by the findings of Sokolov and Pochtakova (Ref. 9), and Storonkin et al. (Ref. 11). Moreover, Braghetti et al. (Ref. 24) found for sodium

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Franzosini, P., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION (cont.d):

ethanoate dissolved in potassium ethanoate a limiting value

$$\lim_{m \to 0} (\Delta T/m) = 14.6 \text{ K molality}^{-1}$$

(ΔT: experimental freezing point depression; m: molality of the solute), whereas the cryometric constant of potassium ethanoate is 18.0 ± 0.3 K molality^{-1} (Ref. 24).

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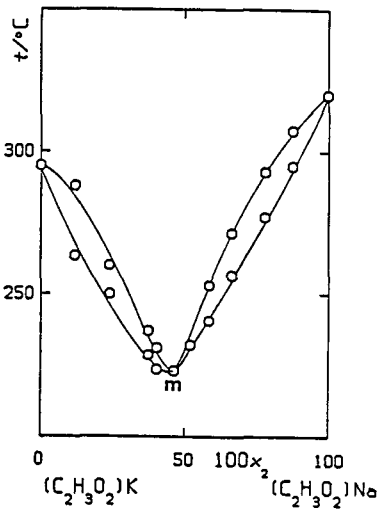
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Baskov, A. Zh. Russk. Fiz.-Khim. Obshch. 1915, 47, 1533-1535.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C[a]	T/K[b]	t/°C[c]	T/K[b]	$100x_2$
295.0	568.2	295.0	568.2	0.0
288.0[d]	561.2	263.5	536.7	12.0
260.0	533.2	250.0	523.2	24.0
237.0	510.2	228.5	501.7	37.5
231.0	504.2	223.5	496.7	40.5
223.0	496.2	223.0	496.2	46.5
		232.0	505.2	52.0
253.0[e]	526.2	240.5	513.7	58.5
271.5	544.7	256.5	529.7	66.5
293.0	566.2	277.2	550.4	78.0
307.5	580.7	295.0	568.2	87.5
320.0	593.2	320.0	593.2	100.0



[a] Starting of crystallization.
[b] T/K values calculated by the compiler.
[c] End of crystallization.
[d] 238.0 in the original text (correction compatible with Fig. 1 of the text; compiler).
[e] 233.0 in the original text (correction compatible with Fig. 1 of the text; compiler).

Characteristic point(s):

Minimum, m, at 233 °C (author), or 223 °C (compiler), and $100x_2$ = 46; none of the cooling curves shows a eutectic stop (author).

AUXILIARY INFORMATION

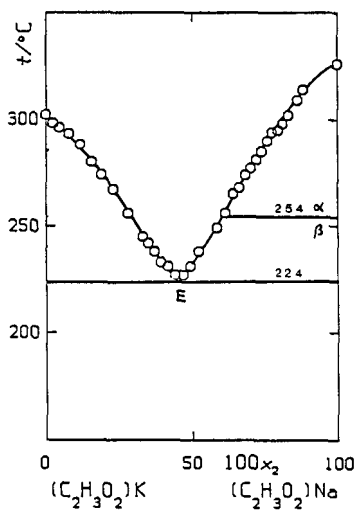
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Thermal analysis.	Materials dehydrated by heating, then cooled in a dessiccator before use.
	ESTIMATED ERROR:
	Temperature: accuracy not evaluable (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Bergman, A.G.; Evdokimova, K.A. **Izv. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim. Akad. Nauk SSSR** 1956, 27, 296-314.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
302	575	0.0	238	511	52.3
298	571	2.4	249	522	58.4
296	569	4.6	256	529	61.3
293	566	7.9	265	538	64.0
288	561	11.8	268	541	66.1
280	553	15.5	274	547	68.0
274	547	18.8	277	550	69.9
267	540	23.0	281	554	71.9
256	529	28.1	285	558	73.7
245	518	33.0	290	563	75.7
242	515	34.9	294	567	77.3
238	511	37.2	295	568	79.4
233	506	39.3	298	571	81.0
231	504	41.8	302	575	83.0
227	500	44.2	309	582	86.0
227	500	46.9	314	587	88.0
231	504	49.4	326	599	100

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



Characteristic point(s):

Eutectic, E, at 224 °C and $100x_2$= 45 (authors).

Note - DTA heating traces were recorded on three mixtures ($100x_2$= 5, 20, 80, respectively) previously melted and cooled quickly, in order to confirm the eutectic temperature.

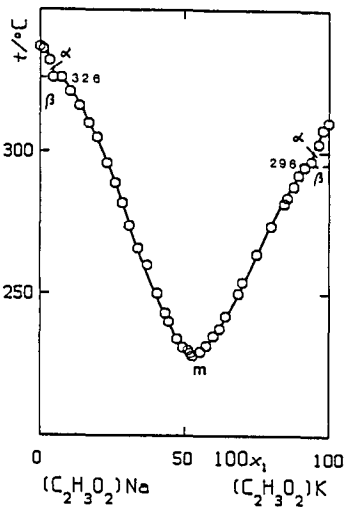
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method: the temperatures of starting crystallization were measured with a Nichrome-Constantane thermocouple and a millivoltmeter (17 mV full-scale).	"Chemically pure" $(C_2H_3O_2)K$ and $(C_2H_3O_2)Na.3H_2O$ were dried to constant mass. Component 2 undergoes a phase transition at $t_{trs}(2)/°C$= 254.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G.; Erlykov, A.M. **Nauch. Dokl. Vysshei Shkoly, Khim. i Khim. Tekhnol.** 1958, **No. 3**, 413-416.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
337	610	0	229	502	52.0
336	609	1.2	228	501	52.7
332	605	3.3	229.5	502.5	55.5
326	599	4.5	231.5	504.5	57.5
326	599	7.5	235	508	60.0
321	594	10.5	237.5	510.5	62.0
316	589	13.7	242	515	64.0
310	583	17.0	250	523	68.5
305	578	19.9	254	527	70.0
296	569	23.2	264	537	75.0
289	562	26.0	274	547	80.0
282	555	28.5	282	555	84.5
274	547	31.0	284	557	85.5
266	539	34.0	288	561	87.8
260	533	37.3	292	565	89.5
250	523	40.6	295	568	91.7
243	516	43.3	297	570	94.0
240	513	44.5	303	576	96.5
234	507	47.5	308	581	98.0
231	504	49.5	310.5	583.5	100.0
230	503	51.3			



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

Characteristic point(s):

Minimum, m, at 228 °C and $100x_2$= 45 (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated. Component 1 undergoes a phase transition at $t_{trs}(1)/°C$= 296. Component 2 undergoes a phase transition at $t_{trs}(2)/°C$= 326.
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Golubeva, M.S.; Bergman, A.G.; Grigor´eva, E.A. **Uch. Zap. Rostovsk.-na-Donu Gos. Univ.** 1958, 41, 145-154.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

Intermediate compound(s):

$(C_2H_3O_2)_3K_2Na$, melting with decomposition at 240 °C (authors).

AUXILIARY INFORMATION

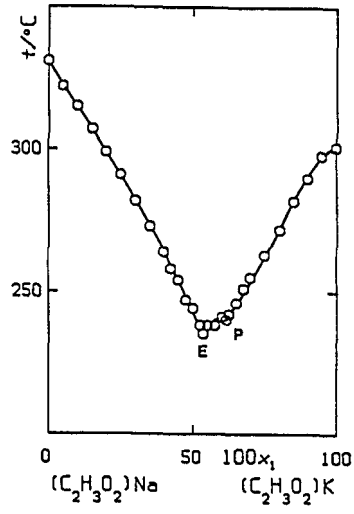
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Chromel-Alumel thermocouple.	Materials of analytical purity recrystallized twice, and dehydrated before use.
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Sokolov, N.M.; Pochtakova, E.I. **Zh. Obshch. Khim.** 1958, **28**, 1397-1404.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
331	604	0	38	511	55
322	595	5	238	511	57.5
315	588	10	241	514	60
307	580	15	240	513	61.5
299	572	20	242	515	62.5
291	564	25	246	519	65
282	555	30	251	524	67.5
273	546	35	255	528	70
264	537	40	263	536	75
258	531	42.5	272	545	80
254	527	45	282	555	85
247	520	47.5	290	563	90
244	517	50	298	571	95
238	511	52.5	301	574	100
235	508	53.5			

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



Characteristic point(s):

Peritectic, P, (eutectic in the compiler's opinion) at 240 °C and $100x_1$= 61.5 (authors).
Eutectic, E, at 235 °C and $100x_1$= 53.5 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_5K_3Na_2$ (congruently melting at 241 °C, compiler).

AUXILIARY INFORMATION

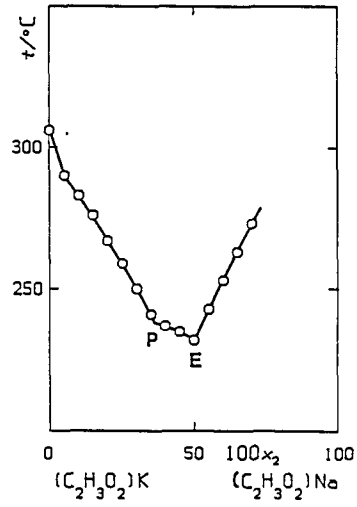
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	"Chemically pure" materials were employed. Component 2 undergoes a phase transition at $t_{trs}(2)$/°C= 254 (Ref. 1).
	ESTIMATED ERROR:
	Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:
	(1) Bergman, A.G.; Evdokimova, K.A. **Izv. Sektora Fiz.-Khim. Anal.** 1956, **27**, 296-314.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Nesterova, A.K.; Bergman, A.G. Zh. Obshch. Khim. 1960, 30, 317-320; Russ. J. Gen. Chem. (Engl. Transl.), 1960, 30, 339-342 (*).
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$
306	579	0
290	563	5
283	556	10
276	549	15
267	540	20
259	532	25
250	523	30
241	514	35
237	510	40
235	508	45
232	505	50
243	516	55
253	526	60
263	536	65
273	546	70

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



Characteristic point(s):

Peritectic, P, at 238 °C and $100x_2$= 36.5 (authors).
Eutectic, E, at 232 °C and $100x_2$= 50 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_3K_2Na$, melting with decomposition (authors).

AUXILIARY INFORMATION

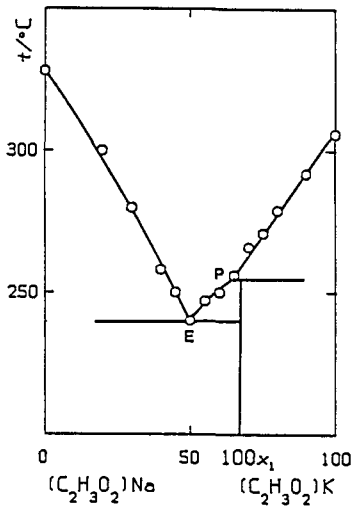
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a thermometer (accuracy: ±0.5 °C). A glycerol bath was employed.	"Chemically pure", recrystallized materials were used. Component 2: $t_{fus}(2)$/°C= 328 (Fig. 2 of the original paper).
	ESTIMATED ERROR: Temperature: accuracy ±0.5 K (authors).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Il'yasov, I.I.; Bergman, A.G. **Zh. Obshch. Khim.** 1960, **30**, 355-358.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$[b]
328	601	0.0
300	573	20.0
280	553	30.0
258	531	40.0
250	523	45.0
240	513	50.0
247	520	55.0
250	523	60.0
256	529	65.0
266	539	70.0
271	544	75.0
279	552	80.0
292	565	90.0
306	579	100.0

[a] T/K values calculated by the compiler.
[b] Erroneously reported as x_2 in Table 1 of the original paper (compiler).



Characteristic point(s):
Peritectic, P, at 255 °C (as reported in the text and in Fig. 2 of the original paper, or at 256 °C as reported in Table 1 of the original paper, or at 250 °C as reported in Fig. 1 of the original paper; compiler) and $100x_1$= 65 (authors).
Eutectic, E, at 240 °C and $100x_1$= 50 (authors).

Intermediate compound(s):
$(C_2H_3O_2)_3K_2Na$, incongruently melting (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperatures measured with a Nichrome-Constantane thermocouple and a millivoltmeter.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G.; Sarapulova, I.F. Zh. Neorg. Khim. 1964, 9, 1292-1294 (*); Russ. J. Inorg. Chem. (Engl. Transl.), 1964, 9, 704-706.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

Characteristic point(s):
Eutectic, E_1, at 240 °C; composition not stated (authors).
Eutectic, E_2, at 235 °C; composition not stated (authors).

Intermediate compound(s):

$(C_2H_3O_2)_5K_3Na_2$ (congruently melting, compiler).

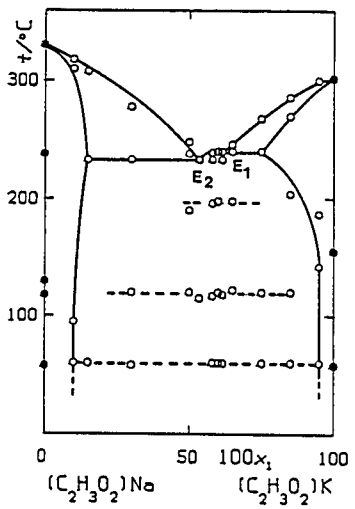
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method; temperature measured with a Chromel-Alumel thermocouple.	"Chemically pure" materials, recrystallized twice and dehydrated by prolonged heating at about 300 °C were employed. Component 1: $t_{fus}(1)/°C$= 310. Component 2: $t_{fus}(2)/°C$= 335 (authors).
	ESTIMATED ERROR: Not evaluable (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Sokolov, N.M.; Pochtakova, E.I. **Zh. Obshch. Khim.** 1967, 37, 1420-1422.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
318[b]	591	10	120[f]	393	60
310[c]	583	10	60[g]	333	60
60[g]	333	10	233[b]	506	61.5
95[h]	368	10	233[d]	506	61.5
308[b]	581	15	118[f]	391	61.5
233[d]	506	15	60[g]	333	61.5
60[g]	333	15	246[b]	519	65
278[b]	551	30	240[d]	513	65
233[d]	506	30	198[e]	471	65
120[f]	393	30	122[f]	395	65
58[g]	331	30	268[b]	541	75
248[b]	521	50	240[c]	513	75
238[d]	511	50	240[d]	513	75
190[e]	463	50	120[f]	393	75
120[f]	393	50	60[g]	333	75
233[b]	506	53.5	286[b]	559	85
233[d]	506	53.5	270[c]	543	85
115[f]	388	53.5	120[f]	393	85
239[b]	512	58	60[g]	333	85
233[d]	506	58	204[h]	477	85
196[e]	469	58	300[b]	573	95
117[f]	390	58	300[c]	573	95
60[g]	333	58	142[f]	415	95
240[b]	513	60	60[g]	333	95
240[d]	513	60	187[h]	460	95
198[e]	471	60			



[a] T/K values calculated by the compiler.
[b] Temperatures of starting crystallization (authors).
[c] Temperatures of ending crystallization (authors).
[d] Eutectic temperatures (authors).
[e] Solid-solid transition of the intermediate compound (authors).
[f] Interaction of the intermediate compound with the solid solution rich in component 1 (authors).
[g] Reaction $2[(C_2H_3O_2)_3K_2Na] = (C_2H_3O_2)_5K_3Na + (C_2H_3O_2)K$ (authors).
[h] Limits of the solid solution regions (authors).

Characteristic point(s): Eutectic, E_1, at 240 °C and $100x_1 = 61.5$ (compiler).
Eutectic, E_2, at 233 °C and $100x_1 = 53.5$ (compiler).
Intermediate compound: $(C_2H_3O_2)_5K_3Na_2$ congruently melting at 240 °C (compiler), or 241 °C according to the figure of the original paper.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Thermographical analysis (with recording of the heating traces), supplemented with (not detailed) visual polythermal measurements, and microscopic observations on solid (previously melted) samples in polarized light.	"Chemically pure" materials employed. Component 1 melts at 302 °C and undergoes phase transitions at $t_{trs}(1)/°C = 58$, 155 (Ref. 1). Component 2 melts at 331 °C and undergoes phase transitions at $t_{trs}(2)/°C = 58$, 118, 130, 238 (Ref. 1).
ESTIMATED ERROR:	REFERENCES:
Temperature: accuracy probably ±2 K (compiler).	(1) Sokolov, N.M. **Tezisy Dokl. X Nauch. Konf. S.M.I.** 1956

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G.; Chumakova, V.P. **Fiz.-Khim. Issled. Rasplavov Solei, Irkutsk**, 1975, 7-12.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Eutectic, E, at 238 °C; composition not stated (authors).
Peritectic, P, at 240 °C; composition not stated (authors).

Intermediate compound(s):

$(C_2H_3O_2)_5K_3Na_2$, incongruently melting (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis.	Not stated. Component 1: $t_{fus}(1)/°C$= 302. Component 2: $t_{fus}(2)/°C$= 326 (Fig. 1 of the original paper).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

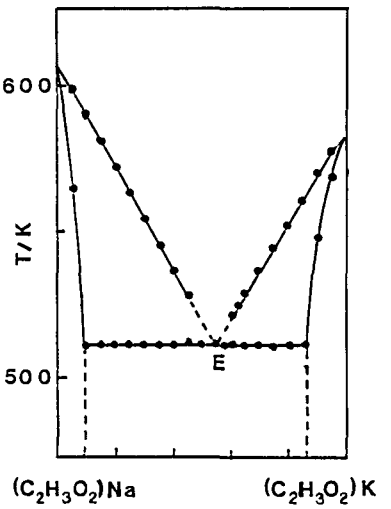
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Storonkin, A.V.; Vasil'kova, I.V.; Tarasov, A.A. **Vestn. Leningr. Univ., Fiz., Khim.** 1977, (4), 80-85.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Data presented in graphical form (see figure).

Characteristic point(s):

Eutectic, E, at 511 K and $100x_1 = 54$ (authors), singled out by extrapolation.



AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

DTA and "contact polythermal method" under polarized light. IR spectra were used to deny the existence of any intermediate compound.

SOURCE AND PURITY OF MATERIALS:

Both components of analytical purity recrystallized twice from water and dried under vacuum (T_{fus}/K= 584 and 607, respectively, authors).
The purity of both components was checked with thermographical analysis. The mixtures were prepared in a glove box.

ESTIMATED ERROR:

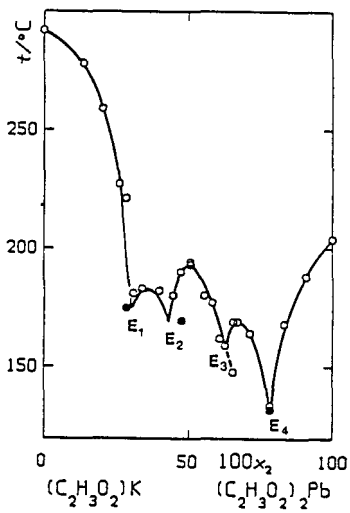
Temperature: accuracy probably ±2 K (compiler).

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Lead ethanoate (lead acetate); $(C_2H_3O_2)_2Pb$; [15347-57-6]	Lehrman, A.; Leifer, E. **J. Amer. Chem. Soc.** 1938, 60, 142-144.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
292	565	0	193	466	50.8
278	551	13.6	180	453	55.2
259	532	20.1	177	450	58.0
227	500	25.9	162	435	60.6
221	494	28.3	159	432	62.5
174.9[b]	448.1	28.3	169	442	65.3
181	454	30.6	148[c]	421	65.3
183	456	33.7	169	442	66.8
182	455	39.7	164	437	71.2
180	453	44.3	134	407	78.1
180	453	44.6	132.2[b]	405.4	78.1
190	463	47.4	168	441	83.1
169.5[b]	442.7	47.4	188	461	90.8
194	467	50.6	204	477	100



[a] T/K values calculated by the compiler;
[b] Eutectic temperatures (filled circles);
[c] Metastable.

Characteristic point(s):
Eutectic, E_1, at 174.9 °C; composition not stated (about $100x_2$= 30, compiler).
Eutectic, E_2, at 169.5 °C; composition not stated (about $100x_2$= 43, compiler).
Eutectic, E_3, at 159.9 °C; and $100x_2$= 62.5 (authors).
Eutectic, E_4, at 132.2 °C; composition not stated (about $100x_2$= 79, compiler).

Intermediate compounds: $(C_2H_3O_2)_4K_2Pb$, congruently melting at 183 °C (compiler).
$(C_2H_3O_2)_3KPb$, congruently melting at 194 °C (compiler).
$(C_2H_3O_2)_5KPb_2$, congruently melting at 169 °C (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The mixtures (20-35 g) were weighed into 2.5x20 cm Pyrex tubes, then suspended in a bath of the molten eutectic of Ca, K, Li nitrates. When necessary to prevent decomposition, two drops of glacial ethanoic acid were added. Due to the tendency to supercool, it was preferred to take the temperatures of complete melting. Cooling curves were used to obtain a few eutectic temperatures. Temperatures were measured mainly with a Copper-Constantane thermocouple (checked at the boiling point of water, and at the melting points of Sn, KNO_3, and of the Sn-Pb eutectic mixture). In a few cases a mercury thermometer was employed.

NOTE:

It can be remarked that the fusion temperature of component 1 found by Lehrman and Leifer does not agree with recent literature data which range mostly between 574 and 584 K (Ref. 1).

SOURCE AND PURITY OF MATERIALS:

Component 1: material of "chemically pure" grade, recrystallized from distilled water, then dried in an oven at 100 °C for one week, and at 140 °C for six hours before weighing.
Component 2: material of "chemically pure" grade, recrystallized from distilled water acidified with ethanoic acid, then dried at 100 °C.

ESTIMATED ERROR:

Temperature: accuracy ±0.5 K (authors).

REFERENCES:

(1) 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.

COMPONENTS:	EVALUATOR:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Spinolo, G., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This binary was first studied with the visual polythermal method by Diogenov and Sarapulova (Ref. 1). Subsequently, Sarapulova et al. (Ref. 2) carried out a thermographical analysis of the system, supplemented with a few visual observations, and X-ray diffractograms recorded on the pure components and five (previously melted) intermediate mixtures.

Only minor differences occur between the liquidus curves by either source. The fusion temperatures of the pure components, i.e., $T_{fus}(1)$= 583 K (Refs. 1, 2), and $T_{fus}(2)$= 509 K (visual; Refs. 1, 2) or 511 K (thermographical; Ref. 2) are acceptable, although somewhat lower than the corresponding values listed in Table 1 of the Preface, i.e., $T_{fus}(1)$= 578.7±0.5 K, and $T_{fus}(2)$= 514±1 K. Poorer agreement, on the contrary, exists between the solid state transition temperatures reported in Ref. 2 (i.e., 327 K and 428 K for component 1, and 488 K for component 2), and those listed in Table 1 of the Preface (i.e., 422.2±0.5 K for component 1, and 498±1 K for component 2).

On the basis of the X-ray patterns mentioned above, Sarapulova et al. (Ref. 2) assert that complete miscibility exists even at room temperature, although giving no information about the phase of component 1 they assume to be involved in these solid solutions.

In the evaluator's opinion, doubts are to be cast about the solid state transition at 327 K in component 1. Should it actually exist, the lower part of the diagram shown in Ref. 2 would require completion, whereas, in its absence, the picture of the phase relations would be substantially correct.

REFERENCES:

(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, 9, 1292-1294 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)**, 1964, 9, 704-706.

(2) Sarapulova, I.F.; Kashcheev, G.N.; Diogenov, G.G.
Nekotorye Vopr. Khimii Rasplavlen. Solei i Produktov Destruktsii Sapropelitov, Irkutsk, 1974, 3-10.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Diogenov, G.G.; Sarapulova, I.F. Zh. Neorg. Khim. 1964, 9, 1292-1294 (*); Russ. J. Inorg. Chem. (Engl. Transl.), 1964, 9, 704-706.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

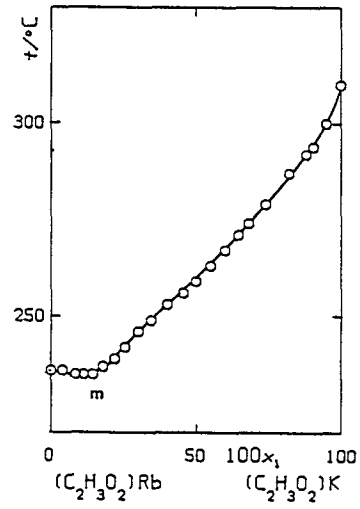
EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
236	509	0	259	532	50.0
236	509	4.0	263	536	55.0
235	508	8.5	267	540	60.0
235	508	11.3	271	544	64.5
235	508	14.5	274	547	68.0
237	510	18.0	279	552	74.0
239	512	22.0	287	560	82.0
242	515	25.5	292	565	88.0
246	519	30.0	294	567	90.5
249	522	34.5	300	573	95.0
253	526	40.0	310	583	100
256	529	45.5			

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

Characteristic point(s):

Continuous series of solid solutions with a minimum (erroneously indicated as a maximum in the text; compiler), m, at 235 °C and $100x_2$ about 85.



AUXILIARY INFORMATION

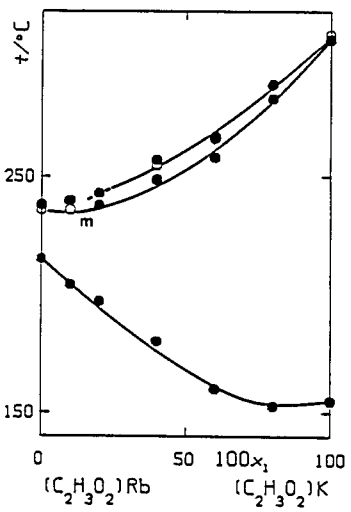
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis; temperature measured with a Chromel-Alumel thermocouple.	Component 1: "chemically pure" material, recrystallized twice and dehydrated by prolonged heating at about 300 °C. Component 2: prepared from rubidium carbonate.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Sarapulova, I.F.; Kashcheev, G.N.; Diogenov, G.G. **Nekotorye Vopr. Khimii Rasplavlen. Solei i Produktov Destruktsii Sapropelitov, Irkutsk, 1974**, 3-10.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
236	509	0	180[be]	453	40
238[bc]	511	0	266	539	60
238[bd]	511	0	267[bc]	540	60
215[be]	488	0	258[bd]	531	60
236	509	10	160[be]	433	60
240[bc]	513	10	289[bc]	562	80
204[be]	477	10	283[bd]	556	80
243[bc]	516	20	153[be]	426	80
238[bd]	511	20	310	583	100
197[be]	470	20	308[bc]	581	100
255	528	40	308[bd]	581	100
257[bc]	530	40	155[be]	428	100
249[bd]	522	40			

[a] T/K values calculated by the compiler.
[b] Differential thermal analysis (filled circles in the figure).
[c] Liquidus.
[d] Solidus.
[e] Solid state transition.



Characteristic point(s):

Continuous series of solid solutions with a minimum, m, at 235 °C and $100x_2$ about 85 (authors).

AUXILIARY INFORMATION

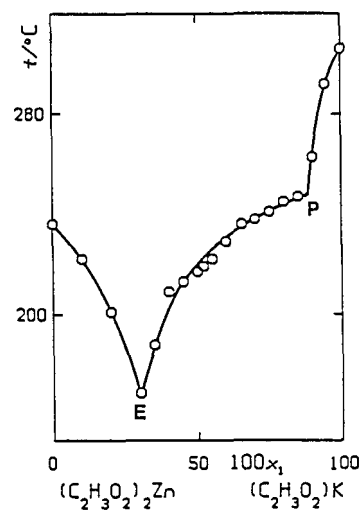
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A thermographical analysis was performed with a Kurnakov pyrometer Mod. 1959 (reference material: Al_2O_3). Only heating traces (at the heating rate of 5-6 °C/min) were recorded due to the tendency of the melts to undercool. Supplementary visual polythermal observations are also tabulated. X-ray diffraction patterns were used to obtain information on the solid solutions.	Not stated. Component 1 undergoes phase transitions at $t_{trs}(1)/°C$= 54, 155. Component 2 undergoes a phase transition at $t_{trs}(2)/°C$= 215.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium ethanoate (potassium acetate); $(C_2H_3O_2)K$; [127-08-2] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Nadirov, E.G.; Bakeev, M.I. **Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR** 1974, 25, 115-128.
VARIABLES: Temperature	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
236	509	0	229	502	60
222	495	10	236	509	65.5
201	474	20	238	511	70
169	442	30	241	514	75
188	461	35	245	518	80
209	482	40	247	520	85
213	486	45	263	536	90
217	490	50	292	565	94.6
219	492	52	306	579	100
222	495	55			

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



Characteristic point(s):

Eutectic, E, at 169 °C and $100x_1 = 30$.
Peritectic, P, at 248 °C (visual polythermal analysis) or at 242 °C (conductometry) and $100x_1 = 88$ (according to Fig. 6 of the original paper; compiler).

Intermediate compound(s):

$(C_2H_3O_2)_{10}K_8Zn$, incongruently melting (it undergoes a phase transition at 161 °C, conductometry).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Visual polythermal analysis supplemented with conductometry and occasionally with X-ray investigations. Temperatures of initial crystallization measured with a thermocouple.

NOTE:

It can be observed that the fusion temperature of component 1 reported by Nadirov and Bakeev (579 K) is in fair agreement with the corresponding value listed in Table 1 of the Preaface (578.7±0.5 K), whereas the fusion temperature of component 2 (509 K) is noticeably lower than other recent data by different investigators (Ref. 1).

SOURCE AND PURITY OF MATERIALS:

Component 1: material recrystallized three times and dried at 110-120 °C. Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity, recrystallized twice and dried at 140 °C.

ESTIMATED ERROR:

Temperature: accuracy probably ± 2 K (compiler).

REFERENCES:

(1) 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.

COMPONENTS:	EVALUATOR:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Franzosini, P., Dipartimento di Chimica Fisica Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was investigated by Diogenov (Ref. 1), by Pochtakova (Ref. 2), and again by Diogenov and Chumakova (Ref. 3) with substantially discrepant conclusions.

Diogenov, in his earlier paper (Ref. 1), claimed the existence of: (i) eutectic, E_1, occurring at 499-500 K (226-227 °C),and (likely) $100x_1 = 81.5$ (the latter figure being quoted in Ref. 4, which is a later paper by the same author); (ii) eutectic, E_2, occurring at 433 K (160 °C) and $100x_1 = 57$; and (iii) the intermediate compound $(C_2H_3O_2)_5Li_4Na$, congruently melting at 500 K (227 °C).

These results, however, were not confirmed in Ref. 3, where Diogenov and Chumakova reported approximately the same coordinates for E_1, viz., 492-494 K (219-221 °C) and $100x_1$ about 78, but completely different fusion temperature for E_2, viz., either 486 K (213 °C; Fig. 2 of the original paper), or 449 K (176 °C; Fig. 4 of the original paper). Moreover they suggested for the intermediate compound a new formula, i.e., $(C_2H_3O_2)_4Li_3Na$.

Finally, it is to be noted that the fusion temperatures given in Refs. 1, 3 for component 2 differ by 11 K, and the phase transitions reported in Ref. 1, i.e., $T_{trs}(1) = 530$ K (257 °C), and $T_{trs}(2) = 596$ K (323 °C), do not meet any value of Table 1 of the Preface.

In conclusion, the poor reproducibility of the results by Diogenov's group does not allow one to take them into consideration for assessing the actual diagram of this system.

Conversely, Pochtakova's data (Ref. 2) seem more reliable, although among the phase transition temperatures of component 2 quoted by the author from Ref. 5, i.e., 331, 391, 403, and 511 K (58, 118, 130, and 238 °C, respectively), only two can be identified with those listed in Preface, Table 1. This disagreement, however, does not seem, in the evaluator's opinion, to involve heavily the reliability of the liquidus, due also to the fact that the fusion temperatures of both pure components (604 K for component 2, and 557 K for component 1, respectively) are close to those reported in Preface, Table 1 (601.3±0.5 and 557±2 K, respectively).

Accordingly, the phase diagram by Pochtakov can be accepted with some confidence: in particular, the composition of the congruently melting intermediate compound, i.e., $(C_2H_3O_2)_5Li_3Na_2$, seems satisfactorily defined by the dome exhibited by the liquidus.

REFERENCES:

(1) Diogenov, G.G.
Zh. Neorg. Khim. 1956, 1, 799-805(*); **Russ. J. Inorg. Chem.** (Engl. Transl.) 1956, 1 (4), 199-205.

(2) Pochtakova, E.I.
Zh. Neorg. Khim. 1965, 10, 1333-2338 (*); **Russ. J. Inorg. Chem.** (Engl. Transl.) 1965, 10, 1268-1271.

(3) Diogenov, G.G.; Chumakova, V.P.
Fiz.-Khim. Issled. Rasplavov Solei. Irkutsk. 1975, 7-12.

(4) Diogenov, G.G.
Zh. Neorg. Khim. 1956, 1, 2551-2555; **Russ. J. Inorg. Chem.** (Engl.Transl.) 1956, 1 (11), 122-126 (*).

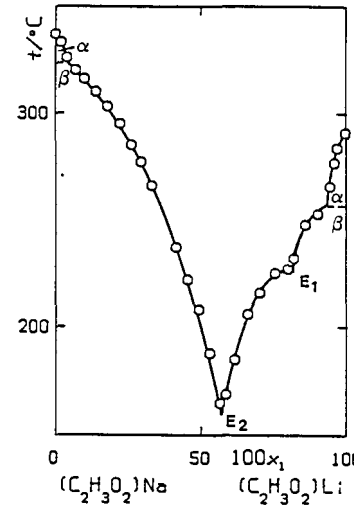
(5) Sokolov, N.M.
Tezisy Dokl. X Nauch. Konf. S.M.I. 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G. **Zh. Neorg. Khim.** 1956, 1, 799-805 (*); **Russ. J. Inorg. Chem. (Engl. Transl.)** 1956, 1 (4), 199-205.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
337	610	0	165	438	56.5
333	606	2	169	442	58.5
326	599	4	185	458	61.5
320	593	7	206	479	66
316	589	10	216	489	70.3
310	583	14	225	498	75.5
303	576	18	227	500	80
295	568	22.3	232	505	82
285	558	26	248	521	86
277	550	29.3	253	526	90.3
266	539	33	266	539	94.5
237	510	41.5	277	550	96
222	495	45.5	284	557	97
208	481	49.2	291	564	100
188	461	53			

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



Characteristic point(s):
Eutectic, E_1, at 227 °C (226 °C according to Fig. 1 of the original paper, compiler) and $100x_1$= 81.5 (according to Ref.1 where the author, quoting the present paper, reports: "The eutectic of the compound $4CH_3COOLi.CH_3COON$ and lithium acetate melts at 226° and corresponds to 81.5 % lithium acetate"; compiler).
Eutectic, E_2, at 160 °C and $100x_1$= 57 (author).

Intermediate compound(s):
$(C_2H_3O_2)_5Li_4Na$, congruently melting at 227 °C (author).

AUXILIARY INFORMATION

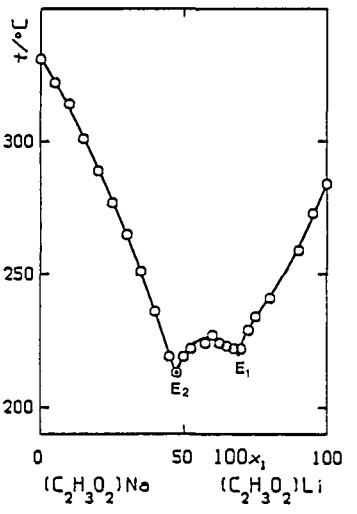
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis.	Not stated. Component 1 undergoes phase transition at $t_{trs}(1)/°C$= 257. Component 2 undergoes phase transition at $t_{trs}(2)/°C$= 323.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Diogenov, G.G. **Zh. Neorg. Khim.** 1956, 1, 2551-2555; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1956, 1 (11), 122-126 (*).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Pochtakova, E.I. **Zh. Neorg. Khim.** 1965, 10, 2333-2338 (*); **Russ. J. Inorg. Chem., Engl. Transl.,** 1965, 10, 1268-1271.
VARIABLES: Temperature	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
331	604	0	224	497	57.5
322	595	5	227	500	60
314	587	10	224	497	62.5
301	574	15	223	496	65
289	562	20	222	495	67.5
277	550	25	222	495	70
265	538	30	229	502	72.5
251	524	35	234	507	75
236	509	40	241	514	80
219	492	45	259	532	90
213	486	47.5	273	546	95
219	492	50	284	557	100
222	495	52.5			

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



Characteristic point(s):

Eutectic, E_1, at 219 °C and $100x_1$= 69 (author).
Eutectic, E_2, at 213 °C and $100x_1$= 47.5 (author).

Intermediate compound(s):

$(C_2H_3O_2)_5Li_3Na_2$, congruently melting at 227 °C (author).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated. Component 2 undergoes phase transitions at $t_{trs}(2)/°C$= 58, 118, 130, 238 (Ref. 1).
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Sokolov, N.M. **Tezisy Dokl. X Nauch. Konf. S.M.I.** 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3]	Diogenov, G.G.; Chumakova, V.P. **Fiz.-Khim. Issled. Rasplavov Solei, Irkutsk**, 1975, 7-12.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

Eutectic, E_1, at 219 °C (Fig. 2 of the original paper) or 221 °C (Fig. 4); composition not stated ($100x_1$ about 78 in compiler's graphical estimation from Fig. 4).
Eutectic, E_2, at 213 °C (Fig. 2 of the original paper) or 176 °C (Fig. 4); composition not stated ($100x_1$ about 54 in compiler's graphical estimation from Fig. 4).

Intermediate compound(s):

$(C_2H_3O_2)_4Li_3Na$, congruently melting at 226 °C (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal method.	Not stated. Component 1: $t_{fus}(1)/°C = 291$ (Fig. 3 of the original paper). Component 2: $t_{fus}(2)/°C = 326$ (Fig. 1 of the original paper).
	ESTIMATED ERROR: Temperature: accuracy probably ± 2 K (compiler).
	REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was studied twice by Diogenov's group, as a side of the ternary $C_2H_3O_2$/Cs, Li, Rb (Ref. 1), and as a side of the reciprocal ternary $C_2H_3O_2$, NO_3/Li, Rb (Ref. 2), respectively.

In both papers two eutectics are reported, viz., E_1 at 509 K (236 °C), and either $100x_1$= 88.5 (Ref. 1), or $100x_1$= 88 (Ref. 2), and E_2 at either 449 K (176 °C; Ref. 1), or 460 K (187 °C; Ref. 2), and $100x_1$= 26.

In Ref. 1, however, Diogenov and Sarapulova report two intermediate compounds, i.e., $(C_2H_3O_2)_5Li_2Rb_3$ and $(C_2H_3O_2)_5Li_3Rb_2$ [congruently melting at 518 K (245 °C) and 582 K (309 °C), respectively], and consequently a third invariant, whilst Diogenov et al. report in Ref. 2 a single intermediate compound, $(C_2H_3O_2)_3Li_2Rb$ [congruently melting at 573 K (300 °C)].

Due to the detailed experimental evidence (obtained, inter alia, with X-ray diffractometry) given in Ref. 2, the evaluator thinks that the existence of the latter compound should be considered as reasonably assessed. On the contrary, the existence of both $(C_2H_3O_2)_5Li_2Rb_3$ and $(C_2H_3O_2)_5Li_3Rb_2$ does not seem adequately supported.

It is to be noticed that some discrepancies exist between the phase transition temperatures reported in Ref. 2 and those given in Table 1 of the Preface, viz., $T_{fus}(1)$= 564 K (291 °C), to be identified with 557±2 K, $T_{trs}(1)$= 405 K (132 °C), with no correspondence, $T_{fus}(2)$= 509 K (236 °C), to be identified with 514±1 K, and $T_{trs}(2)$= 479 K (206 °C), to be identified with 498±1 K. These discrepancies, however, do not imply significant changes in the liquidus by Diogenov et al. (Ref. 2): the evaluator is consequently inclined to consider the presentation by these authors as sufficiently reliable.

REFERENCES:

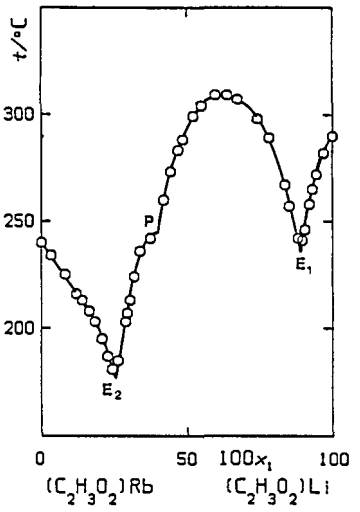
(1) Diogenov, G.G.; Sarapulova, I.F.
Zh. Neorg. Khim. 1964, 9(2), 482-487; **Russ. J. Inorg. Chem. (Engl. Transl.)** 1964, 9, 265-267 (*).

(2) 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 (*).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Diogenov, G.G.; Sarapulova, I.F. Zh. Neorg. Khim. 1964, 9(2), 482-487; Russ. J. Inorg. Chem., Engl. Transl., 1964, 9, 265-267 (*).
VARIABLES:	
Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/oC	T/K[a]	$100x_1$	t/oC	T/K[a]	$100x_1$
240	513	0	283	556	47.0
234	507	3.5	288	561	48.5
225	498	8.3	299	572	52.0
216	489	12.0	304	577	55.0
213	486	14.0	309	582	60.0
208	481	16.5	309	582	64.0
203	476	18.5	307	580	67.5
195	468	21.0	298	571	74.0
187	460	23.0	289	562	78.0
181	454	24.5	267	540	83.5
185	458	26.5	257	530	85.0
203	476	29.0	242	515	88.0
207	480	29.5	241	514	89.5
213	486	30.5	246	519	90.5
224	497	32.0	258	531	92.0
236	509	34.0	265	538	93.0
242	515	37.5	272	545	94.5
260	533	42.0	282	555	97.0
273	546	44.5	290	563	100.0



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

Characteristic point(s): Eutectic, E_1, at 236 °C and $100x_1$ = 88.5 (authors).
Peritectic, P, at 245 °C and $100x_1$ = 40 (compiler).
Eutectic, E_2, at 176 °C and $100x_1$ = 26 (authors).
Intermediate compound(s): $(C_2H_3O_2)_5Li_2Rb_3$, melting at 245 °C (authors).
$(C_2H_3O_2)_5Li_3Rb_2$, congruently melting at 309 °C (authors).

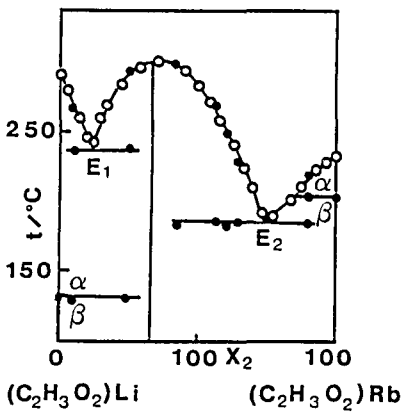
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis. Temperatures measured with a Chromel-Alumel thermocouple.	Not stated.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	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: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

The results are reported only in graphical form (see figure).



Characteristic point(s):

Eutectic, E_1, at 236 °C and $100x_2 = 12$ (authors).
Eutectic, E_2, at 187 °C and $100x_2 = 74$ (authors).

Intermediate compound(s):

$(C_2H_3O_2)_3Li_2Rb$, congruently melting at 300 °C (authors).

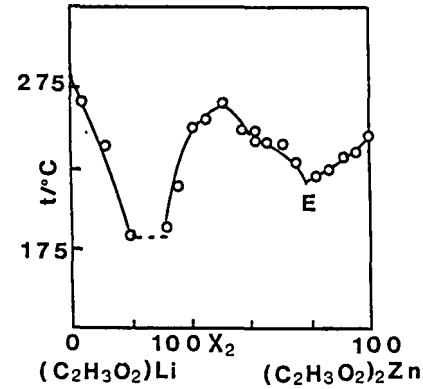
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The data were obtained by visual polythermal and thermographical analysis (empty and filled circles in the figure, respectively), supplemented with a few X-ray diffraction patterns.	Not stated. Component 1 melts at 291 °C and undergoes a phase transition at 132 °C. Component 2 melts at 236 °C and undergoes a phase transition at 206 °C.
	ESTIMATED ERROR: Temperature: precision probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lithium ethanoate (lithium acetate); $(C_2H_3O_2)Li$; [546-89-4] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Pavlov, V.L.; Golubkova, V.V. Visn. Kiiv. Univ., Ser. Khim., Kiev, 1972, No. 13, 28-30.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

The results are reported only in graphical form (see figure).



Characteristic point(s):

Eutectic, E, at 220 °C and $100x_2 = 75$ (authors).

Note - Glasses form at $15 \leq 100x_2 \leq 30$.

Intermediate compound(s):

$(C_2H_3O_2)_3LiZn$, congruently melting at 265 °C (authors).
$(C_2H_3O_2)_5LiZn_2$, incongruently melting at 240 °C (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis as well as time-temperature curves were employed. The temperatures were measured with a Chromel-Alumel thermocouple checked at the freezing temperatures of Zn, $K_2Cr_2O_7$, Cd, Sn, and benzoic acid. NOTE: The formation of glasses in this system is reasonable. Accordingly, one should expect a marked tendency of the molten mixtures to supercool, which might cause the polythermal observations to be less reliable than usual.	Component 1: either $(C_2H_3O_2)Li.2H_2O$ of analytical purity, or material obtained by reacting Li_2CO_3 and ethanoic acid; both materials dehydrated in an oven at 105-110 °C. Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity dried to constant mass at 110 °C. ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler). REFERENCES:

COMPONENTS:	EVALUATOR:
(1) Magnesium ethanoate (magnesium acetate); $(C_2H_3O_2)_2Mg$; [142-72-3] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)_2Na_2$; [127-09-3]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system has been investigated only by Pochtakova (Ref. 1) who reports the results of visual polythermal observations supplemented with DTA investigations, both in numerical and graphical form.

The trend of the accessible part of the liquidus ($0 \leq 100x_1 \leq 70$) has been interpreted by the author as follows: the occurrence of the intermediate compound $(C_2H_3O_2)_4MgNa_2$, congruently melting at 533 K (260 °C), splits the diagram into two eutectic subsystems whose invariants are E_1, at 529 K (256 °C) and $100x_2 = 40.0$, and E_2, at 528 K (255 °C) and $100x_2 = 57.5$. The author suggests also that the intermediate compound undergoes an alpha-beta transition at 493 K (220 °C), and a lattice readjustment of the beta form at 373 K (100 °C).

For an evaluation of the reliability of the above conclusions, the following discrepancies between the text or tables and the original plot must be mentioned.

(i) In the experimental section of the paper two solid-solid transitions are reported for component 1 at 425 K (152 °C) and 449 K (176 °C), respectively, whilst the corresponding figures on the plot are 425 K (152 °C) and 445 K (172 °C).

(ii) The table summarizing the visual polythermal data reports two temperature values at $100x_1 = 50$, the first of which - possibly due to a misprint - probably corresponds to $100x_1 = 30$.

(iii) The table collecting the DTA results reports, at $100x_1 = 60$, five temperature values, one of which (236 °C) is neither included in the phase diagram nor otherwise discussed in the text.

(iv) No DTA evidence for the lattice readjustment at 373 K is provided at the composition of the intermediate compound.

(v) DTA measurements carried out at $100x_2 > 50$ did not allow the author to obtain evidence for either the transition of the intermediate compound at 493 K, or the lattice readjustment at 373 K.

(vi) DTA measurements carried out on the mixtures did not allow the author to obtain evidence for the solid state transitions of the pure components. It is however to be stressed that the transition temperatures of sodium ethanoate are quoted by the author from Ref. 2.

In conclusion the upper part of the phase diagram given in the paper seems to be supported adequately by the experimental results, whereas the system is still to be considered as largely unexplored below the eutectic lines.

REFERENCES:

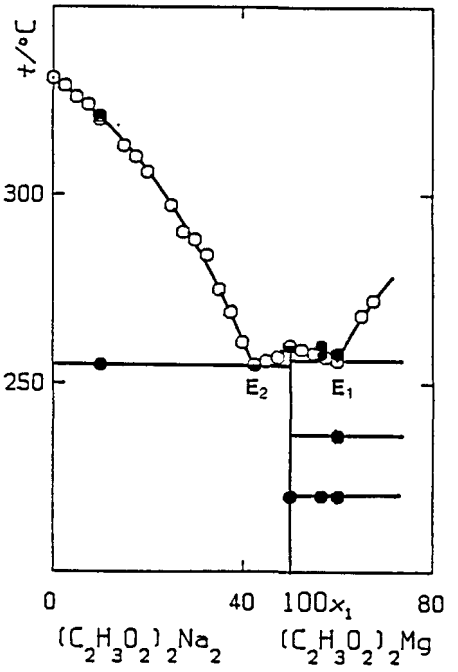
(1) Pochtakova, E.I.
Zh. Obshch. Khim. 1974, 44, 241-248.

(2) Sokolov, N.M.
Tezisy Dokl. X Nauchn. Konf. S.M.I. 1956.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Magnesium ethanoate (magnesium acetate); $(C_2H_3O_2)_2Mg$; [142-72-3] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)_2Na_2$; [127-09-3]	Pochtakova, E.I. **Zh. Obshch. Khim.** 1974, 44, 241-248.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
331	604	0
329	602	2.5
326	599	5
324	597	7.5
320	593	10
321[bc]	594	10
255[bd]	528	10
313	586	15
310	583	17.5
306	579	20
297	570	25
290	563	27.5
288	561	30[i]
284	557	32.5
275	548	35
269	542	37.5
261	534	40
255	528	42.5
255[bc]	528	42.5
255[bd]	528	42.5
256	529	45
257	530	47.5
260	533	50
260[bc]	533	50
220[bg]	593	50
259	532	52.5
258	531	55
260[bc]	533	56.5
258[be]	531	56.5
100[bf]	373	56.5
220[bg]	493	56.5
257	530	57.5
256	529	60
258[bc]	531	60
258[be]	531	60
100[df]	373	60
220[bg]	493	60
236[bh]	509	60
268	541	65
272	545	67.5



a T/K values calculated by the compiler.
b Differential thermal analysis (filled circles in the figure).
c Initial crystallization.
d First eutectic stop.
e Second eutectic stop.
f First transition of the system.
g Second transition of the system.
h Third transition of the system.
i 50 in the original text (corrected by the compiler).

Note - The system was investigated at $0 < 100_x1 < 67.5$ due to thermal instability of component 1.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Magnesium ethanoate (magnesium acetate); $(C_2H_3O_2)_2Mg$; [142-72-3] (2) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)_2Na_2$; [127-09-3]	Pochtakova, E.I. **Zh. Obshch. Khim.** 1974, 44, 241-248.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES: (continued)

Characteristic point(s):

Eutectic, E_1, at 256 °C (extrapolated, visual polythermal analysis), or 258 °C (differential thermal analysis), and $100x_1$= 60 (author).

Eutectic, E_2, at 255 °C and $100x_1$= 42.5 (author).

Intermediate compound(s):

$(C_2H_3O_2)_4MgNa_2$, congruently melting at 260 °C (author).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis, supplemented with differential thermal analysis.	Component 1: prepared (Ref. 1) by reacting the ("chemically pure") carbonate with a slight excess of ethanoic acid of analytical purity [phase transitions at $t_{trs}(1)/°C$= 152, 176]. Component 2: "chemically pure" material recrystallized and dried at 200 °C to constant mass [phase transitions at $t_{trs}(2)/°C$= 238-240, 130, 118, 58, Ref. 2].
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES: (1) Sokolov, N.M. **Zh. Obshch. Khim.** 1954, 24, 1581-1593 (2) Sokolov, N.M. **Tezisy Dokl. X Nauch. Konf. S.M.I.** 1956.

COMPONENTS:	EVALUATOR:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Schiraldi, A., Dipartimento di Chimica Fisica Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was studied twice in Gimel'shtein's laboratory [Ref. 1: visual polythermal analysis (empty circles in the figure); Ref. 2: DTA (filled circles in the figure)] with substantially analogous results for the liquidus: an intermediate compound, $(C_2H_3O_2)_4NaRb_3$, congruently melting at 452-453 K (179 °C, Ref. 1; 180 °C, Ref. 2), forms eutectics with both pure components, at 418-419 K (145-146 °C) and $100x_1$= 38-38.5, and at 451-453 K (178-180 °C) and $100x_1$= 23.5, respectively.

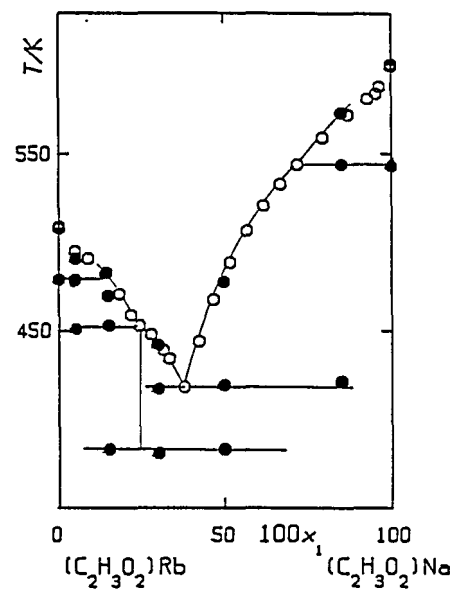
Discrepancies, however, exist between Ref.s 1 and 2 about the phase transition temperatures of the pure components.

As for component 1, Gimel'shtein and Diogenov (Ref. 1) report $T_{trs}(1)$= 583-584 K (310-311 °C), while Gimel'shtein (Ref. 2) gives $T_{trs}(1)$= 543 K (270 °C). The former figure exceeds largely the highest $T_{trs}(1)$ value listed in Table 1 of the Preface, viz., 527±15 K, while the latter one lies just above the upper uncertainty limit of Table 1 value.

As for component 2, 493 K (220 °C) and 479 K (206 °C) are reported in Ref. 1 and Ref. 2, respectively, as the transition temperature: the former value is close to, while the latter one is significantly lower than that listed in Table 1 of the Preface, viz., 498±1 K.

X-ray diffractometric results were claimed (Ref. 2) to support the existence of the intermediate compound, and to suggest that this should decompose into a solid solution just below 383 K (110 °C). The second assertion, however, does not seem convincing, inasmuch as it would imply a change in the solid from a state of miscibility at lower temperatures into a state of immiscibility at higher temperatures.

Finally, the assumption of the congruent fusion of the intermediate compound does not seem adequately supported: the shape of the liquidus could as well suggest the occurrence of a peritectic equilibrium, e.g., in connection with the incongruent fusion of the compound.



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.

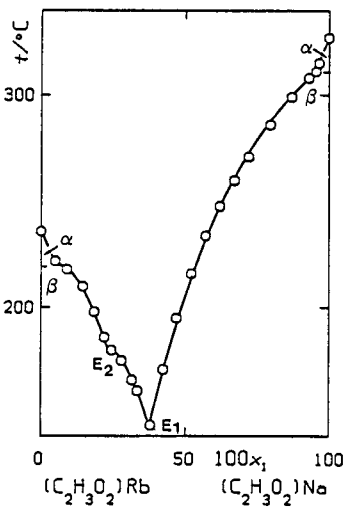
(2) Gimel'shtein, G.G.; Tr. Irkutsk. Politech. Inst. 1971, No. 66, 80-100.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	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: Temperature	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$	t/°C	T/K[a]	$100x_1$
236	509	0	195	468	47
222	495	5	216	489	52
218	491	9	234	507	57
210	483	14.5	248	521	62
198	471	18.5	260	533	67
186	459	22	271	544	72
180	453	24.5	286	559	79.5
175	448	28	299	572	87
166	439	31.7	308	581	93
161	434	33.5	311	584	95.5
145	418	38	315	588	96.5
171	444	42.5	327	600	100

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



Characteristic point(s):
Eutectic, E_1, at 145 °C (according to Fig. 2 of the original paper, or at 146 °C according to Fig. 1 of the original paper, and not at 179 °C as reported in the text; compiler) and $100x_1$ = 38 (authors).
Eutectic, E_2, at 180 °C (according to Fig. 2 of the original paper, or at 179 °C according to Fig. 1 of the original paper; compiler) and $100x_1$ about 23.5 (compiler).

Intermediate compound(s):
$(C_2H_3O_2)_4NaRb_3$, congruently melting at 180 °C (authors).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis. 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 $t_{trs}(1)/°C$ = 311 (310 °C according to Fig. 2 of the original paper; compiler). Component 2 undergoes a phase transition at $t_{trs}(2)/°C$ = 220.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7]	Gimel'shtein, V.G. Tr. Irkutsk. Politekh. Inst. 1971, No. 66, 80-100.
VARIABLES: Temperature	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
328	601	0	108	381	70.0
270	543	0	197	470	85.0
300	573	15.0	180	453	85.0
271	544	15.0	110	383	85.0
148	421	15.0	218	491	95.0
205	478	50.0	206	479	95.0
146	419	50.0	178	451	95.0
110	383	50.0	235	508	100
169	442	70.0	206	479	100
144	417	70.0			

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

Characteristic point(s):

Eutectic, E_1, at 178 °C and $100x_1$= 23.5 (author).
Eutectic, E_2, at 146 °C and $100x_1$= 38.5 (author).

Intermediate compound(s):

$(C_2H_3O_2)_4NaRb_3$, congruently (compiler) melting at 179 °C (author), and undergoing a transformation at 110 °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. NOTE - 1 The meaning of the data listed in the table becomes apparent by observing the figure reported in the critical evaluation. NOTE - 2 The coordinates of the characteristic points were stated by the author on the basis of his own DTA measurements, and of previous literature data (Ref. 1). X-ray patterns were taken at $100x_1$= 27.5.	Not stated. Component 1 melts at $t_{fus}(1)/°C$= 328 (327 according to Fig. 7 of the original paper; compiler), and undergoes a phase transition at $t_{trs}(1)/°C$= 270. Component 2 melts at $t_{fus}(2)/°C$= 235 (236 according to Fig. 7 of the original paper; compiler), and undergoes a phase transition at $t_{trs}(2)/°C$= 206. ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler). REFERENCES: (1) Gimel'shtein, V.G.; Diogenov, G.G. Zh. Neorg. Khim. 1958, 3, 1644-1649.

COMPONENTS:	EVALUATOR:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Schiraldi, A., Dipartimento di Chimica Fisica, Universita' di Pavia (ITALY).

CRITICAL EVALUATION:

This system was studied by Lehrman and Skell (Ref. 1), Pavlov and Golubkova (Ref. 2), and Nadirov and Bakeev (Ref. 3).

A qualitative agreement exists between Refs. 1 and 2, as both of them report a phase diagram characterized by two eutectics, E_1 and E_2, and the congruently melting intermediate compound $(C_2H_3O_2)_4Na_2Zn$. Differences between these papers concern the coordinates of the eutectics: according to Ref. 1, E_1 should occur at 491-493 K (218-220 °C) and $100x_2$ about 28, and E_2 at 548.5-551.8 K (175.3-178.6 °C) and $100x_2$ about 54, whereas, according to Ref. 2, the invariants should be at 473 K (200 °C) and $100x_2$= 25, and at 413 K (140 °C) and $100x_2$= 50, respectively.

The phase diagram suggested in Ref. 3 shows in turn: (i) a single eutectic at either 415, or 421 K (either 142, or 148 °C, according to visual polythermal and conductometric investigations, respectively) and $100x_2$= 57; (ii) a peritectic at either 480, or 477, or 484 K (either 207, or 204, or 211 °C, according to visual polythermal, conductometric, and thermographical results, respectively), and, possibly, $100x_2$= 33.3; and (iii) the intermediate compound $(C_2H_3O_2)_4Na_2Zn$ reported here as incongruently melting.

In the evaluator's opinion, the discrepancies among the diagrams suggested by the different authors should be attributed mainly to different degrees of accuracy in the determination of the actual liquidus temperatures. In this connection, it is important to stress that Lehrman and Skell observed a tendency of the melts to supercool and, in particular, found at temperatures below 483 K extremely viscous melts "so that great difficulty was experienced in obtaining crystallization and reproducible melting points" (Ref. 1). Consequently, in the case of the present binary, poorly reliable results can be reasonably expected both by techniques implying observations performed on cooling (as visual polythermal analysis), and by techniques (as conductometry) implying observations performed on heating at constant rate. Accordingly, the diagrams by Pavlov and Golubkova (based only on visual polythermal observations), and by Nadirov and Bakeev (based mainly on visual polythermal and conductometric investigations) probably suffer from limited accuracy.

In conclusion, the evaluator is inclined to consider as more reliable the findings by Lehrman and Skell (who employed very small heating rates), viz.: (i) the presence of the intermediate compound $(C_2H_3O_2)_4Na_2Zn$, congruently melting at about 500 K; and (ii) the occurrence of two eutectics, E_1 at about 490 K and $100x_2$ about 28, and E_2 at about 550 K and 100 x_2 about 54.

REFERENCES:

(1) Lehrman, A.; Skell, P.
J. Am. Chem. Soc. 1939, **61**, 3340-3342.

(2) Pavlov, V.L.; Golubkova, V.V.
Visn. Kiiv. Univ., Ser. Khim., Kiev, 1972, No. 13, 28-30.

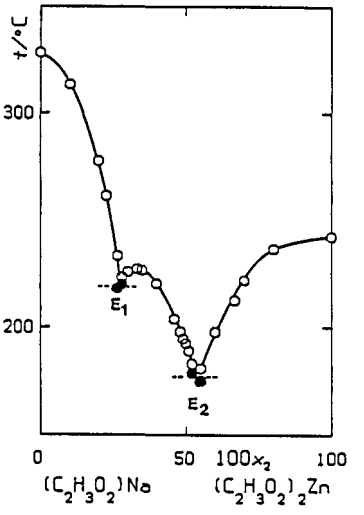
(3) Nadirov, E.G.; Bakeev, M.I.
Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR 1974, **25**, 115-128.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Lehrman, A.; Skell, P. J. Amer. Chem. Soc. 1939, 61, 3340-3342.
VARIABLES:	PREPARED BY:
Temperature	Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_2$	t/°C	T/K[a]	$100x_2$
328.3	601.5	0	203.9	477.1	46.0
313.4	586.6	10.1	198.0	471.2	48.0
277.5	550.7	20.0	194.6	467.8	49.0
261.4	534.6	22.6	192.5	465.7	50.0
233.2	506.4	26.5	189.1	462.3	51.0
218.0[b]	491.2	26.5	183.0	456.2	52.0
223.3	496.5	28.0	178.6[c]	451.8	52.0
220.0[b]	493.2	28.0	180.9	454.1	55.0
225.7	498.9	30.0	175.3[c]	448.5	55.0
227.2	500.4	33.3	197.8	471.0	60.0
227.1	500.3	33.3	212.5	485.7	66.7
227.1	500.3	33.3	221.8	495.0	70.0
226.4	499.6	35.0	236.5	509.7	80.0
220.2	493.4	40.0	242.4	515.6	100.0

[a] T/K values calculated by the compiler.
[b] Eutectic stop (E_1); filled circles in the figure.
[c] Eutectic stop (E_2); filled circles in the figure.



Characteristic point(s):
Eutectic, E_1, at 218-220 °C and $100x_2$ about 28 (compiler).
Eutectic, E_2, at 175.3-178.6 °C and $100x_2$ about 54 (compiler).

Intermediate compound(s):
$(C_2H_3O_2)_4Na_2Zn$, congruently melting at 227.1±0.1 °C (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The salts, contained into 2.5x20 cm Pyrex tube and added with 5 drops of glacial ethanoic acid, were heated in bath formed with the eutectic mixture of calcium, potassium, and lithium nitrates.
The temperature of disappearance of the last crystal as the mixture was heated under stirring was measured with Copper-Constantane thermocouple and potentiometer.
The fusion temperatures tabulated come from three or more determinations ranging within 1 K. The eutectic stops relevant to E_1 were measured by means of time - temperature cooling curves.

SOURCE AND PURITY OF MATERIALS:

Materials of not stated source, recrystallized from dilute ethanoic acid, and dehydrated according to Ref. 1.

ESTIMATED ERROR:

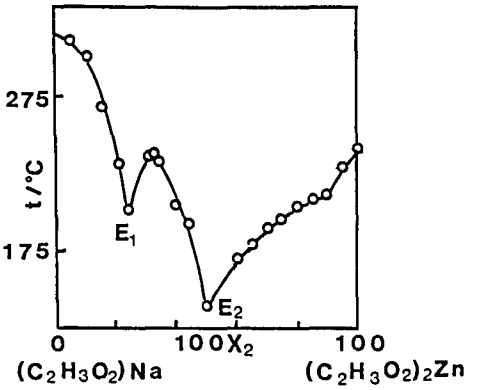
Temperature: accuracy ± 0.5 K (compiler).

REFERENCES:

(1) Davidson, A.W.; McAllister
J. Amer. Chem. Soc. 1930, 52, 519-527.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Pavlov, V.L.; Golubkova, V.V. Visn. Kiiv. Univ., Ser. Khim., Kiev, 1972, No. 13, 28-30.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:



The results are reported only in graphical form (see figure).

Characteristic point(s):

Eutectic, E_1, at 200 °C and $100x_2$= 25 (authors).
Eutectic, E_2, at 140 °C and $100x_2$= 50 (authors).

Intermediate compound(s):

$(C_2H_3O_2)_4Na_2Zn$, congruently melting at 240 °C (authors).

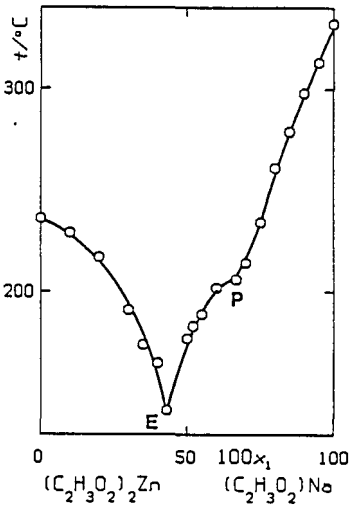
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis as well as time-temperature curves were employed. The temperatures were measured with a Chromel-Alumel thermocouple checked at the freezing temperatures of Zn, $K_2Cr_2O_7$, Cd, Sn, and benzoic acid.	Component 1: $(C_2H_3O_2)Na.3H_2O$ of analytical purity recrystallized from water and dried in an oven at 110-120 °C to constant mass. Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity dried to constant mass at 110 °C.
	ESTIMATED ERROR: Temperature: accuracy probably ±2 K (compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium ethanoate (sodium acetate); $(C_2H_3O_2)Na$; [127-09-3] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Nadirov, E.G.; Bakeev, M.I. **Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR** 1974, **25**, 115-128.
VARIABLES: Temperature	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
236	509	0
229	502	10
217	490	20
191	464	30
174	447	35
165	438	40
142	415	43
177	450	50
183	456	52
189	462	55
202	475	60
206	479	66.7
214	487	70
234	507	75
261	534	80
279	552	85
298	571	90
313	586	95
332	605	100



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

Characteristic point(s):

Eutectic, E, at either 142 °C (visual polythermal analysis), or 148 °C (conductometry), and $100x_1 = 43$.

Peritectic, P, at either 207 °C (visual polythermal analysis), or 204 °C (conductometry), or 211 °C (thermographical analysis), and at a not clearly specified composition [in compiler's opinion, the coordinates of the peritectic might be 206 °C (visual polythermal analysis; tabulated value) and $100x_1 = 66.7$].

Intermediate compound(s):

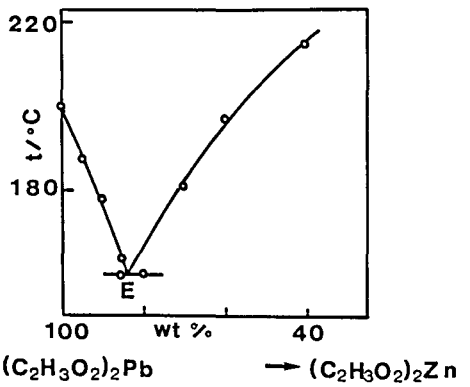
$(C_2H_3O_2)_4Na_2Zn$, incongruently melting.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis supplemented with conductometry and occasionally with thermographical investigations. Temperatures of initial crystallization measured with a thermocouple.	Component 1: "chemically pure" hydrated $C_2H_3O_2Na$ recrystallized twice and dried at 130 °C. Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity, recrystallized twice and dried at 140 °C.
	ESTIMATED ERROR: Temperature: accuracy probably ± 2 K (compiler).

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Lead(II) ethanoate (lead acetate); $(C_2H_3O_2)_2Pb$; [15347-57-6] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Petersen, J. Z. Elektrochem. 1914, 20, 328-332.
VARIABLES:	PREPARED BY:
Temperature.	Baldini, P.

EXPERIMENTAL VALUES:



The results are reported only in graphical form (see figure).

Characteristic point(s):

Eutectic, E, at 160 °C and $100x_2$ about 25 (author).

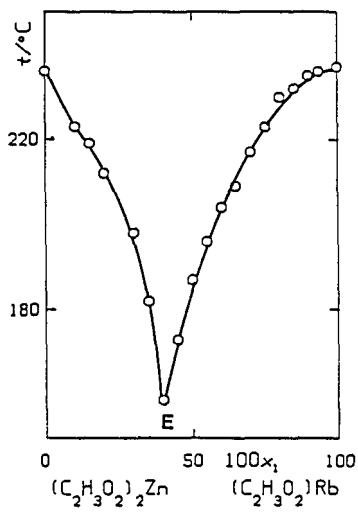
AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Mixtures contained in a glass tube and heated in a sulfuric acid bath. NOTE: $T_{fus}(1)$ and $T_{fus}(2)$ are in reasonable agreement with the data by other authors (Ref. 1). The general features of the diagram seem to be reliable.	Not stated. Component 1: $t_{fus}(1)/°C$= 204. Component 2: $t_{fus}(2)/°C$= 244.
	ESTIMATED ERROR: Temperature: accuracy not evaluable (compiler).
	REFERENCES: (1) 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.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Rubidium ethanoate (rubidium acetate); $(C_2H_3O_2)Rb$; [563-67-7] (2) Zinc ethanoate (zinc acetate); $(C_2H_3O_2)_2Zn$; [557-34-6]	Nadirov, E.G.; Bakeev, M.I. **Tr. Khim.-Metall. Inst. Akad. Nauk Kaz. SSR** 1974, 25, 115-128.
VARIABLES: Temperature.	PREPARED BY: Baldini, P.

EXPERIMENTAL VALUES:

t/°C	T/K[a]	$100x_1$
236	509	0
223	496	10
219	492	15
212	485	20
198	471	30
182	455	35
159	432	40
173	446	45
187	460	50
196	469	55
204	477	60
209	482	65
217	490	70
223	496	75
230	503	80
232	505	85
235	508	90
236	509	93.7
237	510	100



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

Characteristic point(s):

Eutectic, E, at either 159 °C (visual polythermal analysis), or 163 °C (conductometry), and $100x_1 = 40$

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Visual polythermal analysis supplemented with conductometry, and occasionally with thermographical and X-ray investigations. Temperatures of initial crystallization measured with a thermocouple. NOTE 1: The mixtures at $55 \leq 100x_1 \leq 80$ tend to form glasses. NOTE 2: The $T_{fus}(1)$ and $T_{fus}(2)$ values given here are lower than the corresponding values from Preface 1 [$T_{fus}(1) = 514$ K] and from Ref. 1 [$T_{fus}(2) = 514$-533 K], respectively. In Fig. 8 of the original paper the authors report an isothermal line at 404 K (131 °C) which is not discussed in the text. The ability to form glasses might imply poor reliability of the eutectic coordinates; however, the classification of the diagram as of the simple eutectic type might be accepted with some confidence.	Component 1: material recrystallized three times and dried at 110-120 °C. Component 2: $(C_2H_3O_2)_2Zn.2H_2O$ of analytical purity, recrystallized twice and dried at 140 °C.
	ESTIMATED ERROR: Temperature: accuracy probably ± 2 K (compiler).
	REFERENCES: (1) 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.