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SODIUM CHROMATE TETRAHYDRATE

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and David H. Templeton

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Sodium chromate tetrahydrate*.

By Helena Ruben, Ivar Olovsson†, Allan Zalkin and David H. Templeton

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Abstract. $Na_2CrO_4 \cdot 4H_2O$ is monoclinic, $P2_1/c$, with $\underline{a}$ = 6.186(4), $\underline{b}$ = 11.165(4), $\underline{c}$ = 12.20(1) Å, β = 104.95(10)°, Z = 4, d_x = 1.91 g cm^{-3}. The crystals were grown from aqueous solution at 25-29°. The average Cr-O bond distance is 1.64(4) Å. Each sodium ion has either five or six oxygen atoms (from water and chromate) as neighbors. All of the hydrogen atoms are in hydrogen bonds with O-O distances ranging from 2.76 Å to 2.86 Å. $Na_2SeO_4 \cdot 4H_2O$ is isomorphous with $\underline{a}$ = 6.22(2), $\underline{b}$ = 11.18(4), $\underline{c}$ = 12.18(4) Å, and β = 105(1)°.

*Work done under the auspices of the U. S. Atomic Energy Commission.

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Introduction. Sodium chromate crystallizes as the decahydrate (below 19.5°), the hexahydrate (19.5-25.9°) and the tetrahydrate (25.9-63°) (Gmelins Handbuch, 1962), and a sesquihydrate is reported to be stable in the neighborhood of 70° (Borchardt, 1958). We determined the structure of the tetrahydrate as a by-product of a study of several decahydrates (Ruben, Templeton, Rosenstein & Olovsson, 1961).

A yellow crystal of dimensions 0.19 × 0.08 × 0.05 mm was enclosed in a thin wall quartz capillary to prevent gain or loss of water. Intensities of 1844 independent reflections, all of those within a quadrant of the sphere of reflection out to $2\theta = 55°$ were measured using Zr-filtered Mo$\underline{K}\alpha$ radiation ($\lambda = 0.70926$ Å for $\underline{K}\alpha_1$) with the stationary-crystal stationary-counter technique. Systematic absences corresponded to $P2_1/c$. No correction was made for absorption, $\mu = 15.7$ cm^{-1}, nor extinction. For the full-matrix least-squares refinements, the data were weighted as described elsewhere (Sime, Dodge, Zalkin & Templeton, 1971) with $\underline{p} = 0.05$. Zero weight was assigned to 537 reflections with $I < \sigma(I)$.

The sodium and chromium positions were deduced from a three-dimensional Patterson function, and oxygen atoms were found with a subsequent difference map. Hydrogen positions were derived from an analysis of the hydrogen bonding; only three of the eight hydrogen peaks were observable in the difference maps. The positional and

anisotropic thermal parameters of all of the atoms with the exception of hydrogen were refined by least squares. A common isotropic thermal parameter for all hydrogen atoms refined to $B_H = 7.8$ Å^2. The other parameters are listed in Tables 1 and 2. The R_1 index ($R_1 = \Sigma|\Delta F|/\Sigma|F_o|$) was 0.11 for all 1844 data, and 0.068 for the 1307 non-zero weighted data; the weighted index, $R_2 = (\Sigma w|\Delta F|^2/\Sigma w|F_o|^2)^{1/2}$, was 0.061. The goodness of fit was 1.02. In the final cycle no parameter shifted more than 0.02σ. A table of observed structure factors, their estimated standard deviations, and their discrepancies have been deposited with the National Lending Library as Supplementary Publication No. SUPP 00000.*

Cell dimensions of the isomorphous $Na_2SeO_4 \cdot 4H_2O$ were derived from precession and Weissenberg photographs.

Discussion. Each of the eight hydrogen atoms can be assigned unambiguously to a hydrogen bond (Table 3). Only one of these bonds is from one water molecule to another; all of the others are between water and chromate oxygen atoms.

The two sodium ions are each coordinated to oxygen atoms from both water and chromate ions. Na(1) is at the

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center of a distorted octahedron of six oxygen atoms with Na-O distances ranging from 2.36 to 2.46 Å (Tables 4 and 5). Na(2) is coordinated to five oxygen atoms at distances from 2.35 to 2.38 Å.

The chromate ion is moderately distorted from regular tetrahedral shape. The O-Cr-O bond angles range from 108.5 to 111.5°. The average Cr-O bond length is 1.639 Å when uncorrected for thermal motion, and is 1.649 Å after correction for thermal motion assuming the "riding" model. The individual bond lengths vary from 1.605 to 1.675 Å (uncorrected) and this variation appears to be statistically significant. We attribute it to hydrogen bonding and other crystal packing effects because the Cr-O distance is longer when oxygen has a larger number of sodium and hydrogen neighbors. McGinnety (1972) has discussed similar effects in potassium chromate.

0 0 0 0 3 9 0 0 5 5 6

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Table 1. Atomic coordinates

In this and the following tables, estimated standard deviations of the last digits are indicated in parentheses. Hydrogen positions are estimates derived from the hydrogen bonding and were not refined.

	x	y	z
Cr	.2644(2)	.40032(9)	.24003(9)
Na(1)	.2482(4)	.5720(2)	.4971(2)
Na(2)	.4776(4)	.6791(2)	.1124(2)
O(1)	.3750(8)	.4286(5)	.3734(4)
O(2)	.3392(8)	.2641(4)	.2122(4)
O(3)	.3473(8)	.4939(5)	.1596(4)
O(4)	-.0146(7)	.4086(5)	.2137(4)
O(5)	.2069(8)	.4063(4)	.9337(4)
O(6)	.3486(8)	.7431(5)	.9203(4)
O(7)	.1325(8)	.7275(5)	.6121(5)
O(8)	.1183(8)	.4425(4)	.6214(4)
H(1)	.142	.468	.885
H(2)	.253	.435	1.009
H(3)	.236	.692	.876
H(4)	.452	.740	.876
H(5)	.019	.789	.597
H(6)	.092	.681	.670
H(7)	.192	.373	.651
H(8)	.084	.492	.676

Table 2. Thermal parameters, $Å^2$

Anisotropic temperature factors have the form

$$\exp[-(1/4)(B_{11}h^2a^{*2}+\ldots+2B_{12}hka^*b^*+\ldots)]$$

	B_{11}	B_{22}	B_{33}	B_{12}	B_{13}	B_{23}
Cr	1.37(4)	1.41(4)	1.69(4)	-.03(4)	.53(3)	-.05(4)
Na(1)	2.0(1)	2.1(1)	2.2(1)	-.04(9)	.47(9)	-.16(9)
Na(2)	1.9(1)	2.1(1)	2.6(1)	.2(1)	.7(1)	.2(1)
O(1)	2.1(2)	3.7(3)	2.3(2)	.5(2)	.5(2)	-.3(2)
O(2)	2.1(2)	2.0(2)	2.4(2)	-.2(2)	.9(2)	-.3(2)
O(3)	2.9(2)	2.2(2)	3.0(2)	-.6(2)	1.2(2)	.2(2)
O(4)	1.9(2)	2.8(2)	2.4(2)	.2(2)	.4(2)	.0(2)
O(5)	2.8(2)	2.3(2)	2.5(2)	.4(2)	.6(2)	.4(2)
O(6)	2.3(2)	3.0(2)	2.6(2)	-.6(2)	1.3(2)	-.8(2)
O(7)	2.3(2)	3.0(2)	3.4(3)	-.2(2)	1.3(2)	.2(2)
O(8)	3.2(2)	1.8(2)	2.4(2)	.6(2)	.7(2)	.3(2)

Table 3. Hydrogen bond distances and angles

Arrows point away from the hydrogen donors. The two distances refer to the first and second atoms and the second and third atoms respectively.

Atoms	Distances (Å)		Angle (°)
O(3) <-O(5)-> O(4)	2.84(1)	2.80(1)	110.0(2)
O(2) <-O(6)-> O(4)	2.82(1)	2.84(1)	99.0(2)
O(5) <-O(7)-> O(4)	2.85(1)	2.86(1)	101.7(2)
O(2) <-O(8)-> O(4)	2.76(1)	2.81(1)	112.8(3)
O(7)-> O(5)-> O(3)	2.85(1)	2.84(1)	117.2(2)
O(7)-> O(5)-> O(4)	2.85(1)	2.80(1)	102.9(2)

Table 4. Other interatomic distances, Å

Distances in parentheses have been corrected for thermal motion assuming a "riding" model.

Cr	- O(1)	1.625(5) (1.637)	Na(2)	- O(5)	2.367(5)
Cr	- O(2)	1.650(5) (1.655)	Na(2)	- O(7)	2.375(5)
Cr	- O(3)	1.605(5) (1.618)	Na(2)	- O(6)	2.382(6)
Cr	- O(4)	1.675(5) (1.684)	Na(2)	- O(1)	2.922(6)
Na(1)	- O(8)	2.359(6)	O(5)	- O(4)	2.80(1)
Na(1)	- O(8)	2.381(5)	O(5)	- O(3)	2.84(1)
Na(1)	- O(6)	2.414(6)	O(6)	- O(2)	2.82(1)
Na(1)	- O(7)	2.453(6)	O(6)	- O(4)	2.84(1)
Na(1)	- O(1)	2.456(6)	O(6)	- O(7)	3.00(1)
Na(1)	- O(1)	2.463(5)	O(7)	- O(5)	2.85(1)
Na(2)	- O(3)	2.345(6)	O(7)	- O(4)	2.86(1)
Na(2)	- O(2)	2.348(6)	O(8)	- O(2)	2.76(1)
			O(8)	- O(4)	2.81(1)

Table 5. Additional angles, deg

O(1) - Cr -O(2)	108.5(4)	O(1)-Na(2)-O(6)	78.1(2)
O(1) - Cr -O(3)	111.5(4)	O(1)-Na(2)-O(7)	81.3(2)
O(1) - Cr -O(4)	109.1(3)	O(2)-Na(2)-O(3)	104.4(3)
O(2) - Cr -O(3)	108.9(4)	O(2)-Na(2)-O(5)	98.4(3)
O(2) - Cr -O(4)	110.0(4)	O(2)-Na(2)-O(6)	137.4(3)
O(3) - Cr -O(4)	108.8(4)	O(2)-Na(2)-O(7)	92.7(3)
O(1)-Na(1)-O(1)	89.6(3)	O(3)-Na(2)-O(5)	93.4(3)
O(1)-Na(1)-O(6)	99.4(3)	O(3)-Na(2)-O(6)	117.2(3)
O(1)-Na(1)-O(7)	175.5(3)	O(3)-Na(2)-O(7)	91.2(3)
O(1)-Na(1)-O(8)	102.1(3)	O(5)-Na(2)-O(6)	88.6(3)
O(1)-Na(1)-O(8)	89.3(3)	O(5)-Na(2)-O(7)	166.6(3)
O(1)-Na(1)-O(6)	87.5(3)	O(6)-Na(2)-O(7)	78.1(3)
O(1)-Na(1)-O(7)	90.1(3)	O(2)- O(1)-O(3)	59.6(2)
O(1)-Na(1)-O(8)	90.5(3)	O(2)- O(1)-O(4)	61.2(2)
O(1)-Na(1)-O(8)	175.4(3)	O(3)- O(1)-O(4)	59.7(2)
O(6)-Na(1)-O(7)	76.1(2)	O(1)- O(2)-O(3)	60.4(2)
O(6)-Na(1)-O(8)	158.4(3)	O(1)- O(2)-O(4)	60.0(2)
O(6)-Na(1)-O(8)	97.1(3)	O(3)- O(2)-O(4)	59.6(2)
O(7)-Na(1)-O(8)	82.5(3)	O(1)- O(3)-O(2)	60.0(2)
O(7)-Na(1)-O(8)	91.3(3)	O(1)- O(3)-O(4)	60.5(2)
O(8)-Na(1)-O(8)	85.4(3)	O(2)- O(3)-O(4)	61.6(2)
O(1)-Na(2)-O(2)	59.4(2)	O(1)- O(4)-O(2)	58.8(2)
O(1)-Na(2)-O(3)	161.4(3)	O(1)- O(4)-O(3)	59.8(2)
O(1)-Na(2)-O(5)	97.7(3)	O(2)- O(4)-O(3)	58.8(2)

OBSERVED STRUCTURE FACTORS, STANDARD DEVIATIONS, AND DIFFERENCES (X10.0) FOR
SODIUM CHROMATE TETRAHYDRATE F(0,0,0) = 4657

FOB AND FCA ARE THE OBSERVED AND CALCULATED STRUCTURE FACTORS.
SG = ESTIMATED STANDARD DEVIATION OF FOB. DEL = /FOB/ - /FCA/.
* INDICATES ZERO WEIGHTED DATA.

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
H,K=	0,	0		14	172	25	21	11	103	41	-19	0	358	17	-6	-1	649	17	43
2	660	17	-24	H,K=	0,	4		12	107	39	15	1	173	22	-4	0	409	11	22
4	0	55	-26*	0	178	13	-17	13	0	83	-44*	2	71	78	18*	1	914	24	28
6	690	19	8	2	356	12	-24	H,K=	0,	8		3	312	17	-20	2	786	21	6
8	811	22	-48	3	467	14	-30	1	678	20	-58	4	73	80	-12*	3	886	23	-6
10	0	75	-35*	4	755	20	-22	2	370	15	-19	5	195	22	11	4	362	12	-36
14	75	77	54*	5	155	16	15	3	393	15	-50	6	75	81	9*	5	0	61	-75*
12	135	27	8	6	381	14	-15	4	173	20	-8	7	134	31	11	6	493	15	-24
H,K=	0,	1		7	402	15	-21	5	285	15	-1	8	79	84	12*	7	116	24	-30
1	120	7	25	8	325	15	-15	6	185	18	7	H,K=	0,	13		8	96	35	-10
2	218	8	11	9	216	17	-5	7	437	17	3	1	105	42	25	9	355	15	-4
3	476	13	20	10	210	18	3	8	239	18	15	2	0	81	-28*	10	109	34	-11
4	462	14	4	11	0	75	-40*	9	218	19	20	3	76	81	12*	11	115	33	-9
5	209	12	23	12	141	26	16	10	161	24	-9	4	108	39	-23	12	99	39	33
6	683	19	-13	13	74	82	-9*	11	0	78	-25*	5	0	81	-31*	13	166	25	23
7	686	19	-3	14	110	40	17	12	135	31	33	6	158	28	10	14	110	40	9
8	248	15	40	H,K=	0,	5		H,K=	0,	9		H,K=	0,	14		H,K=	1,	2	
9	98	31	4	1	291	12	-9	1	219	16	20	0	175	23	33	-15	111	37	-1
10	0	75	-56*	2	364	13	29	2	196	19	-20	1	222	21	-8	-14	129	30	-8
11	222	18	-6	6	91	33	10	3	60	77	-20*	2	209	22	12	-13	300	17	13
12	215	19	14	7	543	17	-31	4	137	26	-26	3	113	41	-16	-12	178	20	15
13	190	21	28	8	143	24	-30	5	281	15	4	4	114	41	19	-11	200	18	3
14	185	23	25	9	62	76	19*	6	130	27	-18	H,K=	1,	0		-10	60	70	16*
15	225	22	35	10	65	76	13*	7	116	31	36	-14	209	20	6	-9	313	15	-19
H,K=	0,	2		11	237	18	2	8	69	79	38*	-12	188	19	-2	-8	0	67	-38*
0	406	11	88	12	0	78	-21*	9	124	31	34	-10	382	15	-11	-7	190	14	-3
2	143	11	-6	14	0	83	-25*	10	129	30	19	-8	368	14	-15	-6	280	12	8
3	1251	32	-61	H,K=	0,	6		11	134	31	17	-6	98	20	-25	-5	489	15	-9
4	382	12	-33	0	1222	32	-3	12	0	84	-49*	-4	586	16	17	-4	54	55	38*
5	509	15	-32	1	278	13	-7	H,K=	0,	10		-2	226	9	14	-2	56	37	41
6	389	13	2	2	245	13	-14	0	358	16	-4	0	332	10	51	-1	290	10	22
7	349	14	-8	3	315	13	-3	1	176	21	10	2	290	10	20	0	391	11	27
8	240	15	-27	4	663	19	-56	2	356	16	-31	4	1006	26	28	1	504	14	36
9	308	15	-11	5	183	18	-40	3	180	19	-7	6	0	64	-9*	2	0	58	-57*
10	220	17	-0	6	421	15	-21	4	298	16	-23	8	78	50	-33	3	249	11	-3
11	250	16	31	7	278	15	-4	5	67	78	56*	10	294	16	-3	4	0	59	-38*
12	153	24	25	8	298	16	3	6	246	18	4	12	99	39	16	5	464	14	9
13	102	40	7	9	202	18	-10	7	70	78	-5*	14	110	80	19	6	163	16	-6
14	0	79	-19*	10	0	76	-39*	8	145	27	9	H,K=	1,	1		7	247	14	-11
15	0	84	-49*	11	0	77	-48*	9	0	78	-18*	-15	0	78	-9*	8	0	73	-63*
H,K=	0,	3		12	128	32	11	10	245	20	29	-14	0	78	-8*	9	85	51	-16
1	361	11	3	13	109	40	11	11	80	86	25*	-13	222	18	9	10	201	19	12
2	49	56	22*	H,K=	0,	7		H,K=	0,	11	-12	67	74	-5*		11	0	76	-50*
3	75	27	51	1	342	14	-12	1	176	22	-11	-11	218	18	-6	12	0	77	-18*
5	160	15	-13	2	198	16	-26	2	67	76	60*	-10	450	16	13	13	269	19	20
6	0	64	-22*	3	0	68	-14*	3	203	20	-2	-9	408	15	-11	14	78	84	14*
7	145	19	38	4	179	18	-16	4	97	42	17	-8	116	23	-8	H,K=	1,	3	
8	165	19	-17	5	112	29	12	5	70	78	-16*	-7	504	15	-5	-15	0	79	-40*
9	320	15	-10	6	193	19	-4	6	0	78	-4*	-6	77	28	-19	-14	151	26	6
10	382	16	-6	7	475	17	-10	7	74	81	15*	-5	465	14	-9	-13	124	29	13
11	0	76	-64*	8	342	16	4	8	0	79	-5*	-4	669	18	26	-12	118	29	8
12	69	79	25*	9	115	33	18	9	135	32	9	-3	703	19	22	-11	0	72	-4*
13	0	79	-23*	10	219	19	-3	H,K=	0,	12		-2	1012	26	53	-10	567	18	-18

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
-9	99	31	-14	-11	135	27	-17	-11	0	75	-4*	-6	295	16	-15	5	0	78	-43*
-8	485	16	-29	-10	128	25	-10	-10	137	27	-13	-5	125	25	37	6	0	80	-9*
-7	214	14	-5	-9	494	17	-9	-9	0	71	-47*	-4	0	75	-53*	7	130	30	2
-6	932	25	-18	-8	163	19	3	-8	89	38	-1	-3	408	16	-14	8	109	40	1
-5	578	16	10	-7	542	17	-34	-7	85	39	8	-2	445	16	-10	9	159	28	-12
-4	141	15	16	-6	52	67	-2*	-6	546	17	-23	-1	396	15	-20	H,K=	1,	12	
-3	295	11	18	-5	389	14	10	-5	285	15	0	0	213	17	13	-8	0	79	-62*
-2	1190	31	11	-4	94	23	6	-4	698	20	-67	1	314	15	3	-7	77	79	14*
-1	139	14	20	-3	945	25	-14	-3	397	15	-6	2	0	75	-16*	-6	75	77	24*
0	1189	31	11	-2	236	12	19	-2	179	17	-35	3	383	16	-10	-5	0	80	-7*
1	303	11	18	-1	874	23	-11	-1	89	34	31	4	0	76	-13*	-4	0	79	-21*
2	66	36	39	0	86	26	83	0	480	15	-22	5	258	17	-6	-3	124	29	-37
3	359	12	5	1	76	32	2	1	103	27	10	6	370	16	-11	-2	0	77	-33*
4	360	13	31	2	539	16	9	2	821	23	-50	7	154	25	-16	-1	123	33	42
5	0	63	-10*	3	226	13	0	3	254	15	-21	8	0	77	-46*	1	101	40	28
6	878	24	-31	4	275	13	-11	4	358	15	-20	9	104	41	-6	2	0	78	-9*
7	187	17	-29	5	502	16	-48	5	82	49	8	10	77	82	-21*	3	0	79	-35*
8	81	48	3	6	55	73	-29*	6	148	23	-25	11	138	32	27	4	181	23	-15
9	244	16	2	7	420	15	9	7	89	47	-2	H,K=	1,	10		5	0	82	-77*
10	250	16	-12	8	61	77	-6*	8	307	16	12	-11	0	83	-46*	6	0	80	-14*
11	0	77	-12*	9	213	19	-0	9	137	27	1	-10	108	39	-7	7	136	32	-10
12	101	40	-2	10	0	76	-50*	10	258	18	9	-9	74	82	53*	H,K=	1,	13	
13	0	82	-34*	11	100	40	1	11	0	81	-25*	-8	161	24	-7	-7	80	86	-16*
14	224	22	20	12	166	25	-6	12	78	83	-1*	-7	0	76	-57*	-6	158	26	10
H,K=	1,	4		13	220	21	25	H,K=	1,	8		-6	0	76	-37*	-5	110	40	1
-15	179	26	32	H,K=	1,	6		-13	160	26	1	-5	94	43	-22	-4	265	19	-6
-13	272	18	3	-14	0	79	-46*	-12	109	39	7	-4	65	76	42*	-3	76	78	53*
-12	98	39	-4	-13	76	81	-39*	-11	128	30	-18	-3	248	16	-3	-2	213	22	17
-11	147	22	-4	-12	162	23	6	-10	159	23	31	-2	0	75	-22*	-1	75	86	53*
-10	62	73	-31*	-11	139	26	-11	-9	226	18	1	-1	63	76	29*	0	270	19	20
-9	250	15	6	-10	310	16	-27	-8	131	26	2	0	109	34	91	1	106	42	87
-8	369	15	-33	-9	0	71	-24*	-7	200	18	-12	1	141	25	-8	2	185	23	-3
-7	416	15	-14	-8	159	20	3	-6	61	72	10*	2	64	77	40*	3	77	82	55*
-6	156	16	1	-7	229	15	5	-5	213	16	14	3	205	19	-24	4	233	20	-20
-5	93	23	-18	-6	134	21	-21	-4	326	15	6	4	175	22	-10	5	0	83	-60*
-4	244	12	20	-5	74	44	-9	-3	56	71	7*	5	136	27	-5	6	139	32	-8
-3	1105	29	24	-4	513	16	-6	-2	136	23	-1	6	70	77	-23*	H,K=	1,	14	
-1	638	18	16	-3	0	64	-54*	-1	264	15	32	7	0	78	-23*	-4	0	84	-15*
0	278	11	44	-2	229	13	21	1	222	16	2	8	0	81	-19*	-3	80	85	-3*
1	69	31	24	-1	82	32	20	2	0	72	-25*	9	0	80	-47*	-2	0	86	-17*
2	125	17	9	0	350	13	40	3	81	49	-1	10	0	83	-37*	-1	137	34	74
3	108	20	5	1	68	49	23	4	0	75	-42*	H,K=	1,	11		0	137	32	68
4	66	48	-10	2	162	16	-14	5	106	35	17	-10	0	80	-12*	1	137	32	64
5	587	17	-39	3	182	16	8	6	110	33	-4	-9	219	20	14	2	80	85	72*
6	53	68	-16*	4	91	33	25	7	66	77	-36*	-8	168	23	23	3	80	86	32*
7	236	15	-5	5	110	28	-22	8	68	78	5*	-7	311	17	15	H,K=	2,	0	
8	0	75	-15*	6	115	29	-15	9	159	24	-21	-6	160	23	14	-14	104	34	-1
9	0	76	-32*	7	0	75	-62*	10	0	80	-34*	-5	156	24	-12	-12	331	16	2
10	93	43	20	8	275	16	3	11	109	39	34	-4	238	18	-9	-10	406	15	8
11	69	79	11*	9	0	77	-21*	12	0	84	-9*	-3	152	24	-2	-8	432	15	-13
12	103	41	-6	10	155	25	14	H,K=	1,	9		-2	0	78	-42*	-6	348	13	23
13	187	23	5	11	73	80	-54*	-12	0	79	-39*	-1	306	17	28	-4	629	17	-34
14	0	84	-47*	12	0	79	-28*	-11	108	39	-7	0	259	17	4	-2	620	17	21
H,K=	1,	5		13	0	83	-8*	-10	244	19	-11	1	285	17	-0	0	1011	26	12
-14	0	78	-5*	H,K=	1,	7		-9	256	18	-11	2	118	31	20	4	1239	32	-35
-13	148	26	9	-13	0	78	-65*	-8	154	23	9	3	138	27	-26	6	617	18	-42
-12	141	25	5	-12	183	22	15	-7	149	24	-13	4	221	19	-18	8	272	16	-4

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
10	199	20	9	10	134	27	11	7	59	76	-23*	7	0	76	-118*	11	179	25	17
12	410	18	19	11	158	24	6	8	354	15	3	8	345	16	-26	H,K=	2,		9
H,K=	2,		1	12	129	32	7	9	238	18	-3	9	184	22	10	-12	79	85	30*
-15	219	20	11	13	221	21	34	10	196	21	5	10	0	79	-52*	-11	108	39	1
-14	147	24	27	H,K=	2,		3	11	178	23	-7	11	131	30	12	-10	148	26	4
-13	99	36	-2	-15	79	84	56*	12	187	23	23	12	237	21	30	-9	160	24	2
-12	94	40	7	-14	212	19	17	13	0	83	-74*	H,K=	2,		7	-8	0	78	-65*
-11	267	16	8	-13	160	23	16	H,K=	2,		5	-13	78	79	11*	-7	0	76	-8*
-10	197	17	9	-12	235	18	-2	-14	77	79	36*	-12	74	76	5*	-6	92	40	78
-9	56	69	45*	-11	64	74	27*	-13	74	76	28*	-11	0	78	-13*	-5	111	33	-23
-8	387	14	-17	-10	312	16	-3	-12	71	75	14*	-10	0	77	-54*	-4	0	78	-37*
-7	545	16	-1	-9	100	33	2	-11	270	17	-3	-9	0	76	-36*	-3	175	21	5
-6	185	14	8	-8	55	70	28*	-10	64	73	-12*	-8	229	17	-25	-2	87	49	79
-5	443	14	33	-7	248	14	-5	-9	173	19	10	-7	414	16	-12	-1	334	16	16
-4	189	12	6	-6	0	64	-63*	-8	58	70	11*	-6	289	15	27	0	106	35	101
-3	120	16	48	-5	505	15	-5	-7	366	15	4	-5	181	19	3	1	124	28	18
-2	787	21	23	-4	255	12	11	-6	53	69	-4*	-4	185	19	-26	2	63	77	38*
-1	622	17	30	-3	210	12	24	-5	89	33	18	-3	55	73	21*	3	64	77	-44*
0	224	11	20	-2	313	12	35	-4	0	66	-51*	-2	76	52	36	4	0	76	-14*
1	937	25	36	-1	255	11	24	-3	179	15	-13	-1	76	55	45	5	0	76	-3*
2	90	21	5	0	108	18	45	-2	94	27	37	0	209	16	20	6	98	42	7
3	483	15	12	1	126	16	16	-1	47	64	-12*	1	341	15	8	7	0	81	-66*
4	103	23	5	2	263	12	19	0	141	17	15	2	366	15	-2	8	0	81	-6*
5	49	66	-6*	3	273	13	6	1	96	26	9	3	222	17	8	9	153	27	6
6	0	68	-12*	4	0	65	-52*	2	284	13	-2	4	118	29	10	10	79	85	-3*
7	97	35	-33	5	104	27	7	3	135	20	14	5	122	29	-13	H,K=	2,		10
8	0	76	-51*	6	55	72	33*	4	53	70	30*	6	155	23	16	-11	0	83	-2*
9	227	18	-15	7	58	74	49*	5	433	15	-19	7	0	76	-29*	-10	243	20	4
10	163	22	-9	8	0	76	-47*	6	175	19	14	8	97	42	5	-9	0	81	-22*
11	199	20	0	9	0	77	-11*	7	106	33	-17	9	101	40	-0	-8	191	22	24
12	74	82	-2*	10	68	78	-4*	8	64	78	-21*	10	106	42	4	-7	0	77	-95*
13	134	31	20	11	72	79	-2*	9	68	77	15*	11	190	23	1	-6	337	17	10
H,K=	2,		2	12	0	79	-8*	10	0	77	-3*	H,K=	2,		8	-5	0	76	-16*
-15	156	25	21	13	111	40	28	11	128	32	15	-13	138	32	22	-4	311	17	23
-14	74	76	23*	H,K=	2,		4	12	78	83	6*	-12	109	39	35	-3	0	80	-40*
-13	187	20	4	-15	0	80	-12*	H,K=	2,		6	-11	165	24	3	-2	112	35	25
-12	116	29	1	-14	132	28	36	-14	112	44	58	-10	0	77	-17*	-1	65	80	41*
-11	142	23	18	-13	145	24	7	-13	107	35	4	-9	194	20	1	0	290	16	28
-10	255	15	-12	-12	229	18	6	-12	145	25	9	-8	115	32	10	1	93	43	86
-9	354	15	-7	-11	279	16	16	-11	170	22	5	-7	212	17	19	2	392	16	-40
-8	378	14	-24	-10	300	16	6	-10	0	77	-52*	-6	298	16	-6	3	135	27	1
-7	629	18	-2	-9	119	28	-2	-9	180	20	21	-5	105	33	11	4	195	21	2
-6	67	42	59	-8	159	20	14	-8	365	16	10	-4	365	15	7	5	122	30	5
-5	77	30	14	-7	131	22	-40	-7	143	23	5	-3	458	16	-2	6	177	23	3
-4	366	12	12	-6	425	15	-10	-6	56	72	24*	-2	182	19	23	7	75	83	-20*
-3	422	13	-9	-5	375	14	-4	-5	333	14	-21	-1	414	16	-13	8	172	25	23
-1	818	22	1	-4	926	25	6	-4	272	14	-19	0	215	17	-8	9	0	83	-7*
0	505	15	-2	-3	465	14	-5	-3	397	14	-14	1	154	22	18	H,K=	2,		11
1	378	12	-20	-2	87	27	-3	-2	440	15	3	2	365	15	-16	-10	80	85	9*
2	0	59	-8*	-1	130	17	16	-1	123	22	10	3	410	16	8	-9	0	81	-29*
3	432	14	6	0	322	12	-13	0	840	23	-12	4	0	74	-5*	-8	0	82	-52*
4	82	32	26	1	119	19	9	1	178	16	0	5	385	16	9	-7	104	38	38
5	442	15	2	2	335	13	3	2	340	14	35	6	199	20	2	-6	102	37	25
6	0	69	-35*	3	582	17	-24	3	329	14	-9	7	275	17	-6	-5	0	80	-101*
7	536	17	-22	4	144	19	3	4	449	16	9	8	0	78	-5*	-4	0	81	-30*
8	200	19	-15	5	93	33	-38	5	165	21	12	9	234	20	-8	-3	69	81	60*
9	331	16	2	6	226	16	-6	6	574	18	6	10	133	31	3	-2	0	80	-18*

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
-1	69	81	56*	-15	0	82	-13*	H,K=	3,	3		12	80	86	-24*	-12	0	82	-41*
0	97	42	35	-14	105	38	6	-15	0	83	-37*	H,K=	3,	5		-11	73	78	68*
1	138	27	58	-13	71	79	-2*	-14	76	84	6*	-14	0	82	-27*	-10	232	18	10
2	0	76	-13*	-12	68	77	-22*	-13	0	79	-10*	-13	212	21	5	-9	68	77	5*
3	71	79	55*	-11	91	39	28	-12	69	79	31*	-12	0	78	-55*	-8	131	27	58
4	72	80	-1*	-10	106	30	29	-11	93	40	-0	-11	119	30	19	-7	0	75	-23*
5	0	80	-3*	-9	266	15	10	-10	474	17	-5	-10	174	21	-5	-6	87	49	-9
6	0	79	-6*	-8	259	15	4	-9	85	45	-8	-9	126	26	39	-5	85	51	36
7	78	83	-9*	-7	315	14	-24	-8	57	73	9*	-8	332	15	0	-4	317	15	23
8	0	84	-13*	-6	453	15	18	-7	134	23	14	-7	319	15	33	-3	116	28	20
H,K=	2,	12		-5	107	24	-14	-6	322	14	-11	-6	0	74	-84*	-2	321	15	34
-8	0	83	-57*	-4	178	15	-12	-5	50	68	21*	-5	349	15	-2	-1	183	19	14
-7	245	20	6	-3	349	13	-14	-4	517	16	15	-4	53	72	12*	0	486	16	23
-6	76	81	72*	-2	241	12	37	-3	458	15	19	-3	558	17	-45	1	186	19	9
-5	167	25	5	-1	492	15	10	-21	130	30	-20	-2	116	25	7	2	398	16	4
-4	0	80	-86*	0	471	15	3	-1	354	13	11	-1	608	18	-17	3	107	35	11
-3	179	24	7	1	407	14	2	0	126	18	34	0	266	14	-7	4	329	16	18
-2	73	83	25*	2	826	22	-7	1	109	22	44	1	419	15	-28	5	93	43	-21
-1	217	21	-4	3	659	19	-28	2	421	14	-14	2	122	25	12	6	454	17	16
0	145	27	27	4	91	31	21	3	105	26	23	3	495	16	-3	7	157	24	-24
1	242	19	20	5	573	18	-14	4	538	17	-33	4	58	73	36*	8	263	19	5
2	104	41	57	6	428	16	-1	5	269	15	6	5	349	15	13	9	131	30	-23
3	183	24	18	7	238	16	-40	6	671	20	-14	6	303	15	-5	10	176	25	7
4	170	24	-1	8	316	16	-5	7	126	29	-10	7	309	16	1	H,K=	3,	8	
5	134	31	-3	9	225	19	-2	8	93	37	58	8	97	42	3	-12	0	81	-27*
6	0	83	-28*	10	188	21	10	9	69	79	16*	9	367	17	4	-11	199	21	18
H,K=	2,	13		11	106	38	-15	10	261	18	18	10	0	78	-9*	-10	73	77	43*
-6	0	83	-21*	12	78	84	11*	11	107	39	11	11	175	25	44	-9	99	39	5
-5	78	84	-62*	H,K=	3,	2		12	210	23	37	H,K=	3,	6		-8	96	44	-2
-4	78	86	-1*	-15	111	40	0	H,K=	3,	4		-14	113	41	3	-7	66	80	-54*
-3	77	85	8*	-14	130	33	-5	-15	0	84	-7*	-13	133	31	-3	-6	64	79	-9*
-2	171	27	21	-13	143	27	-16	-14	230	20	25	-12	0	80	-66*	-5	418	16	-4
-1	0	86	-41*	-12	0	77	-7*	-13	104	38	-9	-11	187	21	12	-4	139	26	3
0	108	39	66	-11	92	39	-10	-12	70	78	0*	-10	0	76	-30*	-3	184	20	3
2	0	81	-23*	-10	223	17	18	-11	134	25	-1	-9	92	40	73	-2	136	27	17
3	111	40	33	-9	478	16	14	-10	248	16	11	-8	288	16	18	-1	292	16	18
4	80	85	77*	-8	422	15	13	-9	383	16	8	-7	219	17	5	0	300	16	-8
H,K=	2,	14		-7	341	14	-6	-8	394	15	1	-6	322	15	12	1	62	76	13*
-2	197	24	28	-6	203	15	10	-7	56	72	11*	-5	190	18	-14	2	0	77	-13*
-1	197	24	52	-5	304	13	4	-6	132	23	-18	-4	274	15	-2	3	204	19	16
0	114	41	60	-4	220	13	29	-5	300	14	7	-3	258	15	50	4	66	76	22*
H,K=	3,	0		-3	91	26	38	-4	383	14	-11	-2	319	15	8	5	0	77	-26*
-14	0	81	-53*	-2	212	13	23	-3	50	67	37*	-1	144	21	15	6	0	76	-49*
-12	363	16	4	-11	117	29	3	-2	255	13	22	0	348	15	3	7	103	41	3
-10	305	15	19	0	171	14	0	-1	600	18	-4	1	112	29	37	8	0	79	-13*
-8	0	71	-51*	1	94	24	19	0	179	16	23	2	114	28	1	9	110	40	17
-6	298	13	13	2	69	47	40	1	209	15	16	3	0	75	-34*	H,K=	3,	9	
-4	812	22	-6	3	72	43	16	2	91	33	41	4	105	35	41	-12	0	84	-33*
-2	382	13	8	4	283	14	18	3	133	23	-8	5	0	77	-58*	-11	78	83	13*
0	352	13	34	5	0	71	-39*	4	56	71	-12*	6	146	25	6	-10	130	30	8
2	724	20	-1	6	0	75	-45*	5	118	29	2	7	152	24	9	-9	73	78	18*
4	189	16	10	7	152	23	2	6	0	73	-15*	8	0	77	-24*	-8	0	77	-8*
6	239	15	24	8	65	72	5*	7	64	77	-4*	9	0	90	-3*	-7	207	21	-6
8	193	20	-9	9	205	20	-7	8	0	75	-41*	10	171	25	2	-6	214	20	-16
10	0	77	-41*	10	72	79	7*	9	122	30	-8	11	80	85	63*	-5	210	20	-0
12	135	31	23	11	130	30	7	10	104	41	-11	H,K=	3,	7		-4	113	35	-6
H,K=	3,	1		12	79	84	48*	11	0	81	-15*	-13	111	40	17	-3	0	79	-50*

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
-2	288	17	-2	1	131	31	13	-14	77	82	-29*	-10	116	35	-20	-4	679	20	-17
-1	158	24	8	2	108	39	28	-13	127	30	24	-9	112	33	-21	-3	199	19	22
0	183	20	47	3	78	83	12*	-12	141	25	16	-8	187	20	21	-2	179	20	-2
1	386	16	4	4	112	37	88	-11	191	20	6	-7	409	16	-0	-1	355	15	-14
2	281	16	6	H,K=	3,	13		-10	0	77	-20*	-6	336	15	14	0	227	17	6
3	370	16	24	-5	114	41	60	-9	88	46	-4	-5	99	37	-16	1	275	15	7
4	138	26	38	-4	159	30	4	-8	0	76	-28*	-4	463	16	-16	2	259	16	-13
5	188	21	-4	-3	137	34	3	-7	310	15	39	-3	208	16	-17	3	144	25	32
6	219	20	0	-2	79	87	61*	-6	353	15	14	-2	387	15	-2	4	495	18	1
7	213	21	3	-1	158	30	52	-5	457	15	-24	-1	590	18	-8	5	137	26	-10
8	0	81	-49*	0	296	19	13	-4	635	19	-26	0	762	22	-9	6	71	78	19*
9	0	84	-181*	1	79	85	73*	-3	622	18	-40	1	292	15	0	7	127	32	-7
H,K=	3,	10		2	278	20	16	-2	181	17	2	2	332	15	20	8	131	30	-30
-11	139	30	33	H,K=	4,		0	-1	413	15	-21	3	105	34	-5	9	111	40	25
-10	234	21	-3	-14	0	80	-29*	0	249	15	-14	4	0	76	-87*	H,K=	4,		7
-9	152	27	-12	-12	121	30	7	1	335	14	-15	5	194	19	-5	-13	80	86	26*
-8	209	22	-17	-10	64	77	-14*	2	194	17	-9	6	251	17	7	-12	110	40	28
-7	72	83	49*	-8	441	16	19	3	661	20	7	7	231	18	0	-11	168	24	15
-6	0	80	-35*	-6	78	53	2	4	275	16	-4	8	205	21	20	-10	325	18	-10
-5	0	81	-48*	-4	819	23	-4	5	336	16	-5	9	76	81	26*	-9	0	81	-23*
-4	168	24	-1	-2	260	14	-8	6	0	77	-20*	10	79	84	24*	-8	247	19	3
-3	167	24	13	0	457	15	-10	7	166	22	14	H,K=	4,		5	-7	94	47	-7
-2	165	25	-11	2	258	15	-20	8	71	78	62*	-14	80	85	42*	-6	0	79	-49*
-1	271	18	-6	4	773	22	-15	9	221	20	7	-13	243	20	8	-5	111	35	27
0	118	31	54	6	340	16	4	10	0	81	-44*	-12	128	30	18	-4	328	16	2
1	154	25	28	8	243	18	3	11	179	26	19	-11	370	17	19	-3	376	16	24
2	139	28	28	10	76	81	3*	H,K=	4,		3	-10	97	45	-4	-2	385	16	-11
3	100	40	-4	H,K=	4,		1	-14	245	20	-8	-9	66	80	-12*	-1	89	47	22
4	102	37	64	-15	138	30	12	-13	0	78	-24*	-8	64	79	62*	0	89	44	80
5	74	82	16*	-14	170	24	17	-12	327	17	0	-7	465	17	-19	1	64	77	61*
6	76	81	-2*	-13	73	81	52*	-11	97	38	68	-6	209	18	3	2	65	77	51*
7	156	27	-9	-12	0	76	-33*	-10	328	16	5	-5	422	16	17	3	231	17	5
H,K=	3,	11		-11	483	17	-11	-9	141	26	6	-4	82	49	0	4	97	42	19
-9	194	24	-6	-10	157	23	16	-8	426	16	1	-3	270	15	30	5	199	20	-1
-8	232	20	-6	-9	332	16	-6	-7	0	75	-35*	-2	141	24	-1	6	0	79	-37*
-7	131	33	15	-8	221	17	12	-6	422	15	-3	-1	81	52	24	7	0	79	-22*
-6	74	85	-23*	-7	342	15	11	-5	96	36	-20	0	101	33	68	8	78	83	43*
-5	73	83	25*	-6	123	26	-10	-4	312	14	-10	1	168	21	16	9	0	84	-24*
-4	177	24	15	-5	93	35	16	-3	284	14	17	2	0	75	-36*	H,K=	4,		8
-3	320	18	-10	-4	262	14	9	-2	200	17	-17	3	215	18	10	-12	80	85	25*
-2	101	43	49	-3	505	16	-4	-1	178	18	8	4	64	77	-7*	-11	134	31	27
-1	276	18	11	-2	115	25	-17	0	94	34	78	5	0	75	-14*	-10	106	38	-1
0	268	18	14	-1	253	14	-1	1	208	16	4	6	0	77	-30*	-9	146	29	17
1	102	40	71	0	189	16	-1	2	57	74	14*	7	71	79	-22*	-8	71	81	52*
2	127	32	49	1	131	22	26	3	59	76	43*	8	0	81	-2*	-7	196	21	17
3	268	19	3	2	270	15	-6	4	0	76	-83*	9	77	82	54*	-6	96	44	-16
4	185	23	7	3	285	15	25	5	90	38	-24	10	0	84	-52*	-5	149	26	14
5	299	19	0	4	84	47	-5	6	132	28	-2	H,K=	4,		6	-4	66	79	1*
6	0	83	-22*	5	262	16	-5	7	0	77	-14*	-13	0	82	-42*	-3	370	16	3
H,K=	3,	12		6	64	78	25*	8	72	79	16*	-12	251	19	23	-2	113	32	3
-7	237	22	-1	7	165	22	-10	9	74	83	2*	-11	103	37	62	-1	365	16	4
-6	0	84	-9*	8	99	39	-6	10	78	83	-8*	-10	100	43	3	0	175	22	28
-4	76	87	20*	9	104	41	10	H,K=	4,		4	-9	96	44	-17	1	211	19	26
-3	106	46	37	10	132	31	38	-14	0	82	-6*	-8	0	79	-22*	2	225	19	8
-2	106	45	33	11	113	41	20	-13	75	81	60*	-7	232	18	3	3	354	17	10
-1	106	45	62	H,K=	4,		2	-12	126	29	27	-6	89	50	34	4	71	79	10*
0	130	30	34	-15	0	84	-23*	-11	0	76	-45*	-5	184	20	22	5	273	18	2

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
6	106	42	18	-5	251	20	10	-3	84	50	2	5	71	79	-4*	1	99	39	46
7	173	25	6	-4	112	40	43	-2	59	76	12*	6	0	77	-30*	2	213	20	-3
8	80	85	40*	-3	236	21	27	-1	146	22	12	7	131	31	26	3	0	79	-14*
H,K=	4,	9		-2	0	82	-15*	0	160	22	22	8	0	82	-21*	4	74	82	33*
-11	80	85	15*	-1	192	23	19	1	107	35	14	H,K=	5,	5		5	76	81	20*
-10	110	43	11	0	158	28	39	2	89	47	-20	-13	113	41	28	6	222	20	18
-9	169	27	12	1	211	21	22	3	205	19	-19	-12	77	82	39*	H,K=	5,	8	
-8	165	26	-10	H,K=	5,	0		4	0	75	-3*	-11	183	23	-9	-11	161	28	13
-7	177	24	-2	-14	284	19	8	5	69	79	25*	-10	72	80	41*	-10	0	85	-21*
-6	187	22	-16	-12	164	25	-11	6	71	76	10*	-9	199	21	-7	-9	171	26	24
-5	221	20	3	-10	96	44	-9	7	0	78	-16*	-8	119	33	2	-8	0	81	-18*
-4	119	34	19	-8	490	17	2	8	0	80	-45*	-7	164	23	21	-7	147	28	6
-3	97	45	2	-6	149	24	-14	9	80	85	26*	-6	262	17	-20	-6	72	83	-0*
-2	68	80	9*	-4	118	30	-37	H,K=	5,	3		-5	214	19	1	-5	160	25	-4
-1	153	26	-5	-2	194	18	1	-14	139	32	-3	-4	156	24	8	-4	100	43	74
0	120	32	67	0	231	16	19	-13	109	40	1	-3	436	17	-21	-3	71	81	60*
1	198	21	2	2	124	29	15	-12	0	81	-12*	-2	127	29	-15	-2	0	79	-16*
2	0	77	-19*	4	0	77	-64*	-11	0	81	-42*	-1	293	16	-55	-1	200	21	-1
3	102	40	-14	6	141	27	14	-10	220	20	10	1	186	20	25	0	72	79	65*
4	74	82	-25*	8	0	80	-52*	-9	0	94	-11*	2	116	31	20	2	127	32	14
5	107	39	6	H,K=	5,	1		-8	0	80	-29*	3	314	17	3	3	0	81	-36*
6	78	83	19*	-14	112	41	57	-7	156	24	6	4	141	26	3	4	108	39	-20
7	0	84	-4*	-13	132	31	21	-6	492	17	11	5	240	18	-3	5	78	84	40*
H,K=	4,	10		-12	0	80	-71*	-5	87	46	28	6	0	78	-54*	H,K=	5,	9	
-10	139	32	-2	-11	71	81	35*	-4	489	17	0	7	134	31	67	-9	112	44	5
-9	78	84	28*	-10	226	19	-2	-3	104	34	8	8	0	84	-38*	-8	0	84	-42*
-8	188	24	-0	-9	114	32	3	-2	372	15	20	H,K=	5,	6		-7	170	26	22
-7	75	83	69*	-8	64	77	8*	-1	149	23	-3	-12	222	22	-15	-6	130	32	15
-6	286	18	6	-7	384	16	-10	0	87	46	47	-11	153	28	21	-5	148	28	28
-5	103	41	8	-6	183	20	-2	1	250	17	4	-10	0	83	-53*	-4	180	23	14
-4	239	20	22	-5	322	15	-18	2	604	19	-6	-8	70	83	-9*	-3	164	25	14
-3	72	82	2*	-4	102	35	12	3	66	77	33*	-7	228	19	7	-2	207	21	-19
-2	215	21	-0	-3	194	19	-8	4	166	22	-3	-6	117	35	11	-1	180	23	26
-1	101	43	83	-2	211	17	4	5	0	76	-37*	-5	67	80	33*	0	74	82	51*
0	361	17	2	-1	236	16	6	6	161	25	-2	-4	198	20	7	1	106	38	59
1	73	81	36*	0	85	45	24	7	130	30	51	-3	93	43	-3	2	215	21	9
2	277	19	-9	1	183	20	-1	8	0	81	-70*	-2	114	32	-14	3	134	31	-4
3	0	79	-60*	2	62	77	-14*	9	114	41	10	-1	114	32	2	4	79	84	-6*
4	133	31	9	3	222	18	6	H,K=	5,	4		0	94	40	54	H,K=	5,	10	
5	78	84	47*	4	148	25	42	-13	111	40	-20	1	151	24	20	-8	227	22	16
6	227	22	-20	5	216	18	-1	-12	169	26	-15	2	138	27	34	-7	158	28	11
H,K=	4,	11		6	256	18	-3	-11	127	34	-7	3	122	30	15	-6	110	43	1
-8	159	28	22	7	165	23	23	-10	283	18	-18	4	72	80	-4*	-5	133	33	0
-7	207	22	26	8	76	81	56*	-9	322	17	-10	5	0	81	-24*	-4	153	29	9
-6	134	33	38	9	159	28	-3	-8	211	19	3	6	0	80	-9*	-3	76	84	58*
-5	132	33	17	H,K=	5,	2		-7	0	78	-18*	H,K=	5,	7		-2	108	43	11
-4	76	84	33*	-14	0	83	-5*	-6	90	48	-1	-10	132	35	15	-1	0	83	-5*
-3	130	33	42	-13	286	19	3	-5	178	21	10	-9	74	82	1*	0	109	40	75
-2	75	83	10*	-12	104	41	-3	-4	323	16	-7	-8	177	22	3	1	156	27	10
-1	106	42	41	-11	318	18	1	-3	0	77	-17*	-7	100	40	12	2	112	41	33
0	107	42	81	-10	238	18	-24	-2	223	18	-23	-6	279	17	3	3	80	86	22*
1	76	81	69*	-9	221	19	5	-1	323	16	1	-5	69	79	60*	H,K=	5,	11	
2	77	82	73*	-8	112	33	2	0	63	76	43*	-4	136	28	24	-5	253	21	26
3	78	84	59*	-7	0	77	-15*	1	239	18	6	-3	68	80	43*	-4	178	25	25
4	80	85	53*	-6	0	77	-56*	2	65	77	40*	-2	68	78	-8*	-3	137	32	-4
H,K=	4,	12		-5	464	16	-11	3	0	75	-8*	-1	137	28	-3	-2	137	32	39
-6	114	41	96	-4	223	17	-12	4	69	79	22*	0	338	17	-6	-1	138	32	46

OBSERVED STRUCTURES FACTORS (CONT) FOR
SODIUM CHROMATE TETRAHYDRATE

L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
0	179	26	16	-11	0	83	-28*	-10	78	84	1*	H,K=	7,	1		2	112	41	-19
H,K=	6,	0		-10	74	82	-30*	-9	77	82	53*	-11	80	86	56*	H,K=	7,	5	
-12	173	26	-9	-9	73	80	52*	-8	213	20	-15	-10	0	82	-15*	-8	0	83	-15*
-10	0	79	-6*	-8	301	18	-35	-7	105	38	21	-9	0	81	-12*	-7	156	28	-6
-8	98	42	-7	-7	70	79	11*	-6	73	78	62*	-8	107	39	-13	-6	78	83	37*
-6	189	21	8	-6	238	19	-13	-5	102	41	9	-7	75	80	23*	-5	154	27	27
-4	534	18	-14	-5	96	41	10	-3	101	40	5	-6	148	26	-20	-4	77	82	-5*
-2	218	19	-24	-4	165	22	-10	-2	72	80	30*	-5	104	38	-11	-3	0	80	-22*
0	134	27	38	-3	67	77	20*	-1	125	31	-10	-4	0	76	-30*	-2	77	82	-9*
2	362	17	25	-2	252	17	-17	0	219	19	-2	-3	179	22	-10	-1	190	23	-2
4	264	19	4	-1	136	27	3	1	128	30	5	-2	127	30	6	0	111	40	60
6	78	83	60*	0	168	23	10	2	151	27	11	-1	196	21	11	1	286	20	-13
H,K=	6,	1		1	156	24	24	3	154	27	8	0	150	26	14	H,K=	7,	6	
-13	113	41	10	2	142	27	8	4	136	32	10	1	131	31	16	-7	113	41	13
-12	110	43	-9	3	73	81	51*	H,K=	6,		7	2	154	27	33	-6	79	84	33*
-11	238	20	-9	4	106	42	5	-10	139	32	17	3	176	25	10	-5	111	40	-11
-10	194	23	-33	5	77	82	19*	-9	111	40	16	H,K=	7,	2		-4	78	84	4*
-9	0	80	-18*	6	0	83	-3*	-8	109	40	14	-10	79	84	25*	-3	136	32	-15
-8	0	78	-23*	H,K=	6,		4	-7	76	81	53*	-9	233	20	-16	-2	222	22	-14
-7	236	19	-24	-12	80	85	23*	-6	168	25	8	-8	108	39	20	-1	79	84	10*
-6	67	79	4*	-11	78	83	-3*	-5	74	79	52*	-7	168	24	-14	0	113	41	15
-5	210	19	3	-10	76	81	18*	-4	148	26	7	-6	149	26	-9	H,K=	7,	7	
-4	198	20	-18	-9	74	79	44*	-3	128	30	-45	-5	304	18	11	-5	80	86	68*
-3	197	20	-3	-8	125	31	17	-2	74	79	3*	-4	127	30	-3	-4	160	28	2
-2	147	25	-4	-7	71	78	0*	-1	74	79	15*	-3	104	38	-10	-3	80	86	57*
-1	66	78	18*	-6	70	80	2*	0	150	28	10	-2	104	38	17	H,K=	8,	0	
0	67	77	32*	-5	138	27	-8	1	108	39	34	-1	247	19	-7	-4	160	28	-8
1	237	18	0	-4	137	27	24	2	155	27	-13	0	75	80	11*	H,K=	8,	1	
2	70	80	-2*	-3	119	32	0	3	79	84	76*	1	108	39	19	-5	180	26	1
3	101	40	14	-2	153	25	-6	H,K=	6,		8	2	0	81	-33*	-4	80	86	44*
4	164	25	-11	-1	98	42	20	-8	112	41	83	3	112	41	7				
5	185	23	-11	1	100	40	15	-7	136	32	10	H,K=	7,	3					
6	78	83	-4*	2	191	22	-2	-6	77	83	49*	-10	80	85	26*				
7	0	80	-44*	3	209	21	-6	-5	171	25	5	-9	78	84	-14*				
H,K=	6,	2		4	185	24	-6	-4	0	80	-3*	-8	0	81	-27*				
-13	80	86	23*	5	135	31	17	-3	76	81	-6*	-7	0	79	-9*				
-12	78	83	45*	6	179	25	15	-2	187	23	7	-6	150	26	-2				
-11	0	82	-63*	H,K=	6,		5	-1	77	82	16*	-5	0	78	-9*				
-10	128	30	-18	-11	284	19	11	0	77	83	26*	-4	105	38	15				
-9	101	43	-12	-10	77	82	53*	1	157	28	10	-3	105	38	9				
-8	140	28	-2	-9	130	33	12	2	80	85	72*	-2	167	24	2				
-7	206	21	-7	-8	104	38	15	H,K=	6,		9	-1	75	80	20*				
-6	68	79	9*	-7	145	25	-12	-6	80	85	56*	0	186	23	3				
-5	95	44	15	-6	0	78	-2*	-5	112	41	1	1	0	81	-8*				
-4	66	78	14*	-5	173	22	4	-4	111	40	-1	3	80	85	-10*				
-3	133	28	5	-4	70	80	54*	-3	79	84	16*	H,K=	7,	4					
-2	67	78	20*	-3	328	17	-5	-2	176	25	-9	-9	79	85	28*				
-1	268	17	-8	-2	121	32	12	-1	137	32	8	-8	110	40	12				
0	254	18	4	-1	173	22	14	0	113	41	89	-7	77	82	35*				
1	154	25	2	0	71	79	56*	H,K=	7,		0	-6	201	22	-11				
2	70	78	33*	1	162	25	23	-10	136	32	7	-5	393	18	-6				
3	190	22	7	2	0	80	-48*	-8	262	19	-9	-4	238	19	-14				
4	104	41	-11	3	0	82	-35*	-6	221	20	-11	-3	75	81	13*				
5	240	20	20	4	77	82	71*	-4	230	20	-6	-2	169	24	-8				
6	111	40	4	5	158	28	7	-2	179	23	17	-1	0	80	-46*				
H,K=	6,	3		H,K=	6,		6	0	75	80	49*	0	134	31	-7				
-12	136	32	-1	-11	80	86	43*	2	189	23	6	1	78	83	21*				

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