

RESEARCH COUNCIL OF ALBERTA

*Mimeographed Circular No. 9*

ALBERTA MOTOR GASOLINE  
SURVEYS

1950

J. S. Charlesworth and E. Tipman



**RESEARCH COUNCIL OF ALBERTA  
UNIVERSITY OF ALBERTA  
EDMONTON, ALBERTA**

**1950**

ALBERTA MOTOR GASOLINE SURVEY  
1950

---

The quality of motor gasolines sold in the Province of Alberta has been surveyed systematically by the Research Council of Alberta since 1939. Previous published reports\* on this subject covered information compiled during the period from 1939 to 1949. This report gives detailed information on the quality of the gasoline sold during the winter of 1949-1950 and the summer of 1950.

The standard test procedures of the American Society for Testing Materials (A.S.T.M.) which have been used throughout are: Octane number, A.S.T.M. method D357, (otherwise known as the motor method); Tetraethyl lead, A.S.T.M. method D526; Reid vapour pressure, A.S.T.M. method D323; Gravity at 60 degrees Fahrenheit in degrees A.P.I., A.S.T.M. method D287; Distillation range in degrees Fahrenheit on a basis of percentage evaporation, A.S.T.M. method D86; Sulphur content, A.S.T.M. method D90; Gum content, A.S.T.M. method D381; Corrosion, A.S.T.M. method D130.

Alberta Standard Specifications for Gasoline came into effect in March, 1941, as an amendment to the Regulations under the Fuel Oil Licensing Act of 1936. This amendment was published as Part VI, Standards. During the war period from 1942 to 1945 however, these regulations were rendered non-active while gasoline quality for the whole country came under the jurisdiction of the Oil Controller for Canada. Following the war the Alberta Government regulations again came into effect but remained without change until late in the summer of 1950. They were then revised and brought in line with current refining practice and production. The revisions included an increase in octane rating requirements for both Premium and Regular grades, a slight change in

---

\* Alberta Motor Gasoline Surveys 1939 to 1947, R.C.A. Mimeographed Circular No. 2  
Alberta Motor Gasoline Surveys 1948, R.C.A. Mimeographed Circular No. 4  
Alberta Motor Gasoline Surveys 1949, R.C.A. Mimeographed Circular No. 8

distillation requirements for winter gasolines, the inclusion of a limit on tetraethyl lead content and a few other minor items. A complete copy of the new regulations is given as an appendix to this report.

The Alberta Standard Specifications for Gasoline provide for the classification of samples into four groups, namely, Premium grade, Regular grade, and for each of the foregoing, Summer grade and Winter grade. Test data for these groups are tabulated separately. For comparative purposes, the older specification values are listed with each table since most of the samples were obtained before the 1950 specification revisions were applicable.

Table 1 and Table 2 list the average, maximum, and minimum values obtained on each test for both grades of gasoline and for the seasonal periods.

Tables 3, 4, 5, and 6 list in detail the analytical results obtained on each sample. The names of the supplying companies are omitted but samples from individual companies are grouped together and the companies are indicated by code letters. Table 7 lists the companies whose products were sampled but the order of listing has no relationship to the order of the code letters.

For comparative purposes, Tables 8 and 9 show the average analysis for both grades of gasoline and seasonal periods from 1939 to 1950. The variations in octane rating and tetraethyl lead content are shown graphically.

In Tables 3, 4, 5, and 6, values which do not conform to the standard requirements have been underlined. Out of a total of 200 samples, 25 samples or 12.5 percent failed to comply with specifications in one or more particular respects. This value is approximately one half the percentage reported in 1949. Eleven of the failing samples, the products of one company did not meet the 50% distillation requirement. Three samples containing

the purple dye for agricultural gasoline were found being sold through retail pumps to the general public. Samples of Premium grade gasoline continue, as in previous years, to show a lower percentage of failures than Regular grade gasoline.

In some cases, solvent oil is added to gasoline as a solvent or top cylinder lubricant. In the standard A.S.T.M. gum test the solvent oil remains with the gum in the form of a mixed residue. In such cases where solvent oil has been suspected of being present in any sample mentioned in this report, no attempt has been made to separate them. The results so obtained are described separately as "gum plus oil".

The significant feature shown in Tables 8 and 9, and in the graph is the marked increase in tetraethyl lead content and octane number of the gasoline over the period of the past twelve months.

Table 1  
Summary of Analytical Data  
Winter Gasolines 1949-1950

TEST	Premium Grade Gasoline				Regular Grade Gasoline			
	Spec.	Ave.	Max.	Min.	Spec.	Ave.	Max.	Min.
	Total Samples 50				Total Samples 48			
Octane Number	Min. 75	76.0	77.0	74.9	Min. 70	73.3	74.9	71.8
Tetraethyl Lead	Max. 3.6	2.27	2.98	1.90	Max. 3.6	1.75	2.61	0.87
Vapour Pressure	Max. 13	10.2	12.2	7.4	Max. 13	10.5	11.4	7.5
Gravity		62.2	63.8	60.1		61.1	63.6	58.0
Distillation Range I.B.P.		95	116	81		94	117	82
10%	Max. 140	123	136	104	Max. 140	125	141	114
50%	Max. 255	227	244	208	Max. 255	242	272	227
90%	Max. 370	338	349	320	Max. 370	346	364	329
E.P.		395	459	379		394	419	375
Sulphur	Max. 0.15	0.05	0.07	0.03	Max. 0.15	0.05	0.07	0.03
Gum	Max. 7	1.7	5.2	0.2	Max. 7	1.4	7.4	0.2
Gum plus Oil		9.3	21.4	6.4		11.7	29.0	4.8
Corrosion	Neg.	Neg.			Neg.	Neg.		
Freezing Point	Max. -60	Pass			Max. -60	Pass		
Colour	Red	Red			Yellow			

Table 2

## Summary of Analytical Data

Summer Gasolines 1950

	Premium Grade Gasoline				Regular Grade Gasoline			
	Spec.	Ave.	Max.	Min.	Spec.	Ave.	Max.	Min.
	Total Samples 54				Total Samples 48			
Octane Number	Min. 75	76.9	81.7	70.7	Min. 70	74.0	77.9	72.3
Tetraethyl Lead	Max. 3.6	2.76	3.43	1.69	Max. 3.6	2.22	3.36	1.30
Vapour Pressure	Max. 10	8.5	10.6	6.1	Max. 10	8.4	9.8	6.8
Gravity		60.8	63.8	58.4		60.5	62.3	57.5
Distillation Range I.B.P.		96	108	87		97	110	89
10%	Max. 155	131	152	117	Max. 155	133	148	122
50%	Max. 260	233	259	213	Max. 260	241	263	225
90%	Max. 370	344	358	310	Max. 370	345	366	328
E.P.		400	415	371		398	427	377
Sulphur	Max. 0.15	0.06	0.10	0.03	Max. 0.15	0.06	0.11	0.02
Gum	Max. 7	2.9	28.0	0.8	Max. 7	2.1	16.6	0.4
Gum plus Oil		10.5	13.4	8.4			194.8	10.8
Corrosion	Neg.	Neg.	Trace		Neg.	Neg.	Trace	
Colour	Red	Red			Yellow			

Table 3

Data of Gasoline Survey Analysis  
Premium Gasoline Winter 1949-1950

Co.	Octane No.	Tetra- ethyl lead	Vapour Pres- sure	Gravity	Distillation Range				Sulphur	Gum	Gum + Oil	Cor- ros- ion
					I.B.P.	10%	50%	90% E.P.				
Alberta					Specifications							
	Min. 75	Max. 3.6	Max. 13		Max. 140	Max. 255	Max. 370		Max. 0.15	Max. 7		Neg.
A	76.1	2.30	10.0	63.3	94	122	213	333	389	0.05	0.8	Neg.
C	75.9	2.15	9.5	62.4	92	125	215	340	401	0.06	2.0	Neg.
C	76.0	2.34	9.4	62.5	96	126	216	332	405	0.05	1.8	Neg.
C	75.6	2.06	7.7	62.8	100	136	208	320	389	0.05	2.0	Neg.
C	76.0	2.19	8.9	62.1	92	126	216	336	396	0.05	1.2	Neg.
C	75.9	2.12	8.4	62.8	93	128	217	338	406	0.05	0.8	Neg.
C	76.0	2.20	9.4	62.2	97	125	224	341	399	0.04	2.2	Neg.
C	75.7	2.21	9.7	61.9	82	122	223	346	386	0.04	5.0	Neg.
C	76.0	2.16	9.2	62.4	87	125	217	341	396	0.04	1.6	Neg.
C	76.0	2.18	8.9	62.3	89	126	217	342	398	0.04	1.6	Neg.
C	76.0	2.13	9.7	62.1	96	125	222	343	397	0.04	2.6	Neg.
C	75.5	2.18	9.0	62.1	95	127	220	336	399	0.04	2.0	Neg.
C	75.9	2.17	9.4	62.5	96	127	220	338	398	0.05	1.0	Neg.
C	76.2	2.11	10.9	63.8	89	120	215	338	392	0.05	0.8	Neg.
C	75.0	2.31	7.4	61.1	111	136	224	334	392	0.05	0.6	Neg.
C	75.8	2.12	10.3	63.4	110	123	211	322	390	0.05	1.2	Neg.
E	75.4	2.98	9.4	60.7	92	125	242	347	401	0.05	10.2	Neg.
E	75.0	2.14	9.4	60.5	96	133	244	347	409	0.04	10.8	Neg.
E	75.5	2.48	9.9	60.1	95	128	237	345	396	0.05	5.2	Neg.
E	76.4	2.41	11.3	61.5	89	125	238	342	399	0.04	0.8	Neg.
E	76.4	2.27	10.9	61.4	89	116	225	336	386	0.04	6.8	Neg.
E	76.7	2.66	11.7	63.3	100	117	225	334	384	0.06	2.4	Neg.
F	76.3	1.99	11.2	61.4	98	127	239	343	399	0.03	0.8	Neg.
F	76.7	2.53	12.2	63.1	116	127	230	330	391	0.05	2.4	Neg.
F	75.8	2.54	9.5	61.9	115	128	229	336	382	0.06	2.0	Neg.
G	76.2	2.03	11.2	61.4	94	137	232	343	390	0.03	1.0	Neg.
G	76.3	2.35	11.5	63.3	87	115	224	336	387	0.07	1.8	Neg.
H	75.3	2.89	9.5	61.6	90	119	240	344	398	0.05	8.0	Neg.
H	76.3	2.06	11.0	61.6	103	129	237	345	390	0.04	1.2	Neg.
H	77.0	2.51	11.6	63.2	87	107	223	334	380	0.05	2.0	Neg.
I	75.1	2.14	9.4	60.8	91	127	235	338	400	0.04	8.6	Neg.
I	76.5	2.36	11.3	61.5	100	121	232	332	400	0.04	0.6	Neg.
I	76.6	2.46	11.3	63.2	104	117	225	332	382	0.04	2.4	Neg.
J	76.3	2.14	10.4	62.7	111	129	222	344	395	0.04	1.0	Neg.
J	76.5	2.13	10.0	63.6	85	117	214	334	393	0.06	0.2	Neg.
K	<u>74.9</u>	2.13	8.9	61.4	87	127	235	338	395	0.04	6.6	Neg.
K	76.2	2.12	11.3	61.3	89	120	238	345	399	0.04	1.2	Neg.

.... cont'd

Table 3 (cont'd)

Data of Gasoline Survey Analysis  
Premium Gasoline Winter 1949-50

Co.	Octane No.	Tetra-ethyl lead	Vapour Pressure	Gravity	Distillation Range				Sulphur	Gum	Gum + Oil	Corrosion	
					I.B.P.	10%	50%	90% E.P.					
Alberta Specifications													
	Min. 75	Max. 3.6	Max. 13		Max. 140	Max. 255	Max. 370		Max. 0.15	Max. 7		Neg.	
K	76.4	2.49	11.3	63.4	81	106	226	337	386	0.07	1.8		Neg.
L	75.2	2.04	10.1	60.9	90	130	238	338	400	0.04		7.0	Neg.
L	75.6	2.07	9.0	62.5	94	135	238	338	394	0.05		7.4	Neg.
L	75.5	1.90	10.6	60.3	85	120	236	357	459	0.05		6.4	Neg.
L	76.3	2.07	11.3	61.8	99	125	238	349	391	0.04	0.8		Neg.
L	76.7	2.81	11.7	63.4	84	106	229	334	390	0.06	3.0		Neg.
L	75.9	2.24	11.2	63.3	84	104	218	321	379	0.05	1.8		Neg.
M	77.0	2.07	11.1	61.8	89	119	238	349	391	0.04		21.4	Neg.
M	75.9	2.14	10.4	63.5	100	121	211	324	389	0.06	1.2		Neg.
N	76.4	2.43	11.2	63.2	107	118	218	327	383	0.07	2.2		Neg.
N	75.8	2.35	11.2	63.3	104	117	223	332	384	0.07	2.2		Neg.
O	76.4	2.04	11.0	61.6	112	129	238	343	398	0.03	1.4		Neg.
R	76.6	2.39	10.8	61.0	97	132	241	348	399	0.04	2.0		Neg.



Table 4

Data of Gasoline Survey Analysis  
Regular Gasoline Winter 1949-1950

Co.	Octane No.	Tetra-ethyl lead	Vapour Pressure	Gravity	Distillation Range				Sulphur	Gum	Gum + Oil	Corrosion
					I.B.P.	10%	50%	90% E.P.				
Alberta Specifications												
	Min. 70	Max. 3.6	Max. 13		Max. 140	Max. 255	Max. 370		Max. 0.15	Max. 7	Neg.	
A	72.5	2.04	10.6	61.0	83	114	245	351	400	0.06	0.2	Neg.
C	72.5	1.63	8.9	59.9	94	132	248	353	398	0.06	2.6	Neg.
C	73.0	2.08	10.5	59.2	90	122	266	361	405	0.06	8.8	Neg.
C	73.3	2.25	10.4	58.7	91	125	272	362	405	0.07	0.8	Neg.
C	72.6	1.47	7.5	59.4	100	140	246	354	401	0.05	2.8	Neg.
C	72.3	2.17	9.6	58.8	86	125	269	362	405	0.06	3.4	Neg.
C	72.7	2.20	9.8	58.0	93	126	271	364	405	0.07	1.0	Neg.
C	72.9	2.16	10.0	58.5	84	124	268	363	403	0.06	1.0	Neg.
C	72.1	2.16	10.3	59.1	84	125	268	363	405	0.06	0.2	Neg.
C	72.5	2.14	10.2	59.5	84	117	259	361	404	0.05	1.4	Neg.
C	72.1	2.21	10.4	59.3	84	119	268	364	403	0.04	1.6	Neg.
C	72.1	2.27	9.6	59.0	83	121	264	361	407	0.07	0.8	Neg.
C	71.8	2.21	10.7	59.2	94	116	265	360	398	0.06	1.0	Neg.
C	71.9	2.06	9.7	59.5	94	126	263	360	402	0.07	0.6	Neg.
C	72.4	1.86	10.9	60.6	88	121	254	361	402	0.06	2.2	Neg.
C	73.6	1.06	10.9	61.5	85	115	246	351	400	0.07	0.4	Neg.
C	73.0	2.02	10.7	61.3	89	117	244	348	398	0.07	1.4	Neg.
E	72.7	1.52	10.0	60.7	97	131	241	342	403	0.05	3.2	Neg.
E	73.6	1.30	11.2	61.6	90	126	238	342	394	0.03	1.2	Neg.
E	73.4	1.29	11.4	61.7	90	122	236	340	399	0.04	1.6	Neg.
E	73.9	2.24	10.8	62.7	88	115	228	330	393	0.06	1.2	Neg.
F	73.2	1.17	10.6	61.4	91	128	238	340	380	0.03	0.4	Neg.
F	74.9	2.51	11.3	63.5	114	129	227	329	375	0.06	1.8	Neg.
F	74.3	1.93	11.1	63.6	83	114	227	331	383	0.05	0.6	Neg.
G	73.6	1.30	10.3	61.7	90	126	234	332	384	0.03	0.8	Neg.
G	74.3	2.00	10.9	62.9	99	121	230	330	380	0.04	1.0	Neg.
H	73.2	2.17	10.3	61.0	98	127	246	347	419	0.04	7.4	Neg.
H	73.0	1.13	10.8	61.3	95	125	235	338	396	0.03	4.8	Neg.
H	74.4	1.93	11.1	63.0	99	122	229	333	383	0.05	0.4	Neg.
I	72.5	1.09	9.1	60.8	92	141	242	343	396	0.03	8.6	Neg.
I	73.1	1.13	11.3	61.5	99	126	238	342	384	0.04	0.8	Neg.
I	74.6	2.00	10.7	63.2	113	128	231	333	382	0.04	0.8	Neg.
J	73.0	1.33	10.3	61.4	117	135	239	336	390	0.03	1.4	Neg.
J	73.2	2.08	10.7	61.3	101	122	244	352	396	0.07	0.6	Neg.
K	72.5	1.15	9.5	61.9	90	133	235	335	399	0.03	7.4	Neg.
K	73.8	1.19	10.9	61.4	89	122	237	341	388	0.03	1.0	Neg.
K	74.5	2.00	10.8	61.5	103	124	231	333	386	0.05	0.8	Neg.
L	73.2	0.87	11.1	61.8	82	119	235	339	388	0.03	0.8	Neg.

..... cont'd

Table 4 (cont'd.)

Data of Gasoline Survey Analysis  
Regular Gasoline Winter 1949-1950

Co.	Octane No.	Tetra- ethyl lead	Vapour Fres- sure	Gravity	Distillation Range				Sulphur	Gum + Oil	Cor- ros- ion	
					I.B.P.	10%	50%	90% E.P.				
					Alberta Specifications							
		Min.	Max.	Max.		Max.	Max.	Max.	Max.	Max.	Neg.	
		70	3.6	13		140	255	370	0.15	7		
L	73.9	1.04	10.7	61.0	88	125	237	341	400	0.03	29.0	Neg.
L	74.6	1.73	11.1	61.4	102	133	240	348	395	0.04	1.6	Neg.
L	74.9	2.61	10.9	63.3	111	127	230	331	382	0.05	2.4	Neg.
L	74.4	1.97	10.8	63.1	104	124	231	332	385	0.05	1.0	Neg.
M	73.5	1.01	11.1	61.7	89	125	238	348	393	0.04	0.8	Neg.
M	73.2	2.03	10.7	61.1	93	118	242	349	397	0.07	1.0	Neg.
N	74.4	1.96	11.0	63.1	103	123	230	334	385	0.05	1.4	Neg.
N	73.6	1.99	10.9	63.2	91	117	229	331	387	0.05	1.4	Neg.
O	73.3	1.24	10.2	61.8	113	135	237	337	383	0.03	0.4	Neg.
R	73.2	0.87	10.8	61.5	96	128	242	347	389	0.04	1.4	Neg.

Table 5

Data of Gasoline Survey Analysis  
Premium Gasoline Summer 1950

Co.	Octane No.	Tetra-ethyl lead	Vapour Pressure	Gravity	Distillation Range			Sulphur E.P.	Gum	Gum + Oil	Corrosion	
					I.B.P.	10%	50%					90%
Alberta					Specifications							
	Min. 75	Max. 3.6	Max. 10		Max. 155	Max. 260	Max. 370	Max. 0.15	Max. 7	Neg.		
A	77.4	3.31	7.3	60.8	97	135	220	345	406	0.06	1.0	Neg.
C	77.6	2.92	7.3	60.6	102	136	220	341	398	0.05	2.2	Neg.
C	77.0	3.23	6.4	60.1	102	140	226	344	389	0.06	11.2	Neg.
C*	76.7	3.02	7.2	59.9	105	150	236	350	404	0.07	1.8	Neg.
C	77.1	3.30	7.4	61.0	97	134	213	346	408	0.05	1.0	Neg.
C	77.4	3.15	6.9	61.0	104	142	221	347	408	0.07	1.2	Neg.
C	76.1	3.18	7.5	60.4	102	137	229	356	407	0.07	0.8	Neg.
C	77.7	1.69	6.2	61.8	91	146	216	323	400	0.05	1.2	Neg.
E	77.6	2.29	9.7	60.7	95	126	238	344	393	0.06		10.2 Neg.
E	76.7	2.58	8.9	61.0	90	128	233	342	390	0.07	1.0	Neg.
E	76.8	2.96	9.2	60.9	96	123	236	338	401	0.08	2.0	Neg.
F	76.6	2.56	9.8	61.5	91	122	234	339	387	0.04	2.2	Neg.
F	77.8	2.43	9.5	61.1	98	141	234	337	386	0.03	1.2	Neg.
F	77.5	1.97	8.8	60.1	93	131	228	336	384	0.05	0.8	Neg.
F	76.8	2.86	8.8	61.4	94	128	231	349	407	0.10	1.4	Neg.
F	76.2	2.97	8.0	60.7	95	131	232	348	401	0.09	4.8	Neg.
F	77.1	2.93	9.7	61.2	89	122	232	347	405	0.08	2.2	Neg.
G	77.7	2.85	8.4	60.0	98	134	243	351	408	0.08	2.2	Neg.
H	77.4	2.95	10.6	62.0	95	117	225	340	398	0.03	2.4	Neg.
H	77.3	2.89	9.1	61.4	91	125	233	348	408	0.08	3.0	Neg.
H	76.3	2.88	9.2	61.2	105	147	231	352	407	0.05		10.2 Neg.
I	76.7	3.13	9.7	61.4	91	120	236	339	400	0.05	5.2	Neg.
I	77.3	2.40	9.3	59.2	101	128	236	343	390	0.03	1.8	Neg.
I	76.2	2.91	8.4	59.8	100	131	242	342	401	0.06	2.6	Neg.
I	76.4	1.85	9.0	61.3	92	130	228	337	387	0.05	2.8	Neg.
I	76.6	2.78	9.3	61.6	89	123	231	344	406	0.08	1.6	Neg.
I	76.7	2.93	9.3	61.4	89	123	232	349	411	0.09	2.0	Neg.
I	77.3	2.88	9.4	61.6	87	122	232	349	410	0.09	2.0	Neg.
J	77.4	3.15	7.4	60.9	97	138	220	351	408	0.07	1.6	Neg.
J	75.4	3.16	6.1	59.3	89	123	239	342	398	0.07		13.4 Neg.
J	77.6	2.16	6.6	61.9	108	144	225	337	399	0.06	1.6	Neg.
K	77.3	2.40	9.7	60.9	92	125	237	342	406	0.03	2.2	Neg.
K	76.2	3.01	9.6	59.4	92	130	250	358	415	0.06		8.4 Neg.
K	76.3	1.90	9.0	61.5	90	128	227	338	391	0.06	1.2	Neg.

..... cont'd

Table 5 (cont'd.)  
Data of Gasoline Survey Analysis  
Premium Gasoline Summer 1950

Co. No.	Octane	Tetra-ethyl lead	Vapour Pressure	Gravity	Distillation Range				Sulphur	Gum	Gum / Oil	Corrosion
					I.B.P.	10%	50%	90% E.P.				
Alberta					Specifications							
	Min	Max.	Max.		Max.	Max.	Max.		Max.	Max.	Neg.	
	75	3.6	10		155	260	370		0.15	7		
K	77.5	2.98	8.6	59.8	101	134	244	354	411	0.08	2.0	Neg.
L	77.7	2.50	8.8	60.7	103	128	229	338	385	0.03	1.8	Neg.
L	<u>70.7</u>	1.82	6.7	58.4	108	139	247	347	392	0.03	<u>28.0</u>	Neg.
L	78.1	3.43	9.3	58.5	103	128	239	344	398	0.08	5.4	Neg.
L	76.2	2.52	6.1	58.6	105	152	247	343	394	0.05	3.2	Neg.
L	76.2	2.95	9.4	61.1	93	123	236	352	406	0.08	1.8	Neg.
L	77.0	2.79	8.6	61.1	95	128	259	347	404	0.09	1.6	Neg.
L	76.9	2.83	9.1	61.2	96	127	234	349	404	0.08	2.0	Neg.
L	76.6	2.71	8.9	61.3	92	126	233	349	405	0.07	1.2	Neg.
L	76.6	2.92	9.5	61.6	97	125	232	350	407	0.09	1.4	Neg.
M	77.9	3.29	7.1	60.1	110	139	223	342	392	0.06	1.4	Neg.
M	76.7	1.87	9.1	61.7	92	128	224	333	384	0.05	1.8	Neg.
M	77.1	2.98	8.8	61.1	99	127	234	348	410	0.08	2.0	Neg.
N	77.5	3.40	9.0	60.7	95	123	240	344	400	0.05	4.6	Neg.
N	77.6	3.35	8.5	60.8	89	124	237	343	393	0.03	3.8	Neg.
N	76.3	3.05	9.1	60.8	95	132	243	351	411	0.09	5.8	Neg.
R	77.0	1.99	8.6	60.6	95	132	216	345	414	0.04	2.2	Neg.
S	76.0	1.92	8.7	61.2	102	136	232	329	393	0.04	1.2	Neg.
S	76.5	2.83	8.0	59.0	98	139	249	352	400	0.08	2.2	Neg.
U	81.7	3.37	9.4	63.8	94	130	232	310	371	0.07	2.8	Trace

\* - Sample contained purple dye.

Table 6

## Data of Gasoline Survey Analysis

Regular Gasoline Summer 1950

Co.	Octane No.	Tetra-ethyl Lead	Vapour Pressure	Gravity	Distillation Range				Sulphur	Gum + Oil	Corrosion	
					I.B.P.	10%	50%	90%				E.P.
Min.	Max.	Max.			Max.	Max.	Max.	Max.	Max.	Neg.		
70	3.6	10			155	260	370	0.15	7			
C	73.0	3.34	7.3	58.1	99	136	254	354	397	0.04	2.0	Neg.
C*	73.9	3.14	7.0	58.2	94	139	255	354	406	0.07	1.4	Neg.
C	73.3	2.93	8.1	58.4	96	135	259	365	415	0.08	0.8	Neg.
C	73.4	2.85	8.4	58.9	96	136	259	365	412	0.06	0.8	Neg.
C	73.4	3.04	7.5	58.3	92	135	260	362	409	0.08	0.6	Neg.
C	73.9	3.22	7.2	58.3	107	142	258	351	406	0.07	1.2	Neg.
E	73.7	1.94	8.6	61.6	103	131	231	345	395	0.07	1.2	Neg.
F	74.1	1.39	9.1	61.2	94	126	231	334	383	0.05	0.4	Neg.
F	73.0	1.45	8.2	60.4	93	127	234	337	386	0.02	16.6	Neg.
F	74.4	1.35	9.1	61.3	94	131	232	331	378	0.05	0.4	Neg.
F	73.7	2.03	8.9	61.7	90	126	234	349	403	0.08	1.0	Neg.
F	74.0	1.98	8.6	61.7	93	127	231	345	400	0.08	0.8	Neg.
F	74.1	2.06	8.1	60.7	96	132	242	352	404	0.08	1.2	Neg.
G	73.4	1.95	8.5	59.7	96	138	247	341	390	0.05	1.0	Neg.
G	72.5	1.93	7.3	58.6	101	148	263	362	410	0.06	194.8	Neg.
H	74.3	2.47	9.5	61.2	95	124	234	341	394	0.04	1.8	Neg.
H	74.9	2.13	9.4	62.0	89	123	231	346	412	0.07	1.6	Neg.
H	73.7	2.28	8.4	61.2	99	136	243	340	396	0.06	4.4	Neg.
I	74.3	1.48	8.1	60.4	104	138	234	340	387	0.03	0.4	Neg.
I*	75.6	3.10	7.2	59.5	99	144	253	351	427	0.07	14.0	Neg.
I	74.7	2.16	9.1	61.7	91	125	233	348	409	0.06	1.0	Neg.
I	74.8	2.17	9.8	62.0	91	122	233	353	410	0.08	1.0	Neg.
I	74.7	2.18	9.2	61.9	93	126	233	350	410	0.07	1.2	Neg.
J	73.6	3.00	7.8	58.5	95	139	262	366	410	0.07	1.4	Neg.
J	72.3	3.36	6.8	57.5	99	142	248	343	397	0.06	11.0	Neg.
K	74.4	1.36	8.7	61.2	110	132	225	337	387	0.03	1.4	Neg.
K	73.3	2.01	9.3	60.9	97	134	242	340	391	0.04	2.8	Neg.
K	74.5	1.42	8.9	61.3	97	134	233	335	384	0.06	1.0	Neg.
K	73.2	1.93	7.7	59.9	101	140	251	350	398	0.06	0.4	Neg.
L	74.5	1.39	8.6	60.9	106	136	236	331	383	0.03	3.4	Neg.
L	74.0	2.51	8.1	60.4	98	130	235	339	388	0.04	1.6	Neg.
L	74.4	2.52	9.2	61.3	98	130	242	343	391	0.05	7.0	Neg.
L	74.5	2.11	8.6	61.9	94	132	241	345	402	0.07	10.8	Neg.
L	73.8	2.05	8.5	61.2	102	131	237	346	404	0.07	0.8	Neg.

..... cont'd.

Table 6 cont'd.

## Data of Gasoline Survey Analysis

Regular Gasoline Summer 1950

Co.	Octane No.	Tetra-ethyl Lead	Vapour Pressure	Gravity	Distillation Range				Sulphur	Gum + Oil	Corrosion	
					I.B.P.	10%	50%	90% E.P.				
Alberta Specifications												
	Min. 70	Max. 3.6	Max. 10			Max. 155	Max. 260	Max. 370	Max. 0.15	Max. 7	Neg.	
L	73.8	2.11	8.6	61.1	94	128	235	349	402	0.08	0.6	Neg.
L	73.9	1.97	8.4	61.1	93	131	237	346	406	0.07	1.4	Neg.
L	74.6	2.20	9.0	61.8	94	124	230	345	408	0.07	1.6	Neg.
M	74.4	1.51	7.8	58.4	98	135	252	355	400	0.11	1.0	Neg.
M	73.5	2.98	7.7	58.3	102	139	256	357	400	0.06	1.6	Neg.
M	73.6	1.30	8.9	61.1	94	136	235	328	377	0.04	1.8	Neg.
M	74.4	2.09	8.6	61.6	95	130	235	348	413	0.07	0.8	Neg.
N	74.8	2.81	9.0	60.9	94	127	239	339	387	0.05	2.0	Neg.
N	74.9	2.68	9.2	61.2	92	128	240	342	391	0.04	2.0	Neg.
N	73.9	2.07	8.5	61.8	105	134	233	346	399	0.07	1.2	Neg.
R	74.0	2.83	8.4	61.2	98	134	234	337	382	0.04	2.6	Neg.
S	73.7	1.44	9.3	61.2	94	132	236	337	390	0.04	2.2	Neg.
S	72.9	2.25	7.5	58.7	96	142	251	350	396	0.06	0.6	Neg.
U	77.9	1.99	8.6	62.3	91	131	236	308	387	0.10	2.8	Trace

\* Sample contained purple dye

Table 7

C O M P A N I E S

Alberta Hi-Way Refineries Limited  
Bell Refining Company  
British American Oil Company Limited  
Canada Western Distributors Limited  
Canadian Oil Companies Limited  
Crown Oil Sales Limited  
Gas and Oil Products Company Limited  
Great West Distributors Limited  
Husky Oil and Refinery Company Limited  
Imperial Oil Company Limited  
Lion Oil Company Limited  
Maple Leaf Petroleum Company Limited  
McColl-Frontenac Oil Company Limited  
North Star Oil Company Limited  
Renown Oil Company Limited  
Shell Oil Company Limited

Table 8  
Seasonal Average Analysis

Premium Gasoline

1939 - 1950

Year	Octane Number	T.E.L.	V.P.	Gravity	Distillation Range				Sulphur	Gum	
					I.B.P.	10%	50%	90%			E.P.
<u>SUMMER GASOLINES</u>											
1940	77.4		8.5	60.0	101	139	245	350	400	0.05	0.9
1941	76.6		8.5	60.3	92	133	246	354	403	0.05	1.7
1942	76.2		8.8			142	247	350		0.04	1.3
1943	77.0		8.5			138	248	357		0.07	2.2
1944	75.3		9.1			131	249	367		0.07	3.6
1945	74.1		7.1	59.6	98	138	241	352	401	0.04	3.4
1946	77.2		8.7	61.8	94	128	232	338	392	0.06	3.9
1947	75.9	2.70	7.7	60.4	96	137	238	341	396	0.06	2.7
1948	77.5	3.13	8.5	60.6	98	133	236	339	391	0.06	3.9
1949	75.6	2.35	8.6	60.3	95	133	235	341	401	0.05	4.7
1950	76.9	2.76	8.5	60.8	96	131	233	344	400	0.06	2.9
<u>WINTER GASOLINES</u>											
1939-40	78.3		10.5	63.3	91	127	229	342	389	0.06	2.0
1941-42	75.6		10.6			131	240	340		0.04	2.2
1942-43	76.3		9.9			130	239	353		0.06	1.3
1943-44	75.4		9.2			131	251	364		0.04	1.4
1944-45	73.9		9.4	60.4	90	124	244	356	408	0.06	2.8
1945-46	77.1		9.1	62.0	93	125	223	343	397	0.05	2.8
1946-47	76.1	1.96	9.9	62.8	89	120	230	335	388	0.05	2.3
1947-48	77.3	2.98	9.8	62.0	94	128	235	339	391	0.06	2.6
1948-49	77.1	2.95	10.1	62.0	88	120	229	335	393	0.06	2.8
1949-50	76.0	2.27	10.2	62.2	95	123	227	338	395	0.05	1.7



Table 9  
Seasonal Average Analysis

Regular Gasoline

1939 - 1950

Year	Octane Number	T.E.L.	V.P.	Gravity	Distillation Range				Sulphur	Gum	
					I.B.P.	10%	50%	90% E.P.			
<u>SUMMER GASOLINES</u>											
1940	69.9		8.7	60.0	100	141	249	360	404	0.06	0.9
1941	70.8		8.1	59.1	92	138	262	362	403	0.06	2.0
1945	69.8		6.9	59.1	98	140	247	355	402	0.04	2.7
1946	72.9		8.3	60.9	96	131	239	342	395	0.05	5.6
1947	72.5	1.63	7.6	60.5	95	137	242	343	397	0.06	4.7
1948	73.9	2.12	8.5	60.3	96	132	247	345	397	0.06	3.4
1949	71.8	1.39	8.6	59.6	93	132	245	346	401	0.05	6.5
1950	74.0	2.22	8.4	60.5	97	133	241	345	398	0.06	2.1
<u>WINTER GASOLINES</u>											
1939-40	71.2		10.3	62.3	93	131	241	356	401	0.07	1.9
1944-45	70.2		8.9	60.1	92	127	247	353	408	0.06	3.0
1945-46	72.0		8.7	60.6	95	131	236	347	400	0.05	3.4
1946-47	72.9	1.46	9.3	61.4	91	125	238	340	393	0.05	3.5
1947-48	73.5	1.98	10.1	61.8	93	128	241	339	391	0.06	2.1
1948-49	73.7	2.35	9.5	60.8	90	128	244	336	391	0.05	2.8
1949-50	73.3	1.75	10.5	61.1	94	125	242	346	394	0.05	1.4

OCTANE RATINGS AND TETRAETHYL LEAD

PREMIUM AND REGULAR GASOLINES

78

PREMIUM GRADE

76

NUMBER  
OCTANE

74

REGULAR GRADE

72

70

68

YEAR

Octane ———

Lead - - -

1940

1941

1942

1943

1944

1945

1946

1947

1948

1949

1950

1951

TETRAETHYL  
LEAD

3

2

1

Appendix 1

Alberta Standard Specifications for Gasoline

PART VI

STANDARDS

41. In this part and the Schedule A attached, unless the context requires a contrary meaning:-
- (a) "Gasoline" means and includes volatile hydrocarbon fuel suitable for use in the lighter internal combustion engines, requiring a carburant fuel, used in motor vehicles; but does not include material known as aviation fuel, nor the heavier fuels in the classes known as kerosene, engine distillate and other fuels suitable only for use in tractors and heavy engines.
  - (b) "Minister" means the Minister of Industries & Labour.
  - (c) "Summer gasoline" means the gasoline normally sold in the months of May to September (inclusive).
  - (d) "Winter gasoline" means the gasoline normally sold in the months of November to March (inclusive).
42. (a) There is hereby established within the Province two grades of gasoline namely, "Premium" and "Regular" in accordance with the standards set out in Schedule A attached hereto.
- (b) No gasoline shall be sold or offered for sale as "Premium" gasoline unless the said gasoline complies in every respect with each and every of the specifications for "Premium" gasoline set out in Schedule A attached hereto.
  - (c) No gasoline shall be sold or offered for sale as "Regular" gasoline unless the said gasoline complies in every respect with each and every of the specifications for "Regular" gasoline set out in Schedule A attached hereto.
  - (d) No person shall sell or offer for sale by retail any gasoline other than "Premium" or "Regular" gasolines as established by the standards set out in Schedule A attached hereto, or blended gasoline in accordance with section 44 below.
43. No blend of gasoline with benzol and/or alcohol which fails to meet with the requirements of the standard specifications set out in Schedule A shall be sold or offered for sale until the specification for its manufacture has been submitted to and approved by the Minister.
44. Whenever gasoline is sold or offered for sale a plate or sign clearly indicating to the customer the grade of gasoline sold or offered for sale must be conspicuously displayed on the gasoline pump or other container from which the gasoline is supplied to the customer. The said gasoline grade plates or display signs shall be of a type and design approved by the Minister.

45. Whenever it appears to the satisfaction of the Minister that the wholesale or retail vendor of gasoline has failed to maintain the standard specifications hereby prescribed, the wholesale or retail license of the vendor, as the case may be, may be suspended or cancelled by the Minister.
46. No gasoline or naphtha which has a Reid vapour pressure exceeding the values set forth in the standard specifications hereby prescribed shall be sold or offered for sale within the Province.
47. All "Premium" gasoline shall be coloured red, and no gasoline other than "Premium" shall be so coloured.
48. All "Regular" gasoline shall be coloured a distinctive colour, other than red. Such distinctive colour shall be registered with and approved by the Minister, and no other gasoline than "Regular" shall be so coloured.
49. "Summer Gasoline" as set out in the said Schedule A is gasoline intended for sale in the months of May to September (inclusive). "Winter Gasoline" as set out in the said Schedule A is gasoline intended for sale in the months of November to March (inclusive).
50. During the periods in which the changes are being made from summer to winter gasoline, and the reverse, that is normally during the months of October and April, a gasoline will be regarded as satisfactory if it complies with either the winter or summer specification for its grade.
51. The standard specifications for gasoline as shown in Schedule A may be modified from time to time as found necessary by the Minister but such modifications shall not become effective until ample notification has been given to the operators concerned.

SCHEDULE A

STANDARD SPECIFICATIONS FOR GASOLINE

1. Requirement Specific for Premium Gasoline.

- (a) Octane Number: The octane number shall not be less than 76 as determined by the C.F.R. Motor method of A.S.T.M. procedure D-357.

2. Requirement Specific for Regular Gasoline.

- (a) Octane Number: The octane number shall not be less than 72 as determined by the C.F.R. Motor method of A.S.T.M. procedure D-357.

3. Requirements Common to both Premium and Regular Gasoline.

- (a) Appearance: The gasoline shall be clear, i.e., free from undissolved water and suspended matter.
- (b) Corrosion: The gasoline shall pass the test for corrosion (A.S.T.M. D-130)
- (c) Vapour Pressure: The vapour pressure as determined (A.S.T.M. D-323) shall not exceed 10 lbs. for Summer Gasoline and 13 lbs. for Winter Gasoline, except that a vapour pressure one pound greater shall be permitted in each case at the refinery or other point of wholesale delivery.
- (d) Sulphur: The total sulphur content as determined (A.S.T.M. D-90) shall not exceed 0.15 per cent by weight.
- (e) Gum: The gum content as determined (A.S.T.M. D-381) shall not exceed 7 mg. per 100 cc. In the presence of top cylinder lubricant or solvent oil the modified test procedure of the Canadian Government Specifications Board (C.G.S.B.) specification 3-GP-0, method 40.2 shall be employed.
- (f) Freezing Point: For Winter Gasolines only: the freezing point of the fuel, as indicated by the initial formation of solid matter, shall not be higher than minus 60°F. (Minus 51°C.). The method of determination shall be as in C.G.S.B. specification 3-GP-0, method 32.1.
- (g) Tetraethyl Lead: The tetraethyl lead content as determined (A.S.T.M. D-526) shall not exceed 3.6 cc. per Imperial gallon.
- (h) Distillation Range: The distillation range shall be as follows:

Temperature in °F.

Summer Winter

Not less than 10% of the fuel shall be evaporated at	155	130
Not less than 50% of the fuel shall be evaporated at	260	250
Not less than 90% of the fuel shall be evaporated at	370	370

- (1) The distillation range shall be determined by A.S.T.M. procedure D-86.
- (2) The phrase used above, "Not less than 10% of the fuel shall be evaporated at 155°F." is equivalent to the phrase "10% of the fuel shall evaporate at a temperature not higher than 155°F."
- (3) For the purposes of the distillation specification the volume evaporated at any temperature shall be taken as the volume collected plus the distillation loss as determined at the end of the test.
- (4) Distillations may be made at any elevation provided that the observed temperatures are corrected to the temperatures that would presumably have been observed if the distillation had been made at normal barometric pressure at sea level.
- (5) The observed distillation temperatures may be corrected for the effect of difference between actual barometric pressure and normal pressure at sea level by means of the corrections in the following table "A".

TABLE OF CORRECTIONS FOR DISTILLATION DATA TO ADJUST FOR VARIATIONS OF BAROMETRIC PRESSURE FROM STANDARD (29.92 inches)

Corrections to be added - in Degrees Fahrenheit						
Barometric Pressure in Inches of Mercury	Observed Temperatures of Distillation In Degrees Fahrenheit					
	100 to 149°	150 to 199°	200 to 249°	250 to 299°	300 to 349°	350 to 399°
25.60 to 25.79	8	8	9	9	10	11
25.80 " 25.99	7	8	8	9	10	10
26.00 " 26.19	7	7	8	9	9	10
26.20 " 26.39	6	7	8	8	9	9
26.40 " 26.59	6	7	7	8	8	9
26.60 " 26.79	6	6	7	7	8	8
26.80 " 26.99	5	6	6	7	7	8
27.00 " 27.19	5	5	6	6	7	7
27.20 " 27.39	5	5	5	6	6	7
27.40 " 27.59	4	5	5	5	6	6
27.60 " 27.79	4	4	5	5	5	6
27.80 " 27.99	4	4	4	5	5	5
28.00 " 28.19	3	4	4	4	4	5
28.20 " 28.39	3	3	3	4	4	4
28.40 " 28.59	3	3	3	3	3	4
28.60 " 28.79	2	2	3	3	3	3
28.80 " 28.99	2	2	2	2	2	3