

KES

**Molecular Weight Estimation
Test of Petroleum Oils from
Viscosity Measurements**

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1. Scope of Application

This standard determines molecular weight estimation test of petroleum oils from viscosity measured at 37.8 °C and 98.9 °C.

Also, this standard shall be applied in molecular weight range of 250 ~ 700.

2. Method Summary

After measuring a specimen viscosity at 37.8 °C and 98.9 °C, have the function H at 37.8 °C, and have the molecular weight with the relation between 98.9 °C viscosity and H on chart.

3. Operation

- (1) Measure the specimen viscosity at 37.8 °C and 98.9 °C.
- (2) Have the function H using 37.8 °C viscosity on table 1.
- (3) Read viscosity-molecular weight chart using H and 98.9 °C viscosity.

Example) Measuring Viscosity 37.8 °C = 179

98.9 °C = 97.2

On table 1, H value of 37.8 °C viscosity 179 is 461.

Here, on the chart, read H = 461, 98.9°C viscosity and 9.72 molecular weight. Read molecular is 360.

- (4) Average the measured molecular weights of 3 times. Report the result.

4. Accuracy

The accuracy of molecular weight result by this standard is 95 %.

5. Decision Standard

This standard shall be used as reference data for all kinds of lubrication oils.

Table 1 Viscosity, H value Chart

Kinematic Viscosity. cSt. at 100 F	H				
	0	0.2	0.4	0.6	0.8
2	-178	-151	-126	-104	-85
3	-67	-52	-38	-25	-13
4	-1	9	19	28	36
5	44	52	59	66	73
6	79	85	90	96	101
7	106	111	116	120	124
8	128	132	136	140	144
9	147	151	154	157	160
10	163	166	169	172	175
11	178	180	183	185	188
12	190	192	195	197	199
13	201	203	206	208	210
14	211	213	215	217	219
15	221	222	224	226	227
16	229	231	232	234	235
17	237	238	240	241	243
18	244	245	247	248	249
19	251	252	253	255	256
20	257	258	259	261	262
21	263	264	265	266	267
22	269	270	271	272	273
23	274	275	276	277	278
24	279	280	281	281	282
25	283	284	285	286	287
26	288	289	289	290	291
27	292	293	294	294	295
28	296	297	298	298	299
29	300	301	301	302	303
30	304	304	305	306	306
31	307	308	308	309	310
32	310	311	312	312	313
33	314	314	315	316	316
34	317	317	318	319	319
35	320	320	321	322	322
36	328	323	324	325	235
37	326	326	327	327	328
38	328	329	329	330	331
39	331	332	332	333	333