

TEMPERATURE CORRECTION OF FUEL VOLUME

DATA ARE GIVEN IN LITRES PER CUBIC METER OF FUEL

Table 1

Temperature of fuel	Gasoline 86 octanes	Gasoline 98 octanes	Diesel
-10	28.5	26.3	20.2
-9	27.3	25.2	19.4
-8	26.2	24.2	18.6
-7	25.0	23.1	17.8
-6	23.9	22.1	16.9
-5	22.7	21.0	16.1
-4	21.6	20.0	15.3
-3	20.4	18.9	14.5
-2	19.3	17.9	13.7
-1	18.2	16.8	12.9
0	17.0	15.8	12.1
+1	15.9	14.7	11.3
+2	14.8	13.7	10.5
+3	13.6	12.6	9.7
+4	12.5	11.6	8.9
+5	11.4	10.5	8.1
+6	10.2	9.5	7.3
+7	9.1	8.4	6.5
+8	8.0	7.4	5.6
+9	6.8	6.3	4.8
+10	5.7	5.3	4.0
+11	4.5	4.2	3.2
+12	3.4	3.2	2.4
+13	2.3	2.1	1.6
+14	1.1	1.1	0.8
+15	0.0	0.0	0.0

Table 2

Temperature of fuel	Gasoline 86 octanes	Gasoline 98 octanes	Diesel
+16	1.1	1.1	0.8
+17	2.3	2.1	1.6
+18	3.4	3.2	2.4
+19	4.5	4.2	3.2
+20	5.7	5.3	4.0
+21	6.8	6.3	4.8
+22	8.0	7.4	5.6
+23	9.1	8.4	6.5
+24	10.2	9.5	7.3
+25	11.4	10.5	8.1
+26	12.5	11.6	8.9
+27	13.6	12.6	9.7
+28	14.8	13.7	10.5
+29	15.9	14.7	11.3
+30	17.0	15.8	12.1
+31	18.2	16.8	12.9
+32	19.3	17.9	13.7
+33	20.4	18.9	14.5
+34	21.6	20.0	15.3
+35	22.7	21.0	16.1
+36	23.9	22.1	16.9
+37	25.0	23.1	17.9
+38	26.2	24.2	18.6
+39	27.3	25.2	19.4
+40	28.5	26.3	20.2

Table 1: corrections from this table multiplied with cubic meters of fuel to be summed with actually received litres of fuel to get corrected number of litres.

Table 2: corrections from this table multiplied with cubic meters of fuel to be deducted from actually received litres of fuel to get corrected number of litres.

Note 1: Wherever it is possible fuel should be measure by weight and not by volume, because weight is constant and does not depend on temperature.

Note 2: Temperature measurement is the best in the middle of measured fuel level

Note 3: As after loading fuel in tank is stirred up measurement of fuel level with stick must be done only after the fuel is settled.

Note 4: Standard is that level of fuel is calculated to temperature of 15°C

Example 1: At loading place 10'000 l of diesel fuel are loaded in truck and temperature of fuel was 15°C. Fuel is delivered to some other location and during the trip because of atmospheric conditions has changed temperature. Before unloading temperature of fuel in truck was 20°C.

$$10'000 \text{ l} = 10 \text{ m}^3 \qquad 10 \times 4.0 = 40.0 \qquad 10'000 + 40.0 = 10'040$$

Level of fuel measured in truck with stick has to be 10'040 l.

Example 2: At loading place 10'000 l of diesel fuel are loaded in truck and temperature of fuel was 15°C. Fuel is delivered to some other location and during the trip because of atmospheric conditions has changed temperature. Before unloading temperature of fuel in truck was -2°C.

$$10'000 \text{ l} = 10 \text{ m}^3 \qquad 10 \times 13.7 = 137 \qquad 10'000 - 137 = 9'863$$

Level of fuel measured in truck with stick has to be 9'863 l.

Example 3: Level of diesel fuel in fuel tank in the ground needs to be checked. First method of measuring is by stick. Stick shows 26'600 l of fuel in tank. Then temperature of fuel is measured. Thermometer is putted in the middle of fuel volume. It showed that temperature is +2°C.

$$26'600 \text{ l} = 26.6 \text{ m}^3 \qquad 26.6 \times 10.5 = 279.3 \qquad 26'600 + 279.3 = 26'879.3$$

Level of fuel in tank is 26'879.3 at 15°C (standard temperature).

Example 4: Level of diesel fuel in fuel truck needs to be checked. First method of measuring is by stick. Stick shows 21'300 l of fuel in truck. Then temperature of fuel is measured. Thermometer is putted in the middle of fuel volume. It showed that temperature is +32°C.

$$21'300 \text{ l} = 21.3 \text{ m}^3 \qquad 21.3 \times 13.7 = 291.8 \qquad 21'300 - 291.8 = 21'008.2$$

Level of fuel in tank is 21'008.2 at 15°C (standard temperature).

9.34.