

# Jet-A Fuel Density Variation with Temperature

## *Gulfstream G-V*

Temp °F	Temp °C	Min and Max Density lb./USG based on relative density to water @ 15.5° C x 8.336		Typical Density lb./USG Typ	Lb. Jet-A fuel @ 6,118 USG			Δ γ Max-Min	Δ Wt./Max Fuel Δγ x 6,118
		Min	Max		# Max γ	# Typ γ	# Min γ		
<b>-4</b>	<b>-20.0</b>	<b>6.68</b>	<b>7.19</b>	<b>6.985</b>	<b>43,988</b>	<b>42,734</b>	<b>40,868</b>	<b>0.510</b>	<b>3,120</b>
-3	-19.4	6.677	7.187	6.982	43,968	42,715	40,848	0.510	3,120
-2	-18.9	6.673	7.183	6.979	43,948	42,695	40,827	0.510	3,120
-1	-18.3	6.670	7.180	6.975	43,927	42,675	40,807	0.510	3,120
0	-17.8	6.667	7.177	6.972	43,907	42,655	40,787	0.510	3,120
1	-17.2	6.663	7.173	6.969	43,886	42,636	40,766	0.510	3,120
2	-16.7	6.660	7.170	6.966	43,866	42,616	40,746	0.510	3,120
3	-16.1	6.657	7.167	6.962	43,846	42,596	40,725	0.510	3,120
4	-15.6	6.653	7.163	6.959	43,825	42,577	40,705	0.510	3,120
5	-15.0	6.650	7.160	6.956	43,805	42,557	40,685	0.510	3,120
6	-14.4	6.647	7.157	6.953	43,784	42,537	40,664	0.510	3,120
7	-13.9	6.643	7.153	6.950	43,764	42,517	40,644	0.510	3,120
8	-13.3	6.640	7.150	6.946	43,744	42,498	40,624	0.510	3,120
9	-12.8	6.637	7.147	6.943	43,723	42,478	40,603	0.510	3,120
10	-12.2	6.633	7.143	6.940	43,703	42,458	40,583	0.510	3,120
11	-11.7	6.630	7.140	6.937	43,683	42,439	40,562	0.510	3,120
12	-11.1	6.627	7.137	6.933	43,662	42,419	40,542	0.510	3,120
13	-10.6	6.623	7.133	6.930	43,642	42,399	40,522	0.510	3,120
<b>14</b>	<b>-10.0</b>	<b>6.62</b>	<b>7.13</b>	<b>6.927</b>	<b>43,621</b>	<b>42,379</b>	<b>40,501</b>	<b>0.510</b>	<b>3,120</b>
15	-9.4	6.616	7.127	6.923	43,601	42,357	40,477	0.511	3,124
16	-8.9	6.612	7.123	6.920	43,581	42,334	40,454	0.511	3,127
17	-8.3	6.608	7.120	6.916	43,560	42,311	40,430	0.512	3,130
18	-7.8	6.604	7.117	6.912	43,540	42,288	40,406	0.512	3,134
19	-7.2	6.601	7.113	6.908	43,519	42,266	40,382	0.513	3,137

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20	-6.7	6.597	7.110	6.905	43,499	42,243	40,358	0.513	3,141
21	-6.1	6.593	7.107	6.901	43,479	42,220	40,335	0.514	3,144
22	-5.6	6.589	7.103	6.897	43,458	42,197	40,311	0.514	3,147
23	-5.0	6.585	7.100	6.894	43,438	42,174	40,287	0.515	3,151
24	-4.4	6.581	7.097	6.890	43,417	42,152	40,263	0.516	3,154
25	-3.9	6.577	7.093	6.886	43,397	42,129	40,239	0.516	3,158
26	-3.3	6.573	7.090	6.882	43,377	42,106	40,216	0.517	3,161
27	-2.8	6.569	7.087	6.879	43,356	42,083	40,192	0.517	3,164
28	-2.2	6.566	7.083	6.875	43,336	42,061	40,168	0.518	3,168
29	-1.7	6.562	7.080	6.871	43,315	42,038	40,144	0.518	3,171
30	-1.1	6.558	7.077	6.867	43,295	42,015	40,120	0.519	3,175
31	-0.6	6.554	7.073	6.864	43,275	41,992	40,097	0.519	3,178
<b>32</b>	<b>0.0</b>	<b>6.55</b>	<b>7.07</b>	<b>6.860</b>	<b>43,254</b>	<b>41,969</b>	<b>40,073</b>	<b>0.520</b>	<b>3,181</b>
33	0.6	6.547	7.067	6.857	43,237	41,950	40,053	0.521	3,185
34	1.1	6.543	7.064	6.854	43,220	41,930	40,032	0.521	3,188
35	1.7	6.540	7.062	6.850	43,203	41,910	40,012	0.522	3,192
36	2.2	6.537	7.059	6.847	43,186	41,891	39,991	0.522	3,195
37	2.8	6.533	7.056	6.844	43,169	41,871	39,971	0.523	3,198
38	3.3	6.530	7.053	6.841	43,152	41,851	39,951	0.523	3,202
39	3.9	6.527	7.051	6.837	43,135	41,831	39,930	0.524	3,205
40	4.4	6.523	7.048	6.834	43,118	41,812	39,910	0.524	3,209
41	5.0	6.520	7.045	6.831	43,101	41,792	39,889	0.525	3,212
42	5.6	6.517	7.042	6.828	43,084	41,772	39,869	0.526	3,215
43	6.1	6.513	7.039	6.825	43,067	41,753	39,849	0.526	3,219
44	6.7	6.510	7.037	6.821	43,050	41,733	39,828	0.527	3,222
45	7.2	6.507	7.034	6.818	43,033	41,713	39,808	0.527	3,226
46	7.8	6.503	7.031	6.815	43,016	41,693	39,787	0.528	3,229
47	8.3	6.500	7.028	6.812	42,999	41,674	39,767	0.528	3,232

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48	8.9	6.497	7.026	6.808	42,982	41,654	39,747	0.529	3,236
49	9.4	6.493	7.023	6.805	42,965	41,634	39,726	0.529	3,239
<b>50</b>	<b>10.0</b>	<b>6.49</b>	<b>7.02</b>	<b>6.802</b>	<b>42,948</b>	<b>41,615</b>	<b>39,706</b>	<b>0.530</b>	<b>3,243</b>
51	10.6	6.485	7.015	6.800	42,918	41,601	39,675	0.530	3,243
52	11.1	6.480	7.010	6.798	42,887	41,587	39,645	0.530	3,243
53	11.7	6.475	7.005	6.795	42,857	41,573	39,614	0.530	3,243
<b>54</b>	<b>12.2</b>	<b>6.47</b>	<b>7.00</b>	<b>6.793</b>	<b>42,826</b>	<b>41,560</b>	<b>39,583</b>	<b>0.530</b>	<b>3,243</b>
55	12.8	6.468	6.998	6.790	42,814	41,540	39,571	0.530	3,243
56	13.3	6.466	6.996	6.787	42,802	41,520	39,559	0.530	3,243
57	13.9	6.464	6.994	6.783	42,789	41,501	39,547	0.530	3,243
58	14.4	6.462	6.992	6.780	42,777	41,481	39,535	0.530	3,243
<b>59</b>	<b>15.0</b>	<b>6.46</b>	<b>6.99</b>	<b>6.777</b>	<b>42,765</b>	<b>41,462</b>	<b>39,522</b>	<b>0.530</b>	<b>3,243</b>
60	15.6	6.458	6.988	6.773	42,750	41,436	39,507	0.530	3,243
61	16.1	6.455	6.985	6.769	42,734	41,410	39,492	0.530	3,243
62	16.7	6.453	6.983	6.764	42,719	41,384	39,476	0.530	3,243
<b>63</b>	<b>17.2</b>	<b>6.45</b>	<b>6.98</b>	<b>6.760</b>	<b>42,704</b>	<b>41,358</b>	<b>39,461</b>	<b>0.530</b>	<b>3,243</b>
64	17.8	6.446	6.976	6.757	42,679	41,337	39,437	0.530	3,243
65	18.3	6.442	6.972	6.753	42,655	41,316	39,412	0.530	3,243
66	18.9	6.438	6.968	6.750	42,630	41,295	39,388	0.530	3,243
67	19.4	6.434	6.964	6.746	42,606	41,274	39,363	0.530	3,243
<b>68</b>	<b>20.0</b>	<b>6.43</b>	<b>6.96</b>	<b>6.743</b>	<b>42,581</b>	<b>41,254</b>	<b>39,339</b>	<b>0.530</b>	<b>3,243</b>
69	20.6	6.426	6.956	6.740	42,557	41,233	39,314	0.530	3,243
70	21.1	6.422	6.952	6.736	42,532	41,212	39,290	0.530	3,243
71	21.7	6.418	6.948	6.733	42,508	41,191	39,265	0.530	3,243
72	22.2	6.414	6.944	6.729	42,483	41,170	39,241	0.530	3,243
73	22.8	6.410	6.940	6.726	42,459	41,150	39,216	0.530	3,243
74	23.3	6.406	6.936	6.723	42,434	41,129	39,192	0.530	3,243
75	23.9	6.402	6.932	6.719	42,410	41,108	39,167	0.530	3,243

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76	24.4	6.398	6.928	6.716	42,386	41,087	39,143	0.530	3,243
<b>77</b>	<b>25.0</b>	<b>6.39</b>	<b>6.93</b>	<b>6.710</b>	<b>42,398</b>	<b>41,052</b>	<b>39,094</b>	<b>0.540</b>	<b>3,304</b>
78	25.6	6.387	6.927	6.707	42,377	41,035	39,074	0.540	3,304
79	26.1	6.383	6.923	6.704	42,357	41,018	39,053	0.540	3,304
80	26.7	6.380	6.920	6.702	42,337	41,001	39,033	0.540	3,304
81	27.2	6.377	6.917	6.699	42,316	40,984	39,012	0.540	3,304
82	27.8	6.373	6.913	6.696	42,296	40,967	38,992	0.540	3,304
83	28.3	6.370	6.910	6.693	42,275	40,950	38,972	0.540	3,304
84	28.9	6.367	6.907	6.691	42,255	40,933	38,951	0.540	3,304
85	29.4	6.363	6.903	6.688	42,235	40,916	38,931	0.540	3,304
<b>86</b>	<b>30.0</b>	<b>6.36</b>	<b>6.90</b>	<b>6.685</b>	<b>42,214</b>	<b>40,899</b>	<b>38,910</b>	<b>0.540</b>	<b>3,304</b>
87	30.6	6.357	6.897	6.682	42,197	40,879	38,890	0.541	3,307
88	31.1	6.353	6.894	6.678	42,180	40,859	38,870	0.541	3,311
89	31.7	6.350	6.892	6.675	42,163	40,839	38,849	0.542	3,314
90	32.2	6.347	6.889	6.672	42,146	40,819	38,829	0.542	3,317
91	32.8	6.343	6.886	6.669	42,129	40,799	38,809	0.543	3,321
92	33.3	6.340	6.883	6.665	42,112	40,779	38,788	0.543	3,324
93	33.9	6.337	6.881	6.662	42,095	40,758	38,768	0.544	3,328
94	34.4	6.333	6.878	6.659	42,078	40,738	38,747	0.544	3,331
95	35.0	6.330	6.875	6.656	42,061	40,718	38,727	0.545	3,334
96	35.6	6.327	6.872	6.652	42,044	40,698	38,707	0.546	3,338
97	36.1	6.323	6.869	6.649	42,027	40,678	38,686	0.546	3,341
98	36.7	6.320	6.867	6.646	42,010	40,658	38,666	0.547	3,345
99	37.2	6.317	6.864	6.642	41,993	40,638	38,645	0.547	3,348
100	37.8	6.313	6.861	6.639	41,976	40,618	38,625	0.548	3,351
101	38.3	6.310	6.858	6.636	41,959	40,598	38,605	0.548	3,355
102	38.9	6.307	6.856	6.633	41,942	40,578	38,584	0.549	3,358
103	39.4	6.303	6.853	6.629	41,925	40,558	38,564	0.549	3,362

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<b>104</b>	<b>40.0</b>	<b>6.30</b>	<b>6.85</b>	<b>6.626</b>	<b>41,908</b>	<b>40,538</b>	<b>38,543</b>	<b>0.550</b>	<b>3,365</b>
105	40.6	6.297	6.847	6.622	41,888	40,515	38,523	0.550	3,365
106	41.1	6.293	6.843	6.619	41,868	40,493	38,503	0.550	3,365
107	41.7	6.290	6.840	6.615	41,847	40,471	38,482	0.550	3,365
108	42.2	6.287	6.837	6.611	41,827	40,448	38,462	0.550	3,365
109	42.8	6.283	6.833	6.608	41,806	40,426	38,441	0.550	3,365
110	43.3	6.280	6.830	6.604	41,786	40,403	38,421	0.550	3,365
111	43.9	6.277	6.827	6.600	41,766	40,381	38,401	0.550	3,365
112	44.4	6.273	6.823	6.597	41,745	40,358	38,380	0.550	3,365
113	45.0	6.270	6.820	6.593	41,725	40,336	38,360	0.550	3,365
114	45.6	6.267	6.817	6.589	41,704	40,314	38,339	0.550	3,365
115	46.1	6.263	6.813	6.586	41,684	40,291	38,319	0.550	3,365
116	46.7	6.260	6.810	6.582	41,664	40,269	38,299	0.550	3,365
117	47.2	6.257	6.807	6.578	41,643	40,246	38,278	0.550	3,365
118	47.8	6.253	6.803	6.575	41,623	40,224	38,258	0.550	3,365
119	48.3	6.250	6.800	6.571	41,602	40,201	38,238	0.550	3,365
120	48.9	6.247	6.797	6.567	41,582	40,179	38,217	0.550	3,365
121	49.4	6.243	6.793	6.564	41,562	40,157	38,197	0.550	3,365
<b>122</b>	<b>50.0</b>	<b>6.24</b>	<b>6.79</b>	<b>6.560</b>	<b>41,541</b>	<b>40,134</b>	<b>38,176</b>	<b>0.550</b>	<b>3,365</b>

= Baseline Temperature/Density Conditions  
 Numbers in Bold = Fixed Values from Original GAC Document

Avg Decrease / 10°F @ Typ Density: 205  
 Avg Decrease / 5°C @ Typ Density: 186