

# BRIEF SUMMARY: CARB Phase 3 Gasoline Specifications and Test Methods

revised 3/4/14

This summary is not a legal document and is not intended to be used in lieu of the regulations but as an aid to understanding the specifications of the regulated fuel properties.

CCR Section	Gasoline Parameter	Test Method	Flat	Averaging (DAL)	Cap	CARBOB Cap Limits	Units	Reproducibility
2262 & 2262.3	Aromatic HC Content	<u>ASTM D5580-02 (2007)</u>	25.0 <sup>a</sup>	22.0	35.0	38.7	v%	0.2619(x <sup>0.5</sup> ) x = vol%
2262 & 2262.3	Benzene Content	<u>ASTM D5580-02 (2007)</u>	0.80 <sup>a</sup>	0.70	1.10	1.22	v%	0.1087(x <sup>0.64</sup> ) x = vol%
2262 & 2262.3	Distillation, T50	<u>ASTM D86-99</u> <sup>ae1</sup>	213 <sup>a</sup>	203	220	(RVP) 232 <sup>b</sup> (non-RVP) 237 <sup>b</sup>	° F	variable
	Distillation, T90		305 <sup>a</sup>	295	330	335		
2262 & 2262.5b	Ethanol Content	<u>ASTM D4815-09 (2009)</u>	10.0	cannot average	10.0	not applicable	v%	0.23(x <sup>0.57</sup> ) x = w%
2262 & 2262.6a	MTBE Content	<u>ASTM D7754-11 (2011)</u>	cannot add <sup>c</sup> 0.05	cannot average	0.05	not applicable	v%	0.5809(x <sup>0.8476</sup> ) x = ppmw
2262 & 2262.3	Olefin Content	<u>ASTM D6550-10 (2010) (modified)</u>	6.0	4.0	10.0	11.1	v%	0.32(x <sup>0.5</sup> ) <sup>d</sup>
2262 & 2262.5	Oxygen Content	<u>ASTM D4815-09 (2009)</u> Equiv: GC/FTIR	1.8 to 2.2	cannot average	0 to 3.5 <sup>e</sup> 1.8 <sup>f</sup> to 3.5 <sup>e</sup>	not applicable	w%	EtOH: 0.23(x <sup>0.57</sup> ) x = w% (EtOH is the only oxygenate allowed)
2262 & 2262.6c	Oxygen Content (total, other than EtOH & MTBE)	<u>ASTM D7754-11 (2011)</u>	cannot add 0.06	cannot average	0.06	not applicable	w%	variable
2262 & 2262.4	Reid Vapor Pressure <sup>g,h</sup>	<u>ASTM D323-58</u> or <u>13 CCR 2297</u> Equiv: ASTM D6378-08	7.00 6.90 <sup>i</sup>	cannot average	6.40 - 7.20	5.99	psi	0.21
2262 & 2262.3	Sulfur Content	<u>ASTM D5453-93 (1993)</u> Equiv: ASTM D4045-96 Equiv: ASTM D7039-04	20	15	20	21	ppm	0.2217(x <sup>0.92</sup> )
2257	Deposit Control Additive	Specifications are listed in the individual deposit control additive certifications.						
2253.4	Lead Content	<u>ASTM D3237-79</u> or XRF Method	0.05	cannot average	0.05	0.05	gm/gal	0.01
2254	Manganese Content	None specified; XRF Method	cannot add	cannot average	cannot add	cannot add	ppm	not applicable
2253.4	Phosphorus Content	<u>ASTM D3231-73</u>	0.005	cannot average	0.005	0.005	gm/gal	0.0005

See Sections 2261, 2264, 2264.2, 2265, 2265.5, and 2266 for ethanol emission reduction, averaging, PM emissions offsetting, PM formulations, and test certified formulations, respectively.

a = small refiner limits are 35.0 for aromatic HC, 1.00 for benzene, 220 for T50, 312 for T90.

b = limits for RVP and non-RVP season gasoline.

c = a California production facility may use a supplied blending component with an MTBE content of 0.60 % volume or less in the production of California gasoline.

d = x is between 0.3 and 25 m% olefin. Conversion from m% to v% is: (v% olefin) = (0.857)(m% olefin).

e = cap limit is 3.7 w% if oxygen is >3.5 w% **and** ethanol content is ≤ 10 v%.

f = 1.8% winter minimum applies Nov. 1 to Feb. 29 in the South Coast Area and Imperial County.

Note 1: for reproducibility, x = test result.

Note 2: values are maximums unless otherwise indicated.

g = beginning and ending at different times of the year according to air basin (generally March through October).

h = for CARBOB final blends, a minimum RVP limit applies for producers and importers during non-RVP season.

i = applies when evap element of predictive model is used; RVP cap limit = 7.20.

Note 3: underline = current CARB enforcement test method.