LEV III Workshop
E10 Certification Fuel

July 19, 2010

California Environmental Protection Agency

Air Resources Board

E10 Certification Fuel

- Will be proposed with the LEVIII rulemaking later this year
- E10 cert fuel based on in-use data accumulated by enforcement division
  - Used Predictive Model submissions by producers
- Dataset made up of approximately 600 different formulations
- Goal was to make certification fuel representative of current in-use E10 fuel

E10 Certification Fuel

Fuel Property	MTBE	E10	Test Method[a]
Octane (R+M)/2 (min)	91	87.0-88.4[b])	D 2699-88, D 2700-88
Distillation Range °F 10 pct. point 50 pct. point 90 pct. point	 130-150 200-210 290-300	 130-150 205-215 310-320	D 86-99aε1[c]
Sulfur, ppm by wt	30-40	8-11	D 2622-94 or D 5453-93[c]
RVP, psi	6.7-7.0	6.9-7.2	D 323-58[c]
Olefins, vol %	4.0-6.0	4.0-6.0	D 6550-00[c]
Total Aromatic Hydrocarbons, vol%	22-25	19.5-22.5	D 5580-00[c]
Multi-Substituted Alkly Aromatic Hydrocarbons, vol% (max)	12-14	13-15	See method below[d]
Benzene, vol %	0.08-1.0	0.6-0.8	D 5580-00[c]
Methyl tertiary-butyl ether, vol % (max)	10.8-11.2	0.05	D 4815-04[c]
Ethanol, vol %	--	9.75-10.25	D 4815-04[c]
Total Oxygen, wt%	--	3.3-3.7	D 4815-04[c]

E10 Certification Fuel

Fuel Property	MTBE	E10	Test Method
Sensitivity (min)	7.5	7.5	D 2699-88, D 2700-88
Residue, vol% (max)	2.0	2.0	D 86-99aε1(c)
Phosphorous, g/gal (max)	0.005	0.005	D 3231-73(c)
EP, maximum	390	390	D 86-99aε1(c)
Lead, g/gal (max) (No lead added)	0-0.01	0-0.01	D 3237-79(c)
Additives: Sufficient to meet requirements of Title 13, CCR §2257			
Copper Corrosion	No. 1	No. 1	D 130-88
Gum, Washed, mg/100 ml (max)	3.0	3.0	D 381-86
Oxidation Stability, minutes (min)	1000	1000	D 525-88
Specific Gravity	Report	Report	
Heat of Combustion	Report	Report	
Carbon, wt%	Report	Report	
Hydrogen, wt%	Report	Report	

E10 Certification Fuel Footnotes

- (a) ASTM specification unless otherwise noted. A test method other than that specified may be used following a determination by the Executive Officer that the other method produces results equivalent to the results with the specified method.
- (b) For vehicles/engines that require the use of premium fuel as part of their warranty, the Octane ((R+M)/2) becomes a 91 minimum and the rest of the properties are the same.

E10 Certification Fuel Footnotes

- (c) For ease of use, the test methods referred to in Title 13 CCR §2253.4(c) and Title 13 §2263 are labeled on this table. The actual certification fuel regulation will make references to the Title 13 CCR §2253.4(c) and Title 13 §2263 for these test methods.
- (d) "Detailed Hydrocarbon Analysis of Petroleum Hydrocarbon Distillates, Reformates, and Gasoline by Single Column High Efficiency (Capillary) Column Gas Chromatography," by Neil Johansen, 1992, Boulder, CO.

E10 Certification Fuel Dataset

	RVP	ARO	BEN	OLE	SUL	T50	T90
Average	7.14	21.11	0.79	6.91	9.01	212.10	315.40
Std Dev	0.62	3.50	0.12	2.22	2.90	13.26	20.33
Range	6.5-7.2	11.2-31.8	0.48-1.1	1-10	2-19	193-220	284-330
Total # of Samples	586						

Implementation of E10 Certification Fuel

- Phase in schedule still under discussion
- E10 Certification fuel would be optional for use upon the Office of Administrative Law's filing of the LEVIII rulemaking with the Secretary of State

Open Discussion and Questions