

**EXHIBIT C**  
**AROMATICS LEVELS of EPA<sup>ct</sup> STUDY TEST FUELS**  
**vs. MARKET FUEL**

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**FUEL**  
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### Aromatics Levels in the EPAct Study Using ASTM D1319

Test Fuel #	Designed Proportion of Aromatics (%) <sup>1</sup>	Actual Proportion of Aromatics (%) <sup>2</sup>	Percentage Increase
1	15	15.4	2.67%
2	15	14.1	-6.00%
3	15	15.0	0.00%
4	15	15.5	3.33%
5	35	34.7	-0.86%
6	15	15.0	0.00%
7	15	17.0	13.33%
8	15	15.7	4.67%
9	35	35.8	2.29%
10	35	34.0	-2.86%
11	35	35.0	0.00%
12	35	34.8	-0.57%
13	35	34.1	-2.57%
14	15	16.9	12.67%
15	35	35.3	0.86%
16	35	35.6	1.71%
20	15	15.2	1.33%
21	35	35.5	1.43%
22	15	15.0	0.00%
23	15	15.9	6.00%
24	15	15.3	2.00%
25	35	35.2	0.57%
26	35	35.6	1.71%
27	15	14.9	-0.67%
28	35	34.5	-1.43%
30	35	35.5	1.43%
31	35	35.5	1.43%

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<sup>1</sup> EPA, EPAct/V2/E-89: Assessing the Effect of Five Gasoline Properties on Exhaust Emissions from Light-Duty Vehicles Certified to Tier 2 Standards: Final Report on Program Design, Appendix A: Re-Design of Fuel Matrices for EPAct Program, at A-13 (Apr. 2013) (hereinafter EPAct, Appendix A, Re-Design).

<sup>2</sup> EPA, EPAct/V2/E-89: Assessing the Effect of Five Gasoline Properties on Exhaust Emissions from Light-Duty Vehicles Certified to Tier 2 Standards: Final Report on Program Design and Data

## Aromatics Levels in the EPAct Study Using Gas Chromatography

Test Fuel #	Designed Proportion of Aromatics (%) <sup>3</sup>	Actual Proportion of Aromatics (GC) (%) <sup>4</sup>	Percentage Increase
1	15	17.5	16.78%
2	15	19.3	28.99%
3	15	16.3	8.81%
4	15	20.9	39.18%
5	35	37.9	8.43%
6	15	20.3	35.03%
7	15	18.9	26.17%
8	15	17.8	18.91%
9	35	39.4	12.69%
10	35	39.4	12.59%
11	35	38.6	10.36%
12	35	38.1	8.77%
13	35	40.3	15.02%
14	15	20.4	35.79%
15	35	36.1	3.19%
16	35	36.4	3.89%
20	15	15.6	4.00%
21	35	36.9	5.49%
22	15	15.8	5.32%
23	15	21.0	39.99%
24	15	19.3	28.92%
25	35	37.2	6.36%
26	35	36.7	4.98%
27	15	18.7	24.43%
28	35	35.5	1.32%
30	35	37.1	5.99%
31	35	37.1	5.99%

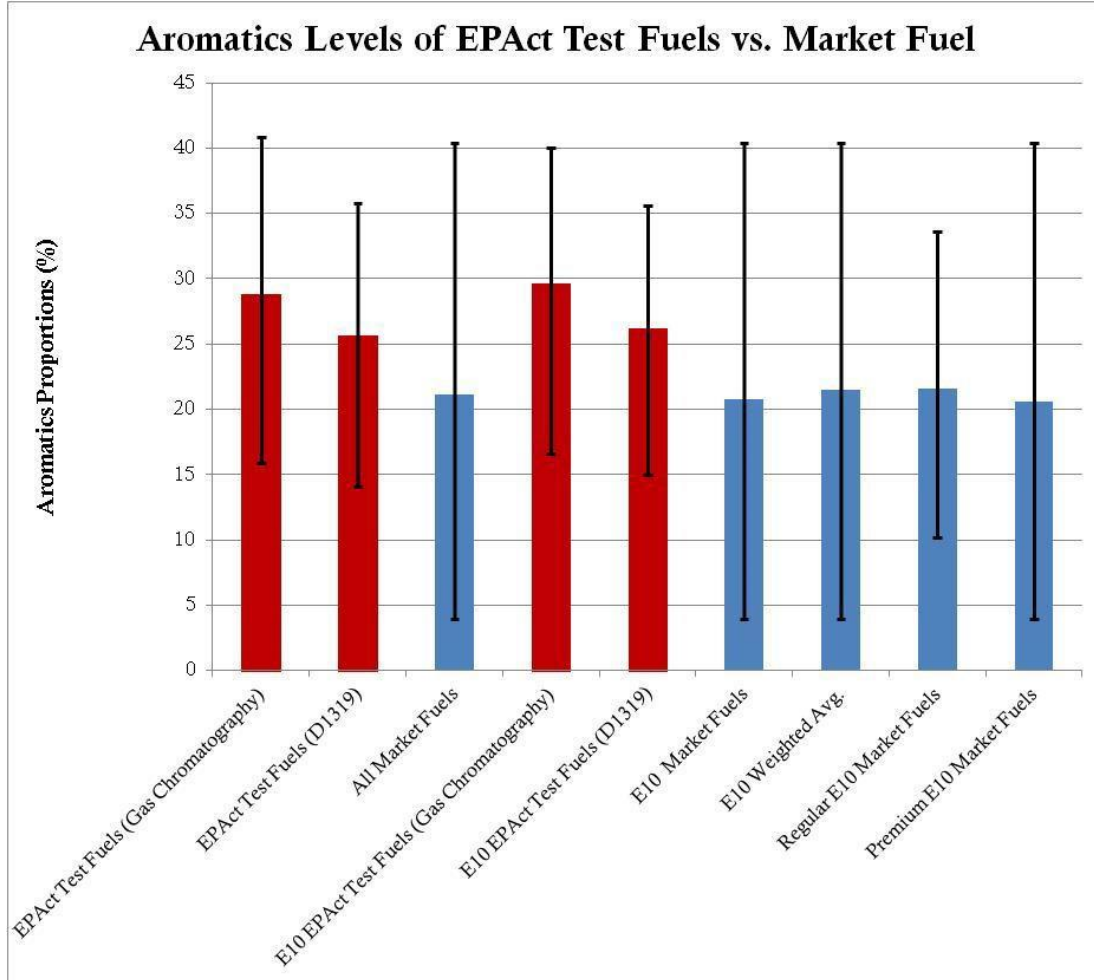
Collection 31–32 (Apr. 2013) (hereinafter EPAct, Final Report on Program Design).

<sup>3</sup> EPAct, Appendix A, Re-Design, *supra* note 1, at 13.

<sup>4</sup> Gas Chromatography is a method for isolating and measuring chemical compounds. A similar but less accurate method is ASTM D1319. *See supra*, at C-1. Aromatic proportions were calculated by totaling Mono-Aromatics, Naphthalenes, Naphtheno/Olefino-Benzs, and Indenes. EPAct Study Test Fuels, <http://bit.ly/2icji2m> (Sheet “DHA-vol%”; Rows 8–16, 109–64, and 192–96).

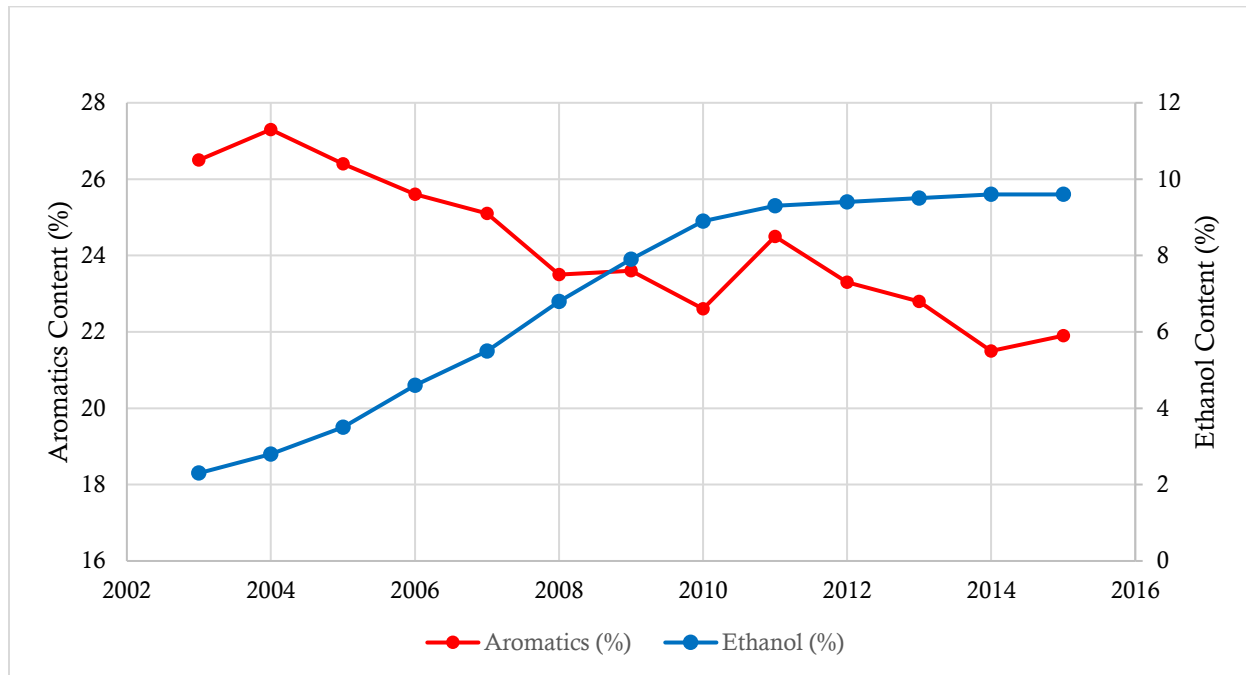
## Aromatics Levels of EPAct Study Test Fuels vs. Market Fuel<sup>5</sup>

Aromatics (%)									
	EPAct Test Fuels				E10 Market Fuels (All Cities)				
	EPAct Test Fuels (Gas Chromatography)	EPAct Test Fuels (D1319)	E10 EPAct Test Fuels (Gas Chromatography)	E10 EPAct Test Fuels (D1319)	All Market Fuels	E10 Market Fuels	E10 Weighted Avg.	Regular E10 Market Fuels	Premium E10 Market Fuels
<b>Average</b>	28.78	25.63	29.61	26.20	21.14	20.74	21.49	21.62	20.55
<b>Median</b>	35.75	34.00	36.17	34.00	21.20	21.10	----	21.40	20.85
<b>Highest</b>	40.84	35.80	40.07	35.60	40.40	40.40	40.40	33.60	40.40
<b>Lowest</b>	15.84	14.10	16.59	15.00	3.90	3.90	3.90	10.20	3.90



<sup>5</sup> “EPAct Fuels” represent the test fuels used in the EPAct study. EPAct, Final Report on Program Design, *supra* note 2, at 31–32; *see* Exhibit D, at D-4. “Market Fuels” represent U.S. fuels measured in the Alliance of Automobile Manufacturers Fuel Survey. Alliance of Automobile Manufacturers, North American Fuel Survey (Summer 2014).

## Aromatics and Ethanol Content in Market Fuel Over Time<sup>6</sup>



Year	Aromatics (%)	Ethanol (%)
2003	26.5	2.3
2004	27.3	2.8
2005	26.4	3.5
2006	25.6	4.6
2007	25.1	5.5
2008	23.5	6.8
2009	23.6	7.9
2010	22.6	8.9
2011	24.5	9.3
2012	23.3	9.4
2013	22.8	9.5
2014	21.5	9.6
2015	21.9	9.6

<sup>6</sup> Each data point represents the average aromatics or ethanol content of regular market gasoline sampled annually by the Auto Alliance nationwide, excluding Fairbanks, Alaska.