

Environmental Protection Agency

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SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
437	58.2	487	54.9	537	56.0	587	48.1	637	52.5	687	49.7	737	51.3		
438	58.1	488	55.0	538	56.0	588	48.0	638	50.2	688	50.0	738	50.5		
439	58.0	489	55.0	539	56.0	589	48.0	639	48.2	689	50.2	739	49.5		
440	57.9	490	55.0	540	56.0	590	48.1	640	46.5	690	50.6	740	48.5		
441	57.9	491	55.0	541	56.0	591	48.4	641	46.2	691	51.1	741	47.6		
442	57.9	492	55.0	542	56.0	592	48.9	642	46.0	692	51.6	742	46.8		
443	57.9	493	55.0	543	56.0	593	49.0	643	46.0	693	51.9	743	45.6		
444	57.9	494	55.1	544	56.0	594	49.1	644	46.3	694	52.0	744	44.2		
445	58.0	495	55.1	545	56.0	595	49.1	645	46.8	695	52.1	745	42.5		
446	58.1	496	55.0	546	56.0	596	49.0	646	47.5	696	52.4	746	39.2		
447	58.1	497	54.9	547	55.9	597	49.0	647	48.2	697	52.9	747	35.9		
448	58.2	498	54.9	548	55.9	598	48.9	648	48.8	698	53.3	748	32.6		
449	58.2	499	54.8	549	55.9	599	48.6	649	49.5	699	53.7	749	29.3		

[42 FR 45667, Sept. 12, 1977]

APPENDIX II TO PART 600—SAMPLE FUEL ECONOMY CALCULATIONS

HC=.139 grams/mile  
CO=1.59 grams/mile  
CO<sub>2</sub>=317 grams/mile

(a) This sample fuel economy calculation is applicable to 1978 through 1987 model year automobiles.

According to the procedure in §600.113-78, the city fuel economy or MPG<sub>c</sub>, for the vehicle may be calculated by substituting the HC, CO, and CO<sub>2</sub> grams/mile values into the following equation.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

$$MPG_c = \frac{2421}{(0.866 \times HC) + (0.429 \times CO) + (0.273 \times CO_2)}$$

$$MPG_c = \frac{2421}{(0.866 \times 1.39) + (0.429 \times 1.59) + (0.273 \times 317)}$$

MPG<sub>c</sub>=27.7

(2) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and calculation similar to that shown in paragraph (a) by this appendix

resulted in a highway fuel economy or MPG<sub>h</sub> of 36.9. According to the procedure in §600.113, the combined fuel economy (called MPG<sub>c/h</sub>) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

$$MPG_{c/h} = \frac{1}{\frac{0.55}{MPG_c} + \frac{0.45}{MPG_h}}$$

$$MPG_{c/h} = \frac{1}{\frac{0.55}{27.7} + \frac{0.45}{36.9}}$$

$$MPG_{c/h} = 31.2$$

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**40 CFR Ch. I (7-1-10 Edition)**

(b) This sample fuel economy calculation is applicable to 1988 and later model year automobiles.

(1) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

HC = .139 grams/mile.  
 CO = 1.59 grams/mile.  
 CO<sub>2</sub> = 317 grams/mile.

(2) Assume that the test fuel used for this test had the following properties:

SG = 0.745.  
 CWF = 0.868.  
 NHV = 18,478 Btu/lb.

(3) According to the procedure in §600.113-08, the city fuel economy or MPG<sub>c</sub>, for the vehicle may be calculated by substituting the HC, CO, and CO<sub>2</sub> gram/mile values and the SG, CWF, and NHV values into the following equation:

$$\text{MPG}_c = (5174 \times 10^4 \times \text{CWF} \times \text{SG}) / [(\text{CWF} \times \text{HC}) + (0.429 \times \text{CO} + (0.273 \times \text{CO}_2)) (0.6 \times \text{SG} \times \text{NHV}) + 5471]$$

Example:

$$\text{MPG}_c = (5174 \times 10^4 \times 0.868 \times 0.745) / [(0.868 \times .139 + 0.429 \times 1.59 + 0.273 \times 317)(0.6 \times 0.745 \times 18478 + 5471)]$$

$$\text{MPG}_c = 27.9$$

(4) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and a calculation similar to that shown in (b)(3) of this section resulted in a highway fuel economy of MPG<sub>h</sub> of 36.9. According to the procedure in §600.210(c), the combined fuel economy (called MPG<sub>comb</sub>) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

$$\text{MPG}_{\text{comb}} = \frac{1}{\frac{0.55}{\text{MPG}_c} + \frac{0.45}{\text{MPG}_h}}$$

$$\text{MPG}_{\text{comb}} = \frac{1}{\frac{0.55}{27.9} + \frac{0.45}{36.9}}$$

$$\text{MPG}_{\text{comb}} = 31.3$$

[51 FR 37852, Oct. 24, 1986, as amended at 71 FR 77958, Dec. 27, 2006]

**APPENDIX III TO PART 600—SAMPLE FUEL ECONOMY LABEL CALCULATION**

Suppose that a manufacturer called Mizer Motors has a product line composed of eight car lines. Of these eight, four are available with the 3.0 liter, 6 cylinder, sequential multi-point fuel injection, 4-valve per cylinder, and 3-way catalyst engine. These four car lines are:

- Ajax
- Boredom III
- Dodo
- Castor (Station Wagon)

A. A car line is defined in subpart A (with additional guidance provided in EPA Advisory Circular 89) as a group of vehicles within a make or division which has a degree of commonality in construction. Car line does not consider any level of decor or opulence and is not generally distinguished by such characteristics as roofline, number of doors, seats, or windows. Station wagons and light duty trucks are, however, identified separately from the remainder of each car line. In other words, a Castor station wagon would be considered a different car line than the normal Castor car line made up of sedans, coupes, etc.

B. The engine considered here is defined as a basic engine in subpart A of this part (with

additional guidance provided in EPA Advisory Circular 83A). A basic engine is a unique combination of manufacturer, engine displacement, number of cylinders, fuel system, catalyst usage and other engine and emission control system characteristics specified by the Administrator. A model type is a unique combination of car line, basic engine, and transmission class. Thus Ajax is a car line but Ajax 3.0 liter, 6 cylinder manual four-speed transmission is a model type whereas Ajax 3.0 liter, 6 cylinder automatic three-speed transmission is a different model type.

C. The following calculations provide an example of the procedures described in subpart C of this part for the calculation of vehicle configuration and model type fuel economy values. In order to simplify the presentation, only city fuel economy values are included (as determined by either the derived 5-cycle method or vehicle-specific 5-cycle based method). The procedure is identical for highway and combined fuel economy values.

Step I. Input data as supplied by the manufacturer or as determined from testing conducted by the Administrator.