

The first proposed regulation was posted on June 24, 2016 with proposed added text shown with a single underline and proposed deletions with a ~~single strikethrough~~.

Following the public comment period that ended on August 11, 2016, modifications to the proposed regulation were drafted. Proposed new additions are shown in Double Underline. Text with single underline and strikethrough was a proposed addition to the current regulation now proposed to be deleted from the modified regulation.

**DEPARTMENT OF FOOD AND AGRICULTURE
DIVISION OF MEASUREMENT STANDARDS**

Title 4, Division 9, Chapter 6. Automotive Product Specifications

Article 10. Specifications for Natural Gas Used as a Motor Vehicle Fuel.

4192. Definitions Used in This Article.

(a) Natural gas means a mixture of hydrocarbon compounds consisting of primarily methane in the form of a compressed gas or a cryogenic liquid intended for use as a motor vehicle fuel.

(b) Methane Number means a rating expressing the resistance to auto ignition (knock) of a gaseous fuel. The Methane Number of a gaseous fuel is determined by its composition, including inert components.

(c) Butanes means hydrocarbons with molecular formula C_4H_{10} and C_4H_8 .

(d) Pentanes means hydrocarbons with molecular formula C_5H_{12} and C_5H_{10} .

(e) C6+ hydrocarbons means aliphatic hydrocarbons containing six or more carbon atoms.

(f) MWM Method means the method of calculation of the Methane Number of a natural gas fuel from its composition. The MWM Method is presented in in the latest version of CEN EN16726 standard "Gas infrastructure – Quality of gas – Group H".

(gb) Wobbe Index means the ratio of the higher heating value of a gaseous fuel at specified reference conditions and the square root of its relative density at the same reference conditions.

4193. Specifications for Natural Gas Used as a Motor Vehicle Fuel.

Effective January 1, 2018, natural gas fuel sold for use in internal combustion engines shall meet the requirements of the latest version of SAE International J1616 "Standard for Compressed Natural Gas Vehicle Fuel."

The following table summarizes the specifications included in SAE J1616 and test methods for their determination. The latest version of SAE J1616 provides the units with minimum and/or maximum values for each specification.

<u>Specification</u>	<u>Test Method</u>
<u>Wobbe Index</u>	<u>ASTM 3588 or ISO 6976</u>
<u>Water Dew Point</u>	<u>ASTM D1142, D5454 or equivalent</u>
<u>Methane</u>	<u>ASTM D1945 or D7833</u>
<u>Ethane</u>	<u>ASTM D1945 or D7833</u>
<u>C3 and higher hydrocarbons</u>	<u>ASTM D1945 or D7833</u>
<u>C6 and higher hydrocarbons</u>	<u>ASTM D1945 or D7833</u>
<u>Hydrogen</u>	<u>ASTM D2650, D1945 or D7833</u>
<u>Carbon monoxide</u>	<u>ASTM D2650, D1945 or D7833</u>
<u>Oxygen</u>	<u>ASTM D1945 or D7833</u>
<u>Sum of CO₂ and N₂</u>	<u>ASTM D1945 or D7833</u>
<u>Total Sulfur (includes odorant)</u>	<u>ASTM D4084, D4810, D4468, D5504, D6228, D6968, or D7551</u>
<u>Hydrogen Sulfide</u>	<u>ASTM D4084, D4810, D4468, D5504, D6228, or D7551</u>
<u>Particulate size</u>	<u>None specified</u>
<u>Silicon</u>	<u>None specified</u>

Other applications: Natural gas not sold as a motor vehicle fuel is exempt from these fuel quality specifications.

NOTE: Authority cited: Sections 12027 and 13446, Business and Professions Code. Reference: Sections 13400 (b) (9), 13400 (c), 13400 (g), 13400 (p), 13400 (t), 13413 (a), 13413 (b)(1), 13440, 13591, 13592 and 13595 (a), Business and Professions Code.

Natural gas fuel sold for the use in internal combustion engine shall meet the following requirements:

(a) Methane Number. The Methane Number (MN) shall be calculated by the method published in the latest version of CEN EN16726 standard “Gas infrastructure - Quality of gas – Group H” (MWM Method).

(b) Minimum Methane Number. Beginning January 1, 2017: Natural gas sold as a motor vehicle fuel shall have a minimum MWM Methane Number of 75.

(c) Wobbe Index (Higher Heating Value). All natural gas sold as a motor vehicle fuel shall have a Wobbe Index range of 46-53 MJ/m³.

(d) Limits for Contaminants in Natural Gas Motor Vehicle Fuel.

<u>Specification</u>	<u>Units</u>	<u>Maximum Value</u>
<u>Ammonia</u>	<u>ppmv</u>	<u>0.1</u>
<u>Water</u>	<u>ppmv</u>	<u>100</u>
<u>Total Sulfur (includes odorant)</u>	<u>ppmv</u>	<u>15</u>
<u>Hydrogen Sulfide and Carbonyl Sulfide as sulfur</u>	<u>ppmv</u>	<u>5</u>
<u>Halogen compounds</u>	<u>ppmv</u>	<u>0.1</u>
<u>Particulate size</u>	<u>µm</u>	<u>10</u>
<u>Maximum Particulates</u>	<u>mg/kg</u>	<u>10</u>

(e) Other applications. Natural gas not sold as a motor vehicle fuel is exempt from these fuel quality specifications.

(f) This specification is an interim standard for natural gas sold for use as a motor vehicle fuel. Once an American National Standards Institute (ANSI) accredited standards writing organization has published a natural gas fuel standard, the Department is required by law to formally adopt that standard by reference. Except that no specification shall be less stringent than required by any California State Law.