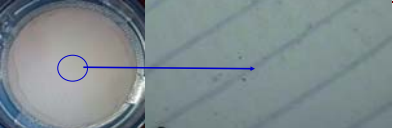


# SAE J2719-202003

# California H<sub>2</sub>

Constituent	SAE J2719 Limits - µmol/mol	Smart Chemistry Limits - µmol/mol	Concentration (µmol/mol)
<b>H<sub>2</sub>O</b> (ASTM D7649)	<b>5</b>	<b>0.5</b>	<b>0.938</b>
<b>Total hydrocarbons</b> except methane (C <sub>1</sub> equivalent) (ASTM D7892)	<b>2</b>	<b>0.01</b>	<0.01
<b>O<sub>2</sub></b> (ASTM D7649)	<b>5</b>	<b>0.01</b>	< 0.01
<b>CH<sub>4</sub></b> (ASTM D5466)	<b>100</b>	<b>0.001</b>	<b>0.0050</b>
<b>He</b> (ASTM D1946)	<b>300</b>	<b>10</b>	<b>47</b>
<b>N<sub>2</sub></b> (ASTM D7649)	<b>300</b>	<b>5</b>	< 5
<b>Ar</b> (ASTM D7649)	<b>300</b>	<b>0.2</b>	<b>1.7</b>
<b>CO<sub>2</sub></b> (ASTM D7649)	<b>2</b>	<b>0.02</b>	< 0.02
<b>CO</b> (ASTM D5466)	<b>0.2</b>	<b>0.0003</b>	<b>0.00033</b>
<b>Total S</b> (ASTM D7652)	<b>0.004</b>		<b>0.0000028</b>
<b>H<sub>2</sub>S</b> Hydrogen Sulfide		<b>0.000002</b>	<b>0.000002</b>
<b>COS</b> Carbonyl Sulfide		<b>0.000002</b>	<b>0.0000008</b>
<b>CH<sub>3</sub>SH</b> Methyl Mercaptan		<b>0.000002</b>	< 0.000002
<b>CH<sub>3</sub>CH<sub>2</sub>SH</b> Ethyl Mercaptan		<b>0.000004</b>	< 0.000004
<b>CH<sub>3</sub>SCH<sub>3</sub></b> Dimethyl Sulfide		<b>0.000004</b>	< 0.000004
<b>CS<sub>2</sub></b> Carbon Disulfide		<b>0.000001</b>	< 0.000001
<b>(CH<sub>3</sub>)<sub>2</sub>CHSH</b> Isopropyl Mercaptan		<b>0.000004</b>	< 0.000004
<b>(CH<sub>3</sub>)<sub>3</sub>SH</b> Tert-Butyl Mercaptan		<b>0.000004</b>	< 0.000004
<b>CH<sub>3</sub>(CH<sub>2</sub>)<sub>2</sub>SH</b> n-Propyl Mercaptan		<b>0.000004</b>	< 0.000004
<b>(CH)<sub>4</sub>S</b> Thiophene		<b>0.000004</b>	< 0.000004
<b>(CH<sub>3</sub>CH<sub>2</sub>)<sub>2</sub>S</b> Diethyl Sulfide		<b>0.000004</b>	< 0.000004
<b>CH<sub>3</sub>(CH<sub>2</sub>)<sub>3</sub>SH</b> n-Butyl Mercaptan		<b>0.000004</b>	< 0.000004
<b>CH<sub>3</sub>SSCH<sub>3</sub></b> Dimethyl Disulfide		<b>0.000004</b>	< 0.000004
<b>(CH<sub>2</sub>)<sub>4</sub>S</b> Tetrahydrothiophene		<b>0.000004</b>	< 0.000004
<b>HCHO</b> (Formaldehyde, ASTM D7892)	<b>0.2</b>	<b>0.002</b>	< 0.002
<b>HCOOH</b> (Formic Acid, ASTM D5466)	<b>0.2</b>	<b>0.0005</b>	< 0.0005
<b>NH<sub>3</sub></b> (Ammonia, ASTM D5466)	<b>0.1</b>	<b>0.004</b>	< 0.004
<b>Halogenated</b> Compounds (halogen ion equivalent)	<b>0.05</b>		< 0.001
<b>Cl<sub>2</sub></b> (ASTM D5466)		<b>0.0004</b>	< 0.0004
<b>HCl</b> (ASTM D5466)		<b>0.0004</b>	< 0.0004
<b>HBr</b> (ASTM D5466)		<b>0.0007</b>	< 0.0007
<b>R-XCl</b> Organic Halides (ASTM D7892, Smart Chemistry limit is for each individual organic halide)			< 0.001
<b>Particulate Concentration</b> (SAE J2719 Limit: 1 mg/kg) (ASTM D7651) <b>Particulates Found &amp; Size</b> (ASTM D7634)			<b>0.19 mg/kg</b>  There are total 15 particulates found in the center (sizes in micrometer) - 247, 177, 127, 96, 64, 57, 45, 29 (3), 23 (3), 14 (2). However, many particulates found at edge of the filter and internal inlet end of particulate filter holder
<b>Hydrogen Fuel Index</b>	<b>99.97%</b>		<b>99.995022%</b>
<b>Total Non-Hydrogen Gases</b>	<b>300</b>		<b>49.8</b>
<b>CO + HCHO + HCOOH</b>	<b>0.2</b>	<b>0.00005</b>	<b>0.00033</b>