

# **Industrial Boilers**

**Table I  
Identification of Performance Standards  
Source Category: Industrial Boilers**

Regulated Component	Pollutant	Rule/Measure/Date								
		Santa Barbara 342, Control of Oxides of Nitrogen (NO <sub>x</sub> ) from Boilers, Steam Generators and Process Heaters, Amended 4/17/97	Yolo-Solano 2.27, Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, Amended 8/14/96	Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters, CARB, 7/18/91						
		Performance Standard								
Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters	NO <sub>x</sub>		30 ppm @ 3% oxygen on a dry basis, 10 minute avg, gaseous fuel		30 ppm @ 3% oxygen on a dry basis, 15 minute avg, gaseous fuel		30 ppm @ 3% oxygen on a dry basis, 15 minute avg, gaseous fuel			
		x	40 ppm @ 3% oxygen on a dry basis, 10 minute avg, nongaseous fuel	x	40 ppm @ 3% oxygen on a dry basis, 15 minute avg, nongaseous fuel		40 ppm @ 3% oxygen on a dry basis, 15 minute avg, nongaseous fuel			
	CO		400 ppm		400 ppm		400 ppm			

**Table II  
Identification of Performance Standards  
Source Category: Industrial Boilers**

Rule/Measure	Rule/Measure				
	Santa Barbara 342	Yolo-Solano 2.27	Determination		
<b>Exemptions</b>	<p>1. Boilers used by electric utilities to generate electricity</p> <p>2. Process heaters, kilns, and furnaces where the products of combustion come into direct contact with the material to be heated</p> <p>3. Waste heat recovery boilers that are used to recover heat from the exhaust of combustion turbines or reciprocating internal combustion engines</p> <p>4. Equipment that does not require a permit under the provisions of SB Rule 202</p> <p>5. Boilers while forced to burn nongaseous fuel during times of natural gas curtailment. This exemption shall not exceed 168 cumulative hours of operation per calendar year excluding equipment testing time not exceeding 24 hours per calendar year.</p> <p>6. Units with permitted annual heat input of less than 9,000 million Btu which are either (a) operated in a manner that maintains stack-</p>	<p>1. Boilers used by electric utilities to generate electricity</p> <p>2. Process heaters used less than 250 hours per year</p> <p>3. Dryers in which a material is being dried while in direct contact with the products of combustion</p> <p>4. Cement and lime kilns, glass melting furnaces and smelters</p> <p>5. Waste heat recovery boilers that are used to recover heat from the exhaust of combustion turbines</p> <p>6. If gas is unavailable for purchase, units which normally burn only gas shall comply with a NOx emission limit not to exceed 0.6 lbs/mmbtu when burning nongaseous fuel according to the following equation: (lbs/mmbtu NOx emission rate)x(hours of operation per calendar year) &lt; 36.12</p> <p>7. Units with annual heat input of less than 9,000 million Btu for each of the three previous calendar years which are either (a) operated</p>	<p>1. Boilers used by electric utilities to generate electricity</p> <p>2. Dryers in which a material is being dried while in direct contact with the products of combustion</p> <p>3. Waste heat recovery boilers that are used to recover heat from the exhaust of combustion turbines</p> <p>4. Cement and lime kilns, glass melting furnaces and smelters</p> <p>5. Units which normally burn only gas shall comply with a 150 ppm NOx emission limit when burning nongaseous fuel, if gas is unavailable for purchase. This exemption shall not exceed 168 cumulative hours of operation per calendar year excluding equipment testing time not exceeding 48 hours per calendar year.</p> <p>6. Units with annual heat input of less than 9,000 million Btu for each of the three previous calendar years which are either (a) operated in a manner that maintains</p>		

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Rule/Measure	Rule/Measure				
	Santa Barbara 342	Yolo-Solano 2.27	Determination		
	gas oxygen concentrations at less than 3.00 percent by volume on a dry basis or (b) operated with a stack-gas oxygen trim system set at 3.00 ± 0.15 percent oxygen by volume on a dry basis or (c) tuned at least once every 12 months	in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis or (b) tuned at least once every 12 months	stack-gas oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis or (b) operated with a stack-gas oxygen trim system set at 3.00 ± 0.15 percent oxygen by volume on a dry basis or (c) tuned at least once every 12 months		
<b>Applicability</b>	Boilers, steam generators, and process heaters with rated heat inputs greater than or equal to 5 million Btu per hour used in all industrial, institutional, and commercial operations	Boilers, steam generators, and process heaters with rated heat inputs greater than or equal to 5 million Btu per hour used in all industrial, institutional, and commercial operations	Boilers, steam generators, and process heaters with rated heat inputs greater than or equal to 5 million Btu per hour used in all industrial, institutional, and commercial operations		

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<b>Comments</b>	<p>Most districts' large boiler rules require the same performance standards. This rule was chosen because it has the fewest exemptions.</p>	<p>Most districts' large boiler rules require the same performance standards. This rule was chosen because it has few exemptions.</p> <p>Pursuant to H &amp; S section 40728.5(c), Yolo-Solano is not required to perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of any District rule or regulation.</p>	<p>Economic impacts are the capital cost of emission control equipment and the increased operating cost associated with emission control equipment. If combustion equipment is operated with lower excess air after, or instead of, retrofitting control equipment; there will be a cost benefit due to increased thermal efficiency.</p>		