

US EPA ARCHIVE DOCUMENT

EPA's New Marine Diesel Standards (p.1 of 2)

New Marine Diesel Standards: Standard Power Density Commercial

Category 1 <75kW	Displacement L/cyl		Tier 2		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019				
			g/kW-hr	g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr	g/kW-hr g/hp-hr				
see note 5:	<0.9	PM	0.80	0.60	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30	0.40 0.30				
	<19 kW	NOx+HC	7.5	5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6				
	<0.9	PM	0.6/0.4	0.30/0.45	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22	0.30 0.22				
	19 - <75kW	NOx+HC	7.5	5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	7.5 5.6	4.7 3.5	4.7 3.5	4.7 3.5	4.7 3.5	4.7 3.5	4.7 3.5				
Category 1 75-600kW	<0.9	PM	0.40	0.30				0.14 0.10	0.14 0.10	0.14 0.10	0.14 0.10	0.14 0.10	0.14 0.10	0.14 0.10	0.14 0.10				
		NOx+HC	7.5	5.6				5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0				
	0.9 - <1.2	PM	0.30	0.22				0.12 0.09	0.12 0.09	0.12 0.09	0.12 0.09	0.12 0.09	0.12 0.09	0.12 0.09	0.12 0.09				
		NOx+HC	7.2	5.4				5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0	5.4 4.0				
	1.2 - <2.5	PM	0.20	0.15						0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.10 0.07	0.10 0.07				
		NOx+HC	7.2	5.4						5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2				
2.5 - <3.5	PM	0.20	0.15					0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.10 0.07	0.10 0.07				
	NOx+HC	7.2	5.4					5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2	5.6 4.2				
3.5 - <7.0	PM	0.20/0.27	0.15/0.20				0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.11 0.08	0.10 0.07	0.10 0.07				
	NOx+HC	7.2/7.8	5.4/5.8				5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3	5.8 4.3				
Category 1 600-3700 kW	all	PM NOx	Same Tier 2 & 3 standards, displacement categories, and start dates as for 75-600 kW (see note 6)										600 - <1400 kW: see note 3:		0.04 0.03 1.8 1.3	0.04 0.03 1.8 1.3	0.04 0.03 1.8 1.3		
		PM NOx											1400-2000 kW:		0.04 0.03 1.8 1.3	0.04 0.03 1.8 1.3	0.04 0.03 1.8 1.3		
		PM NOx											2000-3700 kW (see note 6):		1.8 1.3	1.8 1.3	1.8 1.3		
Category 2 <3700 kW	7.0 - <15.0	PM NOx+HC	0.27 7.8	0.20 5.8					0.14 6.2	0.10 4.6	0.14 6.2	0.10 4.6	Tier 4 standards and start dates for 600-3700 kW Category 2 engines are the same as those for Category 1 600-3700 kW (including see note 6)						
	15.0 - <20.0	PM NOx+HC	0.50 8.7	0.37 6.5						0.34 7.0	0.25 5.2	0.34 7.0				0.25 5.2			
	15.0 - <20.0	PM NOx+HC	0.50 9.8	0.37 7.3						0.27 8.7	0.20 6.5	0.27 8.7				0.20 6.5			
	20.0 - <25.0	PM NOx+HC	0.50 9.8	0.37 7.3						0.27 9.8	0.20 7.3	0.27 9.8				0.20 7.3			
	25.0 - <30.0	PM NOx+HC	0.50 11.0	0.37 8.2						0.27 11.0	0.20 8.2	0.27 11.0				0.20 8.2			
>=3700 kW	<15.0	PM NOx+HC	0.27 7.8	0.20 5.8				see note 2:		0.12 1.8	0.09 1.3	0.12 1.8	0.09 1.3	see note 4:		0.06 1.8	0.04 1.3	0.06 1.8	0.04 1.3
	>=15.0	PM NOx+HC	0.50 same as for <3700 kW							0.25 1.8	0.19 1.3	0.25 1.8	0.19 1.3	see note 4:		0.06 1.8	0.04 1.3	0.06 1.8	0.04 1.3

Notes:

- option for 19-75 kW starting in 2014: 0.20 and 5.8 g/kW-hr (0.15 and 4.3 g/hp-hr) PM and NOx+HC.
- option for C2 >1400kW: Tier 3 in 2012: 0.14/7.8 g/kW-hr PM/NOx+HC; Tier 4 in 2015, including 0.06 PM for >3700kW.
- manufacturer may delay compliance within indicated 2017 compliance model year: to 10/1/2017 for 600-1000 kW
- manufacturer may delay compliance within the indicated 2016 compliance model year: to 12/31/2016
- any <75 kW engines with displacement above 0.9 L/cyl are subject to corresponding 75-600 kW standards
- Tier 3 PM standards/dates apply for 2000-3700 kW, but not Tier 3 NOx+HC (Tier 2 NOx+HC levels apply through 2013)

1st MY for new standards are boxed in red

Tier 2

Tier 3

Tier 4

EPA's New Marine Diesel Standards (p.2 of 2)

New Marine Diesel Standards: High Power Density (≥ 35 kW/L) Commercial & Recreational

Category 1 <75kW	Displacement L/cyl	Tier 2 g/kW-hr g/hp-hr	2009	2010	2011	2012 g/kW-hr g/hp-hr	2013 g/kW-hr g/hp-hr	2014 g/kW-hr g/hp-hr	2015 g/kW-hr g/hp-hr	2016 g/kW-hr g/hp-hr	2017 g/kW-hr g/hp-hr	2018 g/kW-hr g/hp-hr	2019 g/kW-hr g/hp-hr		
	<0.9 PM <19 kW NOx+HC see note 1: <0.9 PM 19 - <75kW NOx+HC	same as for <i>standard</i> power density engines													
Category 1 75-600kW	<0.9 PM NOx+HC	0.40 0.30 7.5 5.6				0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3	0.15 0.11 5.8 4.3		
	0.9 - <1.2 PM NOx+HC	0.30 0.22 7.2 5.4				0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3	0.14 0.10 5.8 4.3		
	1.2 - <2.5 PM NOx+HC	0.20 0.15 7.2 5.4					0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3		
	2.5 - <3.5 PM NOx+HC	0.20 0.15 7.2 5.4				0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3	0.12 0.09 5.8 4.3		
	3.5 - <7.0 PM NOx+HC	0.20/0.27 0.15/0.20 7.2/7.8 5.4/5.8				0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0	0.12 0.09 5.4 4.0		
Category 1 >=600kW	all	Tier 2 and 3 standards and dates are the same as for high power density 75-600 kW engines (except see note 6 on standard power density summary)												Tier 4 standards and dates are the same as for <i>standard</i> power density engines (except no Tier 4 for recreational)	

Notes:

1) any <75 kW engines with displacement above 0.9 L/cyl are subject to the corresponding 75-600 kW standards

Tier 2

Tier 3

Tier 4

1st MY for new standards are boxed in red