

## Emission Standards of European Union – Non Road Diesel Engine

### Stage I/II Standards

Stage I and Stage II emissions shall not exceed the amount shown in Table 1. The Stage I emissions are engine-out limits and shall be achieved before any exhaust aftertreatment device.

Table 1 EU Stage I/II Emission Standards for Nonroad Diesel Engines						
Cat.	Net Power	Date*	CO	HC	NO <sub>x</sub>	PM
	kW		g/kWh			
<b>Stage I</b>						
A	130 ≤ P ≤ 560	1999.01	5.0	1.3	9.2	0.54
B	75 ≤ P < 130	1999.01	5.0	1.3	9.2	0.70
C	37 ≤ P < 75	1999.04	6.5	1.3	9.2	0.85
<b>Stage II</b>						
E	130 ≤ P ≤ 560	2002.01	3.5	1.0	6.0	0.2
F	75 ≤ P < 130	2003.01	5.0	1.0	6.0	0.3
G	37 ≤ P < 75	2004.01	5.0	1.3	7.0	0.4
D	18 ≤ P < 37	2001.01	5.5	1.5	8.0	0.8
* Stage II also applies to constant speed engines effective 2007.01						

A sell-off period of up to two years is allowed for engines produced prior to the respective market placement date. Since the sell-off period—between zero and two years—is determined by each Member State, the exact timeframe of the regulations may be different in different countries.

Emissions are measured on the ISO 8178 C1 8-mode cycle and expressed in g/kWh. Stage I/II engines are tested using fuel of 0.1-0.2% (wt.) sulfur content.

### Stage III/IV Standards

Stage III standards—which are further divided into two sub-stages: Stage III A and Stage III B—and Stage IV standards for nonroad diesel engines are listed in Table 2, Table 3, and Table 4, respectively. These limit values apply to all nonroad diesel engines of indicated power range for use in applications other than propulsion of locomotives, railcars and inland waterway vessels.

The implementation dates in the following tables (Table 2 through Table 7) refer to the market placement dates. For all engine categories, a sell-off period of two years is allowed for engines produced prior to the respective market placement date. The dates for new type approvals are, with some exceptions, one year ahead of the respective market placement date.

**Table 2**  
Stage III A Standards for Nonroad Engines

Cat.	Net Power	Date†	CO	NO <sub>x</sub> +HC	PM
	kW		g/kWh		
H	130 ≤ P ≤ 560	2006.01	3.5	4.0	0.2
I	75 ≤ P < 130	2007.01	5.0	4.0	0.3
J	37 ≤ P < 75	2008.01	5.0	4.7	0.4
K	19 ≤ P < 37	2007.01	5.5	7.5	0.6

† dates for constant speed engines are: 2011.01 for categories H, I and K; 2012.01 for category J.

**Table 3**  
Stage III B Standards for Nonroad Engines

Cat.	Net Power	Date	CO	HC	NO <sub>x</sub>	PM
	kW		g/kWh			
L	130 ≤ P ≤ 560	2011.01	3.5	0.19	2.0	0.025
M	75 ≤ P < 130	2012.01	5.0	0.19	3.3	0.025
N	56 ≤ P < 75	2012.01	5.0	0.19	3.3	0.025
P	37 ≤ P < 56	2013.01	5.0	4.7†		0.025

† NO<sub>x</sub>+HC

**Table 4**  
Stage IV Standards for Nonroad Engines

Cat.	Net Power	Date	CO	HC	NO <sub>x</sub>	PM
	kW		g/kWh			
Q	130 ≤ P ≤ 560	2014.01	3.5	0.19	0.4	0.025
R	56 ≤ P < 130	2014.10	5.0	0.19	0.4	0.025