

# DieselNet: Emission Standards » Japan

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## Tokyo Retrofit Program

### Background

In December 2000, the Tokyo Metropolitan Government (TMG) adopted an “Ordinance on Environmental Preservation”, which included an array of regulatory measures to control air, water, soil, as well as noise pollution. An important part of the Ordinance was the “Countermeasure Against Vehicle Pollution” program, which includes the following components:

- Diesel emission control regulation (retrofit program)  
Certain categories of in-use diesel vehicles had to be retrofitted with emission control systems to reduce PM emissions. Vehicles failing this requirement were to be banned from travel in the TMG area.
- Vehicle environmental management plan  
Businesses which own over 30 vehicles has to produce an environmental management plan, outlining the steps to reduce pollution, and to report on the implementation progress.
- Use of low emission vehicles  
In businesses that use over 200 vehicles, a certain percentage of the fleet had to be “low emission vehicles”. The “low emission vehicle” designations were issued by the [Ministry of Land, Infrastructure and Transport \(MLIT\)](#) and also by the TMG based on the vehicle’s emission level. Low emission vehicle designations were issued in several categories, such as *fairly low emission vehicle* (25% emission reduction below national standards), *highly low emission vehicle* (50%), and *ultra low emission vehicle* (75%).
- “Idling stop” practice  
Engines had to be stopped while parking, unloading cargo, etc.
- Prohibition of heavy-oil fuels  
Diesel fuels mixed with heavy oil was not allowed for vehicles or construction machinery.
- Vehicle pollution inspectors (G-men)  
Inspectors were assigned to promote the introduction and to enforce the above regulatory programs.

A new Ordinance adopted on April 1, 2001 introduced additional provisions related to vehicle emissions, including the diesel retrofit program, effective from October 1, 2003. Vehicle pollution measures similar or identical to those adopted by the TMG were also implemented by a number of neighboring prefectures (Kanagawa, Saitama, Chiba,...).

### Diesel Emission Regulations

Particulate matter emissions from in-use diesel vehicles had to be reduced by retrofitting with emission control devices. The retrofit requirements applied to buses, trucks, and special category vehicles based on buses and trucks, such as campers, garbage collection trucks, and refrigerator/freezer vehicles. Passenger cars were not subject to retrofit requirements.

The PM emission reduction requirements depended on the vehicle [emission level](#) at the time of its manufacture (i.e., emission certification level). Older vehicles had higher PM reduction requirements. Newer vehicles, which met more stringent new engine emission standards, had more relaxed PM emission reduction requirements. The retrofit program had a two-tier structure: the Tier 1 requirements became effective in October 2003. Somewhat more stringent Tier 2 PM emission reduction requirements came to power in 2005. These emission reduction requirements—along with their “Category” designations—are listed in the following table.

**Table 1**  
Diesel PM Reduction Requirements and Categories

Vehicle Description	Tier 1 (2003.10)		Tier 2 (2005)	
	PM Reduction	Category	PM Reduction	Category
Meets 1989/1990 standards, or Fails to meet 1989/1990 standards	> 60%	1	> 70%	3
Meets 1993/1994 standards	> 30%	2	> 40%	4
Meets 1997/1998/1999 standards	N/A		> 30%	5
OEM-fitted with PM aftertreatment	Meet PM standards		Meet PM standards	

All vehicles received 7 years of grace period counting from the date of their first registration. In effect, vehicles had to be retrofitted with PM controls either on the Tier 1/2 dates shown in Table 1, or within 7 years after first registration, whichever occurred later. This is illustrated by the following examples:

**Example 1:** A vehicle originally certified to the 1989 emission standards and first registered in 1993 was prohibited from use in Tokyo starting in October 2003. The vehicle could be used beyond October 2003 if retrofitted with approved Category 1 PM control device.

**Example 2:** A vehicle certified to 1998 standards and first registered in February 2001 was prohibited from use starting February 2008. The vehicle could be operated beyond that date if retrofitted with Category 5 PM control device.

It should be remembered that vehicles also had to comply with the national “Automotive NO<sub>x</sub> and PM Law”, which was independent from the TMG regulations. Under the NO<sub>x</sub> and PM Law, the use of old vehicles could be restricted with different enforcement dates, depending on the vehicle type and age (emission level).

The TMG regulation applied to all diesel vehicles registered in Tokyo—about 420,000 (FY2000)—and to vehicles registered elsewhere, which traveled to Tokyo. The daily traffic flow into Tokyo was estimated at 180,000 diesel vehicles per day (1999 data).

## PM Emission Reduction Systems

The PM control devices had to be approved by the “PM Reduction Device Designation Committee” established by the TMG. Control device manufacturers had to produce data on PM emission reduction, which had to fulfill the requirements shown in Table 1 for applicable model year engines, as tested on applicable Japanese emission test cycles. Manufacturers were also required to submit data on (1) reliability and durability of the emission control systems, (2) their safety, and (3) NO<sub>x</sub>/HC/CO emission performance (no “considerable increase” was allowed).

Emission testing was to be performed using diesel fuel of 50 ppm sulfur content, the type of fuel which was expected to be available (ahead of national regulatory requirements) in the areas of the retrofit program.

At the beginning of the program in October 2003, all devices approved in categories 1 and 3 were diesel particulate filters (passive or active), while devices in categories 2, 4 and 5 were diesel oxidation catalysts.

## Enforcement

Once retrofitted, vehicles were affixed with stickers bearing the approval number of a given PM control device. A sample sticker is shown below.



**Figure 1.** Tokyo Diesel Retrofit Vehicle Sticker  
Sample—no approval number; original diameter 125 mm

Owners of non-complying vehicles could receive injunction on operating the vehicle until retrofitted. If the injunction was not obeyed, the vehicle owner's name was to be made public, and a fine of up to 500,000 yen could be imposed.