

## नेपाल सवारी प्रदूषण मापदण्ड - २०५६

### (Nepal Vehicle Mass Emission Standard, 2056)

#### A. Vehicles Fueled with Gasoline (Positive Ignition Engines)

##### 1 For Passenger Cars with Up To Six Seats and Gross Vehicle Weight (GVW) less than 2.5 tons

###### 1.1 Type I Test - verifying exhaust emissions after a cold start.

	<i>grams per kilometer</i>	
	Carbon monoxide (CO)	hydrocarbons plus oxides of nitrogen (HC + NOx)
Type Approval*	2.72	0.97
Conformity of Production**	3.16	1.13

*Note: The test shall be as per the Driving Cycle adopted by different countries, with cold start on Chassis Dynamometer.*

###### 1.2 Type II Test - carbon monoxide emission at idling speed.

*This test applies to vehicles fueled with leaded gasoline only.*

*The carbon monoxide content by volume of the exhaust gases emitted with engines idling must not exceed 3.5% at the settings used for the Type I test.*

###### 1.3 Type III Test - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

###### 1.4 Type IV Test - determination of evaporative emission

*This test applies to all vehicles fueled with leaded and unleaded gasoline.*

*Evaporative emissions shall be less than 2 g/test.*

###### 1.5 Type V Test - durability of pollution control devices.

*This test applies to vehicles fueled with unleaded gasoline only.*

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

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\* Please see the explanatory note, page 7

\*\* Please see the explanatory note, page 7

## 2 For Light-Duty Commercial Vehicles and Vehicles with Gross Vehicle Weight (GVW) more than 2.5 tons

### 2.1 Type I Test - verifying exhaust emissions after a cold start.

Reference Mass (kg)		grams per kilometer	
		Carbon monoxide (CO)	hydrocarbons plus oxides of nitrogen (HC + NOx)
RM < 1250	Type Approval	2.72	0.97
	Conformity of production	3.16	1.13
1250 < RM < 1700	Type Approval	5.17	1.4
	Conformity of production	6.0	1.6
RM > 1700	Type Approval	6.9	1.7
	Conformity of Production	8.0	2.0

Note:

- The test shall be as per the Driving Cycle adopted by different countries, with cold start on Chassis Dynamometer.
- Reference mass means the "unladen mass" (mass of the vehicle in running order without crew, passengers or load, but with the fuel tank full and the usual set of tools and spare wheel on board, when applicable) of the vehicle increased by a uniform figure of 100 kg.
- Includes passenger vehicles with seating capacity more than six persons or reference mass more than 2,500 kg.

### 2.2 Type II Test - carbon monoxide emission at idling speed.

*This test applies to vehicles fueled with leaded gasoline only.*

*The carbon monoxide content by volume of the exhaust gases emitted with engines idling must not exceed 3.5% at the settings used for the Type I test.*

### 2.3 Type III Test - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

### 2.4 Type IV Test - determination of evaporative emission.

*This test applies to all vehicles fueled with leaded and unleaded gasoline.*

*Evaporative emissions shall be less than 2 g/test.*

### 2.5 Type V Test - durability of pollution control devices.

*This test applies to vehicles fueled with both leaded and unleaded gasoline.*

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

## 3 For Two Wheelers and Three Wheelers

### 3.1 Type I Test - verifying exhaust emissions after a cold start.

	CO (grams per kilometer)		HC + NOx (grams per kilometer)	
	2- Wheeler	3- Wheeler	2-Wheeler	3-Wheeler
Type Approval	2.0	4.0	2.0	2.0
Conformity of Production	2.4	4.8	2.4	2.4

Note: *The test shall be as per the Driving Cycle adopted by different countries, with cold start on Chassis Dynamometer.*

3.2 **Type II Test** - carbon monoxide emission at idling speed.

*This test applies to vehicles fueled with leaded gasoline only.*

*The carbon monoxide content by volume of the exhaust gases emitted with engines idling must not exceed 3.5% at the settings used for the Type I test.*

3.3 **Type III Test** - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

3.4 **Type IV Test** -determination of evaporative emission.

*This test applies to vehicles fueled with leaded and unleaded gasoline.*

*Evaporative emissions shall be less than 2 g/test.*

3.5 **Type V Test** - durability of pollution control devices.

*This test applies to vehicles fueled with unleaded gasoline only.*

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

## B. Vehicles Fueled with Diesel (Compression ignition engines)

### 1 For Passenger Cars With Up To Six Seats and Gross Vehicle Weight (GVW) less than 2.5 tons

1.1 **Type I Test** - verifying exhaust emissions after a cold start.

	<i>grams per kilometer</i>		
	CO	HC + NO <sub>x</sub>	PM (Particulate Matter)
Type Approval	2.72	0.97	0.14
Conformity of Production	3.16	1.13	0.18

*Note: The test shall be as per the Driving Cycle adopted by different countries, with cold start on Chassis Dynamometer.*

1.2 **Type II Test** - carbon monoxide emission at idling speed.

*Not applicable*

1.3 **Type III Test** - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

1.4 **Type IV Test** - determination of evaporative emission.

*Not applicable*

1.5 **Type V Test** - durability of pollution control devices.

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

## 2 For Light-Duty Commercial Vehicles and Vehicles with Gross Vehicle Weight (GVW) more than 2.5 tons

### 2.1 Type I Test - verifying exhaust emissions after a cold start.

Reference Mass (kg)		grams per kilometer		
		CO	HC + NO <sub>x</sub>	PM
RM < 1250	Type Approval	2.72	0.97	0.14
	Conformity of production	3.16	1.13	0.18
1250 < RM < 1700	Type Approval	5.17	1.4	0.19
	Conformity of production	6.0	1.6	0.22
RM > 1700	Type Approval	6.9	1.7	0.25
	Conformity of Production	8.0	2.0	0.29

Note: The test shall be as per the Driving Cycle adopted by different countries, with cold start on Chassis Dynamometer.

Reference mass means the "unladen mass" (mass of the vehicle in running order without crew, passengers or load, but with the fuel tank full and the usual set of tools and spare wheel on board, when applicable) of the vehicle increased by a uniform figure of 100 kg.

Includes passenger vehicles with seating capacity more than six persons or reference mass more than 2500 kg.

### 2.2 Type II Test - carbon monoxide emission at idling speed.

*Not applicable*

### 2.3 Type III Test - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

### 2.4 Type IV Test - determination of evaporative emission

*Not applicable*

### 2.5 Type V Test - durability of pollution control devices.

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

### 3 For Heavy-Duty Vehicles and Vehicles with Gross Vehicle Weight (GVW) more than 3.5 tons

3.1 **Type I Test** - verifying exhaust emissions after a cold start.

Pollutants	Type Approval	Conformity of Production
CO (grams per kilo-watt hour)	4.5	4.9
HC (grams per kilo-watt hour)	1.10	1.23
NOx (grams per kilo-watt hour)	8.0	9.0
PM (grams per kilo-watt hour) for engines with power less than 85 KW	0.61	0.68
PM (grams per kilo-watt hour) for engines with power more than 85 KW	0.36	0.40

Note: *The test shall be as per the Test Driving Cycle adopted by different countries with 13 Mode Emissions Engines Dynamometer Test.*

3.2 **Type II Test** - carbon monoxide emission at idling speed.

*Not applicable*

3.3 **Type III Test** - verifying emissions of crankcase gases.

*The crankcase ventilation system must not permit the emission of any of the crankcase gases into the atmosphere.*

3.4 **Type IV Test** - determination of evaporative emission.

*Not applicable*

3.5 **Type V Test** - durability of pollution control devices.

*The test represents an endurance test of 80,000 kilometer driven on the road or on a chassis dynamometer.*

# Explanatory Notes

## 1.0 Type Approval

Most countries require some form of certification or type approval by vehicle manufacturer to demonstrate that each new vehicle sold is capable of meeting applicable emission standards. Usually, type approval requires emission testing of prototype vehicles representative of planned production vehicles. Under ECE and Japanese regulations, such compliance is required only for new vehicles. U.S regulations require that vehicles comply with emission standards throughout their useful lives when maintained according to the manufacturing specifications.

The advantage of a certification or type approval program is that it can influence vehicle design prior to mass production. It is more cost effective because the manufacturers identify and correct the problems before production actually begins.

## 2.0 Approval of a Vehicle

Vehicle manufacturers apply for approval of a vehicle type with regard to exhaust emissions, evaporative emissions and durability of pollution control devices to the authority responsible for conducting the tests. The application for approval also includes details like description of engines type comprising all the particulars, drawings of the combustion chamber and of the piston, description of evaporative control system, particulars concerning the vehicles, descriptions of pollution control devices etc. If the vehicle type submitted for approval meets the requirements of various types of tests mentioned, only then the approval of that vehicle is granted.

## 3.0 Conformity of Production

The conformity of production is a assembly line testing system. The objectives of assembly line testing are to enable regulatory authorities to identify certified production vehicles that do not comply with applicable emission standards, to take remedial actions (such as revoking certification and recalling vehicles) to correct the problem, and to discourage the manufacture of non-complying vehicles. This test provides an additional check on mass-produced vehicles to assure that the designs found adequate in certification are satisfactorily translated into production, and that quality control on the assembly line is sufficient to provide reasonable assurance that vehicles in use meet standards. The basic difference between TA and COP is that TA is based on prototype vehicle or design of the vehicle while COP measures emissions from real production vehicles.

As per the requirements set forth by the European Union, a sufficient number of random checks are made of serially-manufactured vehicles bearing the type approval mark of vehicles bearing all the types of tests mentioned above. The tolerance limits are provided for conformity of production in Type I tests.