



COLOMBIA



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1. Introduction:

American and European emissions limits, with respective test cycles, are applied.

There are no emissions laboratories in the country, because of this test reports carried out by international homologation agencies are accepted.

2. Vehicle categories:

2.1. Categories for application with European limits

Category	Sub-category	Passengers Capacity	Curb Weight (kg)	Reference Mass (kg)
M	M1	≤ 8	-	-
	M2	> 8	≤ 5000	-
	M3	> 8	> 5000	-
N	N1	Class I	≤ 3500	< 1305
		Class II		≥ 1305
		Class III		≤ 1760
	N2	-	> 3500	-
	N3	-	≤ 12000	-

M = Passenger vehicle
N = Commercial vehicle

2.2. Categories for application with Americans limits

Category	Sub-category	Passengers Capacity	Curb Weight (kg)	Gross Vehicle Weight (kg)	Adjusted Loaded Vehicle Weight (kg)	Reference Mass (kg)	
LDV	-	≤ 12	-	≤ 3856	-	-	
LDT	LLDT	LDT1	> 12 when used for passengers transport	≤ 2722	-	≤ 1701	
		LDT2		-	> 1701		
	HLDT	LDT3		> 2722	≤ 2608	-	
		LDT4		< 3856	> 2608	-	
HDV	MDPV (only for passengers transport)		< 12	> 2722	> 3856	-	
	Urban bus (only for passengers transport)		> 15		> 14969	-	
	LHDGE (Otto engine)		-	> 2722	> 3856	-	-
	HHDGE (Otto engine)				≤ 6350	-	-
	LHDDE (Diesel engine)				> 6350	-	-
	MHDDDE (Diesel engine)				> 3856	-	-
	HHDDDE (Diesel engine)				< 8845	-	-
		≥ 8845			-	-	
		≤ 14969			-	-	
		> 14969	-	-			

LDV = LightDuty Vehicle LDT = LightDuty Truck HDV = HeavyDuty Vehicle

3. Emission limits:

3.1. Limits for light vehicles

European limits

Category	Sub-category	Fuel	Application	Application Date	Phase	CO (g/km)	NOx (g/km)	HC + NOx (g/km)	PM (g/km)	HC Evaporated SHED method (g/test)
M	M1	Gasoline	All	In force	Euro 2	2,2	-	0,5	-	2
		Diesel	Except Passenger public transport	In force	Euro 2	1	-	0,7	0,08	-
			Public transport in metropolitan regions *	In force	Euro 4	0,5	0,25	0,3	0,025	-
			Public transport all over the country	Jan/2013	Euro 4	0,5	0,25	0,3	0,025	-
N	N1	Gasoline	All	In force	Euro 2	2,2	-	0,5	-	2
						4	-	0,65	-	2
						5	-	0,8	-	2
	N1	Diesel	Except Passenger public transport	In force	Euro 2	1	-	0,7	0,08	-
						1,25	-	1	0,12	-
						1,5	-	1,2	0,17	-
	N1	Diesel	Public transport in metropolitan regions *	In force	Euro 4	0,5	0,25	0,3	0,025	-
						0,63	0,33	0,39	0,04	-
						0,74	0,39	0,46	0,06	-
	N1	Diesel	Public transport all over the country	Jan/2013	Euro 4	0,5	0,25	0,3	0,025	-
						0,63	0,33	0,39	0,04	-
						0,74	0,39	0,46	0,06	-

* Metropolitan regions of Bogota, AburráValley and Envigado

U.S. limits

Category	Sub-category	Fuel	Application	Application Date	Phase	CO (g/km)	HC (g/km)	NMHC (g/km)	NOx (g/km)	HCHO (g/km)	PM (g/km)	HC Evaporated SHED method (g/test)						
LDV		Gasoline	All	In force	Tier 1	2,11	0,25	0,16	0,25	-	-	2						
		Diesel	Except Passenger public transport	In force	Tier 1	2,11	0,25	0,16	0,62	-	0,05	-						
			Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,047	0,124	0,009	0,037	-						
				In force (192k km)	Tier 2 Bin 9	2,61	-	0,056	0,186	0,011	0,037	-						
		Public transport all over the country	In force (80k km)	Tier 2 Bin 9	2,11	-	0,047	0,124	0,009	0,037	-							
			In force (192k km)	Tier 2 Bin 9	2,61	-	0,056	0,186	0,011	0,037	-							
LDT	LLDT	Gasoline	All	In force	Tier 1	2,11	-	0,16	0,25	-	-	2						
						2,73	-	0,2	0,44	-	-	2						
						2,73	0,2	-	0,44	-	-	2						
	HLDT	Gasoline	All	In force	Tier 1	3,11	0,24	-	0,68	-	-	2						
						2,11	-	0,16	0,62	-	0,05	-						
						2,73	-	0,2	-	-	-	-						
	HLDT	Diesel	Except Passenger public transport	In force	Tier 1	2,73	0,2	-	-	-	-	-						
						2,73	0,2	-	-	-	-	-						
						3,11	0,24	-	-	-	-	-						
	LLDT	LDT1	Diesel	Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,047	0,124	0,009	0,037	-					
							In force (192k km)	2,61	-	0,056	0,186	0,011	0,037	-				
							In force (80k km)	2,11	-	0,062	0,124	0,009	0,037	-				
							In force (192k km)	2,61	-	0,081	0,186	0,011	0,037	-				
							In force (80k km)	2,11	-	0,087	0,124	0,009	0,037	-				
							In force (192k km)	2,61	-	0,112	0,186	0,011	0,037	-				
		HLDT	LDT3	Diesel	Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,087	0,124	0,009	0,037	-				
								In force (192k km)	2,61	-	0,112	0,186	0,011	0,037	-			
								In force (80k km)	2,11	-	0,087	0,124	0,009	0,037	-			
			In force (192k km)					2,61	-	0,112	0,186	0,011	0,037	-				
			LDT4					Diesel	Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,087	0,124	0,009	0,037	-
												In force (192k km)	2,61	-	0,112	0,186	0,011	0,037
	In force (80k km)	2,11		-	0,047	0,124	0,009					0,037	-					
	Jan/2013 (192k km)	2,61	-	0,056	0,186	0,011	0,037					-						
	Jan/2013 (80k km)	2,11	-	0,062	0,124	0,009	0,037					-						
Jan/2013 (192k km)	2,61	-	0,081	0,186	0,011	0,037	-											
HLDT	LDT3	Diesel	Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,087	0,124	0,009	0,037	-						
						In force (192k km)	2,61	-	0,112	0,186	0,011	0,037	-					
						In force (80k km)	2,11	-	0,087	0,124	0,009	0,037	-					
	Jan/2013 (192k km)					2,61	-	0,112	0,186	0,011	0,037	-						
	Jan/2013 (80k km)					2,11	-	0,087	0,124	0,009	0,037	-						
	Jan/2013 (192k km)					2,61	-	0,112	0,186	0,011	0,037	-						
HLDT	LDT4	Diesel	Public transport in metropolitan regions *	In force (80k km)	Tier 2 Bin 9	2,11	-	0,087	0,124	0,009	0,037	-						
						In force (192k km)	2,61	-	0,112	0,186	0,011	0,037	-					
						Public transport all over the country	Jan/2013 (80k km)	2,11	-	0,087	0,124	0,009	0,037	-				
	Jan/2013 (192k km)					2,61	-	0,112	0,186	0,011	0,037	-						
	Public transport all over the country					Jan/2013 (80k km)	2,11	-	0,087	0,124	0,009	0,037	-					
	Jan/2013 (192k km)					2,61	-	0,112	0,186	0,011	0,037	-						

* Metropolitan regions of Bogota, AburráValley and Envigado

3.2. Limits for heavy duty vehicles

European limits

Category	Sub-category	Fuel	Application	Application Date	Phase	CO (g/kW-h)	HC (g/kW-h)	NMHC (g/kW-h)	CH4 (g/kW-h)	NOx (g/kW-h)	PM (g/kW-h)	Opac. (m ⁻¹)	Notes
M	M2	Diesel	Except Passenger public transport	In force	Euro II	4,0	1,1	-	-	7,0	0,15	**	ECE R49
			Public transport in metropolitan regions *	In force	Euro IV	1,5	0,46	-	-	3,5	0,02	-	ESC
						4,0	-	0,55	-	3,5	0,03	-	ETC
						-	-	-	-	-	-	0,5	ELR
			Public transport all over the country	Jan/2013	Euro IV	1,5	0,46	-	-	3,5	0,02	-	ESC
						4,0	-	0,55	-	3,5	0,03	-	ETC
	-	-				-	-	-	-	0,5	ELR		
	CNG/GPL	Public transport in metropolitan regions *	In force	Euro IV	4,0	-	0,55	1,1	3,5	-	-	ETC	
		Public transport all over the country	Jan/2013	Euro IV	4,0	-	0,55	1,1	3,5	-	-	ETC	
	M3	Diesel	Except Passenger public transport	In force	Euro II	4,0	1,1	-	-	7,0	0,15	**	ECE R49
			Public transport in metropolitan regions *	In force	Euro IV	1,5	0,46	-	-	3,5	0,02	-	ESC
						4,0	-	0,55	-	3,5	0,03	-	ETC
						-	-	-	-	-	-	0,5	ELR
			Public transport all over the country	Jan/2013	Euro IV	1,5	0,46	-	-	3,5	0,02	-	ESC
4,0						-	0,55	-	3,5	0,03	-	ETC	
-	-	-				-	-	-	0,5	ELR			
CNG/GPL	Public transport in metropolitan regions *	In force	Euro IV	4,0	-	0,55	1,1	3,5	-	-	ETC		
	Public transport all over the country	Jan/2013	Euro IV	4,0	-	0,55	1,1	3,5	-	-	ETC		
N	N2	Diesel	-	In force	Euro II	4,0	1,1	-	-	7,0	0,15	**	ECE R49
	N3												

* Metropolitan regions of Bogota, AburráValley and Envigado

** Free acceleration test with application of in-use inspection program

U.S. limits

Category	Sub-category	Fuel	Application	Application Date	Phase	CO (g/bHp)	HC (g/bHp)	NMHC (g/bHp)	NOx (g/bHp)	PM (g/bHp)	HC Evaporated SHED method (g/test)
HDV	LHDGE	Gasoline	-	In force	EPA 91	14.4	1.1	-	4.0	-	2
	HHDGE		-	In force		37.1	1.9	-	4.0	-	2
	Bus LHDDE MHDDE HHDE	Diesel	Except Passenger public transport	In force	EPA 94	15.5	1.3	-	5.0	0.1	-
			Public transport in metropolitan regions *	In force	EPA 2007	15.5	-	0.14	0.2	0.01	-
		Public transport all over the country	Jan/2013	EPA 2007	15.5	-	0.14	0.2	0.01	-	

* Metropolitan regions of Bogota, AburráValley and Envigado

3.3. Limits for motorcycles

European limits

Category	Fuel	Engine	Application	Application Date	Phase	CO (g/km)	HC (g/km)	NOx (g/km)
MT 2W < 50 cc	Gasoline	2T e 4T	-	In force	-	-	-	-
MT 2W 50 cc < 150 cc	Gasoline	2T e 4T	-	In force	Euro 2	5.5	1.2	0.3
MT 2W 150 cc	Gasoline	2T e 4T	-	In force	Euro 2	5.5	1	0.3
MT 3W < 50 cc	Gasoline	2T e 4T	Except for public transport and goods transport	In force	-	-	-	-
	Gasoline		Public transport and goods transport	In force	Euro 2	7	1.5	0.4
	Diesel	-	Public transport and goods transport	In force	Euro 2	2	1	0.65
MT 3W ≥ 50 cc < 150 cc	Gasoline	2T e 4T	Except for public transport and goods transport	In force	Euro 2	5.5	1.2	0.3
			Public transport and goods transport	In force	Euro 2	7	1.5	0.4
	Diesel	-	Public transport and goods transport	In force	Euro 2	2	1	0.65
MT 3W ≥ 150 cc	Gasoline	2T e 4T	Except for public transport and goods transport	In force	Euro 2	5.5	1	0.3
			Public transport and goods transport	In force	Euro 2	7	1.5	0.4
	Diesel	-	Public transport and goods transport	In force	Euro 2	2	1	0.65

U.S. limits

Category	Fuel	Application	Application Date	Phase	CO (g/km)	HC (g/km)	HC + NOx (g/km)
MT 2W and 3W < 50 cc	Gasoline	Except for public transport and goods transport	In force	-	-	-	-
		Public transport and goods transport	In force	EPA 2006	12	1	1,4 *
MT 2W and 3W ≥ 50 cc < 280 cc	Gasoline	All	In force	EPA 2006	12	1	1,4 *
MT 2W and 3W ≥ 280 cc	Gasoline	All	In force	EPA 2006	12	-	1.4

* Alternative limit to replace HC

3.4. Off-road vehicles

Not applicable.

4. Other regulations:

4.1. Durability

Option for 80000 or 19200km.

Application of Deterioration Factors.

2 years warranty concerning the limits in static tests.

4.2. OBD

Not applicable.

4.3 Adapted or transformed vehicles

Must pass the emissions inspection, according to procedures adopted for testing of in-use vehicles.

4.4 Other

Diesel vehicles up to model year 2000: Vehicles with a load capacity exceeding 3 tons or 19 passengers shall be equipped with turbocharged engines and exhaust pipe facing upwards, leaving the gases to at least 3 meters from the ground or 15 cm from the top of the cabin.

5. Control requirements:

5.1. Emissions Conformity of Production

Performed randomly in 25% of vehicles for the Colombian market, following the procedures used for inspection of in-use vehicles. The results shall be sent annually to the Ministry of Environment, Habitation and Territorial Development.

The authorities may check the emissions levels at any time and without prior information to the manufacturer/importer.

5.2. In-use vehicle emissions inspection

Performed annually on motorcycles and every two years in all other vehicles.

Vehicle Type	Fuel	Model Year	Idling Speed		Acceleration		Opacity (free accel.) (%)	Obs.
			CO (%)	HC (ppm)	CO (%)	HC (ppm)		
Light Medium Heavy	Gasoline CNG GPL	1970	5	800	5	800	-	O ₂ 5% e CO ₂ 7%
		1971 - 1984	4	650	4	650	-	
		1985 - 1997	3	400	3	400	-	
		1998 - 2010	1	200	1	200	-	
		2010	0,8	160	0,8	160	-	
	Diesel	1970	-	-	-	-	50	-
		1971 - 1984	-	-	-	-	45	
		1985 - 1997	-	-	-	-	40	
		1998 - 2010	-	-	-	-	35	
		2010	-	-	-	-	28	
Motorcycle Tricycle	Gasoline 2T	2009	4,5	10000	4,5	10000	-	O ₂ 11%
		2010	4,5	1600	4,5	1600	-	O ₂ 6%
	Gasoline 4T	2009	4,5	2000	4,5	2000	-	O ₂ 6%
		2010	4,5	1600	4,5	1600	-	

5.3. Monitoring of emissions in public roads

Otto engine vehicles: it is not permitted any visible emission for more than 10 seconds when the engine is at normal operating temperature.

Diesel engine vehicles: it is not permitted smoke emission of density higher than 4, according to Ringelmann scale, when the engine is at normal operating temperature.

6. Fuels:

6.1. Reference fuel

International specifications are accepted.

6.2. Commercial fuels

6.2.1. Gasoline

Property	Requirement				Unity	Test method
	Corriente		Extra			
	Min.	Max.	Max.	Máx.		
IAD = (RON + MON)/2	84	-	89	-	-	ASTM D2629, D2700 Alternative - Infra-red
Lead	-	0,013	-	0,013	g/l	ASTM D3237, D5059
RVP (Reid Vapor Pressure)	-	65	-	65	kPa	ASTM D4953, D5191, D323
ICV = RVP + 1,13 * (% vol. evap. at 70°C)	-	124	-	124	kPa	-
Aromatics	-	25	-	31,5	% v/v	ASTM D5580, D1319, D6729
Benzene	-	0,9	-	1,8	% v/v	ASTM D5580, D3606, D6729
Sulfur	-	0,027	-	0,027	% m/m	ASTM D4294, D2622
Copper corrosion (3h at 50°C)	-	1	-	1	-	ASTM D130
Water	-	0,2	-	0,2	% v/v	ASTM D6422
Gums	-	5	-	5	mg/100ml	ASTM D381
Oxygen	-	3,5	-	3,5	% m/m	ASTM D4815
Ethanol	-	10 ± 0,5	-	10 ± 0,5	% v/v	ASTM D5501
Oxidation Stability	240	-	240	-	minutes	ASTM D525
Distillation	-	-	-	-	-	-
10% vol. evaporated	-	70	-	70	°C	ASTM D86
50% vol. evaporated	77	121	77	121		
90% vol. evaporated	-	190	-	190		
End point	-	225	-	225		
Residue	-	2	-	2	% v/v	

6.2.2. Diesel

Property	Requirement				Unity	Test Methods
	Corriente		Extra (Bogota)			
	Min.	Max.	Min.	Max.		
Sulfur	-	0,05	-	0,05	% m/m	ASTM D4294 Alternative - ASTM D2622, D1552, D1266
Aromatics	-	35	-	35	% v/v	ASTM D5186, D1319 Alternative - Mass Spectrometry and Ultraviolet
Cetane number	43	-	45	-	-	ASTM D613
Cetane index	45	-	45	-	-	ASTM D976, D4737
Content of biofuel	-	5 ± 0,5	-	5 ± 0,5	% v/v	EN 14078
Copper corrosion (3h at 50°C)	-	2	-	2	-	ASTM D130
Color	-	3	-	2	-	ASTM D1500
Carbon Residue in 10% of the residue	-	0,2	-	0,2	% m/m	ASTM D4530
API Grade	Inform	-	Inform	-	-	ASTM D4052, D1298, D287
kinematics viscosity at 40°C	1,9	5	1,9	4,1	mm ² /s	ASTM D445
Distillation	-	-	-	-	-	-
Initial point	Inform	Inform	Inform	Inform	°C	ASTM D86
50% vol. evaporated	Inform	Inform	Inform	Inform		
90% vol. evaporated	-	360	282	338		
End point	-	390	-	360		
Water and sediments	-	0,05	-	0,05	% v/v	ASTM D1796, D2709
Pour point	-	3	-	3	°C	ASTM D97, D5949
Iodine index	-	120	-	120	-	EN 14111
Filter Plugging Point	-	Inform	-	Inform	°C	ASTM D6371 EN 116
Cloud point	-	Inform	-	Inform	°C	ASTM D2500 ISO 3015
Flash point	52	-	52	-	°C	ASTM D93
Ash	-	0,01	-	0,01	% m/m	ASTM D482
Lubricity	-	450	-	450	µm	ASTM D6079

6.2.3. Biodiesel

Property	Requirement		Unity	Test method
	Min.	Max.		
Density at 15°C	860	890	kg/m ³	ASTM D4052, D1298, D287 ISO 3675, ISO 12185
Cetane Number	47	-	-	ASTM D613 ISO 5165
Cetane Index	49	-	-	ISO 4264
kinematics viscosity at 40°C	1,9	5	mm ² /s	ASTM D445 ISO 3104
Water and sediments	-	0,05	% v/v	ASTM D1796, D2709
Water	-	500	mg/kg	ASTM E203, D95 ISO 12937
Flash point	120	-	°C	ASTM D93 ISO 2719
Copper corrosion (3h at 50°C)	-	1	-	ASTM D130 ISO 2160
Oxidation Stability	Inform		mg/100ml	ASTM D2274
	6	-	hours	EN 14112
Sulphated ash	-	0,02	% m/m	ASTM D874 ISO 3987
Sulfur	-	10	mg/kg	ASTM D5453 ISO 4260, 20846, 20884, 8754
Phosphorus	-	0,001	% m/m	ASTM D4951 ISO 14107
Distillation curve	-	360	°C	ASTM D86, D1160 ISO 3405
Acidity	-	0,8	mg de KOH/g	ASTM D974, D664 ISO 6618
Cold Filter Plugging Point	Inform		°C	ASTM D6371 EN 116
Cloud point	Inform		°C	ASTM D2500 ISO 3015
Pour point	Inform		°C	ASTM D97, D5949
Carbon Residue	-	0,3	% m/m	ASTM D4530 ISO 10370 Reference - ASTM D189, D524
Sodium and Potassium	-	5	mg/kg	EN 14108, EN 14109
Free glycerin	-	0,02	% m/m	ASTM D6584
Total glycerin	-	0,25		ISO 14105, 14106
Gross and net calorific value	Inform		MJ/kg	ASTM D240
Methanol or Ethanol	-	0,2	% m/m	ASTM D4815 ISO 14110
Ester	96,5	-	% m/m	EN 14103
Iodine index	-	120	-	EN 14111

* Biodiesel may be mixed with diesel fuel in a proportion of 5% in volume.

7. Trends:

Biofuels:

Diesel: Blend of biodiesel in the diesel fuel is 10% in some regions and should reach 20% in the next years. B10 specification was not yet published.

Gasoline: Blend of ethanol in the gasoline is 10%. There are plans to increase to 20% in the next years, when the offer of ethanol grows in the country.

Flex-Fuel: It had been defined the start of sales of flex-fuel on the beginning of 2012, but due to the lack of ethanol in the country, it was postponed with no forecast.

New limits for diesel vehicles:

Passenger cars and light commercial vehicles equipped with Diesel engines : Euro 4 or Tier2 Bin9 from 2013.

Heavy diesel vehicles equipped with Diesel engines : Euro IV or EPA 2004 with 0.01 g / bhp.h of MP.

Electric Vehicles:

Efforts to start the commercialization of electric vehicles. Agreement between government and manufactures in progress.