[TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART II, SECTION 3, SUB-SECTION (i)]

GOVERNMENT OF INDIA

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

NOTIFICATION

New Delhi, the 27th November, 2015.

G.S.R___(E).- The following draft of certain rules further to amend the Central Motor Vehicles Rules, 1989, which the Central Government proposes to make in exercise the powers conferred by section 110 the Motor Vehicles Act, 1988 (59 of 1988), is hereby published as required by sub-section (1) of section 212 of the said Act for information of all persons likely to be affected thereby; and notice is hereby given that the said draft rules will be taken into consideration after the expiry of thirty days from the date on which the copies of this notification as published in the Gazette of India, are made available to the public;

The objections or suggestions which may be received from any person with respect to the said draft rules before the expiry of the period aforesaid will be considered by the Central Government;

Objections and suggestions to these draft rules, if any, may be sent to the Joint Secretary (Transport), Ministry of Road Transport and Highways, Transport Bhawan, Parliament Street, New Delhi-110 001.

DRAFT RULES

1. (1) These rules may be called the Central Motor Vehicles (__Amendment) Rules, 2015.

(2) Save as otherwise specifically provided, they shall come into force on the date of their final publication in the Official Gazette.

2. In the Central Motor Vehicles Rules, 1989 (hereinafter referred to as the said rules), in rule 115,

(a) In the first proviso of clause (i) in sub-rule (2), for the words "Bharat Stage-IV" substitute with "Bharat Stage IV / Bharat Stage V/ Bharat Stage VI ".

(b) The title of the 2nd Table, in clause (i) of sub-rule(2), for the words "Bharat Stage-IV" substitute with "Bharat Stage IV / Bharat Stage V/ Bharat Stage VI ".

(c) For the words "Bharat Stage-IV" in Sl. No. 1. and 2. of column (2)of the 2nd Table, in clause (i) of sub-rule(2),substitute with "Bharat Stage IV / Bharat Stage V/ Bharat Stage VI".

(d) For the words "Bharat Stage-IV" in Sl. No. 2. of column (2) of the 1st Table, in clause (ii) of sub-rule(2), substitute "Bharat Stage IV / Bharat Stage V/ Bharat Stage VI ".

(e) For the words "Bharat Stage-IV" in the proviso of sub-rule(7), substitute with "Bharat Stage IV / Bharat Stage V/ Bharat Stage VI ".

3. In the Central Motor Vehicles Rules, 1989 (hereinafter referred as the said rules), in rule 115, after sub- rule (17), the following sub-rule shall be inserted:-

"(18) Mass emission standards Bharat Stage V (BS V) for category M & category N vehicles

i. The Mass emission standards for Bharat Stage V, in respect of M & N category vehicles having Gross vehicle weight not exceeding 3,500 kg, manufactured on or after 1stApril 2019 for new models and on or after 1stApril 2020 for existing models, shall be as under:

Table 1 : Limit Values for M & N Category vehicles fitted with SI & CI Engines: BS V

		Reference Mass (RM) (kg)	Mass of Carbon Monoxide (CO)		Mass of Total Hydrocarbons (THC)[1]		Mass of Non-Methane Hydrocarbons (NMHC)[2]		Mass of Oxides of Nitrogen (NOx)		Combined Mass of Hydrocarbons and Oxides of Nitrogen (THC + NOx)[3]		Mass of Particulate Matter (PM)		Number of Particles (PN)	
			L1 (mg/km)		L2 (mg/km)		L3 (mg/km)		L4 (mg/kg)		L2 + L3 (mg/km)		L5 (mg/km)		L6 (numbers/km)	
Category	Class		PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI[4]	CI	PI	CI
M[5]	-	All	1000	500	100	-	68	-	60	180	-	230	4.5	4.5	-	6.0×10^{11}
N1 & M[6]	I	RM ≤ 1305	1000	500	100	-	68	-	60	180	-	230	4.5	4.5	-	6.0×10^{11}
	II	1305<RM≤ 1760	1810	630	130	-	90	-	75	235	-	295	4.5	4.5	-	6.0×10^{11}
	III	1760≤RM	2270	740	160	-	108	-	82	280	-	350	4.5	4.5	-	6.0×10^{11}
N2[7]	-	All	2270	740	160	-	108	-	82	280	-	350	4.5	4.5	-	6.0×10^{11}

PI = Positive Ignition, CI = Compression Ignition

(1) Limits of THC are not applicable for test on CNG mode and for dual fuel mode (Diesel + CNG). For test on LPG mode, the provision of Rule 115 C shall not be applicable. For test on LPG mode, THC shall be replaced with Reactive Hydrocarbon (RHC), where RHC shall be measured as follows-

a) If commercial LPG fuel is used as test fuel, RHC shall be estimated by the formula, RHC = 0.5 x THC, where THC = Total Hydrocarbons measured during test on LPG mode.

b) If reference LPG fuel is used as test fuel, RHC shall be as measured by the analyser

(2) For test on CNG mode, the provision of Rule 115 B shall not be applicable. For test on dual fuel mode the limits for NMHC specified for PI shall be applicable. For measurement of NMHC in CNG and Dual Fuel Mode, following shall apply-

a) If commercial CNG fuel is used as test fuel, Non-methane Hydro Carbon (NMHC) shall be estimated by the formula, NMHC = 0.3 x THC, where THC = Total Hydrocarbons measured during test on CNG mode.

b) If reference CNG fuel is used as test fuel, NMHC shall be as measured by the analyser.

(3) For test on dual fuel mode, THC shall be replaced by NMHC.

(4) Positive ignition particulate mass standard shall apply only to vehicles with direct injection engines.

(5) These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicle whose gross vehicle weight exceeds 2500 kg

(6) These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2500kg

(7) Type Approval as per this sub-rule is Optional for this category

Note: If a vehicle is tested for type approval on Chassis Dynamometer having Reference Mass upto 2610 kg, manufacturer may seek type approval extensions up to reference mass of 2840 kgs for its variants, even if intended variant GVW exceeds beyond 3500 kg.

Table 2: Application of Test Requirements for Type-Approval for BSV

	Vehicles with Positive Ignition Engines including Hybrids						Vehicles with Compression Ignition Engines including Hybrids		
	Mono Fuel			Bi- Fuel[1]		Flex Fuel[1]	Flex Fuel	Mono Fuel	Dual Fuel
Reference Fuel	Gasoline (E5)	LPG	CNG / Bio-Methane	Gasoline (E5) LPG	Gasoline(E5) CNG / Bio-Methane	Gasoline (E5) Ethanol (E85)	Diesel (B5) Bio-Diesel	Diesel (B5)	Diesel + CNG
Gaseous Pollutants (Type 1 Test)	Yes	Yes	Yes	Yes (Both Fuels)	Yes (Both Fuels)	Yes (Both Fuels)	Yes (B5 Only)	Yes	Yes
Particulate Mass and Particulate Number (Type 1 Test)	Yes[2]	-	-	Yes[2] (Gasoline only)	Yes[2] (Gasoline only)	Yes[2] (Gasoline only)	Yes (B5 only)	Yes	Yes
Idle Emissions (Type II Test)	Yes	Yes	Yes	Yes (Both Fuels)	Yes (Both Fuels)	Yes (Both Fuels)	-	-	-
Crankcase Emissions (Type III Test)	Yes	Yes	Yes	Yes (Gasoline only)	Yes (Gasoline only)	Yes (Gasoline only)	-	-	-
Evaporative Emissions (Type IV test)	Yes	-	-	Yes (Gasoline only)	Yes (Gasoline only)	Yes (Gasoline only)	-	-	-
Durability (Type V Test)	Yes	Yes	Yes	Yes (Gasoline only)	Yes (Gasoline only)	Yes (Gasoline only)	Yes (B5 Only)	Yes	Yes
On-Board Diagnostics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) When a bi-fuel vehicle is combined with a flex fuel vehicle, both test requirements are applicable.
(2) Positive ignition particulate mass limits for vehicles with positive ignition engines including hybrids shall apply only to vehicles with direct injection engines. Particulate number test is not applicable for vehicles with positive ignition engines including Hybrids.
(3) Only NOx emission shall be determined when the vehicle is running on Hydrogen.

Notes: -

1. The test shall be done on Chassis Dynamometer.
2. The test including driving cycle shall be as provided in sub-rule (10) with the modifications that :
   i) The exhaust gas sampling should start at the initiation of the engine start up procedure referred to in Annexure IV-E.
   ii) The driving cycle shall be at a maximum speed of 90 km/hour referred to in Annexure IV-E.
3. There shall be no relaxation of norms for Conformity of Production (COP) purposes.
4. The reference gasoline fuel shall be as specified in Annexure IV-S for Gasoline, Bi-Fuel and Flex-Fuel Ethanol (E85) vehicles. The reference Diesel fuel used in Diesel Vehicles, Flex-Fuel Bio-Diesel Vehicles and Dual Fuel vehicles shall be as specified in Annexure IV-T. E85 Fuel used in Flex fuel vehicles shall be tested with reference fuel as specified in Annexures IV-Q. Reference natural gas fuel used in Natural Gas or Bio-Methane mono-fuel or bi-fuel vehicles shall be as per Annexure IV-L (G20 and G25) and reference LPG fuel used in LPG mono-fuel or bi-fuel vehicles shall be as per Annexure IV M (Fuel A and Fuel B), however, in case of non-availability of reference fuels for CNG / LPG, the commercially available CNG / LPG shall be used for the purpose of Type Approval and Conformity of Production. Hydrogen Fuel vehicles shall be tested with reference fuel specified in the Annexure IV:U to said rules and reference fuel for CNG and LPG shall be available commercially.
5. Specifications of NOx reduction agent AUS 32 (Aqueous Urea Solution) shall conform to Part 1 and Part 2 of ISO 22241-2006 or DIN standard – DIN V 70070.
6. There shall be no crankcase emissions for Gasoline driven vehicles.
7. Evaporative emission shall not be more than 2.0g/test from Gasoline driven vehicles. The evaporative emission test procedure for gasoline driven vehicles shall be as per the procedure specified in AIS 137 and as amended from time to time.
8. The Conformity of Production (COP) testing procedure shall be as described in AIS 137as amended from time to time.
9. Conformity of Production (COP) frequency and samples:
   i) The Conformity of Production period for each vehicle model including its variant(s) shall be once a year.
   ii) Where production volume in six months is less than 250 per model including its variants, the provisions contained in the provisos to rule 126-A shall apply.
   iii) All these tests shall be conducted with the reference fuel as specified in this sub-rule. However, at the manufacturer's request, test may be carried out with commercial fuel.
10. The commercial Gasoline and Diesel fuel shall be as per Annexure IV-V and IV-W. Specification for commercial CNG and LPG shall be as notified from time to time.
11. Maximum torque and maximum net power for vehicles fitted with SI engines to be determined as per the procedure laid down in IS14599:1999.
12. For Diesel vehicles, the emission of visible pollutants (smoke) shall not exceed the limit value of smoke density, when expressed as light absorption coefficient for various nominal flows as given in Annexure I to sub-rule (9) of rule 115 when tested at constant speeds over the full load. These smoke limits are without correction factor and engines are to be tested with conditioned air supplied to the engine to maintain atmospheric factor at 0.98 to 1.02.

13. In the case of Diesel vehicles, the engine power shall be measured on engine dynamometer and the measured power shall conform to the power specified in AIS 137 as amended from time to time, when tested as per the procedures laid down in AIS 137 as amended from time to time.

14. Type II Test:All Gasoline / CNG / LPG vehicles specified in this sub-clause shall comply with the provisions of clause (i) of sub-rule (2) of rule 115 as applicable.

15. Smoke Density: All Diesel Fuelled Vehicles specified in this sub-clause shall comply with the provisions of clause(ii) of sub-rule (2) of rule 115 as applicable

16. Deterioration Factor shall be as given below:

Table 3: Deterioration Factor for BS V

Engine Category	Assigned Deterioration Factor						
	CO	THC	NMHC	NOx	HC+NOx	Particulate Matter (PM)	Particle Number (PN)
Positive Ignition	1.5	1.3	1.3	1.6	-	1.0	-
Compression Ignition	1.5	-	-	1.1	1.1	1.0	1.0

i) Alternatively, the vehicle manufacturer may opt for a vehicle ageing test of 120,000 km or bench ageing durability test for evaluating the Deterioration factor as per AIS 137 and as amended from time to time.

ii) This test may be performed by driving vehicle on a test track, on the road, or on a chassis dynamometer or Engine Test Bench as per AIS 137.

iii) The maximum lap speed at 10th lap and at 11th lap shall be 72 km/hour and 90 km/hour respectively.

iv) The above ageing test should be carried out by the approved test agency specified in rule 126

17. The vehicles shall be equipped with On-Board Diagnostic (BS-V OBD) systems for emission control which shall have the capability of identifying the likely area of malfunction by means of fault codes stored in computer memory as per the procedure laid down in AIS 137/Part III / D1/Sept2015 and as amended from time to time when that failure results in an increase in emission above the limits given in Table below:

Table 4: On-Board Diagnostic (BS-V OBD) Threshold: BS V

		Reference mass (RM) (kg)	CO (mg/km)		NMHC / RHC[1] (mg/km)		NOx (mg/km)		PM (mg/km)	
Category	Class		PI	CI	PI	CI	PI	CI	PI[2]	CI
M[3]	-	All	1900	1900	250	320	300	540	50	50
N1& M[4]	I	RM ≤ 1305	1900	1900	250	320	300	540	50	50
	II	1305 < RM ≤ 1760	3400	2400	330	360	375	705	50	50
	III	1760 < RM	4300	2800	400	400	410	840	50	50
N2	-	All	4300	2800	400	400	410	840	50	50

(1) For OBD test on CNG/ LPG/dual fuel mode conducted on commercial CNG / LPG, the Non-methane hydro carbon (NMHC) for CNG and Reactive hydrocarbon (RHC) for LPG, shall be estimated as below:
- CNG : NMHC = 0.3 x THC
- LPG : RHC = 0.5 x THC

where THC = Total Hydrocarbons measured.

(2) Positive ignition particulate mass standards apply only to vehicles with direct injection engines

(3) These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicle whose gross vehicle weight exceeds 2500kg

(4) These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles

whose gross vehicle weight exceeds 2500kg If a vehicle is tested for type approval on Chassis Dynamometer having Reference Mass upto 2610 kg, manufacturer may seek type approval extensions up to reference mass of 2840 kgs for its variants, even if intended variant GVW exceeds beyond 3500 kg.

"(19) Mass emission standards Bharat Stage VI (BS-VI) for category M & category N vehicles

i. the Mass emission standards for Bharat Stage VI, in respect of M & N category vehicles having Gross vehicle weight not exceeding 3,500 kg, manufactured on or after 1st April 2021 for new models and on or after 1st April 2022 for existing models, shall be as under:

Table 1: Limit Values for M & N Category vehicles fitted with SI & CI Engines: BS VI

		Reference Mass (RM) (kg)	Mass of Carbon Monoxide (CO)		Mass of Total Hydrocarbons (THC) [1]		Mass of Non-Methane Hydrocarbons (NMHC) [2]		Mass of Oxides of Nitrogen (NOx)		Combined Mass of Hydrocarbons and Oxides of Nitrogen (THC + NOx) [3]		Mass of Particulate Matter (PM)		Number of Particles (PN)	
			L1 (mg/km)		L2 (mg/km)		L3 (mg/km)		L4 (mg/km)		L2 + L3 (mg/km)		L5 (mg/km)		L6 (numbers/km)	
Category	Class		PI	CI	PI	CI	PI	CI	PI	CI	PI	CI	PI[4]	CI	PI[4] [5]	CI
M[7]	-	All	1000	500	100	-	68	-	60	80	-	170	4.5	4.5	6.0×10^{11}	6.0×10^{11}
N1& M[8]	I	RM ≤ 1305	1000	500	100	-	68	-	60	80	-	170	4.5	4.5	6.0×10^{11}	6.0×10^{11}
	II	1305<RM≤ 1760	1810	630	130	-	90	-	75	105	-	195	4.5	4.5	6.0×10^{11}	6.0×10^{11}
	III	1760≤RM	2270	740	160	-	108	-	82	125	-	215	4.5	4.5	6.0×10^{11}	6.0×10^{11}
N2[6]	-	All	2270	740	160	-	108	-	82	125	-	215	4.5	4.5	6.0×10^{11}	6.0×10^{11}

PI = Positive Ignition, CI = Compression Ignition

(1) Limits of THC are not applicable for test on CNG mode and for dual fuel mode (Diesel + CNG). For test on LPG mode, the provision of Rule 115 C shall not be applicable. For test on LPG mode, THC shall be replaced with Reactive Hydrocarbon (RHC), where RHC shall be measured as follows-

a) If commercial LPG fuel is used as test fuel, RHC shall be estimated by the formula, RHC = 0.5 x THC, where THC = Total Hydrocarbons measured during test on LPG mode.

b) If reference LPG fuel is used as test fuel, RHC shall be as measured by the analyser

(2) For test on CNG mode, the provision of Rule 115 B shall not be applicable. For test on dual fuel mode the limits for NMHC specified for PI shall be applicable. For measurement of NMHC in CNG and Dual Fuel Mode, following shall apply:-

a) If commercial CNG fuel is used as test fuel, Non-methane Hydro Carbon (NMHC) shall be estimated by the formula, NMHC = 0.3 x THC, where THC = Total Hydrocarbons measured during test on CNG mode.

b) If reference CNG fuel is used as test fuel, NMHC shall be as measured by the analyser.

(3) For test on dual fuel mode, THC shall be replaced by NMHC.

(4) Positive ignition particulate mass and number of particles limit shall apply only to vehicles with direct injection engines.

(5) Until three years after the dates of implementation of this sub-rule, particle emission number limit shall be applicable to DI vehicles upon choice of the manufacturer.

(6) Type Approval as per this sub-rule is Optional for this category

(7) These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicle whose gross vehicle weight exceeds 2500 kg

(8) These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2500 kg

Note: If a vehicle is tested for type approval on Chassis Dynamometer having Reference Mass upto 2610 kg, manufacturer may seek type approval extensions up to reference mass of 2840 kg for its variants, even if intended variant GVW exceeds beyond 3500 kg.

Table2: Application of Test Requirements for Type-Approval – BS VI

					Vehicles with Positive Ignition Engines including Hybrids				Vehicles with Compression Ignition Engines including Hybrids		
	Mono Fuel					Bi- Fuel[1]			Flex Fuel [1]	Flex Fuel	Mono Fuel	Dual Fuel
Reference Fuel	Gasoline (E0,E5,E10)[7]	LPG	CNG / Bio-Methane	Hydrogen (ICE)[5]	H_2 CNG (Hydrogen + CNG)	Gasoline (E0, E5,E10)[7]	Gasoline (E0,E5,E10)[7]	Gasoline (E0,E5,E10)[7]	Gasoline (E0,E5,E10)[7]	Diesel (B0, B5, B7)[7]	Diesel (B0,B5,B7)[7]	Diesel + CNG
						LPG	CNG / Bio-Methane	Hydrogen (ICE)[5]	Ethanol (E85)	Bio-Diesel		
Gaseous Pollutants (Type 1 Test)	Yes	Yes	Yes	Yes[4]	Yes[4]	Yes (Both Fuels)	Yes (Both Fuels)	Yes (Both Fuels)[4]	Yes (Both Fuels)	Yes (B5/B7 Only)[2,7]	Yes	Yes
Particulate Mass and Particulate Number (Type 1 Test)	Yes[6]	-	-	-	-	Yes[(2)] (Gasoline only)	Yes[(2)] (Gasoline only)	Yes (Gasoline Only)	Yes[(2)] (Both Fuels)	Yes (B5,B7 Fuel only)[2,7]	Yes	Yes
Idle Emissions (Type II Test)	Yes	Yes	Yes			Yes (Both Fuels)	Yes (Both Fuels)	Yes (Gasoline Only)	Yes (Both Fuels)	-	-	-
Crankcase Emissions (Type III Test)	Yes	Yes	Yes			Yes (Gasoline only)	Yes (Gasoline only)	Yes (Gasoline Only)	Yes (Gasoline only)	-	-	-
Evaporative Emissions (Type IV test)	Yes	-	-			Yes (Gasoline only)	Yes (Gasoline only)	Yes (Gasoline Only)	Yes (Gasoline only)	-	-	-
Durability (Type V Test)	Yes	Yes	Yes	Yes		Yes (Gasoline	Yes (Gasoline	Yes (Gasoline	Yes (Gasoline	Yes (B5,B7	Yes	Yes

						only)	only)	Only)	only)	Fuel only)[2,7]		
In-Service Conformity	Yes	Yes	Yes	Yes	Yes	Yes (both fuels)	Yes (both fuels)	Yes (both fuels)	Yes (both fuels)	Yes (B5,B7 only)[2,7]	Yes	Yes
On-Board Diagnostics and IUPRm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) When a bi-fuel vehicle is combined with a flex fuel vehicle, both test requirements are applicable.
(2) This Provision is temporary , further requirements for biodiesel shall be proposed later on
(3) Test will be performed on both the fuels. The E75 test reference fuel.
(4) Only NOx emissions shall be determined when the vehicle is running on Hydrogen.
(5) Reference Fuel is 'Hydrogen for Internal Combustion Engine' as Specified.
(6) Positive ignition particulate mass and number limits for vehicles with positive ignition engines including hybrids shall apply only to vehicles with direct injection engines.
(7) Upon the choice of the manufacturer vehicles with positive and compression ignition engines may be tested with either E0, E5 or E10 and either B0,B5 or B7 respectively. However new type approvals shall only be performed with E10 and B7 fuels.

Notes: -

1. The test shall be on Chassis Dynamometer.
2. The test including driving cycle shall be as provided in sub-rule (10) with the modifications that
   i) The exhaust gas sampling should start at the initiation of the engine start up procedure referred to in Annexure IV-E.
   ii) The driving cycle shall be at a maximum speed of 90 km/hour referred to in Annexure IV-E
3. There shall be no relaxation of norms for Conformity of Production (COP) purposes.
4. The reference gasoline fuel used in gasoline vehicles, bi-fuel vehicles and flex-fuel ethanol (E85) vehicles shall be as specified in Annexure IV-W, the reference diesel fuel used in Diesel Vehicles, flex-fuel bio-Diesel vehicles and dual fuel vehicles shall be as specified in Annexure IV-X and E85 fuel used in Flex-fuel ethanol vehicles shall be tested with reference fuel specified in Annexures IV-Q. Reference natural gas fuel used in Natural Gas / Bio-Methane mono-fuel or bi-fuel vehicles shall be as per Annexure IV-L (G20 and G25) and reference LPG fuel used in LPG mono-fuel or Bi-fuel vehicles shall be as per Annexure IV M (Fuel A and Fuel B), however, in case of non-availability of reference fuels for CNG / LPG, the commercially available CNG / LPG shall be used for the purpose of Type Approval and Conformity of Production. Technical specification of the reference Hydrogen fuel shall be as per the Annexure IV –U.
5. There shall be no crankcase emissions for Gasoline driven vehicles.
6. Evaporative emission shall not be more than 2.0g/test from Gasoline driven vehicles. The evaporative emission test procedure for gasoline driven vehicles shall be as per the procedure specified in AIS137and as amended from time to time.
7. The Conformity of Production (COP) testing procedure shall be as described in AIS 137as amended from time to time.
8. Conformity of Production (COP) frequency and samples:
   i) The Conformity of Production period for each e vehicle model including its variant(s) shall be once a year.
   ii) Where production volume in six months is less than 250 per model including its variants, the provisions contained in the provisos to rule 126-A shall apply.
   iii) All these tests shall be conducted with the reference fuel as specified in this sub-rule. However, at the manufacturer's request, test may be carried out with commercial fuel.
9. The commercial Gasoline and Diesel fuel shall be as per Annexure IV-V and IV-W respectively. Specification for commercial CNG and LPG shall be as notified from time to time.
10. Specifications of NOx reduction agent AUS 32 (Aqueous Urea Solution) shall conform to Part 1 and Part 2 of ISO 22241-2006 or DIN standard – DIN V 70070.
11. Maximum torque and maximum net power for vehicles fitted with SI engines to be determined as per the procedure laid down in IS14599:1999.
12. For Diesel vehicles, the emission of visible pollutants (smoke) shall not exceed the limit value of smoke density, when expressed as light absorption coefficient for various nominal flows as given in Annex I to sub-rule (9) of rule 115 when tested at constant speeds over the full load. These smoke limits are without correction factor and engines are to be tested with conditioned air supplied to the engine to maintain atmospheric factor at 0.98 to 1.02.
13. In the case of Diesel vehicles, the engine power shall be measured on engine dynamometer and the measured power shall conform to the power specified in AIS 137as amended from time to time, when tested as per the procedures laid down in AIS 137as amended from time to time.
14. Type II Test:All Gasoline/ CNG/LPG vehicles specified in this sub-clause shall comply with the provisions of clause (i) of sub-rule (2) of rule 115 as applicable.

15. Smoke Density: All Diesel Fuelled Vehicles specified in this sub-clause shall comply with the provisions of clause (ii)of sub-rule (2) of rule 115 as applicable.

16. Deterioration Factor shall be as given below:

Table 3: Deterioration Factor shall be as given below: BS VI

Engine Category	Assigned Deterioration Factor						
	CO	THC	NMHC	NOx	HC+NOx	Particulate Matter (PM)	Particle Number (PN)
Positive Ignition	1.5	1.3	1.3	1.6	-	1.0	1.0[1]
Compression Ignition	1.5	-	-	1.1	1.1	1.0	1.0

[1] Positive ignition particulate mass and number limits shall apply only to vehicles with direct injection engines.

i) Alternatively, the vehicle manufacturer may opt for a vehicle ageing test of 160,000 km or bench ageing durability test, for evaluating the Deterioration factor as per AIS 137and as amended from time to time.

ii) This test may be performed by driving vehicle on a test track, on the road, or on a chassis dynamometer or Engine Test Bench as per AIS 137

iii) The maximum lap speed at 10th lap and at 11th lap shall be 72 km/hour and 90 km/hour respectively.

iv) The above ageing test should be carried out by the approved test agency specified in rule 126

17. The vehicles shall be equipped with On-Board Diagnostic (BS VI - OBD) systems for emission control which shall have the capability of identifying the likely area of malfunction by means of fault codes stored in computer memory as per the procedure laid down in AIS 137and as amended from time to time when that failure results in an increase in emission above the limits given in Table below

i) OBD Threshold for BS VI vehicles manufactured on or after 1st April 2021 for new models and manufactured on or after 1st April 2022 for existing models shall be as given below:

Table 4: On-Board Diagnostic (BS VI-1 OBD) Threshold: BS VI

		Reference mass (RM) (kg)	CO (mg/km)		NMHC/ RHC [1] (mg/km)		NOx (mg/km)		PM[2] (mg/km)	
Category	Class		PI	CI	PI	CI	PI	CI	PI	CI
M[3]	-	All	1900	1750	170	290	150	180	25	25
N1& M[4]	I	RM ≤ 1305	1900	1750	170	290	150	180	25	25
	II	1305 < RM ≤ 1760	3400	2200	225	320	190	220	25	25
	III	1760 < RM	4300	2500	270	350	210	280	30	30
N2	-	All	4300	2500	270	350	210	280	30	30

(1) For OBD test on CNG/ LPG/dual fuel mode conducted on commercial CNG / LPG, the Non-methane hydro carbon (NMHC) for CNG and Reactive hydrocarbon (RHC) for LPG, shall be estimated as below:

- CNG : NMHC = 0.3 x THC
- LPG : RHC = 0.5 x THC

Where, THC = Total Hydrocarbons measured.

(2) Positive ignition particulate mass limits apply only to vehicles with direct injection engines

(3) These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicle whose gross vehicle weight exceeds 2500kg

(4) These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2500kg

If a vehicle is tested for type approval on Chassis Dynamometer having Reference Mass upto 2610 kg, manufacturer may seek type approval extensions up to reference mass of 2840 kgs for its variants, even if intended variant GVW exceeds beyond 3500 kg.

ii) OBD Threshold for BS VI vehicles manufactured on or after 1st April 2026 for new models and vehicles manufactured on or after 1st April 2027 for existing models :

Table 5 : On-Board Diagnostic (BS VI-2 OBD) Threshold : BS VI

		Reference mass (RM) (kg)	CO (mg/km)		NMHC/ RHC [1] (mg/km)		NOx (mg/km)		PM (mg/km)	
Category	Class		PI	CI	PI	CI	PI	CI	PI [2]	CI
M[3]	-	All	1900	1750	170	290	90	140	12	12
N1& M[4]	I	RM ≤ 1305	1900	1750	170	290	90	140	25	12
	II	1305 < RM ≤ 1760	3400	2200	225	320	110	180	12	12
	III	1760 < RM	4300	2500	270	350	120	220	12	12
N2	-	All	4300	2500	270	350	120	220	12	12

(1) For OBD test on CNG/ LPG/dual fuel mode conducted on commercial CNG / LPG, the Non-methane hydro carbon (NMHC) for CNG and Reactive hydrocarbon (RHC) for LPG, shall be estimated as below:
   a. CNG : NMHC = 0.3 x THC
   b. LPG : RHC = 0.5 x THC
   Where, THC = Total Hydrocarbons measured.

(2) Positive ignition particulate mass apply only to vehicles with direct injection engines

(3) These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicle whose gross vehicle weight exceeds 2500kg

(4) These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2500kg

If a vehicle is tested for type approval on Chassis Dynamometer having Reference Mass upto 2610 kg, manufacturer may seek type approval extensions up to reference mass of 2840 kgs for its variants, even if intended variant GVW exceeds beyond 3500 kg.

18. The in-use performance ratio (IUPR) of a specific monitor M of the OBD systems shall be:

$$IUPR_M = Numerator_M / Denominator_M$$

i) Comparison of Numerator and Denominator gives an indication of how often a specific monitor is operating relative to vehicle operation. Detailed requirements for tracking $IUPR_M$ are given in AIS 137.

ii) If, according to the requirements specified in AIS 137, the vehicle is equipped with a specific monitor M, IUPRM shall be greater or equal to 0.1 for all monitors M.

In theprincipal rules,afterANNEXURE IV-R,thefollowingAnnexures shallbeinserted,namely:-

"ANNEXUREIV-S

[Seerule115]

Technical specifications ofthereferencefuelGasoline (E5) for BS-V

Parameter	*Unit*	*Limits*[1]		*Testmethod*
		Minimum	*Maximum*	
Researchoctanenumber,RON		95.0	-	EN25164 Pr.ENISO5164
Motoroctanenumber,MON		85.0	-	EN25163 Pr.ENISO5163
Densityat15 °C	kg/m^3	743	756	ENISO3675 ENISO12185
Vapourpressure	kPa	56.0	60	ENISO13016-
Watercontent	%v/v		0.015	ASTME 1064
Distillation:				
-Evaporatedat70 °C	%v/v	24.0	44.0	EN-ISO3405
-Evaporatedat100°C	%v/v	48	60.0	EN-ISO3405
-Evaporatedat150°C	%v/v	82.0	90.0	EN-ISO3405
-Finalboilingpoint	°C	190	210	EN-ISO3405
Residue	%v/v	-	2.0	EN-ISO3405
Hydrocarbonanalysis:				
-Olefins	%v/v	3.0	13.0	ASTMD 1319
- Aromatics	%v/v	29.0	35.0	ASTMD 1319
-Benzene	%v/v	-	1.0	EN12177
-Saturates	%v/v	Report		ASTM1319
Carbon/hydrogenratio		Report		
Carbon/oxygenratio		Report		
Inductionperiod[2]	minutes	480	-	EN-ISO7536
Oxygencontent[3]	% m/m	Report		EN1601
Existentgum	mg/ml	-	0.04	EN-ISO6246
Sulphurcontent	mg/kg	-	10	ENISO20846 ENISO20884
Coppercorrosion		-	Class1	EN-ISO2160
Leadcontent	mg/l	-	5	EN237
Phosphoruscontent[4]	mg/l	-	1.3	ASTMD 3231
Ethanol[3]	%v/v	4.7	5.3	EN1601 EN13132

(1) Thevaluesquotedinthespecificationsare"truevalues".Inestablishmentoftheirlimitvaluesthetermsof ISO 4259 Petroleum products-Determinationandapplicationof precisiondatainrelationtomethodsoftesthavebeenappliedandin fixingaminimumvalue,aminimum differenceof 2Rabovezerohas beentakenintoaccount;infixingamaximum and minimumvalue,the minimumdifference is 4R(R= reproducibility).

- Notwithstandingthismeasure,whichisnecessaryfortechnicalreasons,themanufactureroffuelsshallneverthelessaim ata zerovaluewherethestipulatedmaximumvalueis2Randatthemeanvalueinthecaseof quotationsofmaximumand minimumlimits.Shoulditbenecessarytoclarifywhetherafuelmeetstherequirementsofthespecifications,thetermsof ISO 4259shallbe applied.

(2) Thefuelmaycontainoxidationinhibitorsandmetaldeactivatorsnormallyusedtostabilizerefinerygasolinestreams,but detergent/dispersive additives andsolvent oils shallnotbe added.

(3) Ethanolmeetingthe specificationofEN 15376is the onlyoxygenate thatshallbe intentionallyaddedtothe reference fuel.

(4) There shall be nointentionaladditionofcompounds containingphosphorus,iron,manganese, orleadtothisreferencefuel.

"ANNEXUREIV-T [See Rule115]

Technical specifications ofthereferencefuelDiesel (B5) for BS-V

Parameter	Unit	Limits[1]		Testmethod
		Minimum	Maximum	
Cetanenumber[2]		52.0	54.0	EN-ISO5165
Densityat15 °C	kg/m^3	833	837	EN-ISO3675
Distillation:				
-50 %point	°C	245	-	EN-ISO3405
-95 %point	°C	345	350	EN-ISO3405
-Finalboilingpoint	°C	-	370	EN-ISO3405
Flashpoint	°C	55	-	EN22719
CFPP	°C	-	-5	EN116
Viscosityat40 °C	mm^2/s	2.3	3.3	EN-ISO3104
Polycyclicaromatichydroca	% m/m	2.0	6.0	EN12916
Sulphurcontent[3]	mg/kg	-	10	ENISO20846 /ENISO20884
Coppercorrosion		-	Class1	EN-ISO2160
Conradsoncarbonresidue(10%	% m/m	-	0.2	EN-ISO10370
Ashcontent	% m/m	-	0.01	EN-ISO6245
Watercontent	% m/m	-	0.02	EN-ISO12937
Neutralisation(strongacid)	mgKOH/g	-	0.02	ASTMD 974
Oxidationstability[4]	mg/ml	-	0.025	EN-ISO12205
Lubricity(HFRRwearscan diameterat60 °C)	µm	-	400	ENISO12156
Oxidationstabilityat110°C[4]	h	20.0		EN14112
FAME[5]	%v/v	4.5	5.5	EN14078

(1) Thevaluesquotedinthespecificationsare"truevalues".Inestablishmentoftheirlimitvaluesthetermsof ISO4259 Petroleum products –Determinationandapplicationof precisiondatainrelationtomethods oftesthavebeenappliedandin fixingaminimumvalue,aminimumdifferenceof2Rabovezerohasbeentakenintoaccount;infixingamaximumand minimumvalue,the minimumdifference is 4R(R= reproducibility).

- Notwithstandingthismeasure,whichisnecessaryfortechnicalreasons,themanufactureroffuelsshallnever thelessaimata zerovaluewherethestipulatedmaximumvalueis2Randatthemeanvalueinthecaseof quotationsofmaximumand minimumlimits. Shoulditbe necessarytoclarifywhetherafuelmeets the requirements ofthe specifications,the terms ofISO 4259shall be applied.

(2) Therangeforcetanenumberisnotinaccordancewiththerequirementsofaminimum rangeof4R.However,inthecaseofa disputebetweenfuelsupplierandfueluser,thetermsofISO4259maybeusedtoresolvesuchdisputesprovidedreplic ate measurements, ofsufficient numbertoarchive thenecessaryprecision,are made inpreference tosingle determinations.

(3) The actualsulphurcontentofthefuel usedforthe Type ITestshall be reported.

(4) Eventhoughoxidationstabilityiscontrolled,itis likelythatshelflifewill be limited.Advice shall be soughtfromthe supplier as tostorage conditions andlife.

(5) FAMEcontenttomeetthe specificationofEN14214.

(6) OxidationstabilitycanbedemonstratedbyEN-ISO 12205orbyEN 14112.Thisrequirementshallbereviewedbasedon CEN/TC19evaluationsofoxidative stabilityperformance andtestlimits.

[See rule 115 (E)]

Technical Specification of Reference Hydrogen Fuel.

Characteristics	Units	Limits		Test Method
		Minimum	Maximum	
Hydrogen Purity	% mole	98	100	ISO 14687-1
Total Hydrocarbon	µmol/mol	0	100	ISO 14687-1
Water[1]	µmol/mol	0	[2]	ISO 14687-1
Oxygen	µmol/mol	0	[2]	ISO 14687-1
Argon	µmol/mol	0	[2]	ISO 14687-1
Nitrogen	µmol/mol	0	[2]	ISO 14687-1
CO	µmol/mol	0	1	ISO 14687-1
Sulphur	µmol/mol	0	2	ISO 14687-1
Permanent Particulates[3]				ISO 14687-1

(1) Not to be condensed

(2) Combined water, oxygen , nitrogen, argon: 1.900 µmol/mol.

(3) The hydrogen shall not contain dust, sand , dirt, gums, oils or other substancesin an amount sufficient to damage the fuelling station equipment of the vehicle (engine) being fuelled.

ANNEXURE - IV V

[See rule 115 (18 & 19)]

Specification of Commercial Gasoline Fuel

Characteristics	Unit	Requirements	
		Regular	Premium
Color, visual		Orange	Red
Density @ 15°C	Kg/m3	720-775	720-775
Distillation :			
a) Recovery up to 70 °C (E 70)	% volume	10-45	10-45
b) Recovery up to 100 °C (E 100)	% volume	40-70	40-70
c) Recovery up to 150 °C (E 150)	% volume	75 min	75 min
d) Final Boiling Point (FBP), max	°C	210	210
e) Residue, max	% volume	2	2
Research Octane Number (RON) min		95	95
Motor Octane Number (MON), min		85	85
Gum content (solvent washed), max	mg/100ml	5	5
Oxidation Stability, min	minutes	360	360
Sulphur, total, max	mg/kg	10	10
Lead content (as Pb), max	g/l	0.005	0.005
Reid Vapour Pressure (RVP) @ 38°C, max	kPa	60	60
Vapour Lock Index (VLI)			
a) Summer, max		750	750
b) Other months, max		950	950
Benzene Content, max	% volume	1	1
Copper strip corrosion for 3 hrs @ 50°C, max	rating	Class 1	Class 1
Olefin content, max	% volume	21	18
Aromatics content, max	% volume	35	35
Oxygen content, max	% mass	2.7	2.7
Oxygenates Content			
a) Methanol, max	% volume	3	3
b) Ethanol, max	% volume	5	5
c) Iso-propyl alcohol, max	% volume	10	10
d) Iso-Butyl alcohol, max	% volume	10	10
e) Tertiary-butyl alcohol, max	% volume	7	7
f) Ethers containing 5 or more carbon atoms per molecule, max	% volume	15	15
g) Other oxygenates, max	% volume	8	8

Note :

1. Test methods and other provisions and details along with the requirements as given above shall be issued by Bureau of Indian Standards.

ANNEXURE - IV W

[See rule 115 (18 & 19)]

Specification of Commercial Diesel Fuel

Characteristics	Unit	Requirements
Ash, max	% mass	0.01
Carbon Residue (Ramsbottom) on 10 % residue, max	% mass	0.3 without additives
Cetane number (CN), min		51
Cetane Index (CI), min		48
Distillation :		
95% vol. recovery at ^{0}C, max	^{0}C	360
Flash point :		
a) Abel, min	^{0}C	42
Kinematic Viscosity @ 40 ^{0}C	cst	2.0-4.5
Density @15 ^{0}C	kg/m^3	820-845
Total Sulphur, max.	mg/kg	10
Water content, max	mg/kg	200
Cold filter Plugging point (CFPP)		
a) Summer, max	^{0}C	18
b) Winter, max	^{0}C	6
Total contaminations, max	mg/kg	24
Oxidation stability, max	g/m^3	25
Polycyclic Aromatic Hydrocarbon (PAH), max	% mass	11
Lubricity, corrected wear scar diameter @ 60 ^{0}C, max	µm (microns)	460
Copper strip corrosion for 3 hrs @ 50^{0}C	rating	Class – 1

Note :

1. Test methods and other provisions / details along with the requirements as given above shall be issued by Bureau of Indian Standards.

"ANNEXUREIV-X[See Rule115]

Technical specifications oftheReferenceGasoline Fuel(E10) for BS VI

Parameter	Unit	Limits [1]		Test method
		Minimum	Maximum	
Research octane number, RON [2]		95.0	98.0	EN ISO 5164
Motor octane number, MON [2]		85.0	89.0	EN ISO 5163
Density at 15 °C	kg/m^3	743.0	756.0	EN ISO 12185
Vapour pressure (DVPE)	kPa	56.0	60.0	EN 13016-1
Water content	% m/m	max 0.05 [Appearance at -7°C: Clear and Bright]		EN 12937
Distillation:				
– evaporated at 70 °C	% v/v	34.0	46.0	EN ISO 3405
– evaporated at 100 °C	% v/v	54.0	62.0	EN ISO 3405
– evaporated at 150 °C	% v/v	86.0	94.0	EN ISO 3405
– final boiling point	°C	170	195	EN ISO 3405
Residue	% v/v	—	2.0	EN ISO 3405
Hydrocarbon analysis:				
– olefins	% v/v	6.0	13.0	EN 22854
– aromatics	% v/v	25.0	32.0	EN 22854
– benzene	% v/v	-	1.00	EN 22854 EN 238
– saturates	% v/v	report		EN 22854
Carbon/hydrogen ratio		report		
Carbon/oxygen ratio		report		
Induction period [3]	minutes	480	—	EN ISO 7536
Oxygen content [4]	% m/m	3.3	3.7	EN 22854
Solvent washed gum (Existent gum content)	mg/100ml	—	4	EN ISO 6246
Sulphur content [5]	mg/kg	—	10	EN ISO 20846 EN ISO 20884
Copper corrosion 3hrs, 50 °C		—	Class 1	EN ISO 2160
Lead content	mg/l	—	5	EN 237
Phosphorus content [6]	mg/l	—	1.3	ASTM D 3231
Ethanol [4]	% v/v	9.0	10.0	EN 22854

1 The values quoted in the specifications are 'true values'. In establishment of their limit values the terms of ISO 4259 Petroleum products - Determination and application of precision data in relation to methods of test have been applied and in fixing a minimum value, a minimum difference of 2R above zero has been taken into account; in fixing a maximum and minimum value, the minimum difference is 4R (R = reproducibility). Notwithstanding this measure, which is necessary for technical reasons, the manufacturer of fuels shall nevertheless aim at a zero value where the stipulated maximum value is 2R and at the mean value in the case of quotations of maximum and minimum limits. Should it be necessary to clarify whether a fuel meets the requirements of the specifications, the terms of ISO 4259 shall be applied.

2 A correction factor of 0.2 for MON and RON shall be subtracted for the calculation of the final result in accordance with EN 228:2008.

3 The fuel may contain oxidation inhibitors and metal deactivators normally used to stabilise refinery gasoline streams, but detergent/dispersive additives and solvent oils shall not be added.

4 Ethanol is the only oxygenate that shall be intentionally added to the reference fuel. The Ethanol used shall conform to EN 15376.

5 The actual sulphur content of the fuel used for the Type I test shall be reported.

6 There shall be no intentional addition of compounds containing phosphorus, iron, manganese, or lead to this reference fuel.

"ANNEXURE IV-Y [See Rule 115]

Technical specifications of the reference Diesel Fuel (B7) for BS VI

Parameter	Unit	Limits [1]		Test method
		Minimum	Maximum	
Cetane Index		46.0		EN ISO 4264
Cetane number [2]		52.0	56.0	EN ISO 5165
Density at 15 °C	kg/m^3	833.0	837.0	EN ISO 12185
Distillation:				
- 50% point	°C	245.0	—	EN ISO 3405
- 95% point	°C	345.0	360.0	EN ISO 3405
- final boiling point	°C	—	370.0	EN ISO 3405
Flash point	°C	55	—	EN ISO 2719
Cloud point	°C	-	-10	EN 23015
Viscosity at 40 °C	mm^2/s	2.30	3.30	EN ISO 3104
Polycyclic aromatic hydrocarbons	% m/m	2.0	4.0	EN 12916
Sulphur content	mg/kg	—	10.0	EN ISO 20846 EN ISO 20884
Copper corrosion 3hrs, 50 °C		—	Class 1	EN ISO 2160
Conradson carbon residue (10 % DR)	% m/m	—	0.20	EN ISO 10370
Ash content	% m/m	—	0.010	EN ISO 6245
Total contamination	mg/kg	-	24	EN 12662
Water content	mg/kg	—	200	EN ISO 12937
Acid number	mg KOH/g	—	0.10	EN ISO 6618
Lubricity (HFRR wear scan diameter at 60 °C)	µm	—	400	EN ISO 12156
Oxidation stability @ 110 °C [3]	h	20.0		EN 15751
FAME [4]	% v/v	6.0	7.0	EN 14078

1 The values quoted in the specifications are 'true values'. In establishment of their limit values the terms of ISO 4259 Petroleum products – Determination and application of precision data in relation to methods of test have been applied and in fixing a minimum value, a minimum difference of 2R above zero has been taken into account; in fixing a maximum and minimum value, the minimum difference is 4R (R = reproducibility). Notwithstanding this measure, which is necessary for technical reasons, the manufacturer of fuels shall nevertheless aim at a zero value where the stipulated maximum value is 2R and at the mean value in the case of quotations of maximum and minimum limits. Should it be necessary to clarify whether a fuel meets the requirements of the specifications, the terms of ISO 4259 shall be applied.

2 The range for cetane number is not in accordance with the requirements of a minimum range of 4R. However, in the case of a dispute between fuel supplier and fuel user, the terms of ISO 4259 may be used to resolve such disputes provided replicate measurements, of sufficient number to archive the necessary precision, are made in preference to single determinations.

3 Even though oxidation stability is controlled, it is likely that shelf life will be limited. Advice shall be sought from the supplier as to storage conditions and life.

4 FAME content to meet the specification of EN 14214.

[No. RT-11028/ 20/2015-MVL]

(Abhay Damle)
Joint Secretary to the Government of India

Note :- The principal rules were published in the Gazette of India , Extraordinary, Part II, section 3, sub-section (i) vide G. S. R. 590(E) dated the 2nd June, 1989 and last amended vide G.S.R. 677(E) dated the 03/09/15.