उपाबंध IV त

(नियम 115क (7) देखें)

डीजल ईंधन विनिर्देश

विशेषताएं	न्यूनतम	अधिकतम	परीक्षण विधि
सीटेन संख्या	52	54	ईएन-आईएसओ 5165
15°से. (किग्रा/एम3) पर घनत्व	833	837	ईएन-आईएसओ 3675
आसवन : °से में			
50% प्वाइंट (°से)	245	---	ईएन-आईएसओ 3405
95% प्वाइंट (°से)	345	350	
अंतिम क्वथनांक (°से)	--	370	
फ्लेश प्वाइंट (°से)	55	---	ईएन 22719
सीएफपीपी (°से)	--	(-) 5	ईएन 116
40°से. (मिमी2/एस) पर विस्कोसिटी	2.5	3.5	ईएन-आईएसओ 3104
पोलीसाइक्लिक एरोमैटिकहाइड्रोकार्बन (% एम/एम)	3.0	6.0	आईपी 391
सल्फर तत्व (मिग्रा/किग्रा)	---	300	एएसटीएमडी 5453
ताम्र क्षरण	---	श्रेणी 1	ईएन-आईएसओ 2160
कॉनरेडसन कार्बन अवशिष्ट (10% डीआर) (% एम/एम)	---	0.2	ईएन-आईएसओ 10370
भस्म तत्व (% एम/एम)	---	0.01	ईएन-आईएसओ 6245
जल तत्व (% एम/एम)	---	0.05	ईएन-आईएसओ 12937
निष्प्रभावन (गाढ़ा अम्ल) सं0. (मिग्रा केओएच/ग्रा)	---	0.02	एएसटीएमडी 974
आक्सीकरण स्थिरता (मिग्रा/मिली)	---	0.025	ईएन-आईएसओ 12205

[फा. सं. आरटी-11028/2/2007-एमवीएल]

सरोज कुमार दास, संयुक्त सचिव

पाद टिप्पण : मूल अधिनियम, संख्यांक सा.का.नि. 590(अ), तारीख 2 जून, 1989 द्वारा प्रकाशित किए गए थे और संख्या सा.का.नि. 37(अ), तारीख 20 जनवरी, 2009 द्वारा उनका अंतिम संशोधन किया गया था ।

MINISTRY OF SHIPPING, ROAD TRANSPORT AND HIGHWAYS

(Department of Road Transport and Highways)

NOTIFICATION

New Delhi, the 9th February, 2009

G.S.R. 84(E).— Whereas the draft of the Central Motor Vehicles Rules, 1989, were published vide number G.S.R. 522 (E) , dated the 15th July, 2008, as required by sub-section (1) of section 212 of the Motor Vehicle Act, 1988 (59 of 1988) , for inviting objections and suggestions from all persons likely to be affected thereby before expiry of the period of sixty days from the date on which copies of the Gazette of India in which the said notification was published, were made available to the public;

And whereas copies of the said Gazette notification were made available to the public on the 21st July 2008;

And whereas , the objections and suggestions received from the public on the said draft rules have been considered by the Central Government;

Now, therefore, in exercise of the powers conferred by section 110 of the said Motor Vehicle Act, the Central Government hereby makes the following rules further to amend the Central Motor Vehicles Rules, 1989, namely:-

1. (1) These rules may be called the Central ***Motor Vehicles (Second Amendment) Rules, 2009.***

(2) Save as otherwise specifically provided, they shall come into force on the date of their 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 sub-rule (2), in clause (i), after the third proviso, the following proviso shall be inserted, namely:-

"Provided that in the case of CNG/ LPG motor vehicles operating on Bi-fuel mode, the test shall be conducted only on CNG/LPG mode."

(b) in sub-rule (14), after clause (E), the following clauses shall be inserted with effect from the 1st day of April, 2010, namely:-

"(F) Mass Emission Standards (Bharat Stage III) for two and three wheelers manufactured on and from 1st April 2010 shall be as under:-

Vehicle Category	Pollutants	TA=COP norms (g/km)	D.F. (Deterioration Factor)
(1)	(2)	(3)	(4)
Two-wheelers (Gasoline)	CO	1.0	1.2
	HC+NOx	1.0	1.2
Three-wheelers (Gasoline)	CO	1.25	1.2
	HC+NOx	1.25	1.2
Two-wheelers and Three-wheelers (Diesel)	CO	0.50	1.1
	HC+NOx	0.50	1.0
	PM	0.05	1.2

Notes.-

1. (a) For vehicles operating on CNG mode, the provisions of rule 115-B shall be applicable.

(b) For vehicles operating on LPG mode, the provisions of rule 115-C shall be applicable.

2. The reference fuel for Diesel and Gasoline vehicle shall be as specified in Annexure IV F and Annexure IV G respectively and reference fuel for CNG and LPG shall be as available commercially.

3. The commercial fuel for Gasoline and Diesel vehicle shall be as per BIS Specification IS: 1460-2005 (Fifth revision) for Diesel and IS: 2796-2008 (Amendment No. I-January, 2008) (Forth Revision) for Gasoline, Specification for Commercial CNG and LPG shall be as notified from time to time.

4. The provisions of clauses (a), (c), (d), (e) and (f) of sub-rule 12 of rule 115, except the proviso therein, shall be applicable to the said vehicles.

5. In case of diesel vehicles, the engine power shall be measured on engine dynamometer and the measured power shall conform to the power specified in Chapter 1 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time, when tested as per the procedures laid down in Chapter 6 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time.

6. (i) Gasoline/ CNG/LPG vehicles specified herein shall comply with the provisions of clause (i) of sub-rule (2) of rule 115.

(ii) Diesel vehicles specified herein shall comply with clause (ii) of sub-rule (2) of rule 115.

(G) The provisions of this sub-rule in respect of four-wheeled vehicles manufactured on and from the 1st April, 2010 shall apply to all the States and the Union territories except the National Capital Region and the cities of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad including Secunderabad, Ahmedabad, Pune, Surat, Kanpur and Agra.";

(c) after sub-rule (14), the following sub-rule shall be inserted with effect from the 1st day of April, 2010, namely:-

"(15) Mass Emission Standards (Bharat Stage IV) for M and N Category vehicles :-

(a) the Mass Emission Standards for Bharat Stage IV shall come into force in the National Capital Region and the cities of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad including Secunderabad, Ahmedabad, Pune, Surat, Kanpur and Agra in respect of four-wheeled vehicles manufactured on or after the 1st April, 2010, except the four-wheeled transport vehicles plying on Inter-State permits or National permits or All India Tourist permits, within the jurisdiction of these cities.

Explanation.- For the purposes of sub-rules (14) and (15), the "National Capital Region" shall have the same meaning as assigned to it in clause (f) of section 2 of the National Capital Region Planning Board Act, 1985 (2 of 1985);

(b) the Mass Emission Standards for Bharat Stage IV shall be as under:-

(i) the mass emission standards for Bharat Stage–IV Category M and Category N vehicles manufactured on or after the 1st April, 2010, with Gross Vehicle Weight not exceeding 3,500 kg, shall be as under:

Limit Values for TA and COP									
Category	Class	Reference Mass (RW) (Kg)	Mass of Carbon Monoxide (CO) (g/km)		Mass of Hydro Carbon (HC) (g/km)	Mass of Oxides of Nitrogen (NOx) (g/km)		Combined mass of hydro carbons and oxides of Nitrogen (HC+NOx) (g/km)	Mass of Particulates (PM) (g/km)
			Gasoline	Diesel	Gasoline	Gasoline	Diesel	Diesel	Diesel
M*	-	All	1.00	0.50	0.10	0.08	0.25	0.30	0.025
N1 and M**	I	RW≤1305	1.00	0.50	0.10	0.08	0.25	0.30	0.025
	II	1305<RW≤ 1760	1.81	0.63	0.13	0.10	0.33	0.39	0.04
	III	1760<RW	2.27	0.74	0.16	0.11	0.39	0.46	0.06

* These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2,500 kg.

** These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2,500 kg.

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. (i) In case of vehicles operating on CNG, the provisions in rule 115 B shall be applicable.

(ii) In case of vehicles operating on LPG, the provisions in rule 115 C shall be applicable.

5. The reference fuel shall be as specified in Annexure IV J for Gasoline vehicles, Annexure IV K for Diesel vehicles, Annexure IV L for CNG (G20 and G25) vehicles and Annexure IV M for LPG (Fuel A and Fuel B) vehicles respectively. Reference Fuel as per Annexure IV L and IV M shall be used for Type Approval and Conformity of Production one year after the same is available to the test agencies. Till then, Commercial CNG / LPG fuel shall be used.

6. There shall be no crankcase emissions for Gasoline driven vehicles.

7. Evaporative emission shall not be more than 2.0 g / test from Gasoline driven vehicles. The evaporative emission test procedure for gasoline driven vehicles shall be as per the procedure specified in MoSRTH/CMVR/TAP-115/116 and as amended from time to time.

8. The Conformity of Production (COP) testing procedure shall be as described in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

9. The COP frequency and samples:

(i) The Conformity of Production period for each vehicle model including its variant(s) shall be once in a year;

(ii) Where production volume in six months is less than 250 per model including it's variants, the provisions contained in the provisos to rule 126-A shall apply.

10. The commercial Gasoline and Diesel fuel shall be as per Annexure IV- N and IV-O in respect of the places mentioned in clause (a) of this sub-rule and in respect of all other places, the commercial fuel shall be Bharat Stage-III as per BIS specification IS:1460-2005 (fifth revision) for Diesel and IS:2796-2008 (Amendment No. I- January 2008) (Forth Revision) for Gasoline. Specification for commercial CNG and LPG shall be as notified from time to time.

11. For the vehicles of the Category M and Category N with Gross Vehicle Weight not exceeding 3,500 kg. –

(i) Deterioration factor shall be as given below:

Engine Category	Deterioration Factor				
	CO	HC	NOx	HC+NOx	PM
Gasoline/Gaseous fuelled engines.	1.2	1.2	1.2	Not Applicable	
Diesel Engines.	1.1	Not Applicable	1.0	1.0	1.2

(ii) Alternatively, the vehicle manufacturers may opt for an ageing test of 80,000 km for evaluating deterioration factor as per MoSRTH/CMVR/TAP-115/116 and as amended from time to time.

(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.

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 Chapter – 1 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time, when tested as per the procedures laid down in Chapter 6 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time.

14. i) 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.

ii) All Diesel Fuelled Vehicles specified in this sub-clause shall comply with the provisions of clause (ii) of sub-rule (2) of rule 115.

15. The vehicles of the Category M and Category N with Gross Vehicle Weight not exceeding 3,500 kg. shall be equipped with On-Board Diagnostic (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 for vehicles manufactured on and from 1st April 2010 as per the procedure laid down in MoSRTH/CMVR/TAP-115/116 and as amended from time to time. The On-Board Diagnostic (OBD) systems for emission control shall be as specified in the Tables below:

Table I

On-Board Diagnostic (OBD) systems for emission control:

Sr. No.	Engine Type	Category of Vehicles	Year	
			OBD I vehicles manufactured on and from	OBD II vehicles manufactured on and from
1.	Gasoline Fuelled Engines	M1 and M2 (less than 3,500 kg GVW)	1st April 2010	1st April 2013
2.	Gasoline Fuelled Engines	N1	1st April 2010	1st April 2013
3.	LPG or CNG Fuelled Engines	M1 and M2 (less than 3,500 kg GVW)	---	1st April 2013
4.	LPG or CNG Fuelled Engines	N1	---	1st April 2013
5.	Compression Ignition Engines	M1 and M 2 (less than 3,500 kg GVW)	1st April 2010	1st April 2013
6.	Compression Ignition Engines	N1	1st April 2010	1st April 2013
7.	All	Vehicles above 3,500 kg GVW	---	1st April 2013

Table II

All Positive Ignition Vehicles		
OBD Monitoring Items		
Monitoring Items	OBD I vehicles manufactured on and from	OBD II vehicles manufactured on and from
Catalyst	-	1st April 2013
Misfire	-	1st April 2013
O_2 (Oxygen) sensor	1st April 2010	1st April 2013
Secondary Air system (if provided)	1st April 2010	1st April 2013
Coolant temperature	1st April 2010	1st April 2013
EGR, (Exhaust Gas Recirculation) (if provided)	1st April 2010	1st April 2013
Fuel tank leakage and evaporation	-	1st April 2013
Fuel system	-	1st April 2013
Emission Control systems/ components (Comprehensive Components)	1st April 2010	1st April 2013
Circuit continuity for all emission related power train components	1st April 2010	1st April 2013
Distance traveled since MIL (Malfunction Indicator Lamp) ON	1st April 2010	1st April 2013

Table III

All Compression Ignition Vehicles		
OBD Monitoring Items		
Monitoring Items	OBD I vehicles manufactured on and from	OBD II vehicles manufactured on and from
Catalyst	-	1st April 2013
Electronic fuel Injection system	1st April 2010	1st April 2013
Particulate Trap (if provided)	-	1st April 2013
Coolant temperature	1st April 2010	1st April 2013
EGR (Exhaust Gas Recirculation) (if provided)	1st April 2010	1st April 2013
Fuel system	-	1st April 2013
Emission Control systems/ components (Comprehensive Components)	1st April 2010	1st April 2013
Circuit continuity for all emission related power train components	1st April 2010	1st April 2013
Distance traveled since MIL (Malfunction Indicator Lamp) ON	1st April 2010	1st April 2013

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16. For vehicles manufactured on and from 1st April 2013, the On-Board Diagnostic–II (OBD-II) systems for emission control must indicate the failure of an emission-related component or system, as per the procedure laid down in MoSRTH/CMVR/TAP-115/116 and as amended from time to time, when that failure results in an increase in emissions above the limits given in the Table below:

Table IV

		Reference mass	Mass of carbon monoxide		Mass of hydrocarbons		Mass of oxides of nitrogen		Mass of Particulates
		(RW)	(CO)		(HC)		(NOx)		(PM)
		(kg)	(g/km)		(g/km)		(g/km)		(g/km)
Category	Class		Petrol	Diesel	Petrol	Diesel	Petrol	Diesel	Diesel
M*	-	All	3.2	3.2	0.4	0.4	0.6	1.2	0.18
N1 and M*	I	RW ≤ 1305	3.2	3.2	0.4	0.4	0.6	1.2	0.18
	II	1305 < RW ≤ 1760	5.8	4.0	0.5	0.5	0.7	1.6	0.23
	III	1760 < RW	7.3	4.8	0.6	0.6	0.8	1.9	0.28

* These limits are not applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2,500 kg.

** These limits are applicable for vehicles designed to carry more than six persons including driver or vehicles whose gross vehicle weight exceeds 2,500 kg.

(ii) Vehicles with Gross Vehicle Weight exceeding 3,500 kg manufactured on or after the 1st April, 2010 and equipped with either the diesel engines or the CNG Engines or the LPG Engines shall conform to the following norms: -

(A) For Diesel engines

Limit values for Type Approval (TA) as well as (COP)				
Engine Steady State Cycle (ESC) test				Engine Load Response (ELR) test
CO (g/kWh)	HC (g/kWh)	NOx (g/kWh)	PM (g/kWh)	Smoke (m^{-1})
1.5	0.46	3.5	0.02	0.5

(B) For diesel engines, CNG Engines or LPG Engines

Engine Transient Cycle (ETC) test				
CO (g/kWh)	NMHC (1) (g/kWh)	CH_4 (2) (g/kWh)	NOx (g/kWh)	PM (3) (g/kWh)
4.0	0.55	1.1	3.5	0.03

(1) A manufacturer may choose to measure the mass of total hydrocarbons (THC) instead of measuring the mass of non-methane hydrocarbon (NMHC). In this case, the limit for mass of THC should be same as for the NMHC.

(2) For CNG engines only

(3) For Diesel engines only

Notes:-

1. The test shall be done on engine dynamometer.

2. There shall be no relaxation of norms for Conformity of Production (COP) purposes.

3. In case of vehicles operating on diesel fuelled engines, the gaseous and particulate emissions shall be as per Engine Steady State Cycle (ESC) and Engine Transient Cycle (ETC) and smoke test shall be as per Engine Load Response (ELR) as specified in MoSRTH/CMVR/TAP-115/116 and as amended from time to time.

4. In case of vehicles operating on CNG or LPG fuelled engines, the gaseous emissions are to be determined only on the Engine Transient Cycle (ETC) test as specified in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

5. The smoke opacity is to be determined on the Engine Load Response (ELR) test as specified in Part XII of MoSRTH/CMVR/TAP-115/116 as amended from time to time.

6. In case of vehicles operating on CNG or LPG mode, the provisions of rules 115-B and 115-C shall be applicable respectively.

7. The reference fuel shall be as specified in Annexure IV K for Diesel vehicles, Annexure IV L for CNG (G20, G23 and G25) vehicles and Annexure IV M for LPG (Fuel A and Fuel B) vehicles respectively. Reference Fuel as per Annexure IV L and IV M shall be used for Type Approval and Conformity of Production, one year after the same is available to the test agencies. Till then, Commercial CNG / LPG fuel shall be used.

8. The Conformity of Production (COP) testing procedure shall be as specified in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

9. The Conformity of Production (COP) frequency and samples:

   (i) The Conformity of Production period for each engine model including its variant (s) shall be once a year;

   (ii) Where production volume in six months is less than 250 per model including it's variants, the provisions contained in the provisos to rule 126-A shall apply.

10. For diesel engine vehicles, the emission of visible pollutants (smoke) shall not exceed the limit value of smoke density, as per Annexure I to sub-rule (9) of rule 115. These smoke limits are without correction factor and engines are to be tested with conditioned air supplied to the engine to maintain atmospheric factor of 0.98 to 1.02.

11. The commercial Diesel fuel shall be as per Annexure IV-O in respect of the places mentioned in sub-clause (i) of clause (a) of this sub-rule and in respect of all other places, the commercial fuel shall be as per BIS specification

IS:1460-2005 (fifth revision) for Diesel. Specification for Commercial CNG and LPG shall be as notified from time to time.

12. For vehicles with Gross Vehicle Weight exceeding 3,500 kg manufactured on or after the 1st April, 2010, -

(i) deterioration factor shall be as given in the Table below:

Engine type	Test cycle	CO	HC	NMHC	CH_4	NOx	PM
Diesel engine	ESC	1.1	1.05	-	-	1.05	1.1
	ETC	1.1	1.05	-	-	1.05	1.1
CNG, LPG or Gaseous fuelled engine	ETC	1.1	1.05	1.05	1.2	1.05	-

ii) alternatively, the vehicle manufacturers may opt for evaluation of deterioration factor as specified in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

Category of Vehicle in which engine will be installed	Minimum Service accumulation period
Category N1 Vehicles	100,000 km
Category N2 Vehicles	125,000 km
Category N3 Vehicles with GVW equal to or less than 16,000 kg	125,000 km
Category N3 Vehicles with GVW above 16,000 kg	167,000 km
Category M2 Vehicles	100,000 km
Category M3 Vehicles with GVW equal to or less than 7,500 kg	125,000 km
Category M3 Vehicles with GVW above 7,500 kg	167,000 km

The above ageing test should be carried out by the approval test agency.

13. In the case of Diesel vehicles, the engine power shall be measured on engine dynamometer and the measured power shall not differ from the specified power as given in Chapter – 1 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time when tested as per procedures laid down in Chapter – 6 of Part IV of MoSRTH/CMVR/TAP – 115/116 as amended from time to time.

14. (i) The CNG and LPG vehicles specified in this sub-clause shall comply

with the provisions of clause (i) of sub-rule (2) of rule 115

(ii) All Diesel Fuelled Vehicles specified in this sub-clause shall comply with the provisions of clause (ii) of sub-rule (2) of rule 115.

15. The extension of type approval to engine family and engine after treatment system family shall be as described in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

16. The vehicles specified in this sub-clause shall be equipped with an On-Board Diagnostic 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 for vehicle manufactured on and from 1st April 2013, as per procedure laid down in MoSRTH/CMVR/TAP-115/116 and as amended from time to time.

17. The Diesel engine NOx reduction agent AUS 32 (Aqueous Urea Solution) shall conform to Part 1 and Part 2 of ISO 22241-2006.".

3. In the said rules, in rule 115A, after sub-rule (6), the following sub-rule shall be inserted, namely: --

"(7) Every diesel driven agricultural tractor manufactured on and from the date specified in column (2) of the Table 1 shall comply with the Bharat (Trem) Stage-III A norms and the weighted average mass of Carbon Monoxide (CO), Hydrocarbon (HC) and Oxides of Nitrogen (NOx) and Particulate Matters (PM) in grams per kilo Watt/hour emitted by them in addition to those of visible pollutants as provided in sub-rule (2), when tested for Type Approval (TA) and Conformity of Production (COP) in accordance with the procedure specified in ISO 8178 Part-4 (1996) 'C1' 8 mode cycle, shall not exceed the limits given in columns (3), (4) and (5) respectively, of the said Table.

Table 1

Limit Values for Type Approval (TA) and Conformity of Production (COP)

Category	Applicable from	CO	HC+ NOx	PM
(1)	(2)	(3)	(4)	(5)
< 8 kW	1.4.2010	5.5	8.5	0.8
8 <= kW < 19	1.4.2010	5.5	8.5	0.8
19 <= kW < 37	1.4.2010	5.5	7.5	0.6
37 <= kW < 56	1.4.2011	5.0	4.7	0.4
56 <= kW < 75	1.4.2011	5.0	4.7	0.4
75 <= kW < 130	1.4.2011	5.0	4.0	0.3
130<= kW < 560	1.4.2011	3.5	4.0	0.2

Notes:-

1. The test shall be on Engine Dynamometer.

2. The test procedure for measurement of Gross Power (without Fan) shall be as per Part IV of MoSRTH/CMVR/TAP-115/116 Issue No.3.

3. The test procedure for measurement of emission of visible and gaseous pollutants and Particulate Matter shall be as per MoSRTH/CMVR/TAP-115/116 Part X (Sub-part A).

4. Test fuel shall be the reference fuel as specified in Annexure- IV P

5. The emission of visible pollutants, when tested as provided in sub-rule (3) of rule 115-A, shall not exceed the limit values given therein.

6. To meet Bharat (Trem) Stage-III A norms with effect from the date specified in column (2) of Table 1, the engine manufacturer may opt for an aging test as specified in Table 2 for evaluating deterioration factors as per Annexure V of Part X (Sub-part-B) of MoSRTH/CMVR/TAP/115-116 Issue No.3 or fixed deterioration factors as per Table 3.

Table 2

Category (power band)	Useful life (hours) (Emission Durability Period)
<=19 kW	3000
19< kW <=37	5000
> 37 kW	8000

Table 3

CO	HC	NOx	PM
1.1	1.05	1.05	1.1

7. There shall be no relaxation of norms for Conformity of Production (COP) purposes.

8. Conformity of Production (COP) Selection Procedure shall be as per MoSRTH/CMVR/TAP-115/116 Part VI.

9. Conformity of Production (COP) Frequency shall be as per Part X (Sub-part A) of MoSRTH/CMVR/TAP-115/116.

10. The extension of Type Approval (TA) to engine family and engine after- treatment system family shall be specified in MoSRTH/CMVR/TAP-115/116 as amended from time to time.

Explanation 1. - The term "engine family" includes a range of engines having similar design parameters for emission levels.

Explanation 2. - The term "engine after-treatment system family" means if same after-treatment system consisting of catalyst, particulate traps etc., is used on a series of engines, then the deterioration factor based on one engine test shall be applicable to the entire series.".

4. In the said rules. in rule 115 B,-

(1) in item A, -

(a) in sub-item (I), for clauses (c), (d) and (e), the following clauses shall be substituted, namely:-

"(c) vehicle models and variants having option for bi-fuel operation and fitted with limp-home Gasoline tank of capacity not exceeding two litres, three litres and five litres respectively on two-wheeler, three-wheeler and four-wheeler shall be exempted from mass emission tests including all tests specified under sub-rule (2), Notes 6 and 7 mentioned below clause (C) of sub-rule (14) and Notes 6, 7, 15 and 16 of sub-clause (i) of clause (b) of sub-rule (15) of rule 115 in Gasoline mode;

(d) prevalent conformity of production procedure shall also be applicable.";

(b) in sub-item (II), in clause (a), after sub-clause (iii), the following sub-clause shall be inserted, namely:-

"(iv) for the vehicles manufactured on and after the 1st day of April 2010, the type approval norms as applicable, subject to minimum of Bharat Stage- IV emission norms for Category M and Category N Vehicles with Gross Vehicle Weight not exceeding 3,500 kg and Bharat Stage-III emission norms for two and three wheelers.";

(c) in the *Explanation*, in clause (a), in the Table, for serial number (iii) and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

(1)	(2)
"(iii) Fuel Consumption test	S. No. 31 of the notification number S.O.1365 (E), dated the 13th December, 2004";

(2) in item B,-

(a) in sub-item (II), in clause (c), after sub-clause (iii), the following sub-clause shall be inserted, namely:-

"(iv) for the vehicles manufactured on and after 1st April 2010, the type approval norms as applicable, shall be subject to minimum of Bharat Stage- IV emission norms in case of four wheelers and Bharat Stage-

III emission norms in case of two and three wheelers till the validity of these norms";

(b) in the *Explanation*, in clause (a), in the table, for serial number (iv) and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

(1)	(2)
"(iv) Fuel Consumption test	S. No. 31 of the notification number S.O. 1365 (E), dated the 13th December, 2004";

(3) in item C, in the table, for serial number (vii) and the entries relating thereto, the following serial number and entries shall be substituted, namely:-

(1)	(2)
"(vii) Fuel Consumption test	S. No. 31 of the notification number S.O. 1365 (E), dated the 13th December, 2004";

(4) for item D, the following item shall be substituted, namely:

"D. Applicable Emission Norms

Category	Applicable Emission Norms
(i) OE CNG Category M and Category N Vehicles with GVW equal to or less than 3,500 kg, Three wheelers and Two wheelers.	Prevailing gasoline norms
(ii) CNG Category M and Category N vehicles with GVW equal to or less than 3,500 kg, Three and Two wheelers retro fitment from gasoline vehicles.	Prevailing gasoline norms
(iii) CNG Category M and Category N vehicles with GVW equal to or less than 3,500 kg, Three and Two wheelers retro fitment from diesel vehicles.	Prevailing diesel norms

(iv) CNG engines Category M and Category N vehicles with GVW greater than 3,500 kg manufactured upto 1st April 2010.	Prevailing diesel engine norms based on 13-mode steady-state engine dynamometer test or 13-mode Engine Steady State Cycle as applicable.
(v) CNG engines for Category M and Category N vehicles with GVW greater than 3,500 kg manufactured on and from 1st April 2010	Prevailing diesel engine emission norms.".

5. In the said rules, in rule 115 C,-

(A) in sub-rule (2),-

(i) for clause (a), the following clause shall be substituted, namely:-

"(a) in case of LPG fitments done by vehicle manufacturers on new gasoline vehicles, each model manufactured by vehicle manufacturers shall be type approved as per the prevailing mass emission norms as applicable for the category of new vehicles in respect of the place of its use.";

(ii) for clauses (c), (d) and (e) the following clauses shall be substituted, namely:-

"(c) vehicle models and variants having option for bi-fuel operation and fitted with limp-home Gasoline tank of capacity not exceeding two litres, three litres and five litres respectively on two-wheeler, three-wheeler and four-wheeler shall be exempted from mass emission tests including all tests specified under sub-rule (2), Notes 6 and 7 mentioned below clause (C) of sub-rule (14) and Notes 6, 7, 15 and 16 of sub-clause (i) of clause (b) of sub-rule (15) of rule 115 in Gasoline mode;

(d) prevalent conformity of production procedure shall also be applicable.";

(B) in sub-rule (3),-

(i) in clause (a), after sub-clause (iii), the following sub-clause shall be inserted, namely:-

"(iv) for the vehicles manufactured on and after the 1st day of April 2010, the type approval norms as applicable, subject to minimum of Bharat Stage- IV emission norms for Category M and Category N Vehicles with Gross Vehicle Weight not exceeding 3,500 kg and Bharat Stage- III emission norms for two and three wheelers.";

(ii) in clause (b), for sub-clause (ii), the following sub-clause shall be substituted, namely:-

"(ii) separate type approval shall be necessary for the following types of vehicles -

(a) two stroke
(b) four stroke
(c) carbureted
(d) single point fuel injected; and
(e) multi point fuel injected.";

(C) in sub-rule (6), in the *Explanation*, in clause (a), in the table, for Sl. No. 4 and the entries relating thereto, the following Sl. No. and entries shall be substituted, namely:-

(1)	(2)	(3)
"4.	Fuel Consumption test	S. No. 31 of the notification number S.O. 1365 (E), dated the 13th December, 2004";

(D) in sub-rule (7), in the table, for Sl. No. 4 and the entries relating thereto, the following Sl. No. and entries shall be substituted, namely:-

(1)	(2)	(3)
"4.	Fuel Consumption test	S. No. 31 of the notification number S.O. 1365 (E), dated the 13th December, 2004";

(E) in sub-rule (8), for the table, the following table shall be substituted, namely:-

Category	Applicable Emission Norms
(i) OE LPG Category M and Category N Vehicles with GVW equal to or less than 3,500 kg, Three wheelers and Two wheelers.	Prevailing gasoline norms

(ii) LPG Category M and Category N vehicles with GVW equal to or less than 3,500 kg, Three and Two wheelers retro fitment from gasoline vehicles.	Prevailing gasoline norms
(iii) LPG Category M and Category N vehicles with GVW equal to or less than 3,500 kg, Three and Two wheelers retro fitment from diesel vehicles.	Prevailing diesel norms
(iv) LPG engines Category M and Category N vehicles with GVW greater than 3,500 kg manufactured upto 1st April 2010.	Prevailing diesel engine norms based on 13-mode steady-state engine dynamometer test or 13-mode Engine Steady State Cycle as applicable.
(v) LPG engines for Category M and Category N vehicles with GVW greater than 3,500 kg manufactured on and from 1st April 2010	Prevailing diesel engine emission norms.".

6. In the said rules, in rule 126, after the words "the International Centre for Automotive Technology, Manesar", the words "or the Northern Region Farm Machinery Training and Testing Institute, Hissar (for testing of combine harvester)" shall be substituted.

7. In the said rules, after Annexure IV-I, the following Annexures shall be inserted, namely:-

"ANNEXURE – IV]

[See rule 115(15)]

Technical Specification of the Reference Fuel to be used for testing vehicles equipped with Gasoline engines.

Parameter	Unit	Limits (1)		Test Method
		Minimum	Maximum	
Research octane number, RON		95.0	--	EN 25164
Motor octane number, MON		85.0	-	EN 25163
Density at 15 degrees C	kg/m3	740	754	ISO 3675
Reid vapour pressure	kPa	56.0	60.0	PrEN ISO; 13016-1; (DVPE)
Distillation :				
-evaporated at 70 degress C	% v/v	24.0	40.0	EN-ISO 3405
-evaporated at 100 degrees C	% v/v	50.0	58.0	EN-ISO 3405
-evaporated at 150 degrees C	% v/v	83.0	89.0	EN-ISO 3405
-final boiling point	Degree C	190	210	EN-ISO 3405
Residue	% v/v	-	2.0	EN-ISO 3405
Hydrocarbon analysis :				
-olefins	% v/v	-	10.0	ASTM D 1319
-aromatics	% v/v	29.0	35.0	ASTM D 1319
-benzene	% v/v	-	1.0	ASTM D 1319
-saturates	% v/v	Report	Report	Pr. EN 12177
Carbon / Hydrogen ratio		Report		ASTM D 1319
Induction period (2)	minutes	480	-	EN-ISO 7536
Oxygen content	% m/m	-	1.0	EN 1601
Existent gum	mg/ml	-	0.04	EN-ISO 6246
Sulphur content (3)	mg/kg	-	10	ASTM D 5453
Copper corrosion		-	Class 1	EN-ISO 2160
Lead content	mg/l	-	5	EN 237
Phosphorus content	mg/l	-	1.3	ASTM D 3231

(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 should 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 the questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.

(2)The fuel may contain oxidation inhibitors and metal deactivators normally used to stabilize refinery gasoline streams, but detergent/dispersive additives and solvent oils must not be added.

(3) The actual sulphur content of the fuel used for the Type I test shall be reported

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ANNEXURE – IV K

[See rule 115(15)]

Technical Specification of the Reference Fuel to be used for testing vehicles equipped with Diesel engines.

Parameter	Unit	Limits (1)		Test method
		Minimum	Maximum	
Cetane number (2)		52.0	54.0	EN-ISO 5165
Density at 15 degrees C	kg/m^3	833	837	EN-ISO 3675
Distillation :				
- 50% point	degree C	245	-	EN-ISO 3405
- 95% point	degree C	345	350	EN-ISO 3405
- final boiling point	degree C	-	370	EN-ISO 3405
Flash point	degree C	55	-	EN 22719
CFPP	degree C	-	-5	EN 116
Viscosity at 40 degrees C	mm^2/s	2.3	3.3	EN-ISO 3104
Polycyclic aromatic hydrocarbons	% m/m	3.0	6.0	IP 391
Sulphur content (3)	mg/kg	-	10	ASTM D 5453
Copper corrosion		-	Class 1	EN-ISO 2160
Conradson carbon residue (10% DR)	% m/m	-	0.2	EN-ISO 10370
Ash content	% m/m	-	0.01	EN-ISO 6245
Water content	% m/m	-	0.02	EN-ISO 12937
Neutralisation (strong acid) number	mg KOH/g	-	0.02	ASTM D 974
Oxidation stability (4)	mg/ml	-	0.025	EN-ISO 12205
Lubricity (HFRR wear scan diameter at 60 degrees C)	Micrometer µm	-	400	CEC F-06-A-96
FAME	Prohibited			

(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 should 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 the questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should 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) The actual sulphur content of the fuel used for the Type I test shall be reported

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

ANNEXURE – IV L
[See rule 115(15)]
Specification of reference fuel for CNG

CNG Reference Fuel for Category M and Category N Vehicles not exceeding 3,500 Kgs GVW and Two and Three-Wheelers

Characteristic	Units	Basis	Limits		Test method
			minimum	maximum	
Reference fuel G_{20}					
Composition:					
Methane	% mole	100	99	100	ISO 6974
Balance (1)	% mole	-	-	1	ISO 6974
N_2	% mole				ISO 6974
Sulphur content	mg/m^3 (2)	-	-	10	ISO 6326-5
Wobbe Index (net)	MJ/m^3 (3)	48.2	47.2	49.2	
Reference fuel G_{25}					
Composition:					
Methane	% mole	86	84	88	ISO 6974
Balance (1)	% mole	-	-	1	ISO 6974
N_2	% mole	14	12	16	ISO 6974
Sulphur content	mg/m^3 (2)	-	-	10	ISO 6326-5
Wobbe Index (net)	MJ/m^3 (3)	39.4	38.2	40.6	

(1) Inerts (different from N_2) + C_2 + C_{2+}.
(2) Value to be determined at 293, 2 K (20° C) and 101.3 kPa.
(3) Value to be determined at 273,2 K (0° C) and 101.3 kPa.

The above type of vehicles should be tested with both types of Reference Fuels

CNG Reference Fuel for Vehicles above 3,500 Kgs GVW

Characteristic	Units	Basis	Limits		Test method
			Minimum	Maximum	
Reference fuel G_R					
Composition:					
Methane		87	84	89	
Ethane		13	11	15	
Balance (1)	% - mole	-	-	1	ISO 6974
Sulphur content	mg/m^3 (2)	-	-	10	ISO 6326-5

(1) Inerts + C_{2+}
(2) Value to be determined at standard conditions (293.2 K (20°C) and 101.3 kPa).

Characteristic	Units	Basis	Limits		Test method
			Minimum	Maximum	
Reference fuel G_{23}					
Composition:					
Methane		92.5	91.5	93.5	
Balance (1)	% - mole	-	-	1	ISO 6974
N_2		7.5	6.5	8.5	
Sulphur content	mg/m^3 (2)	-	-	10	ISO 6326-5

(1) Inerts (different form N_2)+ C_2+C_{2+}.
(2) Value to be determined at standard conditions (293.2 K (20°C) and 101.3 kPa).

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Characteristic	Units	Basis	Limits		Test method
			minimum	maximum	
Reference fuel G_{25}					
Composition:					
Methane		86	84	89	
Balance [1]	% - mole	-	-	1	ISO 6974
N_2		14	12	16	
Sulphur content	mg/m^3 [2]	-	-	10	ISO 6326-5
(1) Inerts (different from N_2) + C_2 + C_{2+}.					
(2) Value to be determined at standard conditions (293.2 K (20°C) and 101.3 kPa).					

ANNEXURE – IV M

[See rule 115(15)]

(Specification of reference fuel for LPG)

LPG Reference Fuel for Category M and Category N Vehicles not exceeding 3,500 Kgs GVW and Two and Three Wheelers

Parameter	Unit	Fuel A	Fuel B	Test method
Composition				ISO 7941
C_3-content	% vol.	30±2	85±2	
C_4-content	% vol.	balance	balance	
$<C_3, >C4$	% vol.	maximum 2	maximum 2	
Olefins	% vol.	Maximum 12	maximum 15	
Evaporation residue	mg/kg	maximum 50	maximum 50	ISO 13757
Water at 0° C		free	free	Visual inspection
Total sulphur content	mg/kg	maximum 10	maximum 10	EN 24260
Hydrogen sulphide		none	none	ISO 8819
Copper strip corrosion	Rating	Class 1	Class 1	ISO 6251 [1]
Odour		Characteristic	Characteristic	
Motor octane number		minimum 89	Minimum 89	EN 589 Annex B
[1] This method may not accurately determine the presence of corrosive materials if the sample contains corrosion inhibitors or other chemicals which diminish the corrosivity of the sample to the copper strip. Therefore, the addition of such compounds for the sole purpose of biasing the test method is prohibited.				

LPG Reference Fuel for Vehicles above 3,500 Kgs GVW

Parameter	Unit	Fuel A	Fuel B	Test method
Composition				ISO 7941
C_3-content	% vol	50±2	85±2	
C_4-content	% vol	balance	balance	
$<C_3, >C4$	% vol	max. 2	max. 2	
Olefins	% vol	max. 12	max. 14	
Evaporation residue	mg/kg	max. 50	max.50	ISO 13757
Water at 0° C		Free	free	visual inspection
Total sulphur content	mg/kg	max. 10	max. 10	EN 24260
Hydrogen sulphide		None	none	ISO 8819
Copper strip corrosion	rating	Class 1	Class 1	ISO 6251 [1]
Odour		characteristic	characteristic	
Motor octane number		min. 92.5	min. 92.5	EN 589 Annex B
[1] This method may not accurately determine the presence of corrosive materials if the sample contains corrosion inhibitors or other chemicals which diminish the corrosivity of the sample to the copper strip. Therefore, the addition of such compounds for the sole purpose of biasing the test method is prohibited.				

ANNEXURE - IV N

[See rule 115(15)]

Specification of Commercial Gasoline Fuel

Characteristics	Unit	Requirements	
		Unleaded regular	Unleaded premium
Color, visual		Orange	Red
Density @ 15^{0}C	Kg/m3	720-775	720-775
Distillation :			
a) Recovery up to 70 ^{0}C (E 70)	% volume	10-45	10-45
b) Recovery up to 100 ^{0}C (E 100)	% volume	40-70	40-70
c) Recovery up to 150 ^{0}C (E 150)	% volume	75 min	75 min
d) Final Boiling Point (FBP), max	^{0}C	210	210
e) Residue, max	% volume	2	2
Research Octane Number (RON) min		91	95
Motor Octane Number (MON), min		81	85
Gum content (solvent washed), max	mg/100ml	5	5
Oxidation Stability, min	minutes	360	360
Sulphur, total, max	mg/kg	50	50
Lead content (as Pb), max	g/l	0.005	0.005
Reid Vapour Pressure (RVP), 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^{0}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 details along with the requirements as given above shall be issued by Bureau of Indian Standards.
2. Petrol of 89 RON and 79 MON and having all other properties as the unleaded regular grade indicated above shall also be available for meeting requirements of the older vehicles which will be conforming to pre-Euro III equivalent vehicular emission norms.
3. Type test for Phosphorous content in petrol shall be introduced
4. These standards specifications have been finalized by the Expert Committee after discussions with the automobile and oil industry as per Auto Fuel Policy.

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ANNEXURE - IV O
[See rule 115(15)]
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		46
Distillation :		
95% vol. recovery at °C, max	^{0}C	360
Flash point :		
a) Abel, min	^{0}C	35
Kinematic Viscosity @ 40 ^{0}C	Cst	2.0-4.5
Density @15 ^{0}C	kg/m^3	820-845
Total Sulphur, max.	mg/kg	50
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 (wsd 1,4) @ 60 0C, max	µm (microns)	460
Copper strip corrosion for 3 hrs @ 50^{0}C	Rating	Class – 1

Note :

1. These density and 95 per cent distillation recovery temperature limits shall be company pool average values. However, all samples shall meet the density @ 15^{0}C limit of 820-860 kg/m^3 and 95 per cent minimum distillation recovery at 370^{0}C
2. For diesel processed from Assam crude, relaxation of CN & CI by 3 units and density shall be applicable as provided in the present BIS specification
3. Test methods and other provisions / details along with the requirements as given above shall be issued by Bureau of Indian Standards.
4. These standards specifications have been finalized by the Expert Committee after discussions with the automobile and oil industry as per Auto Fuel Policy.

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ANNEXURE IV P
(See Rule 115A (7))

Diesel Fuel Specifications

Characteristics	Minimum	Maximum	Test Method
Cetane Number	52	54	EN-ISO 5165
Density at 15°C (kg/m3)	833	837	EN-ISO 3675
Distillation : in °C			
50% point (°C)	245	---	EN-ISO 3405
95% point (°C)	345	350	
Final boiling point (°C)	--	370	
Flash point (°C)	55	---	EN 22719
CFPP (°C)	--	(-) 5	EN 116
Viscosity at 40°C (mm2/s)	2.5	3.5	EN-ISO 3104
Polycyclic aromatic hydrocarbons (% m/m)	3.0	6.0	IP 391
Sulphur Content (mg/kg)	---	300	ASTM D 5453
Copper Corrosion	---	Class 1	EN-ISO 2160
Conradson carbon residue (10% DR) (% m/m)	---	0.2	EN-ISO 10370
Ash Content (% m/m)	---	0.01	EN-ISO 6245
Water Content (% m/m)	---	0.05	EN-ISO 12937
Neutralisation (strong acid) No. (mg KOH/g)	---	0.02	ASTM D 974
Oxidation Stability (mg/ml)	---	0.025	EN-ISO 12205

[F. No. RT-11028/2/2007-MVL]

SAROJ KUMAR DASH, Jt. Secy.

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