

Foreword

This Bangladesh Standard was adopted by the Bangladesh Standards and Testing Institution on after the draft finalized by the Mineral, Fuels and Petroleum products Sectional Committee had been approved by the Chemical Divisional Committee.

This standard was first published in 1963 and subsequently revised in 1983, 1991, 1999 and 2010. In 1999 the sectional committee revised the standard in the previous context of world trend of using unleaded motor gasoline. It was revealed that Octane Number of motor gasoline-premium grade ranging in between 92-98 is being used in many countries including our neighbouring country. In 2010 the sectional committee revised this standard considering octane Number 95 as the standard value.

The main changes in table 1 compared to the previous standard are as follows:

- viii) Sulphur, total, ppm, Max.: 250 changed to 10; and
- xii) Benzene Content, percent by volume, Max.: 1 have been included.

In the preparation of this standard, assistance have been derived from the following publications:

BS 4040 Specification for leaded petrol (gasoline) for motor vehicles.

British Standards Institutions.

Statistics on the Research Octane Number in the Asia pacific countries.

ASTM D 439:1989 Standard specification for Automotive gasoline.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value (observed or calculated) expressing the result of a test or analysis, shall be rounded off in accordance with BDS 103.

Bangladesh Standard
Specification for
Unleaded Motor Gasoline – Premium
(Fifth Revision)

1. Scope

1.1 This standard prescribes the requirements and methods of sampling and test for motor gasoline – premium, suitable for use as a fuel in automobile spark-ignition internal combustion engines.

2. Normative Reference

The following methods of test issued under 'P' series of BDS 1320 are necessary adjuncts to this standard:

BDS 1320 (P:1) Methods of test for petroleum and its products. Density and relative density (sp.gr.) of crude petroleum and liquid petroleum products by hydrometer methods.

BDS 1320 (P:6) Detection of copper corrosion from petroleum products by the copper strip tarnish test.

BDS 1320 (P:7) Methods of test for petroleum and its products. Distillation of petroleum products.

BDS 1320 (P:8) Determination of sulfur in petroleum products (Lamp method).

BDS 1320 (P:9) Methods of test for petroleum and its products. Knock characteristics of motor fuels by the research method.

BDS 1320 (P:10) Total lead in gasoline by iodine monochloride method.

BDS 1320 (P:11) Methods of test for petroleum and its products

Vapour pressure of petroleum products by Reid method.

BDS 1320 (P:12) Methods of test for petroleum and its products. Existent gum in fuels by jet evaporation.

BDS 1320 (P:13) Methods of test for petroleum and its products. Oxidation stability of gasoline (induction method).

BDS 1320 (P:14) Methods of test for petroleum and its products. Doctor test.

BDS 1320 (P:15) Mercaptan sulfur in gasoline, kerosene, aviation turbine and distillate fuels (Potentiometric method).

BDS 1341/ ASTM D 4057/IP 51 Methods of sampling of petroleum and its products.

3. Requirements**3.1 General**

3.1.1 The material shall be a refined petroleum distillate, free from undisclosed water, foreign matter and other visible impurities. The material may contain antioxidants metal deactivators, anti-knock agents and other additives (see 3.1.1.1 to 3.1.1.4) in appropriate concentration to improve the quality of gasoline.

3.1.1.1 Antioxidant – An approved antioxidants may be added in sufficient concentration to meet the requirements for oxidation stability as specified in Table1. Following are the approved antioxidants:

- a) N, N'- di- secondary-butyl-paraphenylene diamine;
- b) 2, 4- di-methyl-6-tertiary butyl phenol;
- c) 4- methyl-2, 6-tertiary butyl phenol;
- d) N, N'- di- isopropyl paraphenylene diamine;
- e) N-normal butyl-p-aminophenol; and
- f) Mixture of N, N'- di- secondary-butyl-paraphenylene diamine and disalicylidene-N-methyl dipropylene triamine.

3.1.1.2 Metal deactivators – An approved metal deactivator shall be added in sufficient concentration of the material or any component thereof has been refined by copper sweetening process. The following are the approved metal deactivators:

- a) N, N'- di-disalicylidene-propylene diamine;
- b) N, N'- di-disalicylidene-ethylene-diamine; and
- c) N, N'- disalicylidene-methylamine-dipropylene triamine.

3.1.1.3 Dyes – A suitable dye shall be added in such proportions as will satisfy the requirement for colour as specified in Table 1.

3.1.1.4 Subject to agreement between the purchaser and the supplier suitable additives other than those mentioned in 3.1.1.1 and 3.1.1.2 may be added in appropriate concentration to improve the quality of gasoline.

3.2 Other requirements – The material shall also comply with the requirements prescribed in Table 1 when tested according to the methods referred in column 4 of the table. (The equivalent/identical methods given in the numerical list of ASTM/IP standards may be used).

Table 1 Requirements for Unleaded Motor Gasoline - Premium
(Clauses 3.1.1.1, 3.1.1.3 and 3.2)

SL. No.	Characteristics	Requirements	Method of Test Ref to		
			(4)		
(1)	(2)	(3)	Part of BDS 1320	ASTM	IP
i)	Density at 15°C, Kg/L	Not limited but to be reported	P-1	D 1298 D 4052	160
ii)	Colour	Red	visual		
iii)	Copper-strip corrosion for 3 hours at 50°C	Not worse than No.1	P-6	D130	154
iv)	Distillation:				
	a) Initial boiling point, °C	Not limited but to be reported			
	b) 10 percent recovery by volume, °C, Max.	75			
	c) 50 percent recovery by volume, °C, Min. Max.	80 125	P-7	D 86	123
	d) 90 percent recovery by volume, °C, Max.	180			
	e) Final boiling point, °C, Max.	210			
	f) Residue, percent by volume, Max.	2.0			
v)	Octane number (Research method), Min.	95	P-9	D 2699	237
vi)	Oxidation stability, in minutes, Min.	240	P-13	D 525 D 7525	40
vii)	Solvent washed gum content, mg/100 mL, Max.	4.0	P-12	D 381	131
viii)	Sulphur, total, ppm, Max.	10	P-8	D 4294 D 4045 D 7220 D 3120	107
ix)	Lead content (as Pb), ppm, max.	10*	P-10	D 3237 D 5059	270
x)	Reid vapour pressure at 37.8°C (100°F), psig, Max.	10	P-11	D 323 D 5191	69
xi)	Doctor test Or, Mercaptan sulphur, percent by mass, Max.	Negative 0.001	P-14 P-15	D 4952 D 3227 UOP 163	30 342
xii.	Benzene Content, percent by volume, Max.	1	ISO 22854	D 3606 D 55809 D 6277 D 6730 D 6839	-
The intentional addition of lead is not permitted.					

3. Sampling

3.1 Representative samples of the material shall be drawn as prescribed in BDS 1341/ASTM D 4057/IP 51.