

Products Standardization in Oil & Gas Sector in India

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Introduction

- Bureau of Indian Standards (BIS), works under Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India.
- BIS has been entrusted the job of formulation of National Standards under an Act of Parliament.

Activities of BIS

- Formulation of National Standards
- Certification Schemes
 - Product Certification
 - Hall Marking of Gold Jewellery
 - Imported Goods Certification
 - ECO Mark Scheme
 - Quality System Certification (IS/ISO 9001)
 - Environmental Management System Certification (IS/ISO 14001)
 - Hazard Analysis & Critical Control Points (HACCP) Certification (IS 15000:1998)
 - Occupational Health & Safety Management System (OHSMS) Certification (IS 18001:2000)
- Training Services
- Information Services
- Laboratory Services

Formulation of National Standards

- Indian Standards are formulated in a transparent manner through a consensus process by the Technical Committees comprising of experts from all concerned areas such as Consumers, Producers/ Manufacturers, R&D Centres, NGOs, Regulatory Bodies etc.
- The Bureau has published over 18000 standards so far.

Is it mandatory for all manufacturers to adopt Indian Standards?

- Adoption of Indian Standards is generally voluntary in nature and their implementation depends on adoption by concerned parties. An Indian Standard becomes binding if it is stipulated in a contract, referred to in a legislation or made mandatory by specific orders by the Central or State Governments.

Status of Implementation of Indian Standards on Petrol & Diesel

- Ministry of Petroleum and Natural Gas has adopted Indian Standards on Motor gasoline and diesel in the country through a Govt. Gazette notification
- Compliance to Indian Standards on these products is mandatory but taking ISI Mark is not.

International Activities

- BIS is a founder Member of ISO and continues to take active part in International Standardization.
- BIS is also a member of Technical Management Board (TMB).
- BIS is a Participating P-Member of 61 Technical Committees of ISO.
- BIS holds secretariat responsibilities of 8 Technical Committees including subcommittees.
- Besides, BIS Functions as the National Enquiry Point for WTO-TBT as nominated by the Ministry of Commerce, the dealing Ministry with WTO.

Harmonization of Standards

- Currently there is no mechanism in place to collect and disseminate standards in Asia, for example Fuel standards.
- Socio economic differences in Asia are large and will not allow for harmonization in the short term. Also within countries, there are considerable regional differences.

Harmonization of Standards Contd...

- Harmonization has four stages
- 1) Information sharing
- 2) Debating harmonization
- 3) Deciding on harmonization and
- 4) Implementation of standards.
- The current pattern in India is to duplicate European emission standards and related fuel standards.

Harmonization of Standards

- Harmonization can mean having the same goal but different time schedules to reach the common goal.
- Awareness raising and consensus building on the advantages and disadvantages of harmonization are very important.
- Certain countries, like India have strict standards for specific hot spots rather than same standards at entire National Level.
- There could be a concern that harmonization of standards may become reason for watering down standards in some part of the world.

Indian Standards on Petroleum Sector

- **Indian Standards in the area of petroleum, coal and related products are formulated through following Sectional Committees :**
 - **Methods of Measurement and Test for Petroleum, Petroleum Products & Lubricants, PC 1**
 - **Petroleum, Lubricants & Their Related Products, PC 3**

Fuels Standards Development

- A close knit set up of Technical Committees is in practice in BIS
- Systems approach being followed in setting and reviewing fuel standards by the technical committee with sound understanding of the impact of fuel on emissions, Health Impacts and the economic costs, financial impact for producer, distributor and consumer including the linkage with vehicle standards and engine technology.
- Involvement of different stakeholders such as Govt., Private Sector, academia and Civil Society to avoid polarization.

Fuel Standards Development

- Parameters that need regulation in Motor gasoline are Lead, Sulphur, Reid Vapour Pressure, Benzene, Aromatics and Olefins (Though there are 22 requirements)
- For Diesel, these include Sulphur, Distillation recovery, Density, flash point and Cetane Number. (Though there are 22 requirements)

Fuel Standards Development

- While laying standards for Motor Gasoline and Diesel, the affordability, availability and cost factors, all have been taken into consideration.
- Compliance to emission norms set is not much problem in new vehicles, however difficulty of implementation is mainly in old vehicles

Indian Standards on Petroleum Products

Motor gasoline, diesel ,bio-diesel
and others

Important Indian Standards under PCD 3

- IS 1460:2005 Diesel Fuels – Specification (Fifth Revision)
- IS 2796:2008 Motor Gasoline – Specification (Fourth Revision)
- IS 15607:2005 Bio-diesel (B100)blend stock for diesel fuel-Specification

IS 1460:2005 DIESEL FUELS - SPECIFICATION

- This Indian Standard was first published in 1959 and subsequently revised in 1968, 1974, 1995 , 2000 and 2005.
- In the present version, specification for high speed diesel fuel for the vehicles meeting Bharat Stage III (EURO III equivalent) Emission norms have been covered while retaining requirements for Bharat Stage II as well.

IS 1460:2005 DIESEL FUELS - SPECIFICATION

- Provision of blending of bio-diesel up to 5% (v/v) with High Speed Diesel (HSD) has been made in the standard.

Comparison of IS 1460:2005 (Bharat Stage III) with Overseas Standards

Requirement	India	EN	USA Calfor	Brazil	WFC Category 1	ASTM
Cetane Number, Min	51	51	48	42	48	40
Cetane Index, Min.	46	46	40	45	45	40
Density at 15°C, kg/m ³	820- 845	820- 845	820- 870	820- 880	820- 860	-
Viscosity at 40°C, cst, Max.	2.0- 4.5	2.0- 4.5	2.0- 4.1	-	-	4.1 Cont..

Comparison of IS 1460:2005 with Overseas Standards

Requirement	India	EN	USA Calf or.	Brazil	WFC	ASTM
Distillation, Min						
T50	-	-	243- 293	245- 310	-	-
T85	-	350		370	-	-
T90		-	282- 321	-	370	338
						Cont..

Comparison of IS 1460:2005 with Overseas Standards

Requirements	India	EN	USA Calfrn.	Brazil	WFC	ASTM
Distillation, Min						
T95	360°C	360 °C		-	-	-
End point °C	-	-	304-349	-	-	-
Total acidity, mg KOH/g, Max	To report	-	-	-	-	-
						Cont..

Comparison of IS 1460:2005 with Overseas Standards

Requirement	India	EN	USA Calfrn.	Brazil	WFC	ASTM
Sulphur, ppm, max.	350	350	500	2000	5000	500
Total aromatics, Vol %, Max	-	-	10	-	-	-
Flash point, °C, Min.	35	55	54	-	55	52
Carbon residue 10%, wt %, Max.	0.3	0.3	0.15	0.25	0.3	-

Comparison of IS 1460:2005 with Overseas Standards

Requirements	India	EN	USA Calfrn.	Brazil	WFC	AST M
Cold Filter Plugging point, °C, Max.	6(W) /18(S)	(-)44-(-)20	-	-	-	-
PAH,% by mass, max	11	1.1	1.4	-	-	-
Pour point °C, Max.	3(W) /15(S)	-	-	-	-	-
Cloud pt. °C, Max.	-	(-)34-(-)10	-	0.05	-	0

Comparison of IS 1460:2005 with Overseas Standards

Requirements	India	EN	USA Calfrn.	Brazil	WFC	AST M
Water, mg/kg Max	200	240	-	-	500	-
Total Sediment mg/100ml, max	-	-	-	-	-	-
ASH % (wt%) max	0.01	0.01	0.01	-	0.01	-

IS 2796:2008 MOTOR GASOLINE

- (Fourth Revision)

- This Indian Standard was first published in 1964 and subsequently revised in 1971, 1995, 2000 and 2008.
- In the present version two grades of unleaded motor gasoline such as BS II and BS III complying with respective emission norms have been covered.
- In order to meet stricter emission norms (Bharat Stage IV / Euro IV) envisaged in future, quality requirement for motor gasoline have been given to provide sufficient lead time to refineries so that major process changes can be carried out.

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IS 2796:2008 MOTOR GASOLINE - SPECIFICATION

- 5% Ethanol blending in motor gasoline has been implemented.
- Provision of 10% Ethanol Blending in motor gasoline (E10) has been made.
- Requirements for protection of engines in view of blending with organic oxygenates such as alcohol and ethers have been made by making addition of anti-oxidants and MFA mandatory for E10.

Comparison of IS 2796:2008

(Bharat Stage III) with Overseas Standards

Requirements	India	EN	Japan	Brazil	WFC	ASTM
MON, Min	81/85	85	-	-	85	-
RON, Min	91/95	95	89/96	80	95	-
(MON+RON)/2, Min	-	-	-	-	-	87/89/91
Density at 15°C, Kg/m ³	720-775	720-775	783	-	715-770	-
						..Cont..

Comparison of IS 2796:2008 with Overseas Standards (Contd.)

	India	EN	Japan	Brazil	WFC	ASTM
RVP@38°C , kPa, Max *For ethanol blended	60/ (67) *	45- 100	44-78	45-62	45- 105	54-103
Distillation						
70°C, Max	10-45	-	-	-	-	-
100°C, Max	40-70	-	70	70	45- 65	50-70 cent

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Distillation (Contd.)						
150°C	75	-	75	80- 130	77- 100	110- 121
180°C	-	-	180	190	130- 175	185- 190
Final Boiling Point °C, Max	210	210	220	220	195	225 ..cont..

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Residue, vol %, Max	2	2	2	2	-	-
Driveability, Index	-	-	-	-	550-570	1200-1250
Anti-knock index, Min	-	-	-	-	-	-
Oxidation stability, Minutes	360	-	>240	-	-	-

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Vapour lock index (VLI) summer/ other * For ethanol blended	750(900*)/ 950(1050*)	1050- 1250	-	-	-	-
Lead g/l, max	0.005	0.005	No detect ion	0.005		0.013
Sulphur, % mg/kg, max	150	150	10	1200/ 1000	500- 1000	1000

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Engine intake system cleanliness	Report MFA used					
Benzene vol %, max	1	1.0	<1.0	2.7/2.0	1.0	-
Aromatics, vol %, Max	42	42	-	-	35	-
Olefins, vol %, Max	21/18	21/18	20	-	10	- ..cont..

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Oxygen, % by mass, Max	2.7	2.7	<1.3	0 - 2.0	2.7	-
Existent gum g/m³, Max	40	-	<5mg/100ml	-	-	-
Potential gum g/m³Max	-	-	-	-	-	-
Copper Strip Corrosion for 3h at 50°C	Class 1(Not more than 1)	-	<1	-	-	-.cont..

Comparison of IS 2796:2008 with Overseas Standards (contd.)

Requirements	India	EN	Japan	Brazil	WFC	ASTM
Water tolerance of gasoline-alcohol blends, temp. for phase separation, °C, Max						
a) Summer	10	-	-	-	-	-
b) Winter	0	-	-	-	-	-

Bio-diesel

- Bio-diesel in India is made from non-edible vegetable oil (*Jatropha Curcas* and *Pongamia Pinnata* ('Honge' or 'Karanja') plants) through trans-esterification.
- A standard has been laid down for bio-diesel (B100) blend stock for diesel fuel vide IS 15607:2005 for usage only for blending up to 5% in conventional diesel.

Alternative Fuels

- India has made a beginning to implement fuel switching mostly for public transport vehicles in capital: buses, taxis and three wheelers.
- Liquid Petroleum Gas (LPG) and Compressed Natural Gas (CNG) are most important alternate fuels.

Alternative Fuels

- IS 14861:2000 – Liquefied Petroleum Gases (LPG) for Automotive Purposes

Under Preparation

- Doc: PCD 3(2370) Compressed Natural Gas for Automotive Purposes
- Doc: PCD 3(2372)/ISO 15403:2006 Natural Gas – Natural Gas for use as a Compressed fuel for Vehicles – Part 1 Designation of the quality
- Doc. PCD 3 (2373)/ISO 15403-2 :2006 – Part 2 Specification of the Quality

How to see List of published Indian Standards on Petroleum Products

- List of Indian Standards published so far in the field of petroleum & Lubricants can be seen at www.bis.org.in
- First click to Programme of Work from web page, then go to Petroleum, Coal and Related Products Department.
- Refer to list of Indian Standards pertaining to PC1 and PC3
- For any queries mail to pcd@bis.org.in

A vibrant field of yellow tulips in full bloom, set against a clear blue sky with scattered white clouds. The flowers are the central focus, with their bright yellow petals and green stems creating a cheerful and uplifting scene. The text is overlaid on the lower half of the image, centered horizontally.

**Thanks for your
Patient Listening**