

Laborator **Bharat Petroleum Corporation Ltd., QA Laboratory, Bijwasan Installation, PO: Bijwasan, New Delhi**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-6964 (in lieu T-0844)**

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Validity **01.04.2018 to 31.03.2020**

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	PETROLEUM PRODUCT			
1.	Aviation Turbine Fuel (ATF)	Total Acidity	IS:1448 (Part-113)	0.0001 mg.KOH/g to 0.100 mg.KOH/g
		Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Aromatics	IS:1448 (Part-23)	5 % by Volume to 45% by Volume
		Colour (Saybolt)	IS:1448 (Part-14) / ASTM D 156	(-)16 units to (+)30 units
		Cu Strip Corrosion for 2 hrs at 100°C	IS:1448 (Part-15)	Qualitative (1a to 4c) by rating
		Density	IS:1448 (Part-16) / ASTM D1298	750 kg/m ³ to 840 kg/m ³
		Distillation -Temperature -Volume Recovered	S: 1448 (Part-18) / ASTM D 86	30 °C to 300 °C 0.1% to 100%
		Doctor Test	IS:1448 (Part-19)	Qualitative (Positive /Negative)
		Electrical conductivity	ISO6297/IP274	20 pS/m to 1000 pS/m
		Existent Gum	IS:1448 (Part-29) / ASTM D 381-12	0.1 g/100 ml to 10 g/100 ml
		Flash Point (Abel cup)	IS:1448 (Part-20) / IP 170	10 °C to 70°C
		Freezing Point	IS:1448 (Part-11) / ASTM D 2386	(-) 70 °C to 0°C
		Kinematic Viscosity at (-) 20°C	IS:1448 (Part-25) / ASTM D445/ASTM D7042	1.0 cSt to 10 cSt
		Naphthalene	IS:1448 (Part-118) / ASTM D-1840	0.1% v/v to 5.0 % v/v

Soundira Pandian K.
Convenor

N. Venkateswaran
Program Director

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		Silver Strip Corrosion classification for 4 hrs at 50°C	IP 227	Qualitative (0 to 4) by rating
		Smoke point	IS:1448 (Part-31) / ISO 3014	10mm to 30 mm
		Specific Energy	ASTM D 3338	42.8 MJ/Kg to 44 MJ/Kg
		Water reaction (Interface rating)	IS:1448(Part-42) / ASTM D1094-07	Qualitative (0 to 4) by rating
		Total Sulphur	ASTM D 4294	0.005% by Mass to 0.5% by Mass
2.	Motor Spirit (MS)	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Aromatics	IS:1448 (Part-23)	5 % to 45% by Volume
		Olefins Content	IS:1448 (Part-23)	0.3 % to 21 % by Volume
		Cu Strip Corrosion for 3 hrs at 50°C	IS:1448 (Part-15)	Qualitative (1a to 4c Rating)
		Density	IS:1448 (Part-16) / ASTM D1298	660 kg/m ³ to 800 kg/m ³
		Distillation -Temperature -Volume Recovered	IS: 1448 (Part-18) / ASTM D 86	30 °C to 400 °C 0.1% to 100%
		Ethanol Content	Annexure C of IS 2796	0.5 % to 20 % by Volume
		Existent Gum	IS:1448 (Part-29) / ASTM D 381	0.1 g/m ³ to 40 g/m ³
		Research Octane No. (RON)	IS:1448 (Part-27) / ASTM D2699	80 to 100
		Unwashed gum	IS:1448 (Part-29) / ASTM D 381	1 g/m ³ to 800 g/m ³
		Total Sulphur	ASTM D 4294/ ISO 20847	3 mg/kg to 200 mg/kg
3.	High Speed Diesel (HSD)	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)

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		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Cetane Index	ASTM D-4737	40 to 65
		Cu Strip Corrosion for 3 hours at 50°C	IS:1448 (Part-15)	Qualitative (1a to 4c Rating)
		Flash Point (Abel)	IS:1448 (Part-20) / IP 170	10 °C to 70°C
		Density	IS:1448 (Part-16) / ASTM D1298	700 kg/m ³ to 1000 kg/m ³
		Distillation -Temperature -Volume Recovered	IS: 1448 (Part-18) / ASTM D 86	30 °C to 400 °C 0.1% to 100%
		Kinematic Viscosity at 40°C	IS:1448 (Part-25) / ASTM D445 /ASTM D7042	1.0 cSt to 5.0 cSt
		Pour Point	IS:1448 (Part-10) / ASTM D 97	(-) 38 °C to (+) 20°C
		Total Sulphur	ASTM D 4294 / ISO 20847	3.0 mg/kg to 200 mg/kg
4.	Light Diesel Oil (LDO)	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Ash Content	IS:1448 (Part-4)	0.001 % to 0.18%
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Density	IS:1448 (Part-16) / ASTM D1298	700 kg/m ³ to 1000 kg/m ³
		Flash Point (Pensky Marten)	IS:1448 (Part-21) -2012 / ASTM D93	66 °C to 120°C
		Kinematic Viscosity at 40°C	IS:1448 (Part-25) / ASTM D445/ ASTM D7042	1.0 cSt to 20.0 cSt
		Pour Point	IS:1448 (Part-10)/ ASTM D 97	(-) 38°C to (+)20°C
		Sediments	IS:1448 (Part-30)	0.001% to 1.0% by mass

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		Water Content	IS:1448 (Part-40) / ASTM D95	0.05 % to 10% by Volume
		Total Sulphur	ASTM D 4294/ ISO 20847	0.005 % to 2.0 % by Mass
5.	Kerosene	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour Saybolt	IS:1448 (Part-14) / ASTM D 156	(-)16 units to (+)30 units
		Cu Strip Corrosion for 3 hours at 50°C	IS:1448 (Part-15)	Qualitative (1a to 4c) by rating
		Density	IS:1448 (Part-16) / ASTM D1298	700 kg/m ³ to 900 kg/m ³
		Distillation -Temperature -Volume Recovered	IS: 1448 (Part-18)/ ASTM D 86	30 °C to 400 °C 0.1% to 100%
		Flash Point (Abel cup)	IS:1448 (Part-20) / IP 170	10 °C to 70°C
		Smoke point	IS:1448 (Part-31) / ISO 3014	10 mm to 30 mm
		Total Sulphur	ASTM D 4294	0.1% to 3.0 % by Mass
6.	Furnace Oil (FO)	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Calorific Value-Gross	IS:1448 (Part-7)	10300 cal/g to 10500 cal/g
		Density	IS:1448 (Part-16) / ASTM D1298	700 Kg/m ³ to 1000 Kg/m ³
		Flash Point (PMCC)	IS:1448 (Part-21) / ASTM D93	66 °C to 120°C
		Pour Point	IS:1448 (Part-10) / ASTM D 97	(-)38°C to (+)20°C

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		Sediments	IS:1448 (Part-30)	0.001 % to 1.0% by mass
		Water Content	IS:1448 (Part-40) / ASTM D95	0.05 % to 25%
		Kinematic Viscosity at 50°C	IS:1448 (Part-25)	80 cSt to 400 cSt
		Total Sulphur	ASTM D 4294	0.5% to 5.0% by mass
7.	High Flash High Speed Diesel (HFHSD)	Flash Point (PMCC)	IS:1448 (Part-21) / ASTM D93	66 °C to 120°C
II.	LUBRICANTS			
1.	Lubricating Oil	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour ASTM	ASTM D-1500 / IS:1448 (Part-12)	0 units to 8.0 units
		Crackle Test	WI-02A;WIM Issue no II, Issue date 01.10.2017	Qualitative
		Cu Strip Corrosion for 3 hours at 100°C	IS:1448 (Part-15)	Qualitative (1a to 4c) by rating
		Density	IS:1448 (Part-16) / ASTM D1298	0.660 g/ml to 1.1 g/ml
		Flash Point (COC)	ASTM D: 92/ IS:1448 (Part-69)	80 °C to 400°C
		Flash Point (PMCC)	IS:1448 (Part-21) / ASTM D93	66 °C to 120°C
		Kinematic Viscosity at 40°C	IS:1448 (Part-25) / ASTM D445/ ASTM D7042	1.0 cSt to 400 cSt
		Kinematic Viscosity at 100°C	IS:1448 (Part-25) / ASTM D445/ ASTM D7042	1.0 cSt to 50 cSt

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		Pour Point	IS:1448 (Part-10) / ASTM D 97-2017a	(-)38°C to (+)20°C
		Total Base Number (TBN)	ASTM D:2896/ IS:1448 (Part-86)	0.1 mg KOH/g to 40.0 mg KOH/g
		Viscosity Index	ASTM D:2270 / IS:1448 (Part- 56)	80 to 150
		Water Content	IS:1448(Part-40)-2015/ ASTM D95-2013e1	0.05 % by volume to 25% by volume
2.	Lubricating Grease	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Consistency of lubricating Grease at 25 + 0.5°C	IS:1448 (Part- 60)	160 units to 400 units
		Drop Point	ASTM D 2265-2015	150°C to 300°C
III.	INDUSTRIAL FINE CHEMICALS			
1.	Ethanol	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Colour	WI-03;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Ethanol Content at 15.6/15.6°C	IS 15464	94 %v/v to 100 %v/v
		Miscibility with Water	Annexure-C of IS 15464	Qualitative (Miscible/Immiscible)
		Relative Density at 15.6/15.6°C	Annexure-A of IS 15464	0.60 to 0.85
2.	Solvent	Appearance	WI-02;WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Aromatics	IS:1448 (Part-23)	Qualitative (Aromatic/ Nonaromatic)
		Colour (Saybolt)	IS:1448 (Part-14) / ASTM D 156	(-)16 to (+) 30 units

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		Cu Strip Corrosion for 3 hours at 50°C	IS:1448 (Part-15)	Qualitative (1a to 4c Rating)
		Density	IS:1448 (Part-16) / ASTM D1298	0.660 g/ml to 0.850 g/ml
		Distillation -Temperature -Volume Recovered	IS: 1448 (Part-18) / ASTM D 86	30 °C to 400 °C 0.1% to 100%
		Existent Gum	IS:1448 (Part-29) / ASTM D 381-12	0.1 g/100 ml to 10 g/100 ml
		Flash Point (Abel)	IS:1448 (Part-20) / IP 170	10 °C to 70°C
3.	Hexane	Appearance	(WI-02);WIM Issue no II, Issue date 01.10.2017	Qualitative (Descriptive)
		Density	IS:1448 (Part-16) / ASTM D1298	0.660 g/ml to 0.750 g/ml
		Distillation -Temperature -Volume Recovered	ASTM D 86	30 °C to 400 °C 0.1% to 100%
		Non Volatile Residue	Annexure A of IS3470	0.0001 g/100 ml to 0.1 g/100 ml