CENTRAL POWER RESEARCH INSTITUTE

No. : CPRIBLRDMD23T0486

Date: 24 January 2024 CPRI

To,
M/s. Power Petrochemicals,
A60/9 & A60/8 Sikandrabad Industrial Area
Sikandrabad,
Dist. Bulandshahr (U.P)-203205.

Dear Sir,

Sub: Testing of Transformer Oil

This has reference to Letter No: Nil, Dated: 18/12/2023, and Customer request form, dated 11/11/2023 on the above subject.

As requested, Transformer Oil sample has been evaluated for the test/s listed in your letter and our test report is enclosed.

It is requested to give your valuable comments in the enclosed customer feedback form.

Thanking you.

Yours faithfully,

PSS Murthy
25/01/2024

P.Sadasiva Murthy
Joint Director

Encl.:a.a.

Dielectric Materials Division
Central Power Research Institute
Prof. Sir C. V.Raman Road, Sadashivanagar P.O.
Bengaluru 560080, email:dmd@cpri.in; Web.:www.cpri.in

CENTRAL POWER RESEARCH INSTITUTE

TEST REPORT

CPRI

Test Report Number	:	CPRIBLRDMD23T0486, Date 24 January 2024
Name and Address of the Customer	:	M/s. Power Petrochemicals, A60/9 & A60/8 Sikandrabad Industrial Area, Sikandrabad, Dist. Bulandshahr (U.P)-203205. (Customer's Reference Letter No: Nil, Dated: 18/12/2023, and Customer request form, dated 11/11/2023)
Name and Address of the Manufacturer	:	M/s. Power Petrochemicals, A60/9 & A60/8 Sikandrabad, Industrial Area, Sikandrabad, Distt. Bulandshahr (U.P.)-203205.
Particulars of Sample tested	:	Mineral Insulating Oil (New)
Type	:	Not Applicable
Description of test sample	:	Refer "Sheet 2 of 5"
Serial Number	:	Refer "Sheet 2 of 5"
Date of receipt of sample	:	15 December 2023
Number of Samples Tested	:	One Only
Date(s) of Test(s)	:	21 December 2023 to 24 January 2024
CPRI Sample Code Number(s)	:	DMDLDLN23S0249
Particulars of tests conducted	:	Refer "Sheet 2 to 4 of 5".
Tests in accordance with standard/ Specification	:	IS 335:2018
Sampling Plan	:	Not Applicable
Customer's requirement	:	As indicated above
Deviations if any	:	Nil
Name of the witnessing persons		
Customer's representatives	:	None
Other than customer's representatives	:	None
Test subcontracted with address of the laboratory	:	Nil
Documents constituting this report (in words)		
Number of Sheets	:	Five only.
Number of Oscillogram(s)	:	Nil
Number of Graph(s)	:	Nil
Number of photograph(s)	:	Nil
Number of test circuit diagram(s)	:	Nil
Number of Drawing(s)	:	Nil

N. Ajith Kumar

(N. Ajith Kumar)
Test Engineer

P.S.R. Murthy 25/01/2024

(P.Sadasiva Murthy)
Head of Division
Reviewed and Authorized by

CENTRAL POWER RESEARCH INSTITUTE

TEST REPORT

Test report Number : CPRIBLRDMD23T0486, Date: 24 January 2024

Description of Sample Tested : Sample of transformer oil (as per IS 335 Type-II Uninhibited; Batch No: 230071 Date: 11/11/2023) received in 2 X 2.5 Ltr brown color glass bottles sealed with plastic cover and labelled as:

= DMDLDLN23S0249

TEST RESULTS

Sl. No.	Characteristics	Specifications /Limits	Results	Test Method/Remarks
1	Kinematic Viscosity @ 40°C ,mm²/s	15 Max.	11.518	IS 1448 [PART:25]-1976 (RA 2018)
2	Kinematic viscosity at 0°C ,mm²/s	1800 Max.	75.410	IS 1448 [PART:25]-1976 (RA 2018)
3	Pour Point ,°C	-10 Max.	-36	IS 1448 [P:10/Sec 2]:2021/ISO 3016:2019
4	Water Content ,mg/kg	30 Max.	8	IEC 60814:1997
5	Breakdown voltage ,kV Readings Average Breakdown voltage, kV (rms) New Unfiltered After treatment Reported	- 30 (min) -	73.2,73.7,68.1 70.8,68.1,71.5 70.9 71	a) IS 6792:2023/IEC 60156:2018 b) Frequency of the test voltage-49.5Hz c) Type of Electrodes-Brass Spherical d) Oil temperature-24.2°C
6	Density @ 20 °C ,g/ml	0.895 Max.	0.8450	IS 1448 [P :16]:2014 /ISO 3675:1998(RA 2019)
7	Dielectric Dissipation Factor (Tan delta) @ 90 °C	0.005 Max.	0.00042	a) IEC 60247-2004 b) Frequency of applied voltage-49.9 Hz c) Electrical stress: 250 V AC /mm& Room Humidity: RH: 45.13%

N. Ajith Kumar

(N. Ajith Kumar)
Test Engineer

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TEST RESULTS

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Sl. No.	Characteristics	Specifications /Limits	Results		Test Method/Remarks
8	Particle Content Particle size,Micron > 4µ > 6µ > 14µ Reported	No General requirement	No. of particles per 1 ml 1647 369 16 18/16/11	ISO Class 18 16 11	IS 13236 : 2013/IEC 60970:2007 (RA 2018)
9	Appearance	Clear, free from sediment and suspended matter	The oil is clear, free from suspended matter and sediments.		IS 335:2018
10	Acidity ,mgKOH/g	0.01 Max.	0.0085		IEC 62021-1: 2003
11	Interfacial Tension @ 27°C ,mN/m	No General requirement	43		ASTM D 971:2020
12	Corrosive Sulphur	Not corrosive	Non-corrosive		DIN 51353: 1985
13	Potentially Corrosive Sulphur	Not corrosive	Non corrosive		IS 16310: 2017/IEC 62535: 2008
14	DBDS ,mg/kg	Not detectable (<5)	None Detected		IS 16497 (Part 1): 2017 / IEC 62697-1: 2012
15	Inhibitors according to IS 13631/IEC 60666 ,%	Not detectable (<0.01)	None Detected		IS 13631: 2017 / IEC 60666: 2010
16	Metal Passivator additives according to IS 13631/IEC 60666 ,mg/kg	Not detectable (<5)	None detected		IS 13631: 2017 / IEC 60666: 2010
17	2-Furfual and related compounds content ,mg/kg	Not detectable (< 0.05) for each individual compound			IS 15668: 2006 / IEC 61198: 1993 (RA 2021)
	5-Hydroxymethyl-2-Furfural(5HMF) / 2-Furfuryl alcohol (2 FOL)	2- Furfural (2-FAL)	2-Acetylfuran (2ACF)	5-Methyl-2Furfural (5MEF)	Total
	None Detected / None Detected	None Detected	None Detected	None Detected	None Detected
18	Oxidation Stability (U) Uninhibited oil : 164 h				IS 12422:2023/IEC 61125:2018
	(a) Total acidity, mg KOH/g	1.2 Max.	0.93		
	(b) Sludge, %	0.8 Max.	0.34		
	(c) Dielectric dissipation factor (Tan delta), @ 90°C	0.500 Max.	0.38		

N. Ajith Kumar

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Test Engineer

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TEST RESULTS

Sl. No.	Characteristics	Specifications /Limits	Results	Test Method/Remarks
19	Gassing tendency ,mm^3/min	No general requirement	+1.667	IEC 60628: 1985, Method A (a) Voltage : 10kV (b) Frequency : 50Hz (c) Temperature : 80 ^{0}C (d) Duration : 120 minutes (e) Gas Phase : Hydrogen
20	Flash Point ,°C	135 Min.	161.5	IS 1448 P:21: 2019/ ISO 2719:2016
21	PCA Content ,%,by weight	3 Max.	1.12	IP-Part 346:1992
22	PCB Content ,mg/kg	Not detectable (<2)	None Detected	IS 16082: 2013 / IEC 61619: 1997(RA 2018)

Conclusion: The sample meets the requirement as per IS 335-2018 for the tested characteristics.

N. Ajith Kumar

(N. Ajith Kumar)
Test Engineer

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NOTE

a) The Test results relate only to the sample(s) tested.

b) Publication or reproduction of this Test report in any form other than by complete set of the whole test report and in the language written is not permitted without the written consent of CPRI

c) Any Corrections / erasure invalidate the Test report

d) Any anomaly/discrepancy in the Test report should be brought to the notice of CPRI within 45 days from the date of issue

e) NABL has accredited this laboratory as per ISO/IEC 17025-2017 standard, vide certificate No TC-5452 for the tests carried out.

TC-5452

(N. Ajith Kumar)
Test Engineer

----------End of Test Report----------

CENTRAL POWER RESEARCH INSTITUTE

Name of the Unit / Division: DIELECTRIC MATERIALS DIVISION (LDL/LUBE/POLYMER)

Format No: CPRI/QAF/03
Revision No.04
Date of revision: 31/08/2016

Issue No. 01
Date of Issue: 01-06-2009

CUSTOMER FEEDBACK FORM

Dear Customer,

At the outset we thank you for having utilized our state of the art facilities.

We are in the process of evaluating the quality of services rendered by our laboratories. We request you to spare your valuable time in expressing free and frank opinion in the feed back form below. The matter will be treated as confidential & will be discussed by the management. **Kindly furnish your feedback to the address furnished below.**

We assure you that we shall be intimating you about the action taken on the issue raised.

1. Name of the company				
2. Represented by: Name: Designation: Contact Address: Tel/Fax No.:				
3. i) Test conducted: ii) Test Report No/Sample No:				
4. Evaluation of services:	Excellent	Very Good	Good	Average
a) Quality of testing: b) Adherence of standards: c) Competence of test engineer: d) Communication/Public Relation skills: e) Obtaining Test Date/test reports:				
5. Areas of Improvement (Please Elaborate) a) Quality of Testing b) Adequacy of infrastructure c) Any other comment				

SIGNATURE WITH DATE

Please hand over this form to the Head of the Laboratory before you leave CPRI, premises, or send to following address.

THANKS
HELP US TO SERVE YOU BETTER

Head of the Division

Address for sending back Feedback to CPRI:

Head of Division, Dielectric Materials Division, Central Power Research Institute,
Prof.Sir C.V.Raman Raod, Sadashivanagar PO, Bengaluru 560080,dmd@cpri.in