Hi Physix Laboratory India Private Limited

ULR No. : TC1351825000000547F

DOC No.	:	HPLI/Test/2502088201	B-32/1/2, MIDC, Industrial Area, Ranjangaon, Pune, Pune, Pune, Maharashtra, India - 412220
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BO Code	:	None	

Test REPORT AS PER : IS 13340 : PART 1 (2012)

QR Code/Barcode : 100000932497

REPORT NO : 10472516/2025/SS/4_1 DATE : 28 May, 2025

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address	:	INDTECH CAPACITORS PVT LTD Plot No. D-2, Sector -A2 , Tronica City, Ghaziabad, TRONICA CITY, GHAZIABAD, UTTAR PRADESH, INDIA - 201103
b) Nature of sample	:	SS
c) Grade/Variety/Type/Class Size etc	:	Shunt Power capacitors of self healing type for AC power systems having rated voltage up to and including 1000 V according to IS 13340 (Part 1) & IEC60831 (Part 1&2) for rating 50 kVAr, 525 V AC, 50 HZ,3 PHASE, Delta connection , Temperature category up to and included -25/55 (-25/A, -25/B, -25/C, -25/D) Class D, insulation level 3/ -kv, Non PCB, Type of dielectric SH MPP ,discharge device- resistor
d) Declare values, if any	:	Shunt Power capacitors of self healing type for AC power systems having rated voltage up to and including 1000 V according to IS 13340 (Part 1) & IEC60831 (Part 1&2) for rating 50 kVAr, 525 V AC, 50 HZ,3 PHASE, Delta connection , Temperature category up to and included -25/55 (-25/A, -25/B, -25/C, -25/D) Class D, insulation level 3/ -kv, Non PCB, Type of dielectric SH MPP ,discharge device- resistor
e) Batch No. & Date of Manufacture	:	NBK115/2025/
f) Quantity	:	1 capacitor +2 dummy capacitor
g) Date of Receipt	:	14 Feb, 2025
h) BIS Seal	:	Verified by Sample Cell
i) IO's Signature	:	Verified by Sample Cell
j) Any other Information / Expiry Date, If any	:	-/0
k) Date of Commencement of Testing	:	17 Mar, 2025
l) Date of Completion of Testing	:	28 May, 2025
m) Section Code	:	25EE824
n) Section Report No.	:	25EE824_1
o) Report Type	:	New
p) Reference Report No.	:	
q) Remarks	:	Test report attached.

Mr. Anuj Kaushik
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 28 May, 2025 11:34 AM

1.

This is a Computer Generated Report.

PART B. SUPPLEMENTARY INFORMATION

1.	Reference to sampling procedure, wherever applicable.	Not Applicable
2.	Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any.	Yes
3.	Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any.	No
3.	NABL Report required ?	Yes

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 28 May, 2025 10:30 AM

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PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	7	Capacitance Measurement and Output Calculation	Capacitance test shall be carried out at rated voltage and frequency. Capacitance Tolerance: (-5 to 10%) as declared by manufacturer. In three phase units, Ratio of max. to min. value of the capacitance measured between any two line terminals shall not exceed 1.08	-	-	-	Satisfactory (for more details, refer to attached test report)
2	8	Measurement of the tangent of the loss angle (tan δ) of the capacitor	The capacitor losses (or tan δ) shall be measured at voltage and frequency chosen by manufacturer	-	-	-	Satisfactory (for more details, refer to attached test report)
3	9.1	Voltage test between terminals	Capacitor shall be subjected to an ac test at Ut = 2.15 UN for a minimum time of 2 sec. During the test no permanent breakdown or flashover shall occur. Self-healing breakdowns are permitted.	-	-	-	Satisfactory (for more details, refer to attached test report)
4	9.2	Voltage test between terminals	Capacitor shall be subjected to an a.c test at Ut = 2.15 UN for a minimum time of 10 sec. During the test, no permanent puncture or flashover shall occur.	-	-	-	Satisfactory (for more details, refer to attached test report)
5	10.1	Voltage test between terminals and container	Units having all terminals insulated from the container shall be subjected to an a.c. Voltage applied between the terminals (joined together) and the container. The voltage to be applied is 2 UN + 2 kV or 3 kV, whichever is higher, for 10 sec. If the units are intended to be connected directly to the aerial power line and by agreement between the manufacturer and the user, the test shall be performed with a voltage of 6 kV. During the test, neither puncture nor flashover shall occur.	-	-	-	Satisfactory (for more details, refer to attached test report)

6	10.2	Voltage test between terminals and container	Units having all terminals insulated from the container shall be subjected to an a.c. voltage applied between the terminals (joined together) and the container. The voltage to be applied is 2UN + 2 kV or 3 kV, whichever is higher, for a duration of 1 min. If the units are intended to be connected directly to the aerial power line; the test shall be performed with a voltage of 6 kV. During the test, neither puncture nor flashover shall occur. If the capacitor container is of insulating material, the test voltage shall be applied between the terminals and a metal foil wrapped closely round the surface of the container. The test shall be made under dry conditions for indoor units, and with artificial rain (See IEC 60060-1) for units to be used outdoors.	-	-	-	Satisfactory (for more details, refer to attached test report)
7	11	Test of Internal Discharge Device	Each capacitor unit and/or bank shall be provided with a means for discharging each unit in 3 min to 75V or less, from an initial peak voltage of √2 times rated voltage UN. There shall be no switch, fuse cut-out, or any other isolating device between the capacitor unit and this discharge device.	-	-	-	Satisfactory (for more details, refer to attached test report)
8	12	Sealing Test	Unenergized capacitor units shall be heated throughout so that all parts reach a temperature not lower than 20 °C above the maximum value in table 1 corresponding to the capacitor symbol, and shall be maintained at this temperature for 2 h. No leakage shall occur	-	-	-	Satisfactory (for more details, refer to attached test report)

9	13 & Table 2- Ambient air temperature for the thermal stability test	Thermal Stability Test	The test capacitor unit subjected to the test shall be placed between two dummy units submitted by manufacturer which shall be energized at the same voltage as the test capacitor. After all parts of capacitor have attained temperature of the ambient air, the capacitor shall subjected for 48h to an a.c. voltage of sinusoidal form. The magnitude of the voltage of the test shall be adjusted to give a calculated output of at least 1.44 times its rated output. During the last six hours, the temperature of the container near the top shall be measured at least four times. The temperature rise shall not be increase by more than 1ºC. At the end of the stability test, the difference between the measured temperature of the container and the ambient air temperature shall be recorded. Before and after the test the Capacitance shall be measured within the standard temperature range for testing before and after the thermal stability test. These two measurements shall be corrected to the same dielectric temperature. No change of capacitance greater than 2% shall be apparent from these measurements. A measurement of the tangent of the loss angle (tan δ) shall be made before and after the thermal stability test, at a temperature of approximately 20 °C. (Change in Loss angle: Max. 2x10-4)	-	-	-	Satisfactory (for more details, refer to attached test report)
10	14	Measurement of the tangent of the loss angle (tan δ) of the capacitor at elevated temperature	The capacitor losses (tan δ) shall be measured at the end of the thermal stability test. The measuring voltage shall be that of the thermal stability test. The value of tan δ, measured in accordance with 14.1, shall not exceed the value declared by manufacturer.	-	-	-	Satisfactory (for more details, refer to attached test report)

11	15	Lightning impulse voltage test between terminals and container	The impulse test shall be performed with a wave of 1.2/50 µs to 5/50 µs having a peak value of 8 kV if the rated voltage of the capacitor is UN ≤ 440 V or having a peak value of 12 kV if UN > 440 V. No. of impulses: 3 Positive polarity followed by 3 Negative polarity between the terminals joined together and container. If the units are indented to be connected directly to the aerial power line, test shall be performed at voltage having peak value of 15kV for capacitors rated voltage UN ≤ 440V or having a peak value of 25 kV if UN > 440 V.	-	-	-	Satisfactory (for more details, refer to attached test report)
12	16	Discharge Test	The capacitor was charged by means of dc and then discharge through a gap situated as close as possible to the capacitor. Test subjected to five such discharges within 10 Min. Voltage test between terminals within 5 minute after discharge test. During the test no permanent breakdown or flashover shall occur. The capacitance shall be measured before the discharge test and after the voltage test. The measurements shall not differ by an amount corresponding either to breakdown of an element, or to blowing of an internal fuse, or by more than 2 %.	-	-	-	Satisfactory (for more details, refer to attached test report)

13	17 & IEC 60831-2	Ageing Test	The capacitor unit is mounted as specified in an enclosure in which heated air is circulated with an air velocity such that the temperature variation at any point of enclosure do not exceed ±2 °C . The capacitor shall be energized at a voltage equal to 1.25 UN (i.e. 550V) for 750 hours. For Ageing test, case temperature of the capacitor shall be maintained which is the highest mean temperature in 24 hours (as per Table 1 of IS 13340 (Part 1): 2012) plus the difference between the capacitor case temperature and the cooling air temperature recorded at the end of thermal stability test. The capacitor shall then be subjected to 1000 discharge cycles consisting of charging the capacitor to a dc voltage of 2UN (i.e. 880V) between terminal 1&3 (terminal 2 left open) for 30s minimum charge-discharge cycle as specified. The Ageing test will repeated after 1000 charge and discharge cycles at 1.25 UN (i.e .550V) for 750 hours. During the test no permanent breakdown, interruption or flashover shall occur. Change in Capacitance before and after ageing test. The Voltage test has been carried out between terminals and container as prescribed in 10.1 of IS 13340 (Part 1): 2012. The Sealing test has been carried out as prescribed in Cl. 12 of IS 13340 (Part 1):2012.	-	-	-	Satisfactory (for more details, refer to attached test report)

14	18 & IEC 60831-2	Self-Healing Test	The capacitor or element shall be subjected to an ac voltage of 2.15UN for 10 seconds. If fewer than five breakdowns occurred during this time the voltage shall be increased slowly until five breakdowns have occurred since the beginning of the test or until the voltage has reached 3.5 times the rated voltage. Before and after the test, the capacitance shall be measured and no significant change in its value is allowed.	-	-	-	Satisfactory (for more details, refer to attached test report)
15	19 & IEC 60831-2	Destruction Test	The capacitor sample shall be mounted in a circulating air oven having a temperature equal to the maximum ambient air temperature of the temperature category of the capacitor. After, all the parts of the capacitor attained the test temperature; the destruction test was performed between terminals 3 and 1 & 2 (joined together). a) A.C. Voltage 1.3UN b) D.C. Voltage 10 UN At the conclusion of the test, following conditions are met. a) Escaping liquid material may wet the outer surface of the capacitor but shall not fall in drops. b) Container may deform & damage but not broken. c) Flame or fiery shall not be emitted from opening d) The results of dielectric test between terminal and container with 1500V for 10s shall be satisfactory	-	-	-	Satisfactory (for more details, refer to attached test report)
16	20 &Table 3 - Admissible voltage levels in service	Maximum Permissible Voltage	Long Duration voltage	-	-	-	Satisfactory (for more details, refer to attached test report)
17	21	Maximum Permissible Current	Maximum permissible current	-	-	-	Satisfactory (for more details, refer to attached test report)
18	22	Discharge Device	Each capacitor unit and/or bank shall be provided with a means for discharging each unit in 3 min to 75V or less, from an initial peak voltage of √2 times rated voltage UN. There shall be no switch, fuse cut-out, or any other isolating device between the capacitor unit and this discharge device.	-	-	-	Satisfactory (for more details, refer to attached test report)

19	23	Container Connections	To enable the potential of the metal container of the capacitor to be fixed, and to be able to carry the fault current in the event of a breakdown to the container, the metallic container shall be provided with connection capable of carrying the fault current.	-	-	-	Stud/Terminal provided with the sample for fixing are able to carry maximum fault current
20	24	Protection of the Environment	When capacitors are impregnated with products that shall not be dispersed into the environment, the necessary precautions shall be taken. In some countries, there exist legal requirements in this respect (see 26.3). The units and the bank shall be labelled accordingly, if so required.	-	-	-	No such type of capacitor
21	25	Other Safety Requirements	The purchaser shall specify at the time of enquiry any special requirements with regard to the safety regulations that apply to the country in which the capacitor is to be installed.	-	-	-	No such type of capacitor

22	26	Marking of the Unit	The following information shall be marked indelibly, either directly or by means of a plate, on each capacitor unit: a) Manufacturer b) Identification number and manufacturing year (The year may be a part of the identification number or be in code form.) c) Rated output QN in kilovars (kvar). d) Rated voltage UN in volts (V). e) Rated frequency fN in hertz (Hz). f) Temperature category g) Discharge device, if internal, shall be indicated by wording or by the symbol or by the rated resistance in kilohms (kΩ) or megohms (MΩ). h) Reference of self-healing design: "SH" or or "self-healing". i) Connection symbol (All capacitors, except single-phase units having one capacitance only, shall have their connection indicated. For standardized connection symbols, see 26.2). j)Internal fuses, if included, shall be indicated by wording or by the symbol k) Indication for the overpressure or thermal disconnector, if such disconnector is fitted. l) Insulation level Ui in kilovolts (kV). (Only for units having all terminals insulated from the container). m) Reference to IEC 60831 (plus year of issue of the edition). A warning notice should be included as follows: "WARNING: WAIT 5 MINUTES AFTER ISOLATING SUPPLY BEFORE HANDLING" The type of connection shall be indicated either by letters or by the following symbols: D or Δ = Delta Y or = star YN or = star, neutral brought out III or ||| = three sections without interconnection	-	-	-	Satisfactory (for more details, refer to attached test report)

23	27	Marking of the Bank	The following minimum information shall be given by the manufacturer in an instruction sheet, or alternatively, on request of the purchaser, on a rating plate: a) Manufacturer. b) Rated output QN in kilovars (kvar). (Total output to be given.) c) Rated voltage UN in volts (V). d) Connection symbol. (For standardized connection symbols, see 26.2. The connection symbol may be part of a simplified connection diagram.) e) Minimum time required between disconnection and reclosure of the bank. f) Weight in kilograms (kg). Subclause 26.3 is also valid for the bank.	-	-	-	Test Not Applicable

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 28 May, 2025 10:30 AM

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TC-13518

Section Report No. : 25EE824_1 IS 13340 : PART 1 (2012)

PART D. REMARKS

See attached test report (Report issue date is 27/05/2025, due to LIMS server error we are submitting today)

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 28 May, 2025 10:30 AM

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TC-13518

HI PHYSIX
testing & calibration laboratory
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
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TEST REPORT

TEST REPORT AS PER IS: 13340 (Part 1):2012 **SRF No. 25020882**

Name & Contact Information of Customer: **Indtech Capacitors Pvt. Ltd,** **Plot No. D-2, Sector A-2, Tronica City,** **Trans Delhi Signature City, Ghaziabad,** **Uttar Pradesh -201103, India** **Contact Person: Mr. Shuaib Malik** **Contact No.: 9654480047**	**ULR – TC1351825000000547F** **Discipline: Electrical Testing** **Group: Capacitors** **Test Report No.: HPLI/Test/2502088201** **Date of Issue: 27/05/2025** **Test Performed: At Lab.**		
	Customer Ref.: Date: 07/02/2025		
	Date of Sample Receipt: 07/02/2025	**Start of Test Date: 17/03/2025**	**End of Test Date: 26/05/2025**

PART A - PARTICULARS OF THE SAMPLE SUBMITTED

Sample description	**Shunt Power Capacitors of the Self-Healing Type for ac Systems having a Rated Voltage upto and Including 1000 V**
Grade/ variety/ type/ class/ size etc.	**50 kVAr, 525 V AC, 50 Hz, 54.99 (Amps), 3 × 192.57 µF -5/+10%, 3 Phase Δ, MPP-SH, -25 °C/55 °C, Ins.Level 3/8 kv, Non-PCB, ⫩, Discharge Device : Resistor, ⊣□⊢**
Declared values, if any	**Input Voltage : 525V AC, Input Current : 54.9A, Input Power : 49.5 KW, Power Factor : 0.99, Input Frequency : 50Hz, Application : indoor**
Code no., BIS seal and IO's sign. if any	**Sample Code: 10472516/2025/SS/4, Barcode: 100000932497**
Batch no., date of manufacture and Brand name	**Brand Name : INDTECH, Date of Manufacturing : 17-01-2025**
Quantity	**1 capacitor + 2 dummies**
Condition of the sample	**OK**
Reference specification (s)	**IS 13340(Part 1):2012**
Environmental conditions	**Temperature (25±2)°C & Relative Humidity<65%**

Statement of Conformity	**Product passing the requirement of IS 13340(Part 1):2012**
Decision Rule	**Measured values including associated measurement uncertainty**

PART B -SUPPLEMENTARY INFORMATION

a) Deviations from the test methods as per relevant specification/work instructions, if any: Nil
b) Details of the drawings, graphs, tables, sketches or photographs as referred in the test report, if any: Nil.
c) Testing procedure according to work instruction HPLI03/Test-cap/WI-30 to 42.
d) The Management System is maintained in accordance with ISO/IEC 17025:2017 and testing Standards/Instruments are traceable to National/International Standards.

Notes: i) This report is not to be reproduced wholly or in part without our special permission in writing.
ii) This report refers only to the particular sample detailed above.
iii) The results reported in this certificate are valid at the time of and under the stipulated conditions of measurement.
iv) Remnants of sample will be disposed off after 90 days of issue of the test report if no any further information is received.

HI PHYSIX LABORATORY INDIA PVT. LTD.
Ashutosh Pathak
(Chief Technical Manager)

Tested By **Checked By** **Approved By** **Issued By**

Format No.- HPLI 04 F31-00

ULR - TC1351825000000547F

PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
Routine Test					
1.	Capacitance Measurement and output calculation (Cl.7 of IS 13340 (Part 1): 2012)	Capacitance shall be measured at voltage and frequency chosen by manufacturer. Capacitance Tolerance: (-5% to +10%) as declared by manufacturer Rated Capacitance = 288.86 µF (Max Value = 317.7 µF Min Value = 274.4 µF) (-5% to +10%)	Yes	Measured at rated voltage & Frequency: 525V/50Hz	P
		Between terminal 1&2		306.1 µF	P
		Between terminal 2&3		305.7 µF	P
		Between terminal 3&1		305.8 µF	P
		In three phase units, Ratio of maximum to minimum value of the capacitance measured between any two line terminals shall not exceed 1.08.		1.00	P
		Calculated output as per Annex B		52.99 kvar	P
2.	Measurement of the tangent of the loss angle (tan δ) of the Capacitor (Cl.8 of IS 13340 (Part 1): 2012)	The capacitor losses (or tan δ) shall be measured at voltage and frequency chosen by manufacturer. (Declared value: Tan D: $\leq$0.005 max at 525 V; 50 Hz)	Yes	Measured at rated voltage & frequency: 525V/50Hz	P
		Between terminal 1&2		0.0014	P
		Between terminal 2&3		0.0013	P
		Between terminal 3&1		0.0012	P
3.	Voltage Tests Between terminals (Cl.9.1 of IS 13340 (Part 1): 2012)	Capacitor shall be subjected to an ac test at $U_t = 2.15U_N$ for a minimum time of 2 sec. During the test, no permanent puncture or flashover shall occur. Self-healing breakdowns are permitted.	Yes	Test voltage: 1.13 kV with frequency: 50 Hz	P
		Between terminal 1&2 (3 open)		No permanent puncture or flashover occurred	
		Between terminal 2&3 (1 open)			
		Between terminal 3&1 (2 open)			
4.	Voltage tests between terminals and container (Cl.10.1 of IS 13340 (Part 1): 2012)	Units having all terminals insulated from the container shall be subjected to an a.c. voltage applied between the terminals (joined together) and the container. The voltage to be applied is $2U_N + 2$ kV or 3 kV, whichever is higher, for 10 sec.	Yes	Test Voltage: 3.13 kV	P

Tested By

Checked By

ULR - TC1351825000000547F

PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
		If the units are intended to be connected directly to the aerial power line and by agreement between the manufacturer and the user, the test shall be performed with a voltage of 6 kV.	Yes	Not intended to be connected directly to the aerial power line as declared by manufacturer	N/A
		During the test, neither puncture nor flashover shall occur.		No puncture or flashover occurred	P
5.	Test of internal discharge device (Cl.11 and Cl. 22 of IS 13340 (Part 1): 2012)	Each capacitor unit and/or bank shall be provided with a means for discharging each unit in 3 min to 75V or less, from an initial peak voltage of √2 times rated voltage (U_N = V) Test voltage: 742.4 V	Yes	Discharged below 75V in 3 minutes.	P
		There shall be no switch, fuse cut-out, or any other isolating device between the capacitor unit and this discharge device.		Satisfactory	
6.	Sealing test (Cl.12 of IS 13340 (Part 1): 2012)	Unenergized capacitor units shall be heated throughout so that all parts reach a temperature not lower than 20 °C above the maximum value in table 1 corresponding to the capacitor symbol, and shall be maintained at this temperature for 2 h. Test temperature: 75°C. No leakage shall occur	Yes	No leakage occurred	P
Type Test					
1.	Voltage Tests Between terminals (Cl.9.2 of IS 13340 (Part 1): 2012)	Capacitor shall be subjected to an a.c test at $U_t = 2.15U_N$ for a minimum time of 10 sec. During the test, no permanent puncture or flashover shall occur.	Yes	Test voltage: 1.13 kV with frequency: 50 Hz	P
		Between terminal 1&2 (3 open)		No puncture or flashover occurred during the test	
		Between terminal 2&3 (1 open)			
		Between terminal 3&1 (2 open)			
2.	Voltage tests between terminals and container (Cl.10.2 of IS 13340 (Part 1): 2012)	Units having all terminals insulated from the container shall be subjected to an a.c. voltage applied between the terminals (joined together) and the container. The voltage to be applied is $2U_N$ + 2 kV or 3 kV, whichever is higher, for a duration of 1 min.	Yes	Test voltage: 3.13 kV	P

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PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
		Units are intended to be connected directly to the aerial power line; the test shall be performed with a voltage of 6 kV.	Yes	Not intended to be connected directly to the aerial power line as declared by manufacturer	N/A
		During the test, neither puncture nor flashover shall occur.		No puncture or flashover occurred	P
		If the capacitor container is of insulating material, the test voltage shall be applied between the terminals and a metal foil wrapped closely round the surface of the container.		Metal body	N/A
		The test shall be made under dry conditions for indoor units, and with artificial rain (See IEC 60060-1) for units to be used outdoors.		Tested under dry conditions	P
3.	Thermal stability test (Cl.13 of IS 13340 (Part 1): 2012)	The test capacitor unit subjected to the test shall be placed between two dummy units submitted by manufacturer which shall be energized at the same voltage as the test capacitor. After all parts of capacitor have attained temperature of the ambient air, the capacitor shall subjected for 48h to an a.c. voltage of sinusoidal form. The magnitude of the voltage of the test shall be adjusted to give a calculated output of at least 1.44 times its rated output. Test Voltage 612 Volts AC at 55 ºC	Yes	Satisfactory	P

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PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS			Verdict
		During the last six hours, the temperature of the container near the top shall be measured at least four times. The temperature rise shall not be increase by more than 1°C.		**Hour**	**Temp(°C)**		--
				43rd	60.7		P
				44th	60.8		P
				45th	60.9		P
				46th	61.0		P
				47th	61.0		P
				48th	61.1		P
		At the end of the stability test, the difference between the measured temperature of the container and the ambient air temperature shall be recorded.		6.1°C Max.			P
		Before and after the test the Capacitance shall be measured within the standard temperature range for testing before and after the thermal stability test. These two measurements shall be corrected to the same dielectric temperature. No change of capacitance greater than 2% shall be apparent from these measurements.	Yes	Before Test (µF)	After Test (µF)	Change in capacitance (%)	--
		Between terminal 1&2		306.2	306.4	0.08	P
		Between terminal 2&3		305.6	305.9	0.09	P
		Between terminal 3&1		305.7	306.0	0.11	P
		A measurement of the tangent of the loss angle (tan δ) shall be made before and after the thermal stability test, at a temperature of approximately 20 °C. (Change in Loss angle: Max. $2x10^{-4}$)		Before Test	After Test	Change in Loss Angle	--
		Between terminal 1&2		0.0013	0.0014	0.0001	P
		Between terminal 2&3		0.0014	0.0013	-0.0001	P
		Between terminal 3&1		0.0013	0.0014	0.0001	P

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PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
4.	Measurement of the tangent of the loss angle (tan δ) of the capacitor at elevated temperature (Cl.14 of IS 13340 (Part 1): 2012)	The capacitor losses (tan δ) shall be measured at the end of the thermal stability test The measuring voltage shall be that of the thermal stability test. The value of tan δ, measured in accordance with 14.1, shall not exceed the value declared by manufacturer. (Declared Value: 0.005(max) 50 Hz)	Yes	See below	--
		Between terminal 1&2		0.0015	P
		Between terminal 2&3		0.0014	P
		Between terminal 3&1		0.0015	P
5.	Lightning impulse voltage test between terminals and container (Cl.15 of IS 13340 (Part 1): 2012)	The impulse test shall be performed with a wave of 1.2/50 µs to 5/50 µs having a peak value of 8 kV if the rated voltage of the capacitor is $U_N \leq 690$ V or having a peak value of 12 kV if $U_N > 690$ V. No. of impulses: 3 Positive polarity followed by 3 Negative polarity between the terminals joined together and container. During the test no failure shall occur	Yes	Satisfactory (Tested at 8 kV)	P
		Units indented to be connected directly to the aerial power line, test shall be performed at voltage having peak value of 15kV for capacitors rated voltage $U_N \leq 690$ V or having a peak value of 25 kV if $U_N > 690$ V.	Yes	Not intended to be connected directly to the aerial power line as declared by manufacturer	N/A
6.	Discharge test (Cl.16 of IS 13340 (Part 1): 2012)	The capacitor was charged by means of dc and then discharge through a gap situated as close as possible to the capacitor. Test subjected to five such discharges within 10 Min.	Yes	Voltage was applied equal to $2U_N$ (i.e. 1.05 kV) between third terminal and two other terminals joined together and subjected to five such discharges	P

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ULR - TC1351825000000547F

PART C-TEST RESULT

TEST REPORT NO.: HPLI/Test/2502088201

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS			Verdict
		Voltage test between terminals as prescribed in 9.1 of IS 13340 (Part 1) :2012 within 5 minute after discharge test. During the test no permanent breakdown or flashover shall occur.		Test voltage: 1.13 kV No permanent breakdown or flashover occurred			P
		Between terminal 1&2 (3 open)					
		Between terminal 2&3 (1 open)					
		Between terminal 3&1 (2 open)					
		The capacitance shall be measured before the discharge test and after the voltage test. The measurements shall not differ by an amount corresponding either to breakdown of an element, or to blowing of an internal fuse, or by more than 2 %.	Yes	Before Discharge Test (µF)	After Voltage Test (µF)	Change in capacitance (%)	--
		Between terminal 1&2 (3 open)		306.5	306.9	0.13	P
		Between terminal 2&3 (1 open)		306.1	306.3	0.09	P
		Between terminal 3&1 (2 open)		306.2	306.5	0.11	P
7.	Ageing Test (Cl.17 of IS 13340 (Part 1) & (Part 2): 2012)	The capacitor unit is mounted as specified in enclosure in which heated air is circulated with an air velocity such that the temperature variation at any point of enclosure do not exceed 2 °C. The capacitor shall be energized at a voltage equal to 1.25 U_N (i.e. 656 V) for 750 hours. For Ageing test, case temperature of the capacitor shall be maintained which is the highest mean temperature in 24 hours (as per Table 1 of IS 13340 (Part 1):2012) plus the difference between the capacitor case temperature and the cooling air temperature recorded at the end of thermal stability test.	Yes	Satisfactory			P

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IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS			Verdict
		The capacitor shall then be subjected to 1000 discharge cycles consisting of charging the capacitor to a dc voltage of $2U_N$ between terminal 1&3 (terminal 2 left open) for 30s minimum charge-discharge cycle as specified.		Satisfactory			P
		The Ageing test will repeated after 1000 charge and discharge cycles at 1.25 U_N for 750 hours		Satisfactory			P
		During the test no permanent breakdown, interruption or flashover shall occur.		No permanent breakdown, interruption or flashover occurred			P
		Change in Capacitance before and after ageing test. Test Voltage: 525 Vac, Frequency: 50 Hz	Yes	Before Test (µF)	After Test (µF)	Change (%)	--
		Between terminal 1&2		306.8	307.1	0.09	P
		Between terminal 2&3		306.1	306.5	0.12	P
		Between terminal 3&1		306.3	306.7	0.13	P
		Overall Phase (Limit: 3% Max.)		Satisfactory			P
		On one phase, (Limit: 5% Max.)		Satisfactory			P
		The Voltage test has been carried out between terminals and container as prescribed in 10.1 of IS 13340 (Part 1) :2012.		No Puncture or flashover occurred during the test			P
		The Sealing test has been carried out as prescribed in Cl. 12 of IS 13340 (Part 1):2012.		Satisfactory			P
8.	Self-healing Test (Cl.18 of IS 13340 (Part 1) & (Part 2): 2012)	The capacitor or element shall be subjected to an ac voltage of $2.15U_N$ for 10 seconds. If fewer than five breakdowns occurred during this time the voltage shall be increased slowly until five breakdowns have occurred since the beginning of the test or until the voltage has reached 3.5 times the rated voltage. The capacitance was then measured at rated voltage 525 Volts ac, Frequency: 50Hz	Yes	Test voltage: 1.13 kV No. of breakdowns occur: >5			P

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IS 13340 (Part 1):2012

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		Change in Capacitance before and after the Self-healing test (Limit ≤ 2%)	Yes	Before Test (µF)	After Test (µF)	Change in Capacitance (%)	--
		Between terminal 1&2		307.0	307.2	0.06	P
		Between terminal 2&3		306.6	306.7	0.03	P
		Between terminal 3&1		306.4	306.6	0.06	P
9.	Destruction Test (Cl.19 of IS 13340 (Part 1) & (Part 2): 2012)	The capacitor sample was mounted in a circulating air oven maintained at a temperature of 55°C. After, all the parts of the capacitor attained the test temperature; the destruction test was performed between terminals 3 and 1 & 2 (joined together). a) A.C. Voltage 1.3U_N (i.e. 682.5V) b) D.C. Voltage 10 U_N (i.e. 5.25 kV)	Yes	See below			--
		a) Escaping liquid material may wet the outer surface of the capacitor but shall not fall in drops.		No leakage observed			P
		b) Container may deform & damage but not broken.		Container not broken			P
		c) Flame or fiery shall not be emitted from opening		No Flame occurred			P
		d) The results of dielectric test between terminal and container with 1500V for 10s shall be satisfactory		Satisfactory & withstood			P
Overloads							
10.	Maximum permissible Voltage (Cl.20 of IS 13340 (Part 1): 2012)	Long Duration voltage	Yes	Long duration voltage as per table 3 of clause no 20.1 of IS 13340 as declared by manufacturer			N/A
11.	Maximum permissible current (Cl.21 of IS 13340 (Part 1): 2012)	Maximum permissible current	Yes	Maximum Current 1.3 times as per IS 13340 as declared by manufacturer			N/A

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PART C-TEST RESULT **TEST REPORT NO.: HPLI/Test/2502088201**

IS 13340 (Part 1):2012

Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
Safety Requirements					
12.	Container Connections (Cl. 23 of IS 13340 (Part 1): 2012)	To enable the potential of the metal container of the capacitor to be fixed, and to be able to carry the fault current in the event of a breakdown to the container, the metallic container shall be provided with connection capable of carrying the fault current.	Yes	Stud /Terminal provided with the sample for fixing are able to carry maximum fault current.	P
13.	Protection of the Environment (Cl. 24 of IS 13340 (Part 1): 2012)	When capacitors are impregnated with products that shall not be dispersed into the environment, the necessary precautions shall be taken. The units and the bank shall be labeled accordingly, if so required.	Yes	No such type of capacitor	N/A
14.	Other Safety Requirements (Cl. 25 of IS 13340 (Part 1): 2012)	The purchaser shall specify at the time of enquiry any special requirements with regard to the safety regulations that apply to the country in which the capacitor is to be installed.	Yes	No such requirement	N/A
Markings					
15.	Marking of the unit (Cl.26 of IS 13340 (Part 1): 2012)	The following information shall be marked indelibly, either directly or by means of a plate, on each capacitor unit:	Yes	See below	--
		a) Manufacturer		Mfd. by.: INDTECH CAPACITORS PVT. LTD.	P
		b) Identification number and manufacturing year (The year may be a part of the identification number or be in code form.)		Marked as "NBK115/2025"	P
		c) Rated output Q_N in kilovars (kvar).		50 kVAr	P
		d) Rated voltage U_N in volts (V).		525 V AC	P
		e) Rated frequency f_N in hertz (Hz).		50 Hz	P
		f) Temperature category		Marked as " -25ºC/55 ºC"	P
		g) Discharge device, if internal, shall be indicated by wording or by the symbol ⊣□⊢ or by the rated resistance in kilohms (kΩ) or megohms (MΩ).		Marked as "Discharge Device : Resistor ⊣□⊢ "	P

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Sl. No.	TESTS WITH CLAUSE REFERENCE	SPECIFIED REQUIREMENTS	Covered under our NABL Scope (Yes/No)	RESULTS	Verdict
		h) Reference of self-healing design: "SH" or or ⧻ "self-healing".	Yes	Marked as ˇ ⧻	P
		i) Connection symbol (All capacitors, except single-phase units having one capacitance only, shall have their connection indicated. For standardized connection symbols, see 26.2).		Marked as "3 Phase Δ"	P
		j)Internal fuses, if included, shall be indicated by wording or by the symbol ⊟		Not Used	N/A
		k) Indication for the overpressure or thermal disconnector, if such disconnector is fitted.		Marked as "OVERPRESSURE DISCONNECTOR"	P
		l) Insulation level Ui in kilovolts (kV). (Only for units having all terminals insulated from the container).		Marked as "Ins. Level 3/8 kv"	P
		m) Reference to IEC 60831 (plus year of issue of the edition).		Marked as "IEC60831-1&2"	P
		A warning notice should be included as follows: "WARNING: WAIT 5 MINUTES AFTER ISOLATING SUPPLY BEFORE HANDLING		Marked as "Wait 5 minutes after isolating supply before handling"	P
	Standardized connection symbols (Cl.26.2 of IS 13340 (Part 1): 2012)	The type of connection shall be indicated either by letters or by the following symbols:		See below	--
		D or Δ = Delta		Marked as "3 Phase Δ"	P
		Y or ⅄ = star		See above	N/A
		YN or ⅄ = star, neutral brought out		See above	N/A
		III or ||| = three sections without interconnection		See above	N/A

PART D:-

Remarks: 1. The observations given in part A of the cover page of the test report are taken from the specification provided with the sample.

2. N/A = Not Applicable

***** END OF THE TEST REPORT *****

HI PHYSIX LABORATORY INDIA PVT. LTD.

Ashutosh Pathak
(Chief Technical Manager)

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