Bharat Test House Pvt Ltd 781 Sonipat Haryana

ULR No. : TC645126000000045F

DOC No.	:	TR020260202002	781, HSIIDC Rai Industrial Estate, Sonipat, Sonipat, Haryana, India - 131029
Telephone	:	+91 9810562215	
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BO Code	:	None	

Test REPORT AS PER : IS 2993 : Part 1 (2024)

QR Code/Barcode : 100001187641

REPORT NO : 10080916/2025/SS/4_1 DATE : 03 Feb, 2026

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address	:	TIBREWALA ELECTRONICS LIMITED TIBREWALA ELECTRONICS LIMITED, Survey No. 1/1; Plot Nos. 30 to 33; Hardware park Imarat Kancha ; Ravirayal village; , ASHOKNAGAR (HYDERABAD), HYDERABAD, TELANGANA, INDIA - 500005
b) Nature of sample	:	SS
c) Grade/Variety/Type/Class Size etc	:	1MFD 450VAC 50Hz 40/85/21, Class of operation B, Safety Class S3
d) Declare values, if any	:	1MFD
e) Batch No. & Date of Manufacture	:	18102025/
f) Quantity	:	60
g) Date of Receipt	:	18 Nov, 2025
h) BIS Seal	:	Verified by Sample Cell
i) IO's Signature	:	Verified by Sample Cell
j) Any other Information / Expiry Date, If any	:	-/N/A
k) Date of Commencement of Testing	:	29 Nov, 2025
l) Date of Completion of Testing	:	02 Feb, 2026
m) Section Code	:	25E144E
n) Section Report No.	:	25E144E_1
o) Report Type	:	New
p) Reference Report No.	:	
q) Remarks	:	

Sunil Kumar
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 03 Feb, 2026 17:41 PM

1.

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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.	Not Applicable
3.	NABL Report required ?	Yes

Sandeep Chauhan
OIC Electrical
(Authorized Signatory)
Authorized on: 02 Feb, 2026 17:39 PM

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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	9.5	Leakage current	-	-	-	-	Test Not Applicable
2	9.4	Checking transients	-	-	-	-	Test Not Applicable
3	9.3	Checking capacitor temperature	-	-	-	-	Test Not Applicable
4	9.2.2	Influence of capacitance	-	-	-	-	Test Not Applicable
5	9.2.1	Measurements of working voltage	-	-	-	-	Test Not Applicable
6	8	Marking	-	-	-	-	Satisfactory (Refer the attachment)
7	7.4	Discharge devices	-	-	-	-	N/A (Discharge device not used)
8	7.3	Earth connections	-	-	-	-	N/A
9	7.2	Terminals and connecting cables	-	-	-	-	Satisfactory
10	7.1	Requirements for Creepage distances and clearances	-	-	-	-	N/A (Wire termination used)
11	7	Safety requirements	-	-	-	-	Satisfactory
12	6.3	Maximum permissible reactive output	-	-	-	-	Test Not Applicable
13	6.2	"Maximum permissible current "	-	-	-	-	Test Not Applicable
14	6.1	Maximum permissible voltage	-	-	-	-	Test Not Applicable
15	5.17.3	Tracking test	-	-	-	-	N/A (Wire termination used)
16	5.17.2	Glow-wire test	-	-	-	-	N/A (Wire termination used)
17	5.17.1	Ball-pressure test	-	-	-	-	N/A (Wire termination used)
18	5.17	Resistance to heat, fire and tracking	-	-	-	-	N/A (Wire termination used)
19	5.16	Destruction test	-	-	-	-	Satisfactory (Class of safety S3)
20	5.15	Self-healing test	-	-	-	-	Satisfactory (Refer the attachment)
21	5.14	Damp heat test	-	-	-	-	Satisfactory (Refer the attachment)
22	5.13	Endurance test	-	-	-	-	Satisfactory (Refer the attachment)
23	5.12	Sealing test	-	-	-	-	N/A (Dry capacitors)
24	5.11	Mechanical tests	-	-	-	-	Satisfactory (Refer the attachment)
25	5.1	Check of dimensions	-	-	-	-	Diameter * Overall Height (27.04 mm * 58.05 mm)
26	5.9	Capacitance measurement	-	0.95	1.05	MFD	1.0416 (Measured capacitance of all the 60 capacitors lies between the range)

27	5.9	Capacitance measurement	-	0.95	1.05	MFD	1.0416 (Measured capacitance of all the 60 capacitors lies between the range)
28	5.8	Voltage test between terminals and case	-	-	-	-	Withstood (2kv @ 50 Hz for 60 sec)
29	5.7	"Voltage test between terminals "	-	-	-	-	Withstood (900 Vac for 60 sec for self healing type)
30	5.5	Tangent of loss angle	-	-	-	-	0.0019 (maximum tangent of loss angle not declared)
31	5.1.1	General	-	-	-	-	Complied

Sandeep Chauhan
OIC Electrical
(Authorized Signatory)
Authorized on: 02 Feb, 2026 17:39 PM

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TC-6451

Section Report No. : 25E144E_1

IS 2993 : Part 1 (2024)

PART D. REMARKS

Nil

Sandeep Chauhan
OIC Electrical
(Authorized Signatory)
Authorized on: 02 Feb, 2026 17:39 PM

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TEST REPORT

ULR No.:	TC645126000000045F			*Page: 1 of 10*
Test Report No.:	TR020260202002		*Issue Date:*	02/02/2026
Discipline:	Electrical		*Group:*	Capacitors
Customer/Manufacturer:	TIBREWALA ELECTRONICS LIMITED Survey No.1/1; Plot Nos. 30 to 33; Hardware park Imarat Kancha, Ravirayal village, ASHOKNAGAR (HYDERABAD), HYDERABAD, TELANGANA, INDIA -500005			
Item Description/Particulars Of Sample Submitted:	Said to be, "A.C. Motor Capacitors,1MFD 450VAC 50Hz 40/85/21, Class of operation B, Safety Class S3, Sample Type: SS, Sample Date: 30 Oct, 2025, Batch No.: 18102025, Manufacturing Date: 18 Oct, 2025".			
Sample/Item Condition:	Fit for testing			
Identification:	Model/ Model No./ Type	-	*Serial No.:*	Nil
			Bar Code:	100001187641
			Sample Code:	10080916/2025/SS/4
			Sample Encoded Code:	25E144E
Sample Deposited/Collected by:	Customer			
Customer Reference no.	Nil		*Date:*	30/10/2025
Job Order No.:	BTH-R0/EL/251118/2		*Date of receipt:*	18/11/2025
Date(s) of performance of tests:	29/11/2025 to 02/02/2026			
Laboratory Name and Address:	**BHARAT TEST HOUSE PVT. LTD.** 781, HSIIDC Indl. Estate, Rai, Distt. Sonipat-131029 Haryana.			
Test Location:	At Lab			
Test specification(s):	IS 2993 (Part 1): 2024 + Amd. 1: 2024			
General Environmental Conditions:	Temperature: 27°C ± 2°C; Relative Humidity: 65% RH ± 5% RH			
Result:	The test results reported are as per relevant test specifications/standards.			
Supplementary Information's:	- Deviation from the test methods as prescribed in relevant Specification/Work Instructions: Nil - The information supplied by the customer may affect the validity of results reported as per standard requirement. - Statement of conformity is not required by the customer. - Authorized signatory is responsible for the results reported by the lab for the requested activity by the customer except for the information provided by the customer.			
Abbreviations:	N/A : Not Applicable, P: Pass			

Scan this QR Code to verify the Report

Remarks:

1. *The test(s) have been carried out as per customer request only.*
2. *The report has been generated and verified digitally.*

This report is related to the sample submitted.

Tested by:	**Reviewed by:**	**Authorized by:**
Vikas Kumar	S. Chauhan	S. Chauhan
Vikas Kumar	**S. Chauhan**	**S. Chauhan**
Testing Engineer/Analyst	**Authorized Signatory**	**Authorized Signatory**
Date: 02/02/2026	**Date: 02/02/2026**	**Date: 02/02/2026**

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S.No.	Tests & Clause Reference	Requirements as per IS 2993 (Part 1): 2024 + Amd. 1: 2024	Test Results/ Observations
1.	Marking (Cl. 8 of IS 2993-1: 2024)	The following information shall be marked on the capacitor:	See Below
		1) Manufacturer's name, abbreviated name or trade-mark	TIBCON CAPACITORS
		2) Manufacturer's type designation.	Marked
		3) Rated capacitance (C_N) in microfarads and tolerance as a percentage.	1.0 MFD ±5%
		4) Rated voltage (U_N) in volts.	450VAC
		5) Rated frequency f_N in hertz, if other than 50 Hz;	50Hz
		6) Climatic category	40/85/21
		7) Date of manufacture (a code may be used)	Marked
		8) # Or SH for Self-healing capacitors.	SH
		9) Discharge device, if any, shall be written out in full or indicated by the symbol —▭— .	N/A (No discharge device used)
		10) Class of safety protection, for example, S0, S1, S2, S3;	S3
		11) Approval marks	N/A (Not Marked)
		12) Filling material. Reference to liquid used (not needed for dry capacitors)	N/A (Dry capacitors)
		13) Class of operation or life duration. To be positioned adjacent to the voltage.	CLASS B
		14) Specification (Standard) number	IS 2993 Part 1 2024
		If the capacitor is small and has not enough space for marking, items a), b), c), d), g), h), i),k), |), n) shall be marked and other items can be omitted. Furthermore, item c) may be markedby the standard code according to IEC 60062 but, if there is enough space available the ratedcapacitance and the capacitance tolerance shall be marked in clear text. Information omitted on the capacitor shall be indicated on the packaging or on theaccompanying notice.	Satisfactory
2.	Tangent of loss angle (Cl. 5.5 of IS 2993-1: 2024)	The tangent of loss angle limit and measuring frequency shall be defined by the manufacturer.	See Table 2
3.	Visual Examination (Cl. 5.6 of IS 2993-1: 2024)	The condition, workmanship, marking and finish shall be satisfactory. The marking shall be legible during the life of the capacitor.	Satisfactory
4.	Voltage Test Between terminals (Cl. 5.7 of IS 2993-1: 2024)	Capacitors shall be subjected to an a.c. voltage test as specified in Table 2a orTable 2b. The test shall be carried out witha substantially sinusoidal voltage at the ratedfrequency.	Satisfactory (See Below)
		For Continuous operation: a) Non Self Healing Capacitor: 2.15 X Rated Voltage for 60 Sec b) Self HealingCapacitor : 2.0 X Rated Voltage for 60 Sec No flashover or permanent breakdown shall occur. For metallized capacitors, self-healing may occur.	Withstood (900 Vac for 60 sec for self healing type)

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5.	Voltage Test Between terminals and case (Cl. 5.8 of IS 2993-1: 2024)	Capacitor shall be subjected to a sinusoidal ac voltage between the terminals (joined together) and the case. If the capacitor case is of insulating material, the test voltage shall be applied between the terminals and the metal mountings, if any, or between the terminals and a metal foil wrapped tightly round the surface of the case as below: **Test Voltage:** Twice the rated Voltage + 1000V or 2000V (Which one is higher) @ Rated Frequency for 60 Sec. During the test, no dielectric breakdown or flashover shall-occur.	Withstood (2kv @ 50 Hz for 60 sec)
6.	Capacitance Measurement (Cl. 5.9 of IS 2993-1: 2024)	The capacitance shall be measured using a method which excludes errors due to harmonics. Testing shall be carried out at between 0.9 and 1.1 times the rated voltage and at the rated frequency.	Satisfactory (See Table 1)
7.	Dimensions (Cl. 5.10 of IS 2993-1: 2024)	Dimensions of the case, of the terminals and of the fixing arrangements shall comply with those indicated in the drawing, taking tolerances into account.	Diameter * Overall Height (27.04 mm * 58.05 mm)
8.	Test for Robustness of Terminations (Cl. 5.11.1 of IS 2993-1: 2024)	The capacitor shall be subjected to Tests Ua, Ub, Uc and Ud of IEC 60068-2-21, as applicable.	See below
9.	Test Ua - Tensile (Cl. 5.11.1.1 of IS 2993-1: 2024)	The load to be applied shall be 20N load is applied on all type of terminations.	Complied
		For external wire terminations, the cross sectional area shall be at least 0.5 mm^2	Satisfactory
10.	Test Ub – Bending (Half of the terminations) (Cl. 5.11.1.2 of IS 2993-1: 2024)	This test shall be carried out only on wire terminations. Two consecutive bends shall be applied.	Satisfactory
11.	Test Uc - Torsion (other half of the terminations) (Cl. 5.11.1.3 of IS 2993-1: 2024)	This test shall be carried out only on wire terminations. Two successive rotations of 180° shall be applied.	Satisfactory
12.	Test Ud – Torque (Screw terminals) (Cl. 5.11.1.4 of IS 2993-1: 2024)	This test shall be carried out on threaded terminations. The nuts or screws shall be tightened to the torque specified in table 3 and loosened again. The torque shall be applied gradually. The screw material shall have adequate resistance against stress cracking.	N/A (No nuts or screws used)
13.	Visual Examination (Cl. 5.11.1.5 of IS 2993-1: 2024)	After each of these tests the capacitors shall be visually examined. There shall be no visible damage.	Satisfactory (No visible damage)

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14.	Soldering (Cl. 5.11.2 of IS 2993-1: 2024)	This test shall be carried out only when terminals are designed for connection by soldering. The capacitor shall then be subjected to Test T of IEC 60068-2-20 either using the solder bath method or the solder globule method. When neither the solder bath method nor the solder globule method is applicable, the soldering iron test shall be used, with soldering iron size A.	N/A (Wire termination used)
		Before and after the test the capacitance of the capacitor shall be measured by the method laid down in clause 5.9. No perceivable capacitance change is permitted.	N/A
		When the test procedures have been carried out, the capacitors shall be visually examined. There shall be no visible damage.	N/A
15.	Vibration (Cl. 5.11.3 of IS 2993-1: 2024)	The capacitors shall be subjected to Test Fc of IEC 60068-2-6 using a mounting system similar to that which is to be used in practice. The severity of the test shall be as follows: – f= 10Hz to 55Hz – a = ± 0.35 mm – Test duration per axis = 10 frequency cycles (3 axes offset from each other by 90°), 1 octave per minute.	Satisfactory
		Before and after the test, the capacitance of the capacitors shall be measured by the method laid down in clause 5.9. No perceivable capacitance change is permitted.	Satisfactory (No perceivable Capacitance change)
		After the test, the capacitor shall be subjected to the voltage test between terminals and case according to clause 5.8. No dielectric breakdown or flashover shall occur.	Withstood (No dielectric breakdown or flashover occurred)
		When all the test procedures have been carried out, the capacitors shall be visually examined. There shall be no visible damage.	Satisfactory (No visible damage)
16.	Fixing bolt or stud (if fitted) (Cl. 5.11.4 of IS 2993-1: 2024)	Fixing threaded bolts and attachments to the capacitor body shall have adequate resistance to ageing deterioration in service.	N/A (No bolt or stud used)
		The durability of the fixing bolt or stud shall be checked on four of the samples tested in clause 5.13 (endurance test) by the following method: Four of the capacitors shall be mounted on a fixing plate in the endurance test chamber. The thickness of the fixing plate shall be 1.5 mm ± 0.1 mm and the diameter of the hole shall be the base bolt diameter +0.5 mm to + 1.0mm.	N/A
		Prior to commencement of the endurance test, torque values specified in table 3 are to be applied. On completion of the endurance test, a torque figure of one half the appropriate values specified in table 3 is to be applied. No failures are permitted.	N/A
17.	Sealing Test (Cl. 5.12 of IS 2993-1: 2024)	The capacitor shall be mounted in a position most likely to reveal leakage at a temperature 10°C ± 2°C higher than the maximum permissible capacitor operating temperature for a time sufficient for all parts of the capacitor to reach this temperature. The capacitor shall be maintained at this temperature for a further hour before cooling.	N/A (Dry capacitors)
		After the sealing test, capacitors shall be inspected for liquid leakage and distorted case. No leakage shall occur. Liquids are allowed to wet the surface but not to form droplets.	N/A

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18.	Endurance Test (Cl. 5.13 of IS 2993-1: 2024)	This test is intended to prove the suitability of the capacitor design for the class of operation specified by the manufacturer.	Satisfactory
		Testing in air with forced circulation (Cl. 5.13.1): The capacitors shall be mounted in a test chamber in which the temperature of the air is constant within a tolerance of +2 °C. The air in the test chamber shall be continuously agitated but not so vigorously as to cause undue cooling of the capacitors. The distance between cylindrical capacitors shall not be less than their diameter, and the distance between rectangular capacitors shall not be less than twice the shorter side of their base. The temperature sensitive element of a temperature recording instrument shall be attached half-way up the side of the case of the capacitor with the lowest value of tangent of loss angle. The thermostat shall be set to (tc – 15°C), and capacitors are then energized according to the appropriate voltage and test cycle. During the first 24 h, the difference between tc and the indication of the temperature recording instrument shall be noted, and adjustments made to ensure the temperature of each capacitor case is at tc ± 2°C. The test is then continued to the end of the appropriate time without further adjustment of the thermostat, the time being measured from the first energization of the capacitors.	Satisfactory
		Endurance test procedure (Cl. 5.13.2): Capacitors shall be tested according to the appropriate class indicated in Table 4. Class of Operation or Life Duration: Class B	Satisfactory (Tested for 1000 hrs of continuous operation at 607.5 V AC)
		Conditions of compliance(Cl. 5.13.3): During the test, no permanent breakdown, interruption or flashover shall occur. No leak should be apparent which forms droplets within 10 min when kept at upper temperature limit in the most unfavorable position.	Satisfactory (No breakdown/ Interruption/ flashover or Leakage occurred)
		At the end of the test, the capacitors shall cool down freely to the ambient temperature and the capacitance shall then be measured. Change in Capacitance shall be less than 3% after the test.	Satisfactory (See Table 3)
19.	Damp-heat test (Cl. 5.14 of IS 2993-1: 2024)	Capacitance shall be measured-before-the test. This test shall be carried out in accordance with IEC 60068-2-78.The severity indicated in the marking shall be employed. No voltage shall be applied to the samples and no measurement shall be taken during the test.	Satisfactory
		After the damp-heat period, the capacitors shall be stored under standard atmospheric conditions for recovery for not less than 1 h and not more than 2 h. Immediately after recovery, the capacitance shall be measured in accordance with 5.9. Capacitance change shall be less than 0.5 % after the test.	Satisfactory (See Table 4)

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20.	Self-healing test (Cl. 5.15 of IS 2993-1: 2024)	Self-healing capacitors shall have adequate self-healing properties. Compliance is checked by the following test. This test shall be applied only to capacitors marked or SH. The capacitors shall be subjected to the test described in 5.7 for the test time indicated in the appropriate table. If fewer than five self-healing breakdowns (clearings) occur during this time, the voltage shall be increased at a rate of not more than 200 V/min until five clearings have occurred since the beginning of the test or until the voltage has reached a maximum of 3.5 U_N. The voltage shall then be decreased to 0.8 times the voltage at which the fifth clearing occurred or 0.8 times the maximum voltage and maintained for 10 s. One additional clearing in each capacitor shall be permitted during this period.	Satisfactory
		The capacitors shall be deemed to have passed the test if they meet both of the following requirements: a) Change of capacitance is < 0.5 % b) RC value is ≥ 100s.	Satisfactory (See Table 5)
21.	Destruction test (Cl. 5.16 of IS 2993-1: 2024)	Capacitors marked S0 are not required to be tested in-accordance with this sub clause. Capacitors fitted with overpressure disconnect device designated S1 and S2 shall be subjected to the sequential DC and AC test described in 5.16.3 and 5.16.5. Capacitors with segmented film as defined in 3.6 and designated S3 class of safety protection shall be subjected to the simultaneous DC and AC test described in 5.16.4 and 5.16.6.	Satisfactory (Class of safety S3)
		The test is to be carried out on 10 samples. Half the test specimens (5) shall have passed the test according to 5.4.1. The remaining five capacitors shall-have passed the endurance test described in5.13. Capacitors are subjected to test as per Cl. 5.16.	Satisfactory
		After completion of the test, samples shall comply with the requirements specified in 5.16.7.	N/A (No failure occurred)
22.	Resistance to heat, fire and tracking (Cl. 5.17 of IS 2993-1: 2024)	These tests are not applicable to capacitors with lead terminations.	Wire termination used
		Ball-pressure test (Cl. 5.17.1):- External parts of insulating material retaining terminals in position shall be sufficiently resistant to heat. For materials other than ceramic, compliance is checked by subjecting the parts to the ball-pressure test in accordance with 27.3 of IEC 60309-1 at 125 °C or at t_c + 40 °C, whichever is the higher. After test, the diameter of impression shall not exceed 2 mm.	N/A

		Glow- wire test (Cl. 5.17.2):- For materials other than ceramic, compliance is also checked by the following test. External parts of insulating material retaining terminals in position shall be subjected to the glow-wire test in accordance with IEC 60695-2-10 and IEC 60695-2-11, subject to the following details: – the test sample comprises one set of individual components forming the terminal assembly; – the temperature of the tip of the glow-wire is 550 °C for I_N< 0.5 A and 850 °C for I_N> 0.5 A; – any flame or glowing of the specimen shall extinguish within 30 s of withdrawing the glow-wire, and any flaming drops shall not ignite a piece of five-layer wrapping tissue, as defined in ISO 4046, spread out horizontally at a distance of 200 mm ± 5 mm below the place where the glow-wire is applied to the specimen.	N/A
		Tracking test (Cl. 5.17.3):- Outer insulating parts of capacitors which retain live parts in position or are in contact with such terminals shall be of material resistant to tracking. Compliance is checked by carrying out the tracking test specified in IEC 60112 at 250 V on relevant parts according to solution A.	N/A
23.	Creepage distances and Clearances (Cl. 7.1 of IS 2993-1: 2024)	The creepage distances over external surfaces of terminal insulation and the clearances between the exterior parts of terminal connections or between such live parts and the metal case of the capacitor, if any, shall be not less than the minimum values given in table 5.	N/A (Wire termination used)
		Clearance: — Between Live parts of different polarity (Minimum 5 mm) — Between Live parts and accessible metal parts (Minimum 6 mm)	N/A
		Creepage: — Between Live parts of different polarity (Minimum 5 mm) — Between Live parts and accessible metal parts (Minimum 6 mm)	N/A
24.	Terminals and connecting cables (Cl. 7.2 of IS 2993-1: 2024)	Terminals and undetachable connecting cables shall have a conductor cross-section which can safely carry the current of the capacitor and shall have sufficient mechanical strength.	Satisfactory
		The minimum cross-sectional area of the conductor shall be 0.5mm^2. Insulated cables shall conform to the voltage and temperature ratings of the capacitor.	Satisfactory
25.	Earth connections (Cl. 7.3 of IS 2993-1: 2024)	If the metal case of the capacitor is intended to be connected to earth or to a neutral conductor, means shall be provided to enable an effective connection to be made. This may be achieved by supplying the capacitor in an unpainted metal case or by provision of an earth terminal, an earth conductor, or a metal bracket with sound electrical connection to the case. Whichever the type of connection used, it must be clearly marked by the symbol ⏚ as the earth connection. When the metal case is provided with a threaded stud and the capacitor is securely fixed to the metal frame by means of this stud without interposed insulating material and the frame is securely connected to earth, the stud shall be considered as an effective connection to earth.	N/A
26.	Discharge devices (Cl. 7.4 of IS 2993-1: 2024)	When a discharge device is specified, it must reduce the voltage at the terminals from the peak of the rated voltage to a value of 50 V or less in the time of 1 min from the moment the capacitor is switched off.	N/A (Discharge device not used)

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(Cl. 5.9 of IS 2993-1: 2024)	TABLE 1: Capacitance Measurement	P

S.No.	Measured Capacitance (µF)	Δ C (in %)	S.No.	Measured Capacitance (µF)	Δ C (in %)	S.No.	Measured Capacitance (µF)	Δ C (in %)
1	1.0344	3.44	21	1.0306	3.06	41	1.0346	3.46
2	1.0262	2.62	22	1.0299	2.99	42	1.0285	2.85
3	1.0295	2.95	23	1.0331	3.31	43	1.0313	3.13
4	1.0334	3.34	24	1.0256	2.56	44	1.0302	3.02
5	1.0221	2.21	25	1.0239	2.39	45	1.0079	0.79
6	1.0276	2.76	26	1.0262	2.62	46	1.0304	3.04
7	1.0125	1.25	27	1.0343	3.43	47	1.0342	3.42
8	1.0232	2.32	28	1.0308	3.08	48	1.0333	3.33
9	1.0258	2.58	29	1.0237	2.37	49	1.0128	1.28
10	1.0324	3.24	30	1.0326	3.26	50	1.014	1.40
11	1.0256	2.56	31	1.0325	3.25	51	1.0175	1.75
12	1.0411	4.11	32	1.0295	2.95	52	1.0297	2.97
13	1.0214	2.14	33	1.0297	2.97	53	1.0307	3.07
14	1.0351	3.51	34	1.0222	2.22	54	1.0272	2.72
15	1.0321	3.21	35	1.0226	2.26	55	1.0272	2.72
16	1.0241	2.41	36	1.0132	1.32	56	1.0251	2.51
17	1.0296	2.96	37	1.0208	2.08	57	1.0185	1.85
18	1.0416	4.16	38	1.0284	2.84	58	1.0193	1.93
19	1.0321	3.21	39	1.0338	3.38	59	1.0224	2.24
20	1.0378	3.78	40	1.0304	3.04	60	1.0293	2.93

(Cl. 5.5 of IS 2993-1: 2024)	TABLE 2: Measurement of Tangent of Loss Angle (@50Hz)

S.No.	Tangent of loss angle	S.No.	Tangent of loss angle	S.No.	Tangent of loss angle
1	0.0017807	21	0.0016752	41	0.0016706
2	0.0017068	22	0.0016214	42	0.0019001
3	0.0017331	23	0.0016421	43	0.0015292
4	0.0017311	24	0.0019091	44	0.0016358
5	0.0016700	25	0.0018761	45	0.0018839
6	0.0016204	26	0.0018125	46	0.0018401
7	0.0016211	27	0.0015317	47	0.0018116
8	0.0018891	28	0.0015035	48	0.0017866
9	0.0018310	29	0.0017031	49	0.0015348
10	0.0015664	30	0.0016298	50	0.0019109
11	0.0018317	31	0.0015820	51	0.0017961
12	0.0016216	32	0.0018121	52	0.0018399
13	0.0015138	33	0.0017341	53	0.0014755
14	0.0016418	34	0.0015624	54	0.0017761
15	0.0017834	35	0.0017964	55	0.0017294
16	0.0017441	36	0.0018160	56	0.0017378
17	0.0018345	37	0.0015376	57	0.0016676
18	0.0017977	38	0.0017727	58	0.0018062
19	0.0016971	39	0.0016752	59	0.0017416
20	0.0018565	40	0.0016311	60	0.0017574

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(Cl. 5.13 of IS 2993-1: 2024)	TABLE 3: ENDURANCE TEST		P
	Test period (h).....:	1000 hr	—
	Test voltage (V).....:	607.5 VAC	—
	Temperature of capacitor case (°C).....:	85°C ± 2°C	—

	CAPACITORS										
Tests	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Before test, Capacitance Measurement C in µF at U_N	1.0221	1.0276	1.0125	1.0232	1.0258	1.0324	1.0256	1.0411	1.0214	1.0351	1.0321
Endurance Test (Verdicts)	P	P	P	P	P	P	P	P	P	P	P
After test, Capacitance Measurement C in µF at U_N	1.0182	1.024	1.0096	1.0197	1.0222	1.0287	1.0217	1.0372	1.0175	1.0314	1.0285
ΔC/C should be ≤ 3%	0.38	0.35	0.29	0.34	0.35	0.36	0.38	0.37	0.38	0.36	0.35

Tests	CAPACITORS									
	16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Before test, Capacitance Measurement C in µF at U_N	1.0241	1.0296	1.0416	1.0321	1.0378	1.0306	1.0299	1.0331	1.0256	1.0239
Endurance Test (Verdicts)	P	P	P	P	P	P	P	P	P	P
After test, Capacitance Measurement C in µF at U_N	1.0206	1.026	1.0379	1.0283	1.0343	1.0270	1.026	1.0291	1.0221	1.0210
ΔC/C should be ≤ 3%	0.34	0.35	0.36	0.37	0.34	0.35	0.38	0.39	0.34	0.28

(Cl. 5.14 of IS 2993-1: 2024)	TABLE 4: DAMP HEAT TEST		P
	Test temperature(°C):----------	40°C ± 2°C	-
	Relative humidity (%):----------	93% ± 2% RH	-
	Test duration:----------	21 Days	-

Tests	Capacitors					
	26	**27**	**28**	**29**	**30**	**31**
Before test, Capacitance measurement C in µF at U_N	1.0262	1.0343	1.0308	1.0237	1.0326	1.0325
Damp Heat Test (Verdicts)	P	P	P	P	P	P
After test, Capacitance measurement C in µF at U_N	1.0244	1.0325	1.0289	1.0218	1.0308	1.0305
ΔC/C should be ≤ 0.5%	0.18	0.17	0.18	0.19	0.17	0.19

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(Cl. 5.15 of IS 2993-1: 2024)	TABLE 5: SELF HEALING TEST									P
Tests	Capacitors									
	32	33	34	35	36	37	38	39	40	41
Before test, Capacitance measurement C in µF at U_N	1.0295	1.0297	1.0222	1.0226	1.0132	1.0208	1.0284	1.0338	1.0304	1.0346
Voltage at which ≥ 5 self-healings observed (U_t)	1060	1055	1060	1055	1060	1055	1060	1050	1055	1055
No. of Self-healings observed at 0.8U_t	0	0	0	0	0	0	0	0	0	0
After test, Capacitance measurement C in µF at U_N	1.0266	1.0267	1.0196	1.0197	1.0105	1.0181	1.0258	1.0311	1.0276	1.0317
ΔC/C should be ≤ 0.5%	0.28	0.29	0.25	0.28	0.27	0.26	0.25	0.26	0.27	0.28

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