

**TECHANICAL SPECIFICATION FOR 3-PHASE BOX MADE FROM GLASS REINFORCED
POLYESTER SHEET MOULDING COMPOUNDS (SMC) FOR 3-PHASE WC ENERGY METER.**

1.0 SCOPE:

This specification covers the design, manufacturing and testing of anti-corrosive, dust proof, rust proof, shock proof, self-extinguishing property, resistant to heat, vermin & water proof, Ultra Violet Stabilized and pilfer resistant Meter Box made from SMC Made from Thermosetting Plastic Confirming to IS:13410 (1992) and attached technical specification, drawing and IS 14772:2000.

2.0 CONSRTUCTION:

2.1 The minimum size of box from inside shall be 400 X 300 X 190 mm & 2 mm thick

2.2 SMC Meter Box shall be moulded in a single piece forming the body of the SMC meter box with a cover fitted with base by minimum three nos. concealed Stainless steel hinges or single continual allowed. The lid/cover shall rest on the collar of SMC the Meter Box base in such a way that any access from outside of the meter is not possible. The hinges shall be fitted with the SMC Meter Box body base and cover rigidly, thereby making the SMC Meter Box pilfer resistant. All corners of the SMC meter Box should be round & not pointed ones.

2.3 The door in closed position should be overlapped in such a manner that no direct entry or access is possible. The SMC Meter Box shall be closed by S.S.'U' Clamp of minimum 0.8 mm (+/- 0.1 mm) thickness for holding and locking of the door with body base. The 'U' Clamp shall have 4 mm **±0.5 mm** diameter holes through which it is possible to seal the box for sealing purpose.

2.4 The top surface of box shall have little tapering shape towards both sides of the meter box for easy flow of rainwater.

2.5 For fixing of P.P.T. (Poly Propylene Talk Fitted-V-O(FR)) box on wall 4 Nos. of nail holes with 7 mm **±0.5 mm** diameter shall be provided at **200mm ±2.5 mm** Horizontal distance between them keeping vertical location as mentioned in drawing.

2.6 Length of flexible channel for fixing of meter bottom screw inside the SMC Box shall be of length having **minimum** 150 mm play as mentioned in Drawing.

2.7 2 (Two) Part head screw is to be provided for fixing of meter bottom screw channel.

2.8 One more door closing S.S.'U' clamp at the bottom of SMC Box shall be provided as mentioned in Drawing. The S.S.'U' Clamp shall have 4 mm **±0.5 mm** diameter holes through which it is possible to seal the box for sealing purpose.

2.9 The box should have a window of size 140 **±2.5** x 120 **±1.5** mm. provided with **internally fitted glass of min. 3 mm thickness** as shown in the drawing. **The glass shall be fixed from inside without any hardware exposed at front** The door shall open **from left to right** at 90 degree.

2.10 Cable entry and exit holes of 25mm **+1 mm (Negative tolerance Not allowed)** diameter shall be provided on both sides of box with good quality rubber grommets as shown in the drawing.

2.11 One no Earth bolt of 6mm diameter x 25mm length with 2 Nos. Nuts and 2 nos. washers plus a spring washer shall be provided. The earthing arrangement shall be of M.S. with Zinc passivated. The irremovable earthing symbol is to be provided near the earthing bolt.

(In Drawing diameter of Earth bolt is mentioned M6 is defined as 6 mm)

2.12 All corners of the Meter box should be round and not pointed ones.

2.13 The Earth Bolt shall be M.S. with Zinc passivated.

2.14 Required arrangements per box should be as follows:

Sr No	Details	Box for 3 Ph. Meter
1	Size of the box inside, minimum	400 X 300 X 190 mm
2	Thickness, minimum	2 mm
3	Opening of the box	90 ⁰
4	No of holes on backside box wall having 7 mm ±0.5 mm dia for fixing of box.	04 No
5	Earth bolt of 6 mm dia X 25 mm length with 2 nuts and 2 washers	01 No
6	Cable Entry Hole with good quality rubber grommets as shown in drawing.	25 mm +1 mm - 01 No
7	Cable Exit Holes with good quality rubber grommets as shown in drawing.	25 mm +1 mm - 01 No

2.15 The box shall be provided with continuous rubber gasket ring in the collar of the box as per drawing in such a manner that the hinges and sealing notch should not disturb/ cut the continuity of the gasket ring.

3.0 GUARANTEED TECHNICAL PARTICULARS:

Guaranteed Technical particulars are given in enclosed Annexure A and B. Bidder shall submit the data in given Performa.

4.0 TYPE TEST CERTIFICATE:

The bidder shall submit type test report as per IS-14772-2000 & IS - 13410: 1992 from CIPET /ERDA, Vadodara/Any NABL Accredited Laboratory along with the offer. Type Test Certificate should not be older than 7 years as on the date of tender opening.

5.0 ROUTINE TEST:

Manufacturer has to Carryout routine test during production to check the essential requirements that are likely to vary during production. Manufacturer has to keep records of the same and to be produced for verification of inspector when asked at the time of inspection of lot.

6.0 ACCEPTANCE TEST:

The acceptance tests shall be carried out on randomly selected samples as per Annexure - B.

7.0 RAW MATERIALS:

The manufacturer has to submit the test certificate for the material used in the lot offered and document for purchase of raw material.

8.0 FACILITY:

The bidder shall have facility to test the box for routine tests and acceptance as per IS14772: 2000 and IS - 13410 at their works. The bidder has to submit list of Machinery & Equipment I Testing instruments etc.

9.0 INSPECTION AND TESTING:

The bidder has to offer the boxes for inspection at his works before dispatch. The manufacturer will offer all facilities to inspector without any charge.

10.0 DESPATCH:

The 3-PH SMC meter boxes shall be so dispatched as to ensure that no damage occurs during transport where they may be subject to rough handling.

11.0 DESTINATION:

The above material shall be supplied to RSO or any store of **MGVCL**.

12.0 TENDER SAMPLE:

Two Sample (as per Specifications and Drawing attached with this Tender) is required to be submitted at the address of **The Deputy Engineer, Divisional Store Office, MGVCL, Lalbaug Division Office, Opp. Pratapnagar Railway Station, Vadodara**. Tender without sample is liable to be rejected.

13.0 PROTO TYPE SAMPLE:

On receipt of firm order the supplier has to prepare and offer the prototype sample within thirty days for carrying out all acceptance tests mentioned at Annexure-B (B) at the supplier's works in presence of DISCOM's Engineer. The cost of testing to be borne by the supplier only. After approval of prototype in writing by DISCOM the supplier can start and make further arrangement to offer the materials in bulk.

Annexure-A

GUARANTED TECHNICAL PARTICULARS FOR THREE PHASE SMC METER BOX

Sr. No	PARTICULARS	DETAILED PARTICULARS	TO BE OFFERED BY BIDDER
1	Maker's name	To be intimated by the supplier	
2	Material	Glass reinforced polyester sheet moulding compound	
3	Grade of Material	SMC confirming to IS:13410:1992 Grade S1 or better	
4	Properties of Material of Construction of Meter Box		
	Heat Deflection Temperature(Ref Std. IS:13411)	150 °C (Minimum)	
	Exposure to flame (Ref. Std. IS:4249)	Self-extinguishing	
	Melting Point (Ref.Std. IS:13360)	Does not melt	
	Glow wire test at 650 Degree Centigrade	As per IS 11000 Part-2/Sec-1	
	Degree of protection	IP-42 as per IS-12063/87	
	Heat distortion temp.	125 C (Min) as per IS:13411	
	Dielectric Strength at 90 C in oil	9 KV/mm (Min) as per IS:6262-1971	
	Exposure to flame (Ref. Std. IS:4249)	Self-extinguishing	
5	Inside dimension of Meter Box	To be mentioned by the Bidder	
	a. Height	400mm (min)	
	b. Width	300 mm (min)	
	c. Depth	190 mm (min)	
	d. Thickness	02 mm (min)	
6	Window having Glass of Min. 3 mm thickness	Window Size 140 mm ±2.5mm x 120 mm ±1.5mm	
	Fixing of Glass	Fitted from inside in such a way that it cannot be replaced without opening door (with anticorrosive SS Frame all around)	
7	Earthing Arrangement		
	Earthing bolt	One no. of Earthing bolt of MS with 2 nuts and 2 washers shall be provided on RH side of box. Earthing sign has to be provided near to earthing bolt	
	Dia. & Length of earthing bolts	Dia. 6 mm Length 25 mm	

Sr. No	PARTICULARS	DETAILED PARTICULARS	TO BE OFFERED BY BIDDER
8	Locking arrangement	For Holding & Locking of door with base Three no. of "U" shaped clamps to be provided as mentioned in Drawing	
9	Cable entry holes	Cable Entry Hole Ø25 mm +1 mm (Negative tolerance Not allowed) with good quality rubber grommets on both side as shown in drawing.	
10	Sealing arrangement	Holes for wire seal	
11	Wire entry	Plugged holes	
12	Colour of Meter Box	Off White	
13	Meter Mounting Arrangement	Universal type adjustable to suit mounting of any make of meter broadly as per the Drawing	

Annexure-B

	TEST REQUIREMENT FOR SMC 3 PH METER BOX (3-PH WHOLE CURRENT METER)	Reference Standards
A	ROUTINE TEST	
1	Protection against electric shock	IS 14772
2	Provision for earthing	- Do -
B	ACCEPTANCE TESTS (Random samples 10 nos. to be selected)	
1	Marking (Name, Trade mark)	- Do -
2	Protection against electric shock	- Do -
3	Provision for earthing	- Do -
4	Construction and Dimension verification	- Do -
5	Heat distortion temperature (min 150°C) (On any one sample)	IS: 13411
6	Self Extinguishing (On any one sample)	IS: 4249
C	TYPE TEST	
1	Marking	IS: 14772
2	Dimensions	- Do -
3	Protection against electric shock	- Do -
4	Provision for earthing	- Do -
5	Construction	- Do -
6	Resistance to ageing, to humid conditions, ingress of Solid objects and to harmful ingress of water	- Do -
7	Mechanical strength	- Do -
8	Resistance to heat	- Do -
9	Resistance to insulating material to abnormal heat and fire	- Do -
10	Resistance to rusting	- Do -
11	Resistance of tracking	- Do -
12	Heat distortion temperature (min 150°)	IS 13360 (Part VI Sec III)
13	Self Extinguishing	IS: 4249
14	Material Identification	CIPET
15	UV ageing for 200 Hrs. as per ASTM G154/155	
16	All test as per IS:13410:1992	CIPET/ERDA, Baroda
	Type Tests	Requirement as per IS (Grade:S1)
a	Glass Content	20% (Mini)

	TEST REQUIREMENT FOR SMC 3 PH METER BOX (3-PH WHOLE CURRENT METER)	Reference Standards
b	Water Absorption	0.25 % (Max)
c	Izod Impact strength (Notched)	45 KJ/M2 (Mini)
d	Flexural strength	155 Mpa (Mini)
e	Power Arc Resistance	120 Sec (Mini)
f	Dielectric Strength at 90 °C	9 Kv/mm (Mini)
g	Heat distortion temp.	125 °C (Mini)
h	Oxygen Index	23 % (Mini)
i	Tracking resistance	600 CTI (Mini)
j	Modulus of elasticity	12 to 15, 10 ³ MPa
k	Flammability (Min) As per IS-11731	FV0
l	Melting point (IS 13360)	--
m	Glow wire test at 650 °C (IS : 11000 P2)	--