

**SECTION –III-B****TECHNICAL SPECIFICATION FOR MOULDED METER CUP-BOARD SUITABLE FOR THREE PHASE STATIC ENERGY METERS AGAINST TN-2628****1.0 A) SCOPE:**

This specification covers the moulding and supply of moulded cup-board suitable to house the three phase energy meters. The meter cup-boards shall be suitable for wall mounting.

**B) REQUIREMENT:**

The requirement of Three Phase Moulded Meter Boxes is 95,000 Nos. This quantity is tentative which may be increased or decreased at the time of placement of order.

**2.0 TECHNICAL REQUIREMENT & STANDARDS****2.1 MATERIAL AND STANDARDS:**

The meter cup-board base shall be made of compression moulded SMC and meter cup-board cover shall be made of injection moulded, unbreakable, high grade flame retardant polycarbonate with minimum thickness of 2.0 mm having good dielectric and mechanical strength. The top cover of the meter cup-board must be totally transparent without any provision of the separate window arrangement. The material must be 'UV' stabilized to ensure that the moulded meter cup-board should not change in colour shape, size, dimension when subjected to 200 hrs. on U-V ageing test.

The cup- board should have tapered surface / corners to prevent stay of rain water at the top of the meter cup board.

The cup board should be capable of withstanding the mechanical, electrical and thermal stresses as well as the affects of humidity which are likely to be encountered in service, at the same time ensuring desired degree of safety. The plastic material should be adequately stabilized against detrimental effects of light and weather. The surface appearance of moulded part must be smooth, non-porous and homogenous, free of ripples, defects and marks. No fillers of fibers should be visible at any place. The cup-board shall comply in all respect with the requirement of latest amended IS:14772/2000 "General requirements for enclosures for accessories for household and similar fixed electrical installations" & IS:13410 for SMC Materials Applicable degree of protection shall be IP 54 or better.

## **2.2 PROPERTIES OF PLASTIC MATERIAL:**

The plastic material which is to be used by the bidder for these moulded meter cup-boards, must have the following properties:

<b>S.N o.</b>	<b>Property</b>	<b>Units</b>	<b>Value</b>
1.	Physical Water Absorption	%	Max. 0.35
2.	Thermal HDT	Deg. C	Min. 125.
3.	Flammability a) Rating b) Glow wire test @ 650 Deg. C		FV 2 Passes
4.	Mechanical a) Tensile Strength b) Flexural strength c) Modulus of Elasticity d) Izod impact strength notched 23 deg. C.	MPa Mpa Mpa KJ/Sq.m	Min. 50 Min. 90 Min. 2000 Min 8

## **2.3 SERVICE CONDITIONS:**

- |    |                                                               |              |
|----|---------------------------------------------------------------|--------------|
| a) | Maximum ambient air temperature                               | :50 deg.C    |
| b) | Maximum ambient air temperature in shade                      | :45 deg.C    |
| c) | Maximum temperature attainable by the meter exposed to sun.d) | :60 deg. C   |
|    | Minimum ambient temperature                                   | :(-) 5 deg.C |
| e) | Average daily ambient air temperature                         | :40 deg.C    |
| f) | Maximum relative humidity                                     | :95 %        |
| g) | Number of months of tropical monsoon condition                | :4 months    |
| h) | Maximum altitude above mean sea level                         | :1000 meters |
| i) | Average annual rain fall                                      | :10-100 cms  |
| j) | Maximum annual rain fall                                      | :1450 mm     |
| k) | Maximum wind pressure /sq.m                                   | :200 kg      |
| l) | Isoceraunic level (days per year)                             | :40          |
| m) | Seismic level (horizontal accn.)                              | :0.30 g      |
| n) | Permitted noise level                                         | :45. db      |

## **2.4 GENERAL & CONSTRUCTIONAL REQUIREMENTS:**

### **2.4.1 DIMENSIONS:**

The minimum inner dimensions of Three Phase moulded meter boxes shall be as under :-

S.No.	Overall height	Width	Depth
1.	min. 385 mm	min. 300 mm	min.135 mm

The size of meter cup-board (length, Width and height) shall be such that there should be a minimum of 30 mm clearance on all sides from the meter sides except the bottom side (which should be minimum 75 mm from the lower edge of terminal block) and 15 mm clearance on front and 10mm clearance from back of the meter. The clearance between the meter and Modem & between modem and horizontal side of meter box & modem and lower side of meter box should be minimum 20 mm each. The clearance between Modem and upper side of meter box should be 40 mm. There should not be external hole additionally for communication cable. These meter boxes should be capable of housing meters of various makes like M/s Avon, M/s. Himachal, M/s. HPL Electric & Power Ltd, M/s. Genus Infrastructure Ltd, M/s. Genus Innovation Ltd, M/s. Linkwell Telesystems Pvt Ltd. M/s. Larsen & Toubro, M/s. Landis & Gyr Ltd, M/s. Secure Meters, etc.

#### **(b) Tolerance**

**The tolerance of meter box(es) shall be to a maximum of +/- 2 % on the overall dimensions and weight.**

#### **2.4.2 BASE & COVER DETAILS:**

The cover shall be made overlapping type having collars on all four sides. The cover of the cup-board shall be provided with semicircular / circular gasket of sufficient size to completely fit in the grooves of the base. The gasket should be made of neoprene rubber. The base of the cup board must have a groove to hold the gasket and the overlap of the top cover with the base must be minimum 6 mm (with gasket). ). The cover of the meter box shall be transparent and the base shall be off-white.

The meter box shall have a taper roof for easy flow of rain water and shall have degree of protection IP 54 for affording protection against dust & water.

#### **2.4.3 METER CUP-BOARD SEALING AND Hinge Type ARRANGEMENT:**

##### **A) Hinge Type ARRANGEMENT:**

The cover shall rest on the base of cup-board in such a way that any access from outside to the meter /hinge of box is not possible. The cover

in closed position should be overlapped on collar of base such that direct entry of screw driver or any other tool/ wire is not possible.

The box cover shall be fixed to the base through min. two number hinges. The arrangement for hinges shall be provided on the side of the base and shall be such, that it may avoid unauthorized access to inside of the box. The rivets or screws, if used shall neither be accessible nor fixed from outside and shall not allow any manipulation from outside. The Hinges should be concealed by meter cover. Box cover shall be openable by more than 120 degrees.

Three U Latch should be attached to the meter box base on all the non hinge sides so that inserting anything between meter box cover and meter box base is not possible from any side.

#### **2.4.4 SEALING ARRANGEMENT**

In order to make the above locking arrangements of meter box fool proof from tampering, three numbers of Double Anchor type Polycarbonate seals shall be provided with each meter Box.

The meter box shall be sealed with three specially designed polycarbonate tamper proof seals, to be inserted on each side of meter box case through U Latch, embossed or indelibly marked or laser etched with serial number and JVVNL and manufacturer's logo visible from the front.

The seal inserting arrangement shall be integral part of moulded meter box. The seals shall become unserviceable and shall be irreplaceable in case of any attempt to tamper the meter box (cup-board). These seals shall be placed in the meter box at specified place (not in loose condition) for inserting them at site after installation. The meter and terminals shall be rendered inaccessible after the meter box is locked using U Latch and sealed with such seals.

The serial no. of meter box shall be alphanumeric with 2 alphabets. The min. no. of digits including alphabets shall be 7. The serial number on seals shall be same as the serial number of the meter box. Provision for all the seals should be made on front side of the meter box. The serial number of meter box shall be embossed or indelibly marked or laser etched on the base as well as the cover of the meter box which can be easily viewed. The supplier shall provide one additional polycarbonate security seal in transparent Red colour with non-corrosive stainless steel sealing wire in unsealed condition for providing the same on terminal cover of the meter to be installed in the meter box. The serial no. of this shall also be same as Sr. No. of the meter box. This seal shall have embossing of word JVVNL on bottom side.

#### **2.4.5 METER MOUNTING INSIDE THE CUP-BOARD:**

The meter base support inside the box is raised by about 10mm in the box for ease of wiring. An insulated frame shall be provided on inside base of meter box in such a manner that all make of meters can be installed on it. The meter holding frame with sliding bakelite strip shall be provided.

The meter shall be provided with special provision to house Modem. There should be U channel/rack to house the Modem and arrangement to hold it.

#### **2.4.6 INCOMING AND OUTGOING CABLE ARRANGEMENT:**

Suitable circular holes shall be provided at the side of the cup-board for inlet and outlet cables –details of cable hole is required. made of Brass or engineering plastic for the cable securely fixed to the bottom of the cup-board on both side by chuck nuts. A suitable arrangement like clamping nut may be provided with the gland so that opening dia can be reduced to the size of cable.

#### **2.4.7 ARRANGEMENT OF METR CUP-BOARD:**

For fixing the cup-board to wall or wooden board, 4 nos. holes (two top side holes to be key holes) of minimum 6 mm dia shall be provided at the four corners of meter cup-board. The meter is to be installed in the cup-board and the cup-board in assembled condition shall have provision to fix it to a pole or on wall. The 4 nos. wooden screws of min. size of 4mm dia and 40 mm long shall be provided with each meter cup-board.

#### **2.4.8 MARKING / EMBOSISNG:**

The following information shall be clearly & indelibly embossed (not printed) on the cover and base of the meter cup-board (except Sr. No. which may be indelibly printed inside the base of meter box and also on the meter box cover with inkjet printing).

- i) TN- 2628.
- ii) Property of JVVNL.
- iii) Name/ Brand name of Manufacturer.
- iv) Sr. No. (printed on both the base & cover of meter box)
- v) ISI mark
- vi) Sign of danger

### **2.5 SAMPLE**

a) Samples along with bid –

The bidder shall furnish one meter box conforming to this specification duly sealed in the office of SE(MM-II),JVVNL, Bani Park Jaipur one day prior to

the date of opening of Tender. If the samples are not received, the bid shall be considered as Non-responsive.

Sample meter box shall be checked / tested for mechanical/ physical features in Nigam's Lab. The meter box shall be tested to house meters supplied during last 10 years in Nigam. Further the meter box shall be tested for any kind of invasion/tampering.

In case sample meters submitted by the bidder with bid don't conform the requirement of specification, the financial bid of that bidder shall not be opened.

(b) Sample before Commencement of supplies:

The supplier shall furnish duly sealed three sample meters boxes having all the features conforming to specification within fifteen days from the date of receipt of PO. Sample meter box shall be checked / tested for mechanical/ physical features in Nigam's Lab. The meter box shall be tested to house meters supplied during last 10 years in Nigam. Further the meter box shall be tested for any kind of invasion/tampering. In case of major deviation in physical features, the supplier be allowed to furnish second set of sample. In case of failure of second set of sample order may be cancelled with imposition of 5% maximum penalty.

The delay in submission of before commencement samples beyond fifteen days from the date of receipt of PO will be supplier's account.

Before commencement, samples will be deposited by the supplier directly in the office of the concerning Superintending Engineer (MM-II) of Discom.

## **2.6 TESTS**

### A) Type Tests

The meter cup board offered shall be fully type tested as per relevant standards and this technical specification (table 2). The bidder must furnish one set of type test reports along with the technical bid or shall submit such type test reports within thirty days of technical bid opening in respect of material offered. The type test report should be from independent recognized testing laboratory / house whose calibration of testing instruments should have traceability to NABL/NPL/ or equivalent. The type tests mentioned below must not have been conducted earlier than two years from the date of opening of bid.

LIST OF TESTS TO BE CARRIED OUT ON MOULDED PLASTIC METER CUP-BOARDS

S. No.	Name of Indian Standard/ Equivalent International	Clasue Ref.	Test requirement	Test particulars		
				Type	Routine	Accept-ance
1.	IS:14772	Clause 7	Marking	T		A
2.	As per Bidder's drawing		Dimensions	T		A
3.	IS:14772	Clause 9	Protection against electric shock	T	R	A
4	IS:14772	Clause 11	Construction	T		
5.	IS 14772	Clause 12	Resistance to ageing, to humid condition, to ingress of solid object and to harmful ingress of water.	T		
6.	IS : 14772	Clause 13	Mechanical strength	T		
7.	IS :14772	Clause 14	Resistance to heat	T		
8.	IS:14772	Clause 16	Resistance to rusting	T		
9.	IS:14772	Clause 17	Resistance to tracking			
10	IS:14772		Test for resistance to heat & fire. Glow w/ire test at 650 deg. C as per cl. 4 to 10 of IEC 695-2-1	T		
11	IS:13411	Annexure H	Heat deflection temperature (Min. 125 degC.)	T		
12	IS : 4249		Self Extinguishing property of spirit burner test.	T		
13	IS:8623/1993	(Part-1) 18.2.2.2	Verification of die electric properties, insulation test with 500V DC Insulation resistance tester	T		

14	CIPET/IR Spectrometry		Material identification.	T		
15	IS:13411/1992	Annexure D	Test for water absorption (Max. 0.35)	T		

In addition to the above all the tests (Routine, Acceptance and Type) as per the requirement of IS:13410 i.e. Glass Reinforced Polyester SMC must be carried out

Note : Applicable degree of protection shall be IP 54 or better.

Legend :-

T = Type Test, R = Routine Test, A = Acceptance Test

B) Acceptance test

The acceptance test as indicated in the table 2 shall be carried out at the time of inspection of the offered material.

C) Routine test

The routine tests as stipulated in the table 2 shall be carried out and routine test certificates / reports shall be submitted to the purchaser's inspecting officer at the time of inspection of the offered material.

Note: Where facilities do not exist at supplier's works for carrying out one or more above tests such test(s) may be got carried out at any of the approved laboratories such as CIPET centers / IIT, Delhi / Shriram test house, Delhi.

## **2.7 INSPECTION AND TESTING**

The inspection and testing shall be carried out by the purchaser's representative as per provisions of relevant ISS, Specification and GTP & shall be governed by clause No.1.27 entitled " Inspection and Testing" of section-2" General conditions of Contract" except mentioned hereunder.

a) The supplier shall arrange fifteen days advance notice to enable the purchaser to depute the inspecting officer for conducting necessary testing at supplier's works. Any delay beyond fifteen days in arranging the inspection shall be to the purchaser's account.

b) In case the manufacturer does not have adequate facilities for getting all the required tests conducted in his Laboratory, the purchaser at his option may get these tests conducted in any reputed testing laboratory. All the expenses for such tests to be conducted outside shall be borne by the supplier.

c) In case material/equipment is not found ready by the representative of the purchaser deputed for inspection to the extent of the quantity indicated in the inspection call with tolerance of (-) 10% or if the inspection is not got carried



out by any reasons on account of the supplier the re-inspection charges shall be Rs. 7,500.00 for the supplier works located in Rajasthan and Rs.15,000.00 for the supplier works located outside Rajasthan will become payable by the supplier on this account to the Accounts Officer (MM) JVVNL, Jaipur.

d) No material shall be despatched without prior inspection and approval by our inspecting officer, unless permission to do so is issued by the purchaser.

e) The Routine/Acceptance tests shall be carried out as per relevant ISS and IEC (Latest Amended) , P.O. and GTPs on each equipment at your works.

(f) Inspecting officer shall also verify the Guaranteed Technical particulars attached with the purchase order.

**g) Verification of testing of materials supplied**

i) After receipt of approval of sample meter box and seals before commencement of supplies, the successful bidder shall offer first lot of meter box comprising minimum 25% of ordered quantity for inspection within 30 days. After satisfactory testing & clearance from purchaser, the material shall be dispatched to Nigam's stores.

ii) Three samples of meter box for type tests shall be selected & sealed from the first lot received in Nigam's stores. The selected samples shall be sent to CIPET/NABL Accredited laboratory along with complete details of meter boxes & seals for all tests i.e. as per Table 1 (for material) & Table 2 as per relevant standard and specification of TN-2628. Such type test charges shall be borne by the supplier. Payment shall only be released after successful type test reports.

The complete type test report under a cover of registered letter shall be sent directly to the purchaser. The purchaser however in first instance may pay testing charges to the testing agency which shall be recovered by AO(CPC) from the bill of the supplier alternatively a sum of Rs.50,000 may be got deposited by the supplier with first inspection call.

iii) The supplies, at the option of purchaser, may be utilized in the field. The supplier can continue supplying material in anticipation of successful type test(s) results.

iv) In case of successful type test results, supplies shall be continued. However, in case the meter box(es) do not meet the requirement as per ISS/Specification in type test(s), three more samples shall be selected from the supplies already received to get them type tested at supplier's cost. In case of repeat failure in type test(s), the order of balance quantity including the quantity lying unused in the stores/ field shall be cancelled. The guarantee period of quantity already

supplied & used shall be doubled and payment for used meter boxes shall be arranged after deducting 10% cost.

v) However, purchaser may allow the supplier to re-offer the material after change/ modification in the design of meters. The balance material shall be accepted only after successful type testing. The type testing charges shall be borne by the supplier.

### **(h) SAMPLING PLAN**

Samples from the offered quantity for inspection shall be selected by inspecting officer as per provisions of IS:5133/1969 (part-II) (Latest amended) for inspection and testing of material. The same shall be inspected in reference of P.O/specification, Guaranteed Technical Particulars and the sample approved by this office.

### **3 PACKING AND FORWARDING**

The meter box shall be suitably packed in corrugated box in order to avoid damage during transit or handling. The packing cases may be marked to indicate the fragile nature of the component.

### **4 MAINTENANCE & GUARANTEE**

It shall be governed by clause 1.40 of GCC except that the guarantee shall be for a period of 5 years from the date of dispatch. The bidder shall replace the defective meter boxes at the purchaser's stores within a period of 30 days from the date of intimation ( from the concern ACOS ) of failure. In case defective material are not replaced in stipulated period the penalty as per clause of delay in delivery shall be applicable.

### **5 GUARANTEED TECHNICAL PARTICULARS**

The tenderer shall furnish all the necessary information as desired in the schedule of GTP appended at Schedule –A-I. If the tenderer desire to furnish any other information in addition to the details as asked for the same may be furnished against the last item for box of this schedule.

### **6 PRICES**

The tenderer must quote prices on "FIRM" price basis inclusive of packing and forwarding charges. The GST as applicable should be indicated separately. The freight and insurance charges and GST may also be indicated separately

### **7 DELIVERY**

The bidder is required to quote monthly delivery. The delivery of quoted quantity should be completed in 8 months period including commencement period of 30 days. In case ordered quantity is different than quoted quantity then monthly delivery shall be adjusted proportionately. Tenders in which monthly delivery schedule is not indicated shall be ignored.

## **8 ADDITIONAL ORDER**

Repeat orders for additional quantities, upto 50% of original ordered quantities, may be placed by the Nigam, on the same rates, terms and conditions given in the contract.

## **9 GENERAL INFORMATION**

- i) Frequent changes in specifications during currency of contract will be avoided and if required the same shall be effected on mutually agreed basis.

**Schedule- A-I**

Guaranteed Technical and other Particulars of Moulded Meter Box suitable for Three Phase Energy Meters.against TN-2628.

S. No	Particulars				To be furnished by bidder	
1.	Material used for moulded meter box:					
	a)	Base			High grade flame retardant UV stabilized SMC in off-white colour(Electrical Grade).	
	b)	Cover			High grade flame retardant UV stabilized transparent polycarbonate.	
2.	Thickness of moulded sheet in mm					
	a)	Base			Min. 2.0	
	b)	Cover			Min. 2.0	
3.	Properties of material for moulded meter box.					
	S.No	Property	Units	Value		
	i)	Physical: Water Absorption	%	Max. 0.35	Max. 0.35	
	ii)	Thermal HDT	Deg. C	Min. 125	Min. 125	
	iii)	Flammability				
		A	Rating		FV2	FV 2
		B	Glow wire test @ 650 Deg. C		Passes	Passes
	iv)	Mechanical				
		A	Tensile strength	MPa	Min. 50	Min. 50
		B	Flexural strength	MPa	Min. 90	Min. 90
		C	Modulus of elasticity	MPa	Min. 2000	Min. 2000
		d	Izod impact strength, Notched, 23 Deg. C	KJ/Sq M	Min. 8	Min. 8
	4.	Dimension of box in mm				
		a)	Overall Height mm x Breadth mm x Depth			min. 385mm x min. 245 mm x min.135 mm
b)		Minimum clearance from meter on all 4 sides			30 mm from all three sides and 75 mm from bottom side from lower edge of terminal block.	
c)		Minimum clearance from meter on front			Min. 15 mm	
d)		Minimum clearance from back of meter			MIN. 10 mm	
5.	Weight of complete box in Kg, with $\pm$ %					

	tolerance	
6.	Whether details of marking / embossing are as per specification?	Provided
7.	Is the cover overlapping type having collars on all four sides?	Yes
8.	Is the cover/base provided with semi-circular / circular gasket of sufficient size to completely fit in the groove of the base?	Yes
	Material of the gasket	As per specification
10.	A) Sealing and self locking arrangement	
	i) Is the Base fitted with non detachable U Latch	Yes
	ii) No. of U Latch arrangement in the box?	Min3Nos. U Latch fitting arrangement
	B) i) Whether three Nos. push fit moulded polycarbonate seals provided as per Cl.2.4.3 B of specification.	Yes
	ii) Whether above sealing arrangement is integral part of the meter box.	Yes
	C) i) Whether Sr. No. of seals of meter box is alphanumeric with two alphabets with min. no. of digits 7, including alphabets.	Yes
	ii) Whether Sr. No. of seals is same as Sr.No. of meter box.	Yes
	iii) Whether one additional polycarbonate seals is provided for providing the same on terminal cover of meter to be installed in the meter box.	Yes
	iv) Whether Sr. No. of this seal is same as Sr. No. of meter box.	Yes
	v) Whether embossing on all the seals is as per specification.	Yes
11.	Dimensions of holes and screw for mounting meter box	
	i) Dimensions of holes for box fixing screw (in mm)	6 mm dia holes
	ii) Dimensions of box fixing screws (in mm)	4 mm dia and 40 mm long
	iii) Total No. of fixing screws	4 nos.
	iv) The top side two fixing holes are Key-holes?	Yes
12.	Colour of the meter box	As per specification
13.	Details of cable glands	
	a) Material	Brass/ Engineering plastic
	b) Size	25 sq. mm. arrangement as per specification
14	Hinges Arrangement	2 Nos concealed type

**SCHEDULE-III-C (VOLUME - `III`)**

**TECHNICAL SPECIFICATION FOR TAMPER EVIDENT TRANSPARENT POLY-CARBONATE SECURITY SEALS TO BE SUPPLIED ALONG WITH THREE PHASE METER BOXES AGAINST TN-2628**

The specification covers the supply of tamper evident poly-carbonate security seals (heat resistant) for sealing of Meter Box. These seals shall be used on meter boxes as per the specification.

The intent of the specification is the general guidelines to provide sealing arrangement, which can be easily justified in the court of law if violated without authority by the consumer.

The poly-carbonate seals shall conform to the Nigam's specification as under:

1. Material of Poly-carbonate Seals:

The raw material used for poly-carbonate seals shall be of M/s. Dow Caliber Ltd., Switzerland (Gade-201- 15), M/s. GE Plastic, Singapore (Grade 143R), M/s. Dupont, Japan (Grade IV-20) or any other manufacturer having better properties as under :-

<b>Sr.No.</b>	<b>Properties</b>	<b>Poly-carbonate</b>
1.	Melting temperature	<b>&gt;140 ° C</b>
2.	USE	Engineering
3.	Softness	Hard
4.	Durability	Weather effect resistance
5.	Transparency	Fully transparent (long time transparency) for female and transparent/ opaque for male portion.

2. Colour of Seal:

The female portion of the Poly-carbonate Seal(s) shall be available in Clear / Red/ Blue / Yellow/ Green colour and should be transparent (see through) type, which shall give complete visualization of its fixing mechanism and shall show clear indication if tampered. Male body to be transparent/ opaque in colours of Clear / Red / Blue / Yellow/ Green colour i.e. variety of colours are available for colour coding.

**3. Design and Construction of Seal :**

- a) **Design :** The seal shall be anchor (Push Fit) type tamper evident with double locking or rotating type system. There shall not be any change in size, shape or design of the seal than the approved samples. If the seal is found different than the approved design / shape / size, the same shall be out rightly rejected.

- b) **Thickness:** The wall thickness of seal should be minimum 0.8mm.
- c) **Serial No. of the Seal:** The serial number of the seals shall be same as the serial no. of the meter box with which it is supplied. The serial numbers shall be laser etched or embossed during moulding (it shall not be screen printed unless the printing is protected with additional tamper proof cover) in contrast colour on front side of capsule body. The Sr. No. shall also be laser etched / embossed on top of the male part / insert.
- d) **Monogram :** The seal shall have laser etched printing/embossed of monogram of JVVNL on front side and month and year of manufacturing in figure on the back side. The laser etched printing should be through complete thickness of polycarbonate.

#### **4. General Construction :**

**The seal shall be capable to withstand temperature upto 140° C without any damage / deformation.**

The seal shall be designed for a single use only and if tampered with the help of pliers, knife or any other sharp instruments, the seal shall be damaged and due to its transparent property, the sign of tampering shall be easily detected. Also once opened, it can not be re-used. The seal shall be made in such a way that, it can be easily locked with the help of finger and thumb pressing or rotating and no tools shall be required to close the seal in the laboratory or at site. Both the parts shall be designed in such a way that they can not be separated and the attachment shall be flexible and shall not break. After inserting the seal through female part, the cap of the male part shall be fitted in the female part in such a way that it should not leave any space to avoid insertion of any sharp tools for opening of seal body of the female part in hot or cold condition.

The seal shall have also the following features :-

- a) Tamper resistance and reliable.
- b) Environmentally safe as it does not contain any lead.
- c) Withstand long-term exposure to direct sunlight.
- d) Required no tools for installation.
- e) Transparent for easily viewing the seal No. & locking arrangement.
- f) Heat resistance.

## 5. Testing :

The seals shall be inspected / tested at the manufacture's works before dispatch in presence of authorized representative of purchaser for the following tests:

- i) **Physical Check-up :** The seals shall be subjected to visual check-up for verification of workmanship and other features as mentioned above including shape / design / dimensions as per approved drawing / samples.
- ii) **Boiling Water Test:** The seal when emerged in the boiling water for more than one hour there shall not be any affect on the seal and it shall remain intact condition i.e. the seal should not become soft, but instead should turn out to trail and easily break thus showing easily the tampering signs if it eventually happens. Even, with the help of any sharp instrument, pulling with plier i.e. by applying mechanical force, the male portion shall not come out from the female part (body seal). In case, it comes out, the same shall damage the seal, so that it can not be re-used.
- iii) **Pull Out Test:** After locking the seal, if the male part / insert is pulled with mechanical force with the help of plier or any other instrument, sharp instrument etc. at normal condition, the seal should not get unlocked without any damage and when such condition occurs, it should leave traces of tampering.
- iv) **Serial No. Verification test:** It shall be verified in random inspection that the Sr. No. of the meter and meter box seals are matching with the Sr. No. of the meters with which they are packed.

In short, if the seal is tested for any of the above tests, in no condition the male and female part shall be separated out without affecting / damaging the seal. In case, if they are separated, the seal shall have sufficient tamper evident.

## 6. Sampling Criteria :

For carrying out above acceptance tests at manufacturer's works minimum 5 samples shall be selected at random from the each offered lot.

The seals used in testing shall be destroyed in the presence of Nigam's Inspecting Officer.



**7. Guarantee :**

The seals shall be guaranteed for a minimum period of five years. In case, if any defect in design and manufacturing is noticed within the guarantee period, the seals of same serial number shall be replaced free of cost within one month. The defective seal found in the field viz. STORES/FIELD OFFICERS shall be collected by the supplier at their risk and cost and shall be destroyed at their works.

**8. Patent :**

The seals shall be patented or design registered. Copy of patent / Design Registration should be submitted along with the offer.

**9. SANCTITY AND LIABILITY OF SUPPLIER:**

It is utmost important that the supplier shall ensure, in case the seal manufacturer is different from meter box manufacturer, that it is not possible for the seal supplier to supply to consumers seals of same serial numbers and design with or without his knowledge. Any information leading to any such misappropriation by the supplier or by the seal manufacturer, the successful bidder shall be made liable to this and shall result in immediate debar of the supplies with all three Discoms of Rajasthan, all pending dues will be withheld and all bank guarantees shall be encashed, with immediate effect. Further, the Discoms may decide to pursue a criminal case against the supplier.

**10. Packing and Forwarding :**

The bidder shall be responsible for suitable packing of seals and seals for the meter box shall be packed in each meter box.

**11. SAMPLES :**

The samples of seal shall be submitted along with the meter box samples before commencement of supplies as per specification, for purchaser's approval. No supply should be made unless the sample is approved by the purchaser.

**12. Quality of Supplies:**

All materials supplied shall generally as per specification laid down and in strict accordance with and as per the approved standard samples.

**13. GUARANTEED TECHNICAL PARTICULARS**

The tenderer shall furnish all the necessary information as desired in the schedule of GTP appended at Schedule-A-II. If the tenderer desire to furnish any other information in addition to the details as asked for the same may be furnished against the last item of this schedule.

## SCHEDULE-A-II

**GUARANTEED TECHNICAL PARTICULARS FOR TAMPER EVIDENT TRANSPARENT  
POLYCARBONATE SECURITY SEALS (HEAT RESISTANT) TO BE USED AS BODY SEAL OF  
THREE PHASE METER BOX AGAINST TN-2628**

S. NO.	PARTICULARS	TO BE FURNISHED BY BIDDER
1	NAME & ADDRESS OF MANUFACTURER.	
2	WORK'S ADDRESS	
3	TYPE /MATERIAL OF SEALS	
4	MELTING TEMPERATURE	
5	WITHSTAND TEMPERATURE	
6	STANDARDS TO WHICH MATERIAL OF SEALS/POLYCARBONATE CONFIRMS:	
7	STANDARDS TO WHICH MATERIAL OF NON-CORROSIVE, NON-MAGNETIC SEAL WIRE CONFIRMS	
8	COLOUR OF SEALS	
9	WHETHER SEALS WITHSTAND FOLLOWING TESTS SATISFACTORILY.	
i)	PHYSICAL CHECK UP	
ii)	BOILING WATER TEST FOR 2 HOURS	
iii)	PULLED OUT TEST AS PER SPECS.	
iv)	SEAL WIRE	
v)	Sr, NO. VERIFICATION TEST.	
10	WHETHER SEALS HAVE FACILITY TO PRINT MONOGRAM/NAME OF COMPANY	
11	IF YES, TYPE OF PRINT (LASER ETCHED/EMBOSSING) GIVE DETAILS	
12	WHETHER SEALS ARE PROVIDED WITH INTERNAL ANCHOR-LOCKING SYSTEM.	
13	WHETHER INTERNAL ANCHOR LOCKING SYSTEM IS IR-REVERSIBLE AND TAMPER EVIDENT IN CASE EFFORTS ARE MADE TO TAMPER/BREAK.	
14	WHETHER PROPERTIES OF MATERIAL ARE AS PER SPECIFICATION CL. 1. OF SPECIFICATION .	