PASCHIM GUJARAT VIJ COMPANY LIMITED

TEHCNICAL SPECIFICATION FOR TAMPER-PROOF POLYCARBONATE PLASTIC SEALS (PATENTED)

SCOPE

The specification covers the manufacturing and testing at manufacturer's works, supply and delivery of tamper-proof polycarbonate plastic seals for sealing electrical installations viz: Meter body of energy meters, terminal cover of energy meters and Meter-Box, CTPT Units etc. and for other similar purpose. The specifications of polycarbonate seal are as under.

The polycarbonate seals shall be patented and conformed to the specification as under.

1. Material of Plastic Seal

The raw material used for polycarbonate plastic seals shall be having material properties as under.

Sr. No.	Item	Polycarbonate
1	Melting temperature	280°C to 295°C
2	Use	Engineering
3	Softness	Hard
4	Durability	Weather effect resistance
5	Transparency	Fully transparent (long time transparency)

2. Colour of Seal

The seals shall be Clear / Red / Blue/ Yellow / Amber / Green / Grey colour and transparent (See through) type, which shall give complete visualization of its fixing mechanism and shall show clear indication if tampered.

3. Design and Construction of seal.

a. Design:

Seals should have tamper proof, internal "anchor" with minimum double locking system having male and female part connected with inbuilt sealed wire that permanently secures the wire upon closing. The mechanism should be designed in such a way that its original position can't be restored after any effort of tamper or breaking of seals. Also, there should be provision of appropriate hole for inserting seal wire.

b. Size of the Seal: The overall size of the seal shall be as under:

Size: It should be minimum 20x20x8mm (±5% maxi. Allowable limit for variation in offered patented seal dimension)

c. Serial No. of the Seal:

Every Seals should have a unique seven-digit number. Numbers shall be printed on side wall of Female part and on the anchor cap using laser marking which shall not be erased using any tool or by any chemical reaction. The seven digit seal numbers should be visible separately on both parts after closing the seal. The size of the digit shall be minimum 2 x 3 mm.

d. Monogram:

On one side of the seal, the secret code with logo of PGVCL and on another side, Name of scheme (DDUGJY / IPDS) with month and Year of manufacturing is to be embossed. The Monogram of PGVCL should be in 10mm Circle.

e. Seal Wire: The seal-wire should be non-corrosive and non-magnetic as per IS-280 Stainless Steel twisted strand wire of 20 SWG size (over all diameter should be 0.92mm /-0.05mm), minimum 6 Inches of length (**excluding** length of inbuilt connecting wire between male and female portion of the seal) shall be used. The seal wire shall not be affected by magnet i.e. it should not attract to magnet. The seal wire used for the above size of seals shall be inbuilt in connecting male and female part of the seal. Sealing mechanism shall be designed in such a way that it can be sealed without using any pliers or tools and by applying thumb pressure to lock the seal. The application of the seal wire is to insert through the hole via female part and insert the male part into female part.

4. General Construction

The Seal should be constructed of two parts, first the main body (female type) and second the anchor (male type) having locking mechanism, both the part should be designed in such a way that once the seal is closed the two parts can't be separated. The seal shall be designed for a single use only and if tampered with the help of plier, knife or any other sharp instruments, the seal shall be damaged and due to its see through property, the sign of internal tampering shall be easily detected. Also, once opened, it cannot 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 and no tools shall be required to close the seal in the laboratory or at site. After inserting the seal wire 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. of tools for installation.
e) Transparent and see through body reveals tampering attempts.
f) Heat resistance.

5. TEST

The seal shall be tested at the manufacturer's works for the following tests:

i) Visual check i.e. workmanship and other features as mentioned above.

ii) Boiling water test -

a) The seal should be locked with seal wire and then it should be dipped keeping seal suspended in such a way that only female portion should be heated and affected in boiling water for one hour and thereafter try to pull out male portion as well as seal wire. The male portion should not come out and if seal wire is pulled out, it should damage the seal, which can be visible as the seal is transparent.

b) The seal shall be emerged in the boiling water for more than one hour and there shall not be any effect on the seal and the seal shall remain intact condition. Even, with the help of any sharp instrument, pulling with plier i.e. by applying mechanical force, the seal shall not come out from the female part. In case, it comes out, the same shall damage the seal, so that it cannot be re-used. Also, if seal wire after locking is pulled out it should not come out without damaging the seal.

c) The seal should withstand temperature up to 147 ° C.

iii) Pulled out test - After locking the seal, if the seal is pulled with mechanical force with the help of plier or any other instrument, sharp instrument etc. at normal condition, the seal shall not be unlocked without any damage.

iv) Seal Wire - In case, if someone tries to pull the seal wire and in any of the test mentioned at Sr. No. 2, 3 & 5 in that case the male / female portion of the seal should be damaged and the same can be seen visually being a transparent one.
v) Chemical Test – The seal shall be kept in the concentrated acid for minimum one hour in locked condition. The same shall remain intact condition and if try to unlock the seal tried to pull out seal wire, the same shall be damaged.

In short, if the seal is tested for any of the above test, in no condition the male and female part shall be separated without damaging the seal. In case, if they are separated, the seal shall have sufficient temper evident. Also, if seal wire is pulled out from the seal in any of the above tests, it shall not come out from the seal without damaging seal.

6. Sampling criteria

Minimum 5 samples of seals shall be selected at random as per IS-4905 for testing purpose from the each lot offered for each zone and after successful passing in the testing the lot shall be accepted. The seals used in testing shall be destroyed in the presence of PGVCL's inspecting officer.

7. Supply Schedule

After Placement of order PGVCL will give delivery schedule with code No. and Sr. No. of the seal. Please note that the seal shall be manufactured only after receipt of the delivery schedule and as per the delivery schedule unless specifically instructed by the authority.

8. Guarantee

The seal 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 shall be replaced within one month free of cost. The defective seal found in the field viz: RSO/Division Office/ Sub-Division Offices shall be collected by you at your risk and cost and shall be destroyed at your works in the presence of PGVCL's Engineers. For the replacement of seal, a new Sr. No. shall be provided by the Company.

9. Special feature

a) The Seal should be patented. Notarized copy of valid patent certificate with seal design shall be submitted along with offer. The 'Patent Certificate' from the Controller General of Patents, Design and Trade Marks, Government of India is to be furnished for verification of the Patent. Seals offered with Patent Pending or Design Certificate or Copyright Artwork etc. may not be considered.
The supplier shall indemnify the purchaser against all claims, actions, suits and proceedings for the infringement or alleged infringement of any patent, design or copy right protected either in the country of origin or in India by the use of any equipment supplied by the supplier other than for the purpose indicated by or reasonably to be inferred from the specification.
Any dispute regarding authority of patent to be indicated in the bid document in the form of declaration. In case of any dispute or legal complications regarding the patent, arising before or after submission of bids, the same is to be intimated to the purchaser. The purchaser reserves the right to reject the bid/LOA if any dispute is found regarding the patent.
b) The seal should be with barcode as per Sr. No. of that specific with following requirements.

- The barcode should be on white void paper
- The barcode to be fixed with durable adhesive material on sidewall of the female part that it should be tamperproof.
- The barcode can be easily read by bar-code scanner.
- The bidder has to supply compatible barcode scanner with all necessary Hardware compatible to Windows OS of existing PGVCL I.T. Infrastructure. The barcode scanners should have guarantee of minimum five years from the date of supply.

- The bidder has to supply one barcode scanner per 50,000 Nos. of seals at free of cost. All such quantity of scanners as per total ordered quantity must be supply along with first lot of supply of seals.

c) The seals are to be manufactured in respect of above aspects. Also a secret code shall be given to each bidder on whom the Company places the order. After completion of supply of order, the dyes of the secret code of the seals shall be surrendered to the Company by each bidder on whom the order is placed by the Company's. Before commencing the supply 25 nos. of sample seals shall have to be approved from the Company.

10. Packing and Forwarding.

The bidder shall have to supply each 100 seals in chronological order i.e. arranging in serially, tide with the steel wire forming a loop and the same shall be packed in polyethylene bag with labels furnishing Sr. No. of seal with following information.

• Client Name
• Purchase order number &date
• Serial number range in the form of bar coding.

11. Tender Sample

Each bidder shall have to enclose 25 Nos. of samples, 1 No. Sample Barcode scanner with all related H/W along with the technical bid. The tender sample seals shall be provided with trademark or logo of firm on front side & month & year of manufacturing on backside of the female part of the seal. The seals shall also be provided Sr. No. of seal i.e. 0000001 to 0000025 on top of the male part of the seal as well side of the female part of the seal. The offer without samples shall be out rightly rejected and the offer will not be considered. The sample seals shall be tested as per specification if desired by the PGVCL, either in the Company's laboratory or at third party Govt. approved laboratory. The tender sample seals along with Barcode scanner not conforming to the specification shall be straight way rejected and accordingly, their offer will not be considered for further evaluation.

12. Stage Inspection.

If desired by the Company, it will arrange stage inspection for the material used for the manufacturing of seal and also during the process of manufacturing. If desired, during the surprise checking, Company shall take sample of raw material and will check for the material properties in any Govt. approved Lab. In case, the same is not found as per the specification, the entire lot under process shall be rejected.

13. Form of undertaking.

On placement of order, bidders shall have to give undertaking as desired by the PGVCL.

Signature of Tenderer:		Company's Round Seal:
Date:		
Place:		