

**TEHCNICAL SPECIFICATION FOR TEMPER PROOF POLYCARBONATE
PLASTIC SEALS.**

SCOPE

The specification covers the design, manufacture, testing at manufacturers works and supplying, delivery of temper proof polycarbonate plastic seals for sealing electrical installations viz: Meter body of energy meters, terminal cover of energy meters and Metal Meter Box, CTPT Units etc. and for other similar purpose. The existing specification of polycarbonate seal with drawing as under will in operation, however, if the manufacture wants to change the design within frame work give, they will be allowed to do so with prior approval of drawing from UGVCL and approval of sample thereafter. For such manufacturer who wants change in design for them the size of the seal shall be such that it should have Bradma code and Company's logo(UGVCL) embossed clearly with Sr. no. of seal printed on one side legible clearly. These seals shall be used for LT/HT Industrial consumers and in theft prone areas.

The polycarbonate seals shall be conformed to the UGVCL's specification as under:

1. Material of Plastic Seal

The raw material used for polycarbonate plastic seals shall be of M/s. Dow Caliber Ltd. Switzerland (Grade 201- 15) M/s. GE Plastic, Singapore (Grade 143R), M/s. Dupont, Japan (Grade LV – 20) or any other equivalent manufacturer having similar material properties as under:

Sr. No.	Item	Polycarbonate
1	Melting temperature	280 ⁰ C to 295 ⁰ 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 colourless, transparent (See through) type, which shall give complete visualization of its fixing mechanism and shall show clear indication if tempered.

3. Design and Construction of seal.

- a. Design:** The seal shall be anchor type temper evident with double locking system having male and female part connected with inbuilt sealed wire. On both the sides the secret code and logo of UGVCL should be embossed as per approval of the drawing. Also, there should be provision

Signature Of Tenderer

1

Date

Place

Company's Round seal

for inserting seal wire – a hole of 1 mm +/- 0.02 mm should be made. The design other than the approved drawing should get approved before execution of the order.

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

Size: 20x20x8mm (\pm 5% maxi. Allowable limit for variation in dimension)

c. Serial no. of the Seal: Non repeat Seven digits Sr. Nos. with code no. on the seal shall be embossed and it shall not be screen printed and it should be provided on male and female portion i.e. on the top in male part and on the side in female part. Please note that Sr. No. of seal shall not be embossed after the seal is manufactured. The size of the digit shall be 2 x 3 mm.

d. Monogram: The seal shall have Monogram in 10mm Circle of UGVCL on front side and month and year in figure on the backside.

e. Seal Wire: The non corrosive non magnetic as per IS 280 Stainless Steel twisted wire (26 gauge i.e. over all diameter of seal wire shall be 0.92mm +/- 0.05mm) of @ 290 millimeter total length (minimum 210 mm bare wire + 80 mm) connecting male and female portion of the seal shall be used. The seal wire shall not have affect of 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. The application of the seal wire is to insert through the hole via female part and insert the male part into female part by applying thumb pressure to lock the seal.

4. General Construction

The seal shall be designed for a single use only and if tempered 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 tempering 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) Temper 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 tempering attempts.
- f) Heat resistance.

Signature Of Tenderer

2

Date

Place

Company's Round seal

5. TEST

The seal shall be tested at the manufacturers works for the following tests:

1. **Visual check** i.e. workmanship and other features as mentioned above.
2. **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 b 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 affect on the seal and the seal shall remain in tact 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.
3. **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.
4. **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.
5. **Chemical Test –** The seal shall be kept in the concentrated acid for minimum one hour in locked condition. The same shall remain in tact 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 UGVCL's inspecting officer.

Signature Of Tenderer

3

Date

Place

Company's Round seal

7. Supply Schedule

After Placement of order UGVCL will give delivery schedule zone wise 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 two 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 UGVCL's Engineers. For the replacement of seal, a new Sr. No. shall be provided by the Company.

9. Special feature

The seals are to be manufactured in respect of above aspects. On placement of order from the Company, all the bidder shall have to make the seal of the same size and shape as per the approval of drawing. Also a secret code shall be given to each bidder on whom the Company places the order. There will be Company's logo (i.e. UGVCL), Sr. No., Month and Year of manufacture or any other symbol given by the Company's shall be embossed. 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 be responsible for suitable packing of seal, zone wise. 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 polythine bag with labels furnishing Sr. No. of seal and name of the zone.

11. Tender Sample

Each bidder shall have to enclose 25 nos. of samples of each size, 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 as per the approved drawing. 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 UGVCL, either in the company's laboratory or at third party Govt. laboratory. The tender sample seals not conforming to the specification shall be straight way rejected and accordingly, their offer will not be considered for further evaluation.

Signature Of Tenderer

4

Date

Place

Company's Round seal

12. Stage Inspection.

If desired by the Company, UGVCL 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, Board shall take sample of raw material and will check for the material properties. 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 UGVCL.

Signature Of Tenderer

5

Date

Place

Company's Round seal