TECHNICAL SPECIFICATION OF POLYCARBONATE SECURITY SEALS

1. **SCOPE :**

The Specification covers design, manufacture, testing, supply and delivery of tamper-resistant heat resistant Polycarbonate Security Seals with Stainless Steel wire to be used for sealing/securing of electrical installations, viz. Energy Meters, Pilfer Resistance Boxes, Transformers etc. and for other purposes as decided by WBSEDCL. These seals shall be used for LT/HT Installations.

2. **GENERAL DESCRIPTION:**

2.1 The material used for the manufacture of the seals should be high impact, flame retardant, best quality, virgin polycarbonate which shall be checked by boiling water and different chemical resistance test. The seals shall be resistant to degradation by ultra-violet rays. Test Certificates from NABL Accredited Laboratory/ Govt. Approved Laboratory as to the impact of the following materials on the seals to be furnished along with the offer, in addition to that already specified :-

(a) Effect of HYDROCHLORIC ACID (Conc.)
(b) Effect of MINERAL OIL
(c) Effect of VEGETABLE OIL
(d) Effect of ALCOHOL (ETHYL)
(e) Effect of SODIUM HYDROXIDE, POTASSIUM HYDROXIDE
(f) Breaking Strength of seal wire.

The seals should be unaffected under different weather conditions like Relative Humidity (between 60% to 95%), Ambient Temperature (between 0°C to 50°C)

2.2 The details of the polycarbonate material used and also documents relating to procurement of the same and Type test report of the above seals are to be furnished along with the offer.

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2.3 The seals should be manufacture as per Law applicable in India and the manufacturer who has official right to manufacture, shall offer his own seal design, along with samples and drawings. No portion of the manufacturing process should be outsourced.

2.4 The seals for 20 cm wire should be of orange colour. Samples of 20(twenty) nos. of each type of seal shall have to be submitted to the office of the Chief Engineer (DTD), Abhikshan, Sector-V, Salt Lake, Kolkata–700091 on or before the due date of opening of tender.

2.5 The seal should be in two parts consisting of the main body and the locking mechanism connected with the stainless steel wire which shall be pre-installed with one end permanently fixed with the main body. The female portion of each seal should be see through type which shall give complete visualization of its fixing mechanism and shall show clear indication if tampered. The sealing wire shall be capable of being threaded through the holes of appropriate diameter. The wire insert hole should be just sufficient for passing the seal wire and hole of larger diameter is discouraged.

Both the male and female parts of the seal 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 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 tools for installation.
e) Transparent.
f) Heat resistance.

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2.6 Every seal should have minimum 20cm long non-corrosive and non-magnetic multi-strand stainless steel twisted wire of overall diameter 0.75 ± 0.10 mm, conforming to stainless steel AISI Grade 316 (if otherwise not specified in the patent).

2.7 The seal should be supplied after providing WBSEDCL Logo along with 7 (seven) sequentially numbered Alpha Numeric Digits which should be readable with naked eye. A suitable Code will also be provided on some of seals. The Number and Code would be intimated after placement of the order.

2.8 The Number and Code should be Thermo engraved in such a way that the same cannot be scratched by using any tools or by any chemical reaction. This should be distinct and should be read without using any lens. The Thermo engraving shall have to be done at the facility of the supplier and cannot be out-sourced for any reason whatsoever.

2.9 The manufacturer shall have to ensure that –

(i) Seals with Duplicate Serial Number shall not be produced at the facility of the supplier.

(ii) Seals with Identical Serial Number supplied to WBSEDCL shall not be supplied to any other Person, Firm, Company or Utility under any circumstances. It should be excise registered.

(iii) All Seals are to be manufactured from same Dice. The supplier will manufacture 10 Lakh Seals only from one dice. **After manufacture of stated no. of seals, the supplier shall have to hand over the customer portion of the dice (i.e. Logo of WBSEDCL & Code) to the Company.**

2.10 The sealing mechanism should be designed for a single use only and if tampered by any means or by using sharp instrument, it should show damage marks and should not be capable of being restored to its original position.

2.11 The sealing mechanism should be designed in such way that it can be sealed without use of any tools.

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2.12 The seal is to be supplied with code as : High-rise-in-moulding embossed WBSEDCL logo / Laser printed WBSEDCL.

2.13 The seal is to be supplied with code as : High-rise-in-moulding embossed 5 digits code / highly visible laser printed 5 digits code.

2.14 At the time of manufacturing the seal, manufacturer should intimate WBSEDCL well in advance, so that representative of WBSEDCL may visit the factory and ask for relevant documents and proof for virgin polycarbonate granules.

3. INSPECTION & TESTING:

Tests are to be carried out at NABL Accredited Laboratory/ Govt. Approved Laboratory on the unpatented seals & type test certificates shall have to be submitted along with the tender for 1)Boiling water test 2)Seal wire test 3)Chemical test 4)Heat test 5)Specific Gravity test 6)Identification of base polymer 7)Melting point 8)Ultra-violet resistance test. Physical test to be carried out during Sample testing which format is enclosed herewith.

4. SAMPLE SELECTION & TESTING:-

The seals shall be offered for inspection & testing at the manufacturer's works before despatch.

Selection of sample for inspection (visual) at the manufacturer's works will be as follows :-

a) 50% cartoon at random from the total offered cartoons selected (one cartoon contains 10 packets).

b) 10% of packets selected at random from the cartoons as selected in (a) above (one packet contains 100 nos. of seal in 5 bunches).

c) 20% of seals selected at random from each packet as selected in (b) for visual inspections.

5. PACKING & LABELLING :

The seals should be supplied in bunches of 20 nos. each serially arranged and fastened in such a way that while taking out the seals from the bunch for use, the seals will come out serially.

The bunches should then be packed in plastic bags containing 5(five) such bunches and then packed into cartons, each carton containing 1000 (one thousand) seals only.

6. **RANDOM TESTING :-**

Random testing of the material will be carried out after receipt at stores, and in case of any failure, the entire lot shall be rejected at the risk & cost of the supplier. The replacement shall be made within one month from the date of intimation. The lot(s) of replaced seals will also have to be got inspected from purchaser's representative.

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Tender No. :-

Description of item :- Polycarbonate Security Seal

Name of the Bidder :- **Date of test :-**

Sl.No.	Requirement as per WBSEDCL Specification	Observation	Remarks
1.	Verification of test certificate		
	a)Steel AISI Grade-316		
	b)Polycarbonate		
2.	Seal Numbering & Code		
	a) Thermo Engraved		
	b) Visibility		
	c) Size / Shape		
3.	Dimensions of sealing wire		
	a) Length		
	b) Strands		
	c) overall diameter 0.75 ± 0.10 mm		
4.	Source of procurement of Polycarbonate (Virgin) is to be submitted.		

Witnessed by : ……