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 not be affected by boiling water, muriatic acid, petrol, thinners and other petroleum products. The seals shall be resistant to degradation by ultra-violet rays. Test Certificates from NABL Accredited 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 are to be furnished along with the offer.

2.3 The seals should be **Patented** as per Law applicable in India and the manufacturer who has official right to manufacture, shall offer his own seal design, as per patent, along with samples and drawings. No portion of the manufacturing process should be outsourced. It is compulsory that manufacturer shall have patent right to manufacture the seal. Necessary documents in this regard should be furnished.
Any dispute regarding authority of patent to be indicated in the bid document in the form of declaration. In case of any dispute or difference 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/litigation is detected subsequently regarding the patent.

2.4 **Samples of 20(twenty) nos. of seal shall have to be submitted to the office of the Chief Engineer (DTD), Abhikshan, Sector-V, Salt Lake, Kolkata–700091 on the specified date and time, for necessary testing & evaluation.**

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.

2.6 Every seal should have the minimum length of wire mentioned in item description, and the wire should be 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 including bar code should be Thermo engraved/embossed/laser printed 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/embossing/laser printing shall have to be done at the facility of the supplier and cannot be out-sourced for any reason whatsoever.

2.9 Seal Management Software should be submitted along with offer for inspection.
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.

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.

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3. INSPECTION & TESTING :

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Tests are to be carried out at NABL Accredited Laboratory on the patented 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.

Format for testing of sample seals at Dist. Testing Lab, is enclosed below.

4. SAMPLE SELECTION & TESTING:-

The seals shall be offered for inspection & testing at the manufacturer's works before despatch. Seal Management Software should be submitted along with offer for inspection.

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

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

b) 10% of packets selected at random from the cartons 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 inspection.

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.

SAMPLE TESTING

Tender No:

Description of item: Polycarbonate Security Seal

Date of test:-

Name of the Bidder

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/embossed/laser printed		
	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		
5	Type Test Report and GTP		

Witnessed by

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GUARANTEED TECHNICAL PARTICULARS :
(To be furnished and signed by the tenderer).

Sl.No.	Particulars	Technical Particulars
1.	Name and address of manufacturer	
2.	Brand name /Model name,of seal	
3.	Raw Material of seal and its source of procurement	
4.	Test Certificate submitted for	
	i) Steel AISI Grade-316	
	ii)Polycarbonate	
5.	Method of marking of sl. no.on seals	
6.	Dimensions of sealing wire	
	a) Length	
	b) Strands	
	c) Overall diameter	
7.	Whether manufacturer possess patent right to manufacture the seals	
8.	Whether seals are type tested by NABL accredited lab as per specification	
9.	Whether seals offered are patented	
10.	Whether seals are suitable for single use only and any internal tampering is visible for detection.	
11.	Behavior of seal in following cases:-	
	i) Boiled Water	
	ii)Muratic Acid	
	iii) Alcohol/Tetrachloride	
	iv)Soap Water (hot)	
	v)Thinner	
	vi)Petrol	
12.	Colour of seal	
13.	Whether Logo of WBSEDCL is provided as per specification.	
14.	Whether any tool will be required to seal or not	

SIGNATURE OF THE TENDERER
WITH COMPANY'S SEAL