BUREAU OF INDIAN STANDARDS
(Central Marks Department - III)

Our Ref : CMD-III/16: 7098(Pt2) **16 March, 2007**

Subject : Implementation of Amendment No.1 , November 1988 to IS 7098(Part2) – cross linked polyethylene insulated pvc sheathed cables.

Amendment No. 1 **to IS 7098(Part2):1985 - cross linked polyethylene insulated pvc sheathed cables-** was published in November 1988 (copy enclosed**)** however STI was not revised**.** Accordingly the STI has now been revised as **Doc: STI/7098(Part2)/3**, **March, 2007** (copy enclosed**).** It has been decided to implement the revised STI with immediate effect.

ROs/ BOs are requested to inform the licensees under their jurisdiction about the revised STI and its implementation with immediate effect .

(Sakuram Guguloth)
Sc B (CMD-III)

Encl : as above

Sc F&H (CMD-III)
DDGM

All ROs/BOs/BIS Labs

Cc : CMD-1

ETD for arranging Gazette notification

Doc : STI/7098(Pt.2)/3
March 2007

SCHEME OF TESTING AND INSPECTION FOR CERTIFICATION OF CROSSLINKED POLYETHYLENE INSULATED PVC SHEATHED CABLES (FOR WORKING VOLTAGES FROM 3.3 kV UPTO AND INCLUDING 33 kV) ACCORDING TO IS :7098(Part 2)-1985 (Including AmendmentNo.1)

1. **LABORATORY** – A laboratory shall be maintained which shall be suitably equipped and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 All testing apparatus shall be periodically checked and calibrated records of such checks/calibration shall be maintained.

2 **TEST RECORDS** - All records of tests and inspection shall be kept in suitable forms approved by the Bureau.

2.1 Copies of any records and other connected papers that may be required by the Bureau shall be made available at any time on request.

3. **QUALITY CONTROL** – It is recommended that, as far as possible, Statistical Quality Control (SQC.) methods may be used for controlling the quality of the product during production as envisaged in this Scheme [See IS 397(Part I):2003 to IS 397 (Part 4):2003].

3.1 In addition, effort should be made to gradually to introduce Quality Management system in accordance with IS/ISO 9001: 2000

4. **STANDARD MARK** – Each drum on which the cable is wound, shall carry the Standard Mark as given in column (1) of the First Schedule of the licence stencilled on the drum along with other information (See 4) about the cables, provided always that each length of the cable wound on the drum conforms to every requirement of the specification.

4.1 **MARKING** - In addition , the drum shall carry the following information marked on it :

(a) Name of manufacturer and his recognized trade mark, if any;
(b) Type of the cable and voltage grade;
(c) Number of cores;
(d) Nominal cross-sectional area of the conductor;
(e) Cable code;
(f) Length of the cable on the drum and number of lengths (if more than one);
(g) Direction of rotation of drum (by means of an arrow):
(h) Gross mass;
(i) Country of manufacture;
(j) Year of manufacture; and
(k) Identification in code, or otherwise to enable the date and lot of manufacture to be traced back to factory records.

4.2 The Standard Mark and the information given in 4 shall also be given on a label or a tag. The label or the tag shall be attached to the end of the cable in such a manner, that it is destroyed as soon as the cable is un wound from the drum. The cut ends of the cable shall be sealed by means of non-hygroscopic sealing material.

5. **LEVELS OF CONTROL** - The tests, as indicated in Table 1 attached(as applicable) and at the levels of control specified therein, shall be carried out on the whole production of the factory which is covered by this scheme and appropriate records and charts maintained in accordance with paragraph 2. above. All the production which conforms to the Indian Standards and covered by the licence shall be marked with certification mark of the Bureau.

5.1 In respect of all other clauses of the specification and at all stages of production the factory shall maintain appropriate controls and checks to ensure that their product conforms to the various requirements of the specification.

6. **REJECTIONS** - A separate record shall be maintained giving information relating to the rejection of the production not conforming to the requirements of the specification and the method of its disposal. Such material shall in no circumstances be stored together with those conforming to the specification .

7. **SAMPLES** - The licensee shall supply, free of charge, the samples required in accordance with the Bureau of Indian Standards (Certification) Regulations, 1988, as subsequently amended, from the factory or godowns. The Bureau shall pay for the samples taken by it from the open market.

8. REPLACEMENT- whenever a complaint is received soon after the goods with Standard marks have been purchased and used, and if there is adequate evidence that the goods have not been misused, defective goods are replaced free of cost by the licensee in case the complaint is proved to be genuine and the warranty period (where applicable) has not expired. The final authority to judge the conformity of the product to the Indian Standard shall be with the Bureau. The firm shall have own complaint investigation system as per IS/ISO 10002.

8.1 In the event of any damages caused by the goods bearing the standard Marks, or claim being filed by the consumers against BIS Standard mark and not " conforming to" the relevant Indian Standard, entire liability arising out of such non conforming product shall be of licensee and BIS shall not in any way be responsible in such cases.

9. **STOP MARKING -** The marking of the product shall be stopped under intimation to the Bureau if, at any time, there is some difficulty in maintaining the conformity of their product to the specification, or the testing equipment goes out of order. The marking may be resumed as soon as the defects are removed under intimation to Bureau.

9.1 The marking of the product shall be stopped immediately if directed to do so by Bureau for any reason. The marking may then be resumed only after permission by the Bureau. The information regarding resumption of marking shall also be sent to the Bureau.

10. **PRODUCTION DATA** -The licensee shall send to BIS as per the enclosed proforma- 1 to be authenticated by a Chartered Accountant a statement of quantity produced, marked and exported by him and the trade value thereof at the end of each operative year of the licence.

Table 1……

IS : 7098(Part 2) - 1985
CROSSLINKED POLYETHYLENE INSULATED PVC SHEATHED CABLES
(FOR WORKING VOLTAGES FROM 3.3 kV UPTO AND INCLUDING 33 kV)
TABLE 1 LEVELS OF CONTROL
(Para 5 of the Scheme of Testing and Inspection)

TEST DETAILS			LEVELS OF CONTROL		
CL	**Requirement**	**Test Method** Part no. of IS 10810	**No. of Samples**	**Frequency**	**Remarks**
19.7.2	High Voltage Test (Routine)	45	One	Each length of finished Cable	
19.2	Partial discharge Test	46	-do-	-do-	Applicable to screened cables only
18.3 and IS: 8130	Conductor resistance Test	5	-do-	-do-	
16.5	Resistance of armour conductor	42	One	Each length of finished cables	Applicable to cables for use in mines
3,9& 18.1(a)	i)Annealing test(for copper)	1	-do-	-do-	1. These are in addition to production line checks at wire drawing stage 2. Until requirements after stranding are specified, annealing test may be confined to one sample out of ten coils or part there received before stranding
	ii)Tensile strength(for aluminum)	2	-do-	-do-	
	iii)Wrapping test(for aluminum)	3	-do-	-do-	
3,16 & 18.1(b)	Test for armouring wires/strips	36 to 42	Two	Every ten coils of same size in each consignment	In case material carries standard mark of the bureau, further testing may not be necessary
18.1(c)	Test for Thickness of Insulation and sheath	6	one	Each length of finished cable	

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TEST DETAILS			LEVELS OF CONTROL		
CL	**Requirement**	**Test Method**	**No. of Samples**	**Frequency**	**Remarks**
		Part No. of 10810			
18.1(d)	Physical test for insulation				
	i) Tensile strength and elongation at break	7	One	Cable of each size and type manufactured in a day	Whenever there is a change in formulation of compound, additional sample shall be tested
	ii) Ageing in air oven Test	11			
	iii)Hot Test	30		Cables of each size and type manufactured in a fortnight or 25 delivery lengths of same size and type, whichever is less	
	iv) Shrinkage Test	12			
	v)Water absorption Test	33			
18.1 (e)	Physical tests for outer sheath (i) Tensile strength and elongation at break	7		Cables of each size and type manufactured in a day.	
	(ii) Ageing in air oven	11		Cables of each size and type manufactured in a fortnight or 25 delivery lengths of same size and type, whichever is less	
	(iii) Shrinkage test	12			
	(iv) Hot deformation	15			
	v)Loss of mass in air oven	10			
	vi)Heat shock	14			
	vii)Thermal stability	Appendix B of IS 5831			

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TABLE 1 LEVELS OF CONTROL
(Para 5 of the Scheme of Testing and Inspection)

TEST DETAILS			LEVELS OF CONTROL		
CL	**Requirement**	**Test Method** Part no. of IS 10810	**No. of Samples**	**Frequency**	**Remarks**
19.3	Bending Test	50	One	All cables of same size and type manufactured in a month or 25 delivery lengths of same size and type of cable, whichever is less	i) Refer 18.1.1 of the specification about applicability of tests ii) On screened cables, the sequence of tests shall be given in 18.1.2 of the specification
19.4	Dielectric power factor Test	48			
	a) As a function of voltage				
	b) As a function of temperature				
18.1(k)&Table1	Insulation resistance(volume resistivity)Test	43			
19.5	Heating cycle Test	49			
19.6	Impulse withstand Test	47			
19.7	High Voltage(type) Test	45			
19.8	Flammability test Test	53			
18.4	Cold impact Test (optional)	21			

PERFORMA - 1

PROFORMA FOR OBTAINING PRODUCTION DETAILS

Period covered

Name of Licensee

CM/L No.

Name of Articles (s) IS No.
Grade/Type/Size/Variety/Class/Rating

1.1 Brand/Trade/Name(s) of BIS Certification Marked Products

2.0 Total production of the articles(s) licensed for certification marking

2.1 Total production of the article(s) conforming to Indian Standard

3.0 Production covered with BIS Certification Mark and its value

a) Quantity

b) Value (Rs.)

3.1 Brand Name used on production covered under BIS Certification Mark

3.2 Calculation of marking fee on unit-rate basis; Marking Fee per unit

a) Unit

b) Quantity covered with BIS Certification Mark

c) Marking fee rounded off in whole rupees as obtained by applying unit rates given in (a) on quantity given in (b)

Note : Incase a clause is not applicable, suitable remarks may be given against it.

4.0 Quantity not covered with BIS Certification Mark. If any, and the reasons for such non-coverage

4.1 Brand Name under with non certified goods were sold

5.0 Quantity Exported with BIS Standard Mark and its value

5.1 Brand Name under which BIS Certified goods are exported

6.0 Authentication by Chartered Accountant