BUREAU OF INDIAN STANDARDS
(Central Marks Department - III)

Our Ref : CMD-III/16: 1554 (Pt.1) **8 May , 2007**

Subject : Implementation of Amendment No.1 , June 1994 and Amendment No.2 , January 2007 to IS 1554 (Pt.1):1988 – PVC insulated (heavy duty) electric cables (for working voltages up to and including 1100V.

Amendment No.1 , June 1994 and Amendment No.2 , January 2007 to IS 1554 (Pt.1):1988-PVC insulated (heavy duty) electric cables (for working voltages up to and including 1100V**)** has been published (copy enclosed**).** In view of these amendments, the existing STI has been revised as Doc: STI/ 1554(Pt.1)/8, May 2007 (copy available on intranet).

It has been decided to implement the above amendment as per the following guidelines:-

ROs /BOs to inform the licensees under their jurisdiction about the implementation of Amendment No 1&2 to IS 1554 (Pt.1):1988 with immediate effect.

Licensees as per IS 1554 (Pt.1):1988 , who intend to cover cables with improved fire performance in their licence, may get the variety included as per prevailing guidelines

Put up for consideration and approval please.

(Rajeev Sharma)
Sc D(CMD-III)

Encl: As above.

D&H (CMD-III)

DDGM

All ROs/BOs/ BIS Labs

c.c. CMD-1

ETD for arranging gazette notification

Doc:STI/1554 (Pt.1)/8
May 2007

SCHEME OF TESTING AND INSPECTION FOR CERTIFICATION OF PVC INSULATED (HEAVY DUTY) ELECTRIC CABLES (FOR WORKING VOLTAGE UPTO AND INCLUDING 1100 V) ACCORDING TO IS: 1554 (Part 1)-1988 (Including Amendment No.1&2)

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/measuring instruments shall be periodically checked and calibrated and records of such checks/calibration shall be maintained.

2. **TEST RECORDS** - All records of tests, inspection and calibration 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 introduce a Quality Management System in accordance with IS/ISO 9001.

4. **STANDARDMARK**: The standard mark as given in column 1 of the first schedule of the license shall be either stenciled on the drum or contained in a label attached to it, provided that the cable to which this mark is thus applied conforms to every requirement of specification.

4.1 **OTHER MARKINGS-**In addition the cable shall carry the information according to clause 18.2 of IS 1554 (Part 1) either stenciled on the drum or contained in a label attached to it.

4.2 The manufacturer's identification and cable identification shall be done as per clause 17.1 and 17.2 of IS 1554 (Part 1)

4.3 The Standard Mark shall be applied on the label or got incorporated in the label in such a manner, that as far as possible, it gets destroyed when the drums are opened for using the cable, as otherwise it may be fraudulently used by any person so as to deceive the consumers.

5. **LEVELS OF CONTROL** -The tests, as indicated in Table 1 attached and at the levels of Control specified therein shall be carried out on the whole production of the factory covered by this scheme and appropriate records and charts maintained in accordance with paragraph 2 above. All the production which conforms to the Indian Standard and covered by this license shall be marked with The Standard Mark.

5.1 On the basis of the test and inspection results, the decision regarding conformity or otherwise of the lot as a whole to the requirements of the specification shall be made as follows:

5.1.1 Each of the samples taken for test shall satisfy the requirement of the specification for acceptance of the lot, unless specified otherwise in the remarks column in Table 1.

5.2. 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 that 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 godown. 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 or their components should be replaced or repaired 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 complaints investigation system as per IS/ISO 10002.

8.1 In the event of any damages caused by the goods bearing the Standard Mark, 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 permitted by the Bureau. The information regarding resumption of markings 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.

Table1……

IS:1554 (Part 1) – 1988
PVC insulated (heavy duty) electric cables
(for working voltages up to and including 1100 V)
TABLE 1 LEVELS OF CONTROL
(Part 5 of the Scheme of Testing and Inspection)

Clause	Test Detail	Requirements		Test Methods	Number of Samples	Lot size/ frequency	Remarks
		Clause	Reference	Part No. of IS:10810			
1	2	3	4	5	6	7	8
15.3(a)	Conductor resistance	Table1 &Table2	IS:8130	5	1	Each length of finished cable.	This is in addition to the production line check at the final drawing stage.
15.3(b)	High voltage test at room temperature.	16.2	IS:1554 (Part 1)	45	1		
15.3(c)	Armour resistance (for mining cables)	13.5.2	IS: 1554 (Part 1)	42	1		
15.2(a)	Annealing test (for copper conductors)	6.1.2	IS:8130	1	1	Every 10 spools of wire drawn or received at the main cable plant (before stranding) and one sample from 25 delivery lengths or less of the same size and types of cable manufactured in a week.	
15.2(b)	Tensile test (for Aluminium conductor)	3.1	IS:8130	2	1		

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TABLE 1 LEVELS OF CONTROL
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Clause	Test Detail	Requirements		Test Methods	Number of Samples	Lot size/ frequency	Remarks
		Clause	Reference	Part No. of IS:10810			
1	2	3	4	5	6	7	8
15.2(c)	Wrapping test (for Aluminium conductors	6.2.2	IS:8130	3	1	Every 10 spools of wire drawn or received at the main cable plant (before stranding) and one sample from 25 delivery lengths or less of the same size and types of cable manufactured in a week.	
15.2(e)	Test for thickness of insulation and sheath	9, 12, 14 Table 2, 4 and 7	IS:1554 (Part 1)	6	1	Each length of finished cable of 25 delivery length or less of the same size and type of cable manufactured in a week.	In all these cases additional samples shall be tested whenever there is a change in the formulation of PVC compound
15.2(f)	Tensile strength and elongation at break of insulation and smooth.	Table 1 and 2	IS:5831	7	1		
15.2(g)	Insulation resistance.	Table 1	IS:5831	43	1		
15.1(b)	Test for armouring wires/strips.	7,8,9& Table5	IS:1554 (Part 1)	36 to42	-	Each consignment of armouring wires/ formed wires received shall be inspected as per sampling plan contained in IS:3975. Resistance test is subject to agreement between the users and suppliers for cables other than mining cables.	
15.1(d)	Physical tests for insulation and outer sheath (1) Tensile strength and elongation at break after aging in air oven.	Table1 &Table2	IS 5831	11	1	25 delivery lengths or less of the same size and type of cable manufactured in a week.	
	(2) Shrinkage test.	-do-		12	1		

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

Clause	Test Detail	Requirements		Test Methods	Number of Samples	Lot size/ frequency	Remarks
		Clause	Reference	Part No. of IS:10810			
1	2	3	4	5	6	7	8
15.1(d)	(3) Hot deformation test.	Table1 &Table2	IS 5831	15	one	25 delivery lengths or less of the same size and type of cable manufactured in a week.	In all these cases additional samples shall be tested whenever there is a change in the formulation of PVC Compound.
	(4) Loss of mass in air oven.	-do-	-do-	10			
	(5) Heat shock test.	-do-	-do-	14			
	(6) Thermal Stability.	-do-	-do-	60			
15.1(f)	High voltage test (water immersion test).	16.3	IS:1554 (Part 1) 1988	45		25 delivery length or less of the same size and type of cable manufactured in a week.	
15.1(h)	Flammability test.	16.4	-do-	53			
15.4(a)	Cold bend test (when applicable)	Table 1&r Table 2	IS 5831	20			
15.4(b)	Cold impact test (when applicable)	-do-	-do-	21			

IS:1554 (Part 1) – 1988
PVC insulated (heavy duty) electric cables
(for working voltages up to and including 1100 V)
TABLE 1 LEVELS OF CONTROL
(Part 5 of the Scheme of Testing and Inspection)

TEST DETAILS					LEVELS OF CONTROL		
Cl.	**Requirement**	**Clause Reference**	**Test Methods Part Reference**		**No. of Samples**	**Frequency**	**Remarks**
Additional type tests for cables with Improved Fire Performance							
15.1.1 and Appendix A	Oxygen Index Test	16.5 IS:1554 (Part 1)	58	IS 10810	One	Every month for each size and type from one consignment of PVC compound.	For Category C1 and C2 Sample to be taken from outer sheath, as applicable, and prepared in the manner given in the relevant test method.
	Flame Retardance Test on single cable	16.6 -do-	61	IS 10810			For category C1 and C2
	Flame Retardance Test on bunched cable	16.7 -do-	62	IS 10810			For category C1 and C2
	Test for specific optical density of smoke	16.8	-	IS 10810			Under consideration
	Temperature Index	16.10 -do-	64	IS 10810			For Category C1 and C2 Sample to be taken from outer sheath, as applicable, and prepared in the manner given in the relevant test method.
	Smoke Density	16.11 -do-	63	IS 10810			For Category C2 Sample to be taken from outer sheath, as applicable, and prepared in the manner given in the relevant test method.
	Test for Halogen acid gas evolution	16.9 -do-	59	IS 10810			For Category C2 Sample to be taken from outer sheath, as applicable, and prepared in the manner given in the relevant test method.

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

Signature of Authorized Signatory
Name
Date

AMENDMENT NO. 2 JANUARY 2007
TO
IS 1554 (PART 1) : 1988 SPECIFICATION FOR PVC INSULATED (HEAVY DUTY) ELECTRIC CABLES

PART 1 FOR WORKING VOLTAGES UP TO AND INCLUDING 1 100 V

(Third Revision)

[*Page* 8, *clause* **15.1.1**, *col* 4 (*see also Amendment No.* 1)] — Delete '(Under preparation)' for Category C1 and Test (a).

[*Page* 8, *clause* **15.1.1**, *col* 4 (*see also Amendment No.* 1)] — Substitute '64' *for* 'Under consideration' for Category C1 and Test (d).

[*Page* 8, *clause* **15.1.1**, *col* 4 (*see also Amendment No.* 1)] — Delete '(Under preparation)' for Category C2 and Test (a).

[*Page* 8, *clause* **15.1.1**, *col* 4 (*see also Amendment No.* 1)] — Substitute '64' *for* 'Under consideration' for Category C2 and Test (g).

(ET 9)

Reprography Unit, BIS, New Delhi, India