



**PRODUCT MANUAL FOR
COMPRESSION TYPE TUBULAR TERMINAL ENDS FOR
ALUMINIUM CONDUCTORS OF INSULATED CABLES
ACCORDING TO IS 8309: 1993**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 8309: 1993
	Title	:	Compression Type Tubular Terminal Ends For Aluminium Conductors of Insulated Cables.
	No. of Amendments	:	1
2.	Sampling Guidelines:		
a)	Raw material	:	• Aluminium of Grade 19501 of IS 5082
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	12 Nos.
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day :		
	i. Visual Examination and Dimensional Check-up ii. Flattening Test iii. Electrical Conductivity Test		
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 8309:1993 with the following scope:		
	Name of the product	Compression Type Tubular Terminal Ends for Aluminium Conductors of Insulated Cables	
	Designation		

ANNEX A

Grouping Guidelines

1. IS 8309: 1993 covers Compression Type Tubular Terminal Ends for Aluminium Conductors of Insulated Cables for rated voltages up to and including 11 kV.
2. For considering GoL/CSoL, following grouping shall be considered:
 - a) **Group I**- “Compression Type Aluminium Tubular Terminal Ends for Crimping to Aluminium Conductors” [Designation- CAA/ CAa]
 - b) **Group II**- “Compression Type Aluminium Tubular Terminal Ends for Crimping to Aluminium Conductors (Round Stranded Compacted) for XLPE Cables” [Designation – CAAX]
3. Samples from each group with maximum and minimum nominal conductor size shall be tested to cover the entire range of nominal conductor sizes in that group. In case Compression Type Tubular Terminal Ends for multi strand conductor is tested, Compression Type Tubular Terminal Ends for single strand conductor may also be covered.
4. The Firm shall declare the varieties of terminal ends they intend to cover in the Licence.
5. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
6. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sr. No.	Test equipment	Tests used in with Clause Reference
1	Flattening Tester	Cl. 8.2
2	Electrical Conductivity Tester	Cl. 8.3
3	Micro meter	Cl. 8.1
	Vernier Caliper	
	Height Gauge	
	Surface Plate	

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection And Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING –As per the requirements of IS 8309:1993.

3.1. In addition, the following information shall also be marked:

- a) Manufacturer's name or trade mark or brand name ;
- b) Batch number.

4. CONTROL UNIT – All the terminals ends of same designation manufactured in a day shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3	Materials	--	IS 5082	S	One	Each Consignment	No further testing is required if accompanied with Test certificate or ISI Marked
4, 8.1	Finish & visual examination	4, 8.1	IS 8309: 1993	R	Each terminal end	Every control unit	If any sample fails in any requirement, double the number of terminal ends from the same control unit shall be tested for that requirement. The control unit shall not be marked in case of failure in re-testing.
5, 8.1	Dimensions	5, 8.1 Table 1&2	IS 8309: 1993	R	5 terminal ends	Every control unit	
8.2	Flattening test	8.3	IS 8309: 1993	R	3 terminal ends	Every control unit	
8.3	Electrical Conductivity test	8.4	IS 8309: 1993	R	3 terminal ends	Every control unit	

Note- 1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note- 2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.