



PRODUCT STANDARD
GAS INSULATED SWITCHGEAR

PSGSG/15-16/006

Page 1 of 3

**SPECIFICATION OF ELECTROLYTIC TOUGH PITCH
COPPER (ETP COPPER)**

1. General:

This specification governs the quality requirements electrolytic tough pitch copper rods and extruded sections for electrical purposes.

2. Application:

This material is used in high voltage switchgear applications.

3. Compliance with National/International standards :

The material shall comply with the requirements of the following national standard and also meet the requirements of this specification.

A. INDIAN : IS : 191:2007

4. Dimensions and Tolerances:

As per drawings/Purchase order

5. Finish:

- a. Surface finish of the components shall be at least Ra 0.8.
- b. The component shall be free from dirt, grease and loose particles.
- c. Drawn profiles, to size, only shall be used for direct welding. No smithy is allowed for formation/ matching of profiles in view of defect inception.
- d. Any sharp corners shall be removed as per the drawing. Wherever not specified in the drawing, a radius of R1 shall be provided at the sharp corners and edges.
- e. Parallelism of the tube must be maintained within 0.1 degree and any deviation shall be subjected to rejection in supply.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited
It must not be used directly or indirectly in any way detrimental to interest of Co.

REV.

PRINTS TO:-

APPROVED –

ALTD.

Issued online

MMRAO

APPD.

PREPARED

ISSUED

DATE

DATE.

N.Shashikanth

08.09.2015



PRODUCT STANDARD

GAS INSULATED SWITCHGEAR

PSGSG/15-16/006

Page 2 of 3

6. Properties :

Sl. No	Parameter	Test method	Unit	Value (Minimum)
1.	Chemical a) Copper b) Bismuth c) Lead d) Oxygen	IS 191	%	Remainder 10ppm 0.005 0.045
2.	Electrical Conductivity at 20°C (Minimum)	IS 191	% IACS	>97

7. Test Methods

Unless otherwise specified, the tests shall be conducted in accordance with relevant methods as mentioned against clause 7.

8. Sample for Tests

The set of test specimens prepared from same batch and in same manner as consignments shall be supplied for testing and approval. The test sample size should be as per requirement specified in relevant test method of clause 7.

9. Test Certificate

The supplier shall submit copy of test certificate for tests specified in clause 7 giving the following information:

- Results of chemical analysis, mechanical and all other tests as called for in this specification/order

10. Packing

The components shall be packed in high density cardboard boxes, with a primary wrapped in polyethylene and packed individually in dust free boxes after degreasing. The components shall be guaranteed against all manufacturing defects.

11. Acceptance criteria:

- Dimensional Report as per drawing.
- Finish as per clause 5.
- Test samples as per clause 8.
- Test certificate as per clause 9.
- Packing as per clause 10.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited
It must not be used directly or indirectly in any way detrimental to interest of Co.



PRODUCT STANDARD

GAS INSULATED SWITCHGEAR

PSGSG/15-16/006

Page 3 of 3

12. Rejection and Replacement:

In the event of the material proving defective in the course of manufacture, such material shall be rejected notwithstanding any previous certification of satisfactory testing and/or inspection.

The supplier shall undertake to replace the material. Repairing of material is not acceptable.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited
It must not be used directly or indirectly in any way detrimental to interest of Co.