
ALUMINUM TUBING

FOR ADB-300C ONLY

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FINAL

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0 FOREWORD

- 0.1 This specification has been prepared by Design NTDC .
- 0.2 This specification is intended for the procurement of material and does not include all the necessary provisions of a contract.
- 0.3 This specification is subject to revision as and when required.

1 SCOPE

- 1.1 This specification describes Aluminum tubing for use as busbar in grid stations. The general intent of this specification is the supply of material equal to or superior to those actually described herein.

2 MATERIAL

- 2.1 The tubing shall be made from high conductivity hard-drawn Aluminium in accordance with 1050 serial alloy EN755-2 for tubes with 40 and 63 mm outer dia. The 3"SPS tube (SH40) should be in accordance with EN 573-1 having physical and mechanical properties as per EN 573-3, EN 755-1, 2 & 8 having a degree of purity of not less than 99 percent

Description	Value	Value	Value	Value	Value	Value
Outer dia mm	40	63	88.90	101.60	141.30	160
Tensile strength R_m (min)	10 kg/mm ²	10 kg/mm ²	25.48 kg/mm ²	25.48 kg/mm ²	25.48 kg/mm ²	25.48 kg/mm ²
0.2 Yield strength R_p (min)	7-12 kg/mm ²	7-12 kg/mm ²	20.39 kg/mm ²	20.39 kg/mm ²	20.39 kg/mm ²	20.39 kg/mm ²
Elongation (min)	6%	6%	8%	8%	8%	8%
Resistivity at 20°C	0.02874 Ω mm ² /m	0.02874 Ω mm ² /m	0.03 Ω mm ² /m	0.03 Ω mm ² /m	0.03 Ω mm ² /m	0.03 Ω mm ² /m

3 DIMENSIONS AND TOLERANCE

- 3.1 The tubing shall have following dimensions:

Description	Value	Value	Value	Value	Value	Value
Outer dia, mm	40	63	88.90	101.60	141.30	160
Wall thickness, mm	4	5	5	5.75	6.55	6.55
Length mm	12000	12000	12000	12000	12000	12000

- 3.2 The tolerance in dimensions shall be +/- 1 percent.

4 REQUIREMENTS

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- 4.1 The tubing shall be commercially sound, straight and of uniform thickness throughout. It shall have smooth surface finish. The edges shall be rounded off and there shall be no cracks or burrs or sharp projections.

5 SAMPLING

- 5.1 The Aluminium tubings offered for inspection shall be divided into lots up to 10 units each. A sample of 10 tubings shall be drawn at random from each lot.
- 5.2 The selected samples shall be subjected to visual inspection and verification of dimensions. If the number of defective tubing is more than one, the lot shall be rejected.

6 TESTS

- 6.1 The following type of sample tests shall be carried out:

- i) Visual examination
- ii) Verification of dimensions
- iii) Tensile test
- iv) Resistivity test

6.2 Visual Examination

Individual items shall be visually examined for the defects given below:

Sr.No.	Examination	Defects
1.	Construction	i. Not of proper dimensions ii. Not of correct material iii. Any crack on the material
2.	Finish	i. Not free from roughness, sharp edges and projections which will interfere with the proper use of the article ii. Corner edges not rounded

6.3 Verification of Dimensions

The dimensions shall conform to clause 3

6.4 Tensile Test

The Aluminium tubing shall be subjected to tensile test in accordance with EN 573-3, EN 755-1, 2 & 8. The values shall be as specified in clause 2.1

6.5 Resistivity Test

The electrical resistance of tube shall be measured on one sample piece to an accuracy of at least one part in a thousand. The length of the specimen shall be sufficient to give the accuracy required and shall be suitable for the method of testing used. The resistance shall be measured at a temperature which shall not be less than 10⁰ C and not more than 30⁰ C. The measured resistance shall be corrected to the value at 20⁰ C by means of the formula.

$$R_{20} = R_T \left(\frac{1}{1 + \alpha (T - 20)} \right)$$

Where T = Temperature of measurement in ⁰C

R_T = Resistance at T⁰ C

R₂₀ = Resistance at 20⁰ C

And α = Temperature coefficient of resistance (= 0.00011 Ohm mm²/m)

7 PACKING

The tubing shall be bundled and banded in groups of three. The banding shall be at three locations with binding strap. The bundles shall be packed in wooden crates, capable of withstanding the rigors of transportation and handling.

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