

TAG CORPORATION

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Test Report No.: CT / 105 / 2007

20 / 03 / 2007

1. **COMMODITY** : ACSR "Wolf" Conductor
Size 30/2.59 mm + 7/2.59 mm
2. **MANUFACTURER** : Diamond Cables Limited,,
District Baroda.
3. **DATE OF TEST** : 20-03-2007
4. **TEST PERFORMED AT** : TAG LABORATORIES, Chennai 44., INDIA
5. **NATURE OF TEST** :
 1. Surface condition
 2. Tensile Test.
 3. Measurement of Diameter of individual strands.
 4. Measurement of Lay Ratio.
 5. Breaking Load of individual strands.
 6. Elongation of individual steel strands.
 7. Resistance of individual aluminium strands.
 8. DC Resistance of complete conductor.
6. **NUMBER OF SAMPLES TESTED** : ONE LENGTH for each test.
Drum No. MEC/MOZ/C-076/W-024.
Sample received vide Blue Dart Express
C.N. No.5804 2419 956, dated 14 / 03 / 2007.
7. **SPECIFICATION APPLIED** : IEC 61089-91, IEC 60888 & IEC 60889
8. **DETAILS & RESULTS** : AS GIVEN IN PAGES TWO to FOUR.


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ISO CERTIFIED COMPANY – Cert.Regno.No. 99 100 00505



1. SURFACE CONDITION TEST:

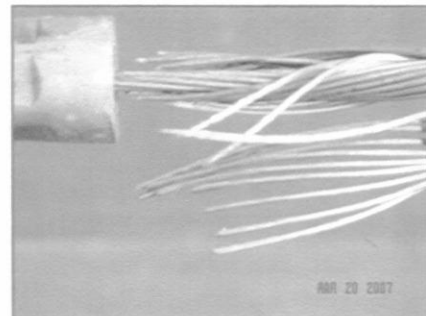
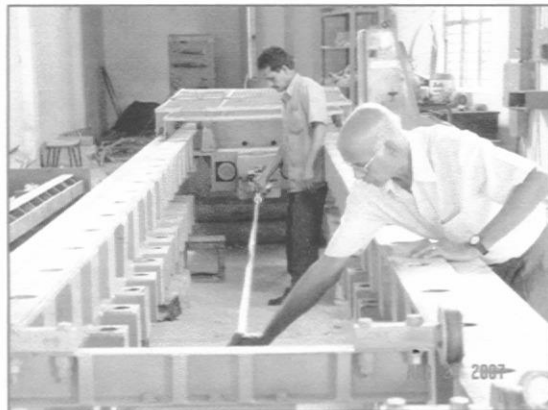
The surface of the ACSR "Wolf" conductor was free from all imperfections visible to the unaided eye. There was no nick, indentation etc and the surface finish was satisfactory.

2. TENSILE TEST ON THE COMPOSITE CONDUCTOR:

The sample of ACSR "Wolf" conductor was fitted with suitable compression dead ends and the assembly was mounted on a tensile testing machine. The load was applied gradually maintaining the rate of increase as per Clause B.6.8 of annex B. At a load of 7,200 kg (70.63 kN), entire aluminium strands broke near the mouth of one of the clamps.

Results:

- 1) The sample of the conductor withstood 95% of the specified ultimate strength of 69.24 kN.
- 2) The breaking load achieved was 7,200 kg (70.63 kN).




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3. MEASUREMENT OF DIAMETER OF INDIVIDUAL STRANDS:

The diameter of the Aluminium and Steel strands cut from the conductor were measured using a micrometer.

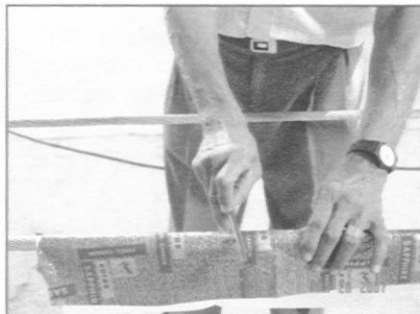
The average diameter of the aluminium wires ranged from 2.610 mm to 2.615 mm.
(Required value – 2.56 mm to 2.62 mm)

The average diameter of the steel wires ranged from 2.585 mm to 2.590 mm.
(Required Value – 2.54 mm to 2.64 mm)



4. MEASUREMENT OF LAY RATIO:

The lay ratio of each layer of the conductor measured and presented below:



LAYER	LAY RATIO Of the conductor	SPECIFIED In the IS
Outer Most Al.	RH – 11.15	(10 – 14)
Innermost Al.Layer	LH – 11.67	(10 – 16)
Steel Core	RH – 21.87	(16 - 26)

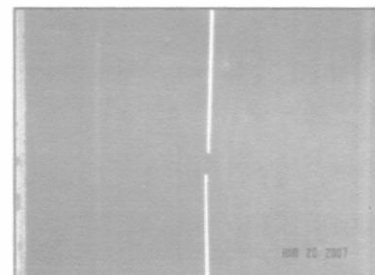
The lay ratios were found to meet the requirement of the specification as per Clause 5.4.

5. BREAKING LOAD TEST ON INDIVIDUAL STRANDS:

One length each of the individual strands of Aluminium and Steel cut from the conductor was fixed between the jaws of the tensile testing machine and the load was applied.

The breaking load of the Al. wire was 186 MPa
(Value specified – 170 MPa Min.)

The breaking load of the Steel Wire was 1230 MPa
(Value specified – 1210 MPa Min.)

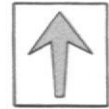



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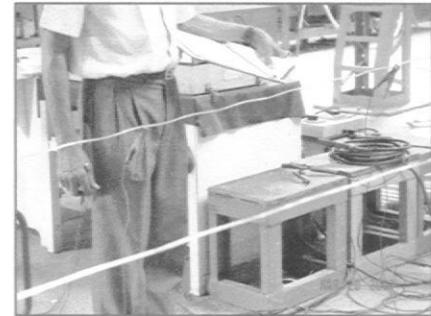
6. ELONGATION TEST:

One specimen of the steel strand was cut from the conductor and was mounted on the tensile testing machine between the jaws after marking a gauge length of 200 mm. The load was applied and after the breakage, the length between the gauge marks was measured. The elongation was 4.0 % as against the specified minimum elongation of 4.0 % and hence the sample met the minimum requirement of the specification.

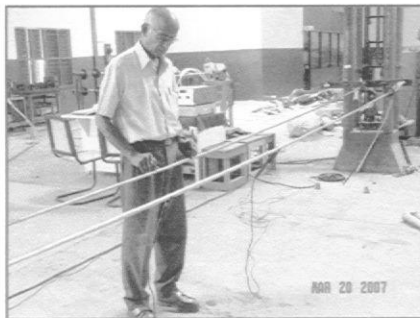
7. RESISTANCE TEST OF THE INDIVIDUAL ALUMINIUM STRANDS:

The electrical resistance of one aluminium wire cut from the conductor was measured at the ambient temperature. The measured resistance was corrected to a value at 20 Deg.C. The resistance for 1-km length of the wire was calculated for this corrected value.

The resistance at 20 Deg. C was 22.891 nΩm as against the maximum permissible value of 28.264 nΩm and hence the sample meets the requirement of the specification.



8. RESISTANCE TEST OF THE COMPLETE CONDUCTOR:



The electrical resistance of the complete conductor was measured at the ambient temperature. The measured resistance was corrected to a value at 20 Deg.C. The resistance for 1-km length of the conductor was calculated for this corrected value.

The resistance of the complete conductor at 20 Deg. C was 0.17024 Ohm/km.


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