



检验编号: MT2015-0231-B

Reference No.:

检 验 报 告

Test Report

试 样 名 称 钢芯铝绞线

Name of product: Aluminum conductors, steel reinforced

型 号 规 格 ACSR Panther[®]

Type and size: _____

委 托 单 位 郑州金源电线电缆有限公司

Client: Zhengzhou Jinyuan Wire and Cable Co., Ltd.

检 验 类 别 型式试验

Kind of test: Type test

上海电缆研究所电工材料及特种线缆质检中心

QUALITY SUPERVISION AND TEST CENTER FOR ELECTRICAL
MATERIALS AND SPECIAL WIRE AND CABLE OF SHANGHAI
ELECTRIC CABLE RESEARCH INSTITUTE



上海电缆研究所电工材料及特种线缆质检中心

QUALITY SUPERVISION AND TEST CENTER FOR ELECTRICAL
MATERIALS AND SPECIAL WIRE AND CABLE OF SHANGHAI
ELECTRIC CABLE RESEARCH INSTITUTE

检验报告

Test Report

第 1 页 共 4 页

1 of 4

试样名称 Name of product	钢芯铝绞线 Aluminum conductors, steel reinforced						
型号规格 Type and size	ACSR Panther		状态描述 Sample Description	绞线 Stranded Conductors			
检验类别 Kind of test	型式试验 Type test		检验编号 Reference No.	MT2015-0231-B			
委托单位 Client	郑州金源电线电缆有限公司 Zhengzhou Jinyuan Wire and Cable Co., Ltd.		地址 Address	郑州市中原区桐柏路 98 号帝湖花园 A 区帝湖王府 6 号楼 1 单元 24 层东侧 U 号 No. 98 Tongbai Road, Zhongyuan District, Zhengzhou, Henan, China			
生产单位 Producer	郑州金源电线电缆有限公司 Zhengzhou Jinyuan Wire and Cable Co., Ltd.		到样日期 Date of receipt	2015.3.3			
取样方式 Delivering method	自送 Sample delivered by customer	送样人 Deliverer	唐瑜佳 TangYujia	邮政编码 Zip code	450007	电话号码 Tel.	0371-87075361
检验依据 Test standard	BS 215: Part2: 1970(R2013) Specification for aluminium conductors and aluminium conductors, steel-reinforced for overhead power transmission. Part 2. Aluminium conductors, steel-reinforced IEC 61089: 1991 Appendix B "Stress-strain test method"						
检验日期 Test date	2015.3.3-2015.3.20						
检验结论 Conclusion	来样所测 9 项性能中, 除“绞线弹性模量及应力-应变曲线”为实测结果外, 其余性能均符合 BS 215: Part2: 1970(R2013) Specification for aluminium conductors and aluminium conductors, steel-reinforced for overhead power transmission. Part 2. Aluminium conductors, steel-reinforced 的要求。 The 9 properties of the test specimen all meet the requirements of BS 215: Part2: 1970(R2013) Specification for aluminium conductors and aluminium conductors, steel-reinforced for overhead power transmission. Part 2. Aluminium conductors, steel-reinforced except that "Elasticity modulus & stress-strain curve" is measured result.						
备注 Remarks	-----						
编写 Edit 日期 Date	王煦 2015.3.20		审核 Review 日期 Date	陆斌 2015.3.20		批准 Approval 日期 Date	曹国飞 2015.3.20

试样型号和规格: Type and size:		ACSR Panther		检验编号: Reference No.:		MT2015-0231-B	
序号 No	检 验 项 目 Item of test	单 位 Unit	标 准 要 求 Requirement	检 验 结 果 Test result	单 项 判 断 Judgment		
1	结构尺寸 Structure size						
1.1	铝线根数 Number of Al wires	根 No.	30	30	√		
1.2	钢线根数 Number of steel wires	根 No.	7	7	√		
1.3	铝线直径 Diameter of Al wires	mm	3.00±0.03	3.00	√		
1.4	钢线直径 Diameter of steel wires	mm	3.00±0.06	3.01	√		
1.5	绞线直径 Conductor diameter	mm	21.00±0.21	20.97	√		
2	表面质量 Surface quality	—	表面不应有肉眼可见的缺陷, 明显的压痕以及与良好商品不相称的任何缺陷。 The conductor shall be clean and free of imperfections not consistent good commercial practice.	通过 Pass	√		
3	绞制 Lay						
3.1	绞向 Direction of lay	—	相邻层绞向应相反, 最外层绞向应右向。 Adjacent wire layers shall be stranded with reverse lay directions, the direction of lay of the external layer shall be "right-hand".	相反, 右向 Reverse, "right-hand"	√		
3.2	均匀紧密性 Inertness	—	每层单线应均匀紧密地绞合在下层中心线芯或内绞层上; 在切断绞线后, 所有单线都不松散或容易用手复位。 The wires in each layer shall be evenly and closely stranded around the underlying wire or wires; where the core is cut, the wires shall remain in position or be readily replaced by hand and then remain approximately in position.	均匀紧密, 未松散 Evenly and Closely	√		
3.3	节径比 Lay Ratio	—	任何层的节径比应不大于其紧邻内层的节径比。 Lay ratio of every layer, should not more than the close inner one.	通过 Pass	√		
3.3.1	钢芯 Steel core layer	—	13~28	16.4	√		
3.3.2	铝线层 Al wires layer	—					
3.3.2.1	内层 Inner layer	—	10~16	15.1	√		

注: "√"表示该项目合格, "×"表示该项目不合格。


Note: "√" means that the item is qualified, "×" means that the item is unqualified.

材料
ST REP
报告
EMT

试样型号和规格: Type and size: ACSR Panther			检验编号: Reference No.: MT2015-0231-B		
序号 No	检 验 项 目 Item of test	单 位 Unit	标 准 要 求 Requirement	检 验 结 果 Test result	单 项 判 断 Judgment
3.3.2.2	外层 Outer layer	—	10~14	12.2	√
4	钢线性能 (绞后) Properties of steel wires (stranded)				
4.1	抗拉强度 Tensile strength	MPa	≥1254 (1320×0.95)	1535	√
4.2	1%伸长时的应力 Stress at 1% extension	MPa	≥1100	1283	√
4.3	伸长率 (L ₀ =200 mm) Elongation (L ₀ =200 mm)	%	≥4.0	5.8	√
4.4	扭转 (100d) Torsion test(100d)	360° /次	≥18	31	√
4.5	卷绕 (1d, 8 圈) Wrapping (1d, 8 turns)	—	不断裂 No fracture	未断裂 No fracture	√
4.6	镀锌层 Zinc coating				
4.6.1	锌层重量 Mass of zinc coating	g/m ²	≥240	293	√
4.6.2	锌层附着性 (4d 卷绕) Adherence of zinc coating (4d, wrapping)	—	锌层不得开裂, 或用手指摩擦 层不会产生脱落的起皮。 The zinc coating shall not crack nor flake to such an extent that any zinc can be removed by rubbing with bare fingers.	未开裂, 未起皮 No cracking, no flaking	√
4.6.3	锌层连续性 Continuity of zinc coating	—	用肉眼观察镀锌层应没有孔 隙, 镀锌层应光洁, 厚度均匀。 There shall be no voids in the coating visibly examined by eyes. The coating shall be smooth and its thickness shall be uniform.	无孔隙, 光 洁, 均匀 No voids. Smooth and uniform.	√
5	铝线性能 (绞后) Properties of Al wires (stranded)				
5.1	抗拉强度 Tensile strength	MPa	≥169	199	√
5.2	20℃时体积电阻率 DC resistivity at 20℃	Ω •mm ² /m	≤0.028264	0.027999	√

注: “√”表示该项目合格, “×”表示该项目不合格。

Note: “√” means that the item is qualified, “×” means that the item is unqualified.

试样型号和规格: Type and size: ACSR Panther			检验编号: Reference No.: MT2015-0231-B		
序号 No	检 验 项 目 Item of test	单 位 Unit	标 准 要 求 Requirement	检 验 结 果 Test result	单 项 判 断 Judgment
5.3	卷绕 (1d, 卷 8 圈, 退 6 圈, 再紧密卷绕) Wrapping (1d winds 8 circles, returns 6 circles, then closely wind.)	—	铝线不应开裂 The wires should not crack	未开裂 Not crack	✓
6	绞线单位长度质量 Mass per unit length	kg/km	974 ± 19.5	968.0	✓
7	20℃时绞线电阻 Resistance of the conductor at 20℃	Ω/km	≤ 0.1363	0.1290	✓
8	绞线综合拉断力 Breaking strength of the conductor	kN	≥ 88.30 (92.95 × 0.95)	#1 96.21 #2 95.82 #3 95.37	✓ ✓ ✓
9	绞线弹性模量及应力—应变曲线 Elasticity modulus & stress-strain curve	—	见附录一 Shown in appendix one	见附录一 Shown in appendix one	实测结果 Measured Result
<p>——以下空白—— ——End of report——</p> 					
<p>注: “✓”表示该项目合格, “×”表示该项目不合格。 Note: “✓” means that the item is qualified, “×” means that the item is unqualified.</p>					





钢芯铝绞线弹性模量及应力-应变曲线

ELASTICITY MODULUS & STRESS-STRAIN CURVE
OF ALUMINUM CONDUCTORS, STEEL REINFORCED

检验报告

Test Report

Sample

生产单位: 郑州金源电线电缆有限公司

Manufacturer: Zhengzhou Jinyuan Wire and Cable Co., Ltd.

型号: ACSR Panther

Type and size: ACSR Panther

结构: 铝线 30/3.00;

钢线 7/3.00

Structure: Aluminum wires 30/3.00;

Steel wires 7/3.00

外径: 21.00mm

Diameter: 21.00mm

总截面积: 261.6mm²Total cross sectional area: 261.6mm²

计算拉断力: 92.95 kN

Rated Strength: 92.95 kN

二. 检验依据:

Test standard:

按 IEC 61089: 1991 附录 B “应力-应变试验方法” 规定进行试验。

According to IEC 61089: 1991 Appendix B “Stress-strain test method”

三. 试验设备和条件:

Testing equipments and conditions

1. 试验设备: 500kN 液电卧式拉力试验机, 见图 1-1。

Testing Equipment: 500kN hydraulic-electric horizontal tensile machine, shown in Fig.1-1.



图 1-1 500kN 卧式拉力试验机
Fig.1-1 500kN hydraulic-electric horizontal tensile machine

2. 试验条件:

Testing conditions:

试样根数: 1 根

Quantity of specimens: 1 piece

试样有效长度: 10m

Effective length of specimen: 10m

试样端头处理: 环氧树脂浇铸

Treatment of specimen ends: cast with epoxy resin

引伸仪长度: 2000 mm

Length of stretching device: 2000mm

测试精度: 应力为 $\pm 1\%$

应变为 $\pm 0.01\text{mm}/2\text{m}$

Test accuracy: Stress: $\pm 1\%$

Strain: $\pm 0.01\text{mm}/2\text{m}$

四. 试验结果:

Test results

1. 试样的最终弹性模量为 82.0 GPa;

The final modulus of elasticity of the specimen is 82.0 GPa;

2. 应力-应变后试样破断拉力为 94.13kN;

Breaking strength of the specimen after the stress-strain test is 94.13kN;

3. 试样的应力-应变曲线见附图。

The stress-strain curve of the specimen is shown as the chart in the following fig.



