2013002533A

CNAS 检测 CNAS L0206

检验编号：MT2015-0231-A

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/GA2 Bobolink

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

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检 验 报 告

Test Report

试样名称 Name of product	钢芯铝绞线 Aluminum conductors, steel reinforced						
型号规格 Type and size	ACSR/GA2 Bobolink			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-A		
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	450006	电话号码 Tel.	0371-86179729
检验依据 Test standard	ASTM B232/B232M-11 *Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Reinforced (ACSR)* 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"20℃时绞线电阻"、"绞线弹性模量及应力-应变曲线"为实测值或实测结果外，其余性能均符合 ASTM B232/B232M-11 *Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Reinforced (ACSR)*的要求。 The 9 properties of the test specimen all meet the requirements of ASTM B232/B232M-11 *Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Reinforced (ACSR)* except that "Resistance of the conductor at 20°C" and "Elasticity modulus & stress-strain curve" are measured value or measured result.						
备 注 Remarks	————						
编 写 Edit 日 期 Date	王照 2015.3.20	审 核 Review 日 期 Date	陆践叶 2015.3.20	批 准 Approval 日 期 Date	黄国飞 2015.3.20		

试样型号和规格：Type and size:	ACSR/GA2 Bobolink	检验编号：Reference No.:	MT2015-0231-A

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.	45	45	√
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	4.529±0.045	4.516	√
1.4	钢线直径 Diameter of steel wires	mm	3.020±0.051	3.008	√
1.5	绞线直径 Conductor diameter	mm	36.25±0.36	36.24	√
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 radio of every layer, should not more than the close inner one.	通过 Pass	√
3.3.1	钢芯 Steel core layer	—	16～26	19.6	√
3.3.2	铝线层 Al wires layer				
3.3.2.1	内层 Inner layer	—	10～17	15.3	√

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/GA2 Bobolink		检验编号：Reference No.:	MT2015-0231-A	
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	中间层 Middle layer	—	10～16	13.2	√
3.3.2.3	外层 Outer layer	—	10～13	11.0	√
4	钢线性能（绞后） Properties of steel wires (stranded)				
4.1	抗拉强度 Tensile strength	MPa	≥1340 （1410×0.95）	1673	√
4.2	1%伸长时的应力 Stress at 1% extension	MPa	≥1280	1392	√
4.3	伸长率（L_0=250 mm） Elongation (L_0=250 mm)	%	≥3.5	5.2	√
4.4	卷绕（2d，8 圈） Wrapping (2d, 8turns)	—	不断裂 No fracture	未断裂 No fracture	√
4.5	镀锌层 Zinc coating				
4.5.1	锌层重量 Mass of zinc coating	g/m^2	≥244	317	√
4.5.2	锌层附着性（4d 卷绕） Adherence of zinc coating (4d, wrapping)	—	锌层不得开裂，或用手指摩擦锌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	√
4.5.3	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				
5.1.1	平均值 Average of a lot	MPa	≥165	183	√
5.1.2	最小值 Individual test	MPa	≥160	177	√

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试样型号和规格：Type and size:	ACSR/GA2 Bobolink		检验编号：Reference No.:	MT2015-0231-A	
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
5.2	伸长率（L_0=250mm） Elongation（L_0=250mm）				
5.2.1	平均值 Average of a lot	%	≥2.1	2.3	√
5.2.2	最小值 Individual test	%	≥2.0	2.2	√
5.3	20℃时体积电阻率 DC resistivity at 20℃				
5.3.1	平均值 Average of a lot	Ω·mm²/m	≤0.028172	0.027980	√
5.3.2	最大值 Individual test	Ω·mm²/m	≤0.028265	0.028012	√
5.4	弯曲性能（1d 卷绕） Bending properties(1d, wrapping)	—	不应有断裂发生 No fracture shall occur	未断裂 No fracture	√
6	绞线单位长度质量 Mass per unit length	kg/km	2397.2±47.9	2372.2	√
7	20℃时绞线电阻 Resistance of the conductor at 20℃	Ω/km	—	0.03846	实测值 Measured value
8	绞线综合拉断力 Breaking strength of the conductor	kN	≥161.9 （170.4×0.95）	#1 186.1 #2 183.7 #3 182.9	√ √ √
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
	——以下空白—— ——End of report——				

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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

CNAS 检 测 CNAS L0206

检 验 报 告
Test Report

一．试件：

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/GA2 Bobolink

Type and size: ACSR/GA2 Bobolink

结构： 铝线 45/4.529；
钢线 7/3.020

Structure: Aluminum wires 45/4.529;
Steel wires 7/3.020

外径： 36.25mm

Diameter:36.25mm

总截面积： 775.0mm^2

Total cross sectional area: 775.0mm^2

计算拉断力： 170.4 kN

Rated Strength: 170.4 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.

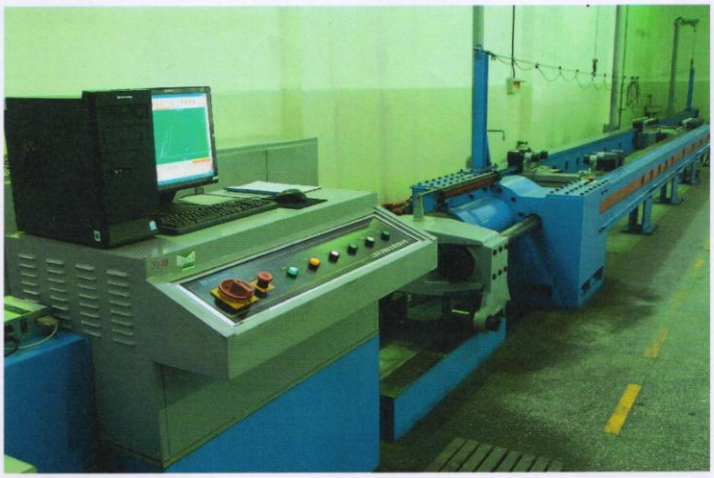

图 1-1 500kN 卧式拉力试验机

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： 12m

Effective length of specimen: 12m

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±1%

应变为±0.01mm/2m

Test accuracy: Stress: ±1%

Strain: ±0.01mm/2m

四. 试验结果：

Test results

1. 试样的最终弹性模量为 63.9 GPa；

The final modulus of elasticity of the specimen is 63.9 GPa;

2. 应力-应变后试样破断拉力为 174.9kN；

Breaking strength of the specimen after the stress-strain test is 174.9kN;

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.

应力-应变曲线 Stress-strain curves

试样型号和规格 Type and size	ACSR/GA2 Bobolink	检验编号 Test No.	MT2015-0231-A
钢芯铝绞线应力-应变曲线 Stress-strain curve of Aluminum conductors, steel-reinforced			
检验单位 Test unit	上海电缆研究所电工材料及特种线缆质量监督检验中心 QUALITY SUPERVISION AND TEST CENTER FOR ELECTRICAL MATERIALS AND SPECIAL WIRE AND CABLE OF SHANGHAI ELECTRIC CABLE RESEARCH INSTITUTE		
制造单位 Manufacture	郑州金源电线电缆有限公司 Zhengzhou Jinyuan Wire and Cable Co., Ltd.		
检验日期 Date of Testing	2015 年 3 月 3/2015		

结构 Construct		截面积 (mm^2) Section area	
铝线 Al wires	45/4.50	铝线 Al wires	724.9
钢线 Steel wires	7/3.020	钢线 Steel wires	50.1
		总 Total	775.0