科莱德

PRODUCRT MANUAL
产品手册

常州科莱德电线电缆有限公司

地址:常州市金坛区经济开发区华丰路102号

Address: NO. 102, Huafeng Road, Economic Development Zone,
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常州科莱德电线电缆有限公司
CHANGZHOU CLAD WIRE & CABLE CO., LTD

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常州科莱德电线电缆有限公司位于常州金坛经济开发区。公司主要生产铜包钢系列产品。自成立以来，从健全制度、营造企业文化做起，为员工搭建可持续发展平台，鼓励员工和公司共同成长。公司注重产品质量管理体系的运行和维护，事前、事中和事后质量控制，和技术创新，以过硬的产品质量，快速的交期，和专业的服务，已经并正在赢得国内外众多用户的信赖。希望和广大商业合作伙伴、用户、和各专业人才共商合作，共谋发展。

Changzhou Clad Wire & Cable Co., Ltd. is located in Jintan Economic Development Zone, Changzhou City. The company mainly produces copper-clad steel series products. Since its establishment, it has built a sustainable development platform for employees by adopting a sound system and a carefully selected corporate culture, encouraging employees and the company to grow together. The company pays attention to the running and maintaining product quality management system, before, during and after quality control,and technological innovation. With excellent product quality, fast delivery, and professional services, it has been and is winning the trust of many users domestic and abroad. Hope to cooperate with new and old business partners, users, and professionals, and to seek common development.

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01 铜包钢单线
Copper Clad Steel Wire

执行标准 Standards

ASTM B452、 ASTM B227、 ASTM B869
ASTM B910 / B910M、BS4087、ST11411

优点 Advantage

1. 包覆法工艺生产的铜包钢线无污染。
2. 高强度：适用于大跨越的架空输电线路。
3. 重量轻：相同规格的铜包钢线长度大于铜线。
4. 衰减小：线膨胀系数小、耐温性好、成本低。

1. The copper clad steel wire by cladding is no pollution.
2. High tensile strength: this kind of wire is suitable for overhead transmission lines.
3. Light weight: The length of the copper clad steel wire is bigger than the pure copper wire for the same specification.
4. Low loss: small linear expansion coefficient, good temperature endurance, low cost.

应用领域 Application

电话入户线、被复线
同轴电缆(CATV线)、输电、通信架空线
网络电缆、计算机电缆
电子元器件插接线、载流承力索
屏蔽地网、汽车用电缆
高温导线

Telephone wire,
CATV cable, Electrical power Communication overhead wire,
Internet Cable, Computer Cable,
Electronics contact fittings,
Shielded line of electric power cable,
High temperature conductor

状态级别(以ASTM标准为例) Standard

21A、21HS——导电率为21%的退火和高强度铜包钢线
30A、30HS、30EHS——导电率为30%的退火、高强度和超高强度铜包钢线
40A、40HS、40EHS——导电率为40%的退火、高强度和超高强度铜包钢线
70A——导电率为70%的退火铜包钢线
21A, 21Hs——Annealed, High Strength, 21% Conductivity
30A, 30HS, 30EHS——Annealed, High and Extra High Strength, 30% Conductivity
40A, 40HS, 40EHS——Annealed, High and Extra High Strength, 40% Conductivity
70A——Annealed, 70% Conductivity

产品范围 The Range of Product

本公司采用包覆焊接法生产的铜包钢线范围 ϕ0.05～ ϕ5.2mm，可根据用户要求生产特殊的铜包钢线
CCS made by clad-welding method, the range of CCS we can produce is 0.05-5.2mm, and we can also produce as customer’s requirements.

铜包钢线电阻率和密度
The Resistivity And Density Of Copper Clad Steel Wire

线的级别 Type	最大电阻率Ω · mm²/m (在20℃时) Max Resistivity At 20℃	20℃时密度g/cm³ Density At 20℃
21A、21HS	0.08210	7.98
30A、30HS、30EHS	0.058616	8.15
40A、30HS、30EHS	0.043970	8.24
70A	0.026524	8.58

铜包钢线最小铜层厚度
Min. copper thickness of copper clad steel wire

线的级别 Type	最小铜层厚度%直径 Min Copper Thickness% mm
21A、21HS	1.5
30A、30HS、30EHS	3
40A、30HS、30EHS	5.0
70A	15.0

电子产品用铜包钢线抗拉强度和伸长率要求
Requirements for Tensile Strength And Elongation Of Copper Clad Steel Wire For Electronic Products

ASTM B452

直径 Dia mm	截面积 Sectional Area mm²	抗拉强度 Tensile Strength Mpa				最小伸长率% (250mm) Min Elongation Lo=250mm	
		30HS	30A	40HS	40A	30HS、40HS	30A、40A
1.83	2.63	875	345	758	310	1.5	15
1.63	2.08	875	345	758	310	1.5	15
1.45	1.65	875	345	758	310	1.5	15
1.29	1.31	875	345	758	310	1.5	15
1.15	1.04	875	345	758	310	1.5	15
1.02	0.823	875	345	758	310	1.0	15
0.912	0.653	875	345	758	310	1.0	15
0.813	0.519	875	345	758	310	1.0	15
0.724	0.412	875	380	758	345	1.0	15
0.643	0.324	875	380	758	345	1.0	15
0.574	0.259	875	380	758	345	1.0	15
0.511	0.205	875	380	758	345	1.0	10
0.455	0.162	875	380	758	345	1.0	10
0.404	0.128	875	380	758	345	1.0	10
0.361	0.102	875	380	758	310	1.0	10
0.320	0.0804	875	380	758	345	1.0	10
0.287	0.0647	875	380	758	345	1.0	10
0.254	0.0507	875	380	758	345	1.0	10
0.226	0.0401	875	380	758	345	1.0	10
0.203	0.0324	875	380	758	345	1.0	10
0.180	0.0255	875	380	758	345	1.0	10
0.160	0.0201	875	380	758	345	1.0	10
0.142	0.159	875	380	758	345	1.0	10
0.127	0.0127	875	380	758	345	1.0	10
0.144	0.0103	875	380	758	345	1.0	10
0.102	0.00811	875	380	758	345	1.0	10
0.089	0.00621	875	380	758	345	1.0	10
0.079	0.00487	875	380	758	345	1.0	10

硬铜包钢线抗拉强度和电阻要求
Tensile Strength And Resistance Of Hardness Copper Clad Steel Wire

ASTM B227

直径 Dia mm	截面积 Sectional Area mm²	抗拉强度 Tensile Strength Mpa				20℃时最大直流电阻 Max D.C.Resistance At 20℃ Ω/km	
		40HS	40EHS	30HS	30EHS	40HS、40EHS	30HS、30EHS
5.189	21.15	745		828	983	2.1431	2.8568
4.620	16.77	780		863	1038	2.7032	3.6025
4.191	13.79	814		897	1088	3.2843	4.3801
4.115	13.30	814		897	1088	3.4057	4.5442
3.665	10.55	849		932	1132	4.2948	5.7253
3.264	8.37	883		966	1173	5.4169	7.2215
3.251	8.30	883		966	1173	5.4596	7.2773
2.906	6.63	918	1076	1001	1201	6.8343	9.1113
2.642	5.48	956		1042	1208	8.2714	11.0242
2.588	5.26	956		1042	1235	8.6126	11.4835
2.052	3.31	956		1042	1235	13.7999	18.3966
2.032	3.24	956		1042	1235	14.0821	18.7739
1.626	2.08	956		1042	1235	22.2157	29.6176
1.024	0.823	956		1042	1235	56.2035	174.9052
0.991	0.771	956		1042	1235	60.1079	80.1220
0.813	0.519	956		1042	1235	90.2931	120.3799

CATV引入线用铜包钢线
Applied In CATV

ASTM B869

标称直径 Nominal Dia	允许偏差 Tolerance	截面积 Sectional Area	20℃时最大直流电阻 Max D.C.Resistance At 20℃	破断力 Breaking Load	质量 Weight
mm	mm	mm²	Ω/km	N	Kg/km
1.628	0.015	2.082	40.1890	1722	16.52
1.450	0.015	1.652	50.7636	1366	13.47
1.290	0.013	1.307	64.0484	1081	10.40
1.151	0.013	1.039	80.7388	859	8.27
1.024	0.010	0.823	101.7897	681	6.71
0.813	0.008	0.519	161.2612	427	4.12
0.724	0.008	0.411	203.7731	334	3.35

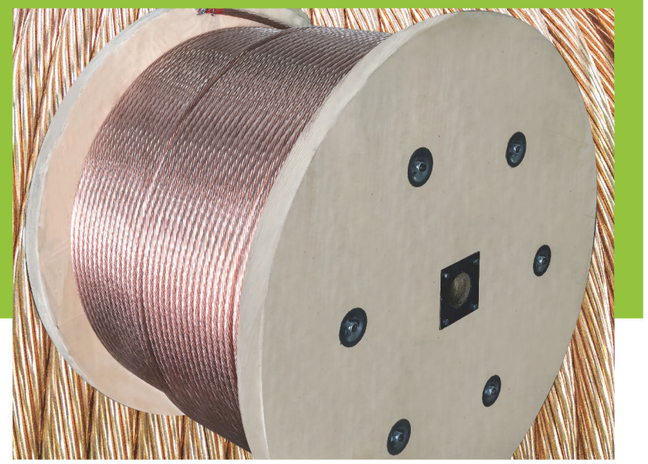
02 铜包钢绞线
Copper Clad Steel Strand Wire

执行标准 Standards

ASTM B228 ASTM B229

Conductivity: 导电率

21%IACS-45%IACS



用途 Application

广泛应用于电力传输线，电气化铁路承力索，防雷接地等领域。

It is widely applied in power transmission line, Electrified railway carrier cable, lightning protection earthing and other field.

优点 Advantages

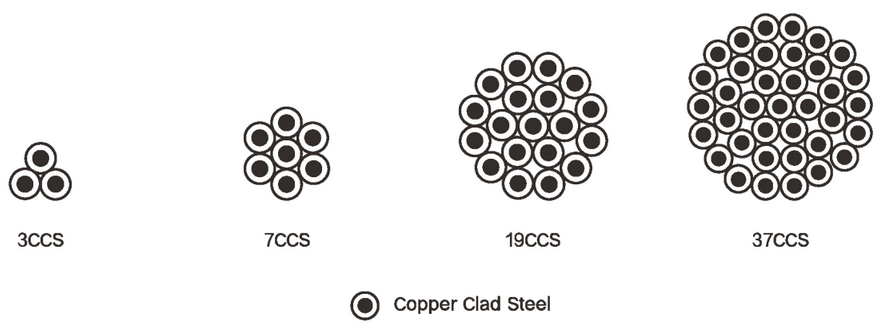
1. 电气性能更佳：铜包钢绞线表层为无氧铜，导电性能好，内层为优质碳素钢。

1. Better electrical performance: The surface layer of copper-clad steel strand is oxygen-free copper, which has good electrical conductivity. The inner layer is high-quality carbon steel.

剖面图 Profile

由纯铜层和钢芯组成。

It is composed of pure copper layer and steel core.



包装方式 Packing

熏蒸木盘、胶合板盘，我们可以根据客户的要求定制。

Wooden drum / Plywood drum, We can also produce the wire according to customer's requirement

铜包钢绞线 Copper Clad Steel Strand Wire

ASTM B228

标称截面 Nominal Sectional Area mm²	结构 股/直径 No/ dia mm	面积 Area mm²	额定破断力 Breaking Load kg			20℃时最大直流电阻 Max D.C.Resistance At 20℃ Ω/km		线质量 Weight Kg/km	
			40HS	30HS	30EHS	40%	30%	30%	40%
320	19/4.62	318.71	22788	25206	30350	0.1399	0.1865	2634.0	2660.8
250	19/4.12	252.71	18849	20788	25188	0.1764	0.2352	2087.9	2110.2
200	19/3.67	200.45	15599	17118	20797	0.2225	0.2966	1656.3	1674.2
160	19/3.26	158.97	12873	14079	17096	0.2805	0.3740	1313.6	1327.2
120	19/2.91	126.06	10609	11567	13884	0.3537	0.4715	1041.7	1052.6
150	7/5.19	148.06	10120	11240	13349	0.3000	0.4000	1218.7	1231.5
120	7/4.62	117.42	8396	9285	11181	0.3783	0.5043	966.41	976.53
90	7/4.12	93.871	6954	7661	9280	0.4771	0.6359	766.25	774.29
70	7/3.67	73.871	5747	6309	7661	0.6014	0.8019	608.06	614.46
60	7/3.26	58.561	4745	5189	6300	0.7586	1.0109	482.02	487.07
50	7/2.91	46.439	3908	4261	5116	0.9564	1.2750	382.16	386.18
35	7/2.59	36.826	3230	3519	4171	1.2061	1.6077	303.14	306.26
50	3/4.62	50.322	3798	4201	5380	0.8809	1.1743	413.41	417.73
40	3/4.12	39.903	3145	3465	4424	1.1106	1.4807	327.84	331.26
30	3/3.67	31.645	2600	2854	3593	1.4007	1.8672	259.98	262.66
25	3/3.26	25.097	2145	2347	2849	1.7662	2.3544	206.11	208.34
20	3/2.91	19.903	1768	1928	2326	2.2271	2.9690	163.55	165.19
15	3/2.59	15.781	1461	1592	1887	2.8082	3.7436	129.62	130.99
10	3/2.05	9.929	1014			4.4654		81.55	82.414

03 镀锡铜包钢线 Tin-coated Copper Clad Steel Wire

执行标准 Standards

ASTM B520、 SJ / T 2421

镀锡线的性能 Properties Of Tin Plated Wire

标称直径 Nominal Dia	允许偏差 Tolerance	直流电阻20℃ D.C. Resistance at 20℃	导电率 Conductivity	拉断力 Breaking Load	延伸率 Ductility
mm	mm	Ω/km	%	N	%
0.10	±0.003	≤5.5984	40%	≥6.5	≥1
0.12	±0.003	≤3.8878	40%	≥9.4	≥1
0.16	±0.003	≤2.1869	40%	≥16.7	≥1
0.203	±0.003	≤1.3585	40%	≥24.0	≥1
0.24	±0.006	≤1.0000	40%	≥48.0	≥1
0.65	±0.006	≤0.13251	40%	≥252	≥1
0.81	±0.006	≤0.08533	40%	≥391	≥1

注：这是有代表性的用户标准，锡层厚度为1μm左右。

Note: This is a representative user standard. The thickness of tin layer is about 1μM.

04 镀银铜包钢线 Silver-coated Copper Clad Steel Wire

执行标准 Standards

ASTM B501

可按用户要求生产 Can be produced according to user requirements

镀银铜包钢线的性能 Properties Of Silver Plated Copper Clad Steel Wire

ASTM B501

直径 Dia mm	截面积 Sectional Area mm²	银层厚度 Thickness of Silver μm				
		1.25%	2.5%	4.0%	6.1%	8.0%
1.829	2.63	4.47	8.94	14.45	22.25	29.41
1.628	2.08	3.96	7.59	12.88	19.79	26.91
1.450	1.65	3.53	7.09	11.46	17.63	23.32
1.290	1.31	3.15	6.30	10.19	15.70	20.75
1.151	1.04	2.82	5.64	9.09	14.00	18.49
1.024	0.823	2.49	5.00	8.08	12.45	16.46
0.912	0.653	2.24	4.47	7.21	11.10	14.66
0.813	0.519	1.98	3.96	6.43	9.88	13.08
0.724	0.412	1.78	3.53	5.72	8.81	11.63
0.643	0.324	1.57	3.15	5.08	7.82	10.34
0.574	0.259	1.40	2.82	4.55	6.99	9.22
0.511	0.205	1.24	2.49	4.04	6.20	8.20
0.455	0.162	1.12	2.24	3.58	5.54	7.32
0.404	0.128	0.99	1.98	3.20	4.90	6.50
0.361	0.102	0.89	1.75	2.84	4.39	5.79
0.320	0.0804	0.79	1.57	2.54	3.89	5.16
0.287	0.0647	0.71	1.40	2.26	3.48	4.62
0.254	0.0507	0.61	1.24	2.01	3.10	4.09
0.226	0.0401	0.56	1.12	1.78	2.74	3.63
0.203	0.0324		0.99	1.60	2.46	3.28
0.180	0.0255		0.89	1.42	2.18	2.90
0.160	0.0201		0.79	1.27	1.96	2.57
0.142	0.0159		0.66	1.12	1.73	2.29
0.127	0.0127		0.61	1.02	1.55	2.03
0.114	0.0103		0.56	0.91	1.40	1.83
0.102	0.00811			0.81	1.24	1.63
0.089	0.00621			0.71	1.09	1.42
0.079	0.00487			0.61	0.97	1.27

05 镀锡圆铜线 Tinned Round Copper Wire

执行标准 Standards

GB/T4910

用途 Application

用于制造电线电缆及电器制品用的镀锡圆铜线。

Used in the manufacture of wire and cable and electrical products with tin plating round copper wire.

镀锡圆铜线的性能 Tinned Round Copper Wire Performance

标称直径 Nominal Dia mm	偏差 Tolerance mm		伸长率（最小值）/ % Elongation (Min)	电阻率 ρ 20（最大值）/（Ω.mm²/m) Resistivity (Max)	
				TXR	TXRH
0.05<d≤0.09	+0.006	−0.003	6	0.01851	0.01851
0.09<d≤0.125	+0.006	−0.003	12	0.01802	0.01831
0.125<d≤0.25	+0.010	−0.004	12	0.01802	0.01831
0.25<d≤0.40	+0.010	−0.004	15	0.01770	0.01793
0.40<d≤0.50	+2%d	−1%d	15	0.01770	0.01793
0.50<d≤2.00	+2%d	−1%d	20	0.01760	0.01775
2.00<d≤4.00	+2%d	−1%d	25	0.01760	0.01775

06 认证证书 Certificate

职业健康安全管理体系认证证书

编号：37121S0011R0S

兹 证 明

常州科莱德电线电缆有限公司

统一社会信用代码：91320413MA21N8ED4Y

地址：常州市金坛区经济开发区华丰路 102 号(213300)

职业健康安全管理体系符合
GB/T45001-2020/ISO 45001:2018 标准
该管理体系覆盖范围
金属材料（铜包钢、铜包钢绞线）
（有生产许可证要求的除外）的生产
所涉及的相关职业健康安全管理活动

初次颁证日期：2021 年 01 月 21 日
本次换证日期：2021 年 01 月 21 日
证书有效期至：2024 年 01 月 20 日

注：自获得本证书之日起组织必须定期接受监督审核，合格后此证书方可继续有效。

签发人：

认证机构盖章

思平认证服务（上海）有限公司

Quality Management System Certification

Certificate NO: 37121Q0013R0S

This Proof

CHANG ZHOU CLAD WIRE &CABLE CO.,LTD

Unified social credit code: 91320413MA21N8ED4Y

Address:No. 102, Huafeng Road, Economy Development Zone, JinTan District,Changzhou City(213300)

Quality Management System
is in conformity with
GB/T19001-2016/ISO9001:2015 Standard
The scope of certification covers
Manufacture of metal material (Copper clad steel single wire, copper clad steel stranded conductor), except for which needs production license

Date of Issue: Jan 21, 2021
Date of Renew: Jan 21, 2021
Date of Expiry: Jan 20, 2024

Note: From the date of this certificate,the organization shall accept the supervision and audit regularly,after qualified, the certificate can continue to be effective.

General Manager:

SIPING Certification Service(Shanghai) Co.,Ltd

质量管理体系认证证书

编号：37121Q0013R0S

兹 证 明

常州科莱德电线电缆有限公司

统一社会信用代码：91320413MA21N8ED4Y

地址：常州市金坛区经济开发区华丰路 102 号(213300)

质量管理体系符合
GB/T19001-2016/ISO9001:2015 标准
该管理体系覆盖范围
金属材料（铜包钢、铜包钢绞线）的生产
（有生产许可证要求的除外）

初次颁证日期：2021 年 01 月 21 日
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签发人：

认证机构盖章

思平认证服务（上海）有限公司

Occupational Health Safety Management System Certification

Certificate NO: 37121S0011R0S

This Proof

CHANG ZHOU CLAD WIRE &CABLE CO.,LTD

Unified social credit code: 91320413MA21N8ED4Y

Address:No. 102, Huafeng Road, Economy Development Zone, JinTan District,Changzhou City(213300)

Occupational Health Safety Management System
is in conformity with
GB/T45001-2020/ISO 45001:2018 Standard
The scope of certification covers
Relevant occupational health and safety management activities related to manufacture of metal material (Copper clad steel single wire, copper clad steel stranded conductor), except for which needs production license

Date of Issue: Jan 21, 2021
Date of Renew: Jan 21, 2021
Date of Expiry: Jan 20, 2024

Note: From the date of this certificate,the organization shall accept the supervision and audit regularly,after qualified, the certificate can continue to be effective.

General Manager:

SIPING Certification Service(Shanghai) Co.,Ltd

07 产品一览 List of products