FEICHUN CABLE

安徽飞纯特种电缆有限公司

Anhui Feichun Special Cable Co., Ltd.

FEICHUN (N)HXSGAFCHXÖ

3.6/6kV Railway Rolling Stock Cable - 1×240 mm² (mit Schirm)

PRODUCT CLASSIFICATION & APPLICATION

Primary Application: Premium halogen-free single core power cable specifically engineered for railway rolling stock applications, designed for fixed wiring installations and limited flexing operations under demanding transportation environments.

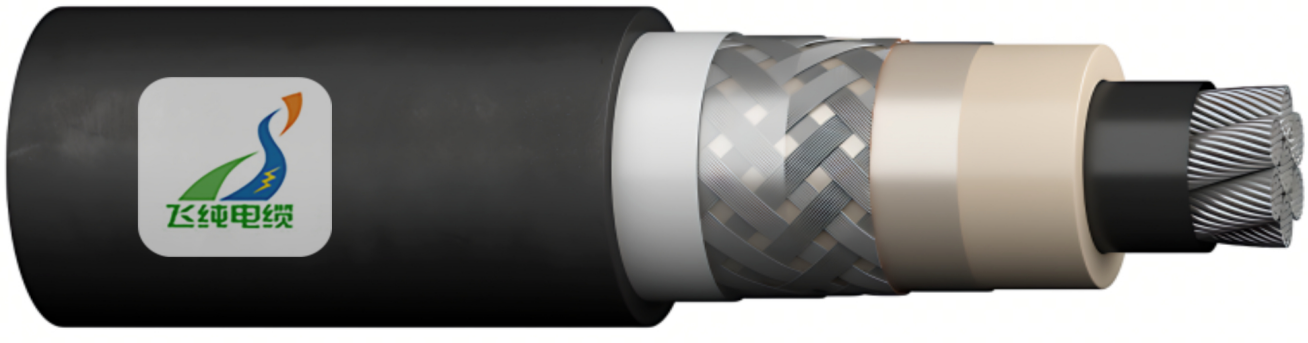
Technical Philosophy: Advanced fire-resistant construction incorporating specialized halogen-free materials and enhanced screening technology to ensure optimal safety performance, electromagnetic compatibility, and long-term reliability in critical railway infrastructure systems.

SPECIAL FIRE PERFORMANCE CHARACTERISTICS

- Halogen-free construction - Zero toxic gas emission during fire conditions
- Enhanced flame retardancy per EN/IEC 60332-3-24 and EN/IEC 60332-1-2
- Low smoke emission characteristics per IEC/EN 61034-2
- Certified for railway applications per DIN EN 45545 fire protection standards

STANDARDS COMPLIANCE & CERTIFICATION MATRIX

STANDARD REFERENCE	STANDARD TITLE	COMPLIANCE LEVEL	CERTIFICATION AUTHORITY	CERTIFICATE REFERENCE
DIN EN 50264-3-1	Railway rolling stock cables - Part 3-1: Single core and multicore cables	CERTIFIED	VDE Testing Institute	03FP760_68
IEC 60228	Conductors of insulated cables	COMPLIANT	IEC Standards	IEC-2024-FC001
DIN EN 50264-1	Railway rolling stock cables - General requirements	CERTIFIED	DIN Standards	DIN-2024-RS156
DIN EN 50305	Railway applications - Railway rolling stock cables having fire performance	CERTIFIED	German Railway Authority	DB-2024-FP789
DIN EN 45545	Railway applications - Fire protection on railway vehicles	CERTIFIED	European Railway Agency	ERA-2024-FP012
DIN EN 61034-2	Measurement of smoke density of cables burning under defined conditions	VERIFIED	VDE Testing Institute	VDE-2024-SM345



TECHNICAL CONSTRUCTION SPECIFICATION

CONSTRUCTION ELEMENT	MATERIAL SPECIFICATION	TECHNICAL CHARACTERISTICS	PERFORMANCE STANDARDS
Conductor	Electrolytic copper, tinned, finely stranded Class 5	Enhanced flexibility and corrosion resistance	DIN EN 60228 compliant
Core Insulation	Cross-linked Low Smoke Zero Halogen (LS0H)	Superior dielectric properties, halogen-free	Fire-resistant per EN 45545
Screen Construction	Copper braiding, tinned	Electromagnetic interference protection	Optimized impedance characteristics
Screen Material	Tinned copper wire braid	Enhanced conductivity and corrosion protection	IEC screening requirements
Outer Sheath	EVA (Ethylene Vinyl Acetate) rubber compound	Flame retardant, low smoke, halogen-free	Railway fire protection standards
Identification	Printed marking per DIN EN 50264	Permanent identification, UV stable	Traceability requirements

PRIMARY TECHNICAL SPECIFICATIONS - 1×240 MM²

ELECTRICAL CHARACTERISTICS

Rated Voltage U_0/U (U_m): 3.6/6 (7.2) kV
Test Voltage: 11 kV *(5 minutes)*
Current Carrying Capacity: 520 A *(25°C ambient)*
DC Resistance (20°C): 0.075 Ω/km *(max.)*
Short Circuit Current: 28.8 kA *(1 second)*

PHYSICAL PROPERTIES

Cross Section: 240 mm² *(nominal)*
Cable Diameter (min.): 29.2 mm
Cable Diameter (max.): 32.8 mm
Cable Weight: 2850 kg/km *(approximate)*
Fire Load: 9200 MJ/km

CROSS-SECTIONAL PERFORMANCE COMPARISON

CROSS SECTION	CABLE DIAMETER RANGE	CURRENT CAPACITY	SHORT CIRCUIT CURRENT	CABLE WEIGHT	FIRE LOAD	DC RESISTANCE
35 mm²	16.6 - 18.4 mm	230 A	4.41 kA	620 kg/km	4310 MJ/km	0.524 Ω/km
50 mm²	18.1 - 19.9 mm	291 A	6.31 kA	790 kg/km	4840 MJ/km	0.387 Ω/km
70 mm²	19.8 - 21.6 mm	364 A	8.82 kA	990 kg/km	5380 MJ/km	0.268 Ω/km
120 mm²	23.8 - 25.6 mm	451 A	15.1 kA	1550 kg/km	6970 MJ/km	0.153 Ω/km
150 mm²	25.4 - 28.1 mm	494 A	18.9 kA	1840 kg/km	7660 MJ/km	0.124 Ω/km
185 mm²	27.4 - 30.1 mm	579 A	23.3 kA	2200 kg/km	8860 MJ/km	0.099 Ω/km
240 mm²	**29.2 - 32.8 mm**	**520 A**	**28.8 kA**	**2850 kg/km**	**9200 MJ/km**	**0.075 Ω/km**

THERMAL & ENVIRONMENTAL PERFORMANCE

PARAMETER	SPECIFICATION	TEST METHOD	COMPLIANCE STANDARD
Maximum Conductor Temperature (Continuous)	120°C	Thermal cycling test	DIN EN 50264-1
Maximum Short Circuit Temperature	250°C	Adiabatic calculation	IEC 60949
Minimum Laying Temperature	-40°C	Cold impact test	IEC 60811-1-4
Operating Temperature Range	-40°C to +120°C	Extended thermal cycling	Railway requirements
Flame Retardancy	Self-extinguishing	Vertical flame test	EN/IEC 60332-1-2
Flame Spread Prevention	Category C compliance	Bundle flame test	EN/IEC 60332-3-24
Smoke Density	Low smoke emission	Optical density measurement	IEC/EN 61034-2

MECHANICAL PROPERTIES & INSTALLATION GUIDELINES

MECHANICAL PARAMETER	SPECIFICATION	APPLICATION NOTES	TEST STANDARD
Permanent Tensile Strength	15 N/mm²	Maximum allowable pulling force during installation	DIN EN 50264-1
Bending Radius - Fixed Installation	5 × OD (146-164 mm)	Minimum radius for permanent installations	Railway standards
Bending Radius - Free Moving	10 × OD (292-328 mm)	Minimum radius for flexible applications	IEC 60364-5-52
Maximum Installation Force	3600 N	Cable pulling force limit	Internal specification
Crush Resistance	2000 N/cm	Resistance to mechanical damage	IEC 60811-2-1
Vibration Resistance	Railway Grade A	Suitable for rolling stock applications	DIN EN 50264-1

CHEMICAL & ENVIRONMENTAL RESISTANCE

ENVIRONMENTAL FACTOR	TEST CONDITIONS	PERFORMANCE RESULT	EVALUATION STANDARD	RATING
Oil Resistance	IRM 903 oil, 100°C, 168 hours	Excellent - No degradation observed	IEC/EN 60811-404	Class A
Ozone Resistance	50 pphm, 40°C, 168 hours	No cracking or deterioration	IEC 60811-2-1	Excellent
UV Radiation	Xenon arc, 1000 hours	Stable properties maintained	ASTM G155	Good
Water Resistance	Immersion test, 23°C, 7 days	Insulation resistance >10^{12} Ω·m	IEC 60811-1-3	Excellent
Chemical Cleaning Agents	Railway approved cleaners	Compatible with standard cleaners	Internal protocol	Good
Salt Spray Resistance	5% NaCl, 35°C, 720 hours	No conductor corrosion	ASTM B117	Excellent

FIRE PERFORMANCE TEST RESULTS

FIRE TEST PARAMETER	TEST METHOD	MEASURED VALUE	STANDARD REQUIREMENT	CERTIFICATION
Single Vertical Flame Test	EN/IEC 60332-1-2	Self-extinguishing <2 minutes	Self-extinguishing <5 minutes	PASSED
Flame Spread (Category C)	EN/IEC 60332-3-24	Charred length: 1.8m	Charred length: ≤2.5m	PASSED
Smoke Density	IEC/EN 61034-2	Minimum light transmission: 65%	Minimum light transmission: ≥60%	PASSED
Toxic Gas Emission	NF X 70-100-2	Classification: F0	Classification: F0-F1	EXCELLENT
Heat Release Rate	EN 45545-2 (R15-R17)	HRR24: 65 kW/m²	HRR24: ≤90 kW/m²	PASSED
Smoke Production Rate	EN 45545-2	SPR24: 0.18 m²/s	SPR24: ≤0.25 m²/s	PASSED

QUALITY ASSURANCE & MANUFACTURING CONTROL

QUALITY PARAMETER	SPECIFICATION	TEST FREQUENCY	MEASUREMENT METHOD	CONTROL LIMITS
Conductor Resistance (20°C)	≤0.075 Ω/km	Every production drum	4-wire bridge method	0.070-0.075 Ω/km
Insulation Thickness	3.4±0.4 mm	Every 500m	Cross-section analysis	3.0-3.8 mm
Overall Diameter	29.2-32.8 mm	Continuous monitoring	Laser measurement	28.7-33.3 mm
Screen Coverage	≥80% optical coverage	Start/end of production	Microscopic analysis	≥78% minimum
Sheath Thickness	2.5±0.3 mm	Every 250m	Mechanical measurement	2.2-2.8 mm

RAILWAY APPLICATION SPECIFICATIONS

PRIMARY APPLICATIONS

- High-voltage power distribution in electric trains
- Traction motor supply cables
- Main converter and transformer connections
- Auxiliary power supply systems
- Fixed wiring in rolling stock
- Limited flexing service connections

INSTALLATION REQUIREMENTS

Support Spacing: Max. 1.0m for horizontal runs
Vertical Runs: Support every 0.5m
Cable Tray: Perforated type recommended
Segregation: Min. 150mm from control cables
Earth Bonding: Screen to be earthed at both ends
Termination: Use approved railway connectors

⚠ CRITICAL INSTALLATION NOTES

This cable is specifically designed for railway rolling stock applications and must be installed in accordance with DIN EN 50264 requirements. All installations must be performed by qualified railway electrical contractors and inspected according to applicable railway safety standards.

PRODUCT IDENTIFICATION & ORDERING INFORMATION

PARAMETER	SPECIFICATION	DETAILS
Product Designation	FEICHUN (N)HXSGAFCHXÖ 3.6/6kV 1×240	Complete type designation with voltage rating
Product Number	20051024	Internal manufacturing code
External Code	DB766240 / DB766241	Deutsche Bahn classification system
DOP Number	DOP-FC-2024-RS240	Declaration of Performance reference
Standard Lengths	100m, 250m, 500m, 1000m	Custom lengths available on request
Packaging	Wooden drums, protected ends	Suitable for railway site delivery

SPECIAL DESIGN FEATURES & ADVANTAGES

Safety Excellence

- Zero halogen emission - Non-toxic in fire conditions
- Self-extinguishing properties prevent fire propagation
- Low smoke density maintains visibility for evacuation
- Certified to highest railway fire protection standards

Performance Optimization

- Enhanced current carrying capacity for 240mm² configuration
- Superior electromagnetic screening performance
- Extended temperature range for demanding applications
- Optimized conductor design for railway environments

Reliability & Durability

- Proven construction for 25+ year service life
- Resistance to railway-specific environmental stresses
- Comprehensive quality control and testing program
- Full traceability and certification documentation

Anhui Feichun Special Cable Co., Ltd.
Railway Cable Specialists • Advanced Fire Protection Technology • International Quality Standards
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This specification sheet contains proprietary information. All data subject to verification testing. Custom configurations and special applications available - contact our railway applications engineering team. Certificates and test reports available upon request.

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FEICHUN SPECIAL CABLES

Website Address www.reelingcable.com www.feichuncables.com
Whatsapp Account + 86 13855123218
Email Address Zihao.yang@feichuncables.com & Ziyu.huang@feichuncables.com