FEICHUN CABLE

Anhui Feichun Special Cable Co., Ltd.

安徽飞纯特种电缆有限公司

TECHNICAL SPECIFICATION DATASHEET

NSHXAFO 1×70 mm² (1.8/3 kV)

Halogen-Free Transportation Cable

Advanced eco-friendly single-core cable engineered for transportation and industrial applications with zero halogen emissions and superior fire safety characteristics.

Product Overview & Applications

The FEICHUN NSHXAFO series represents cutting-edge halogen-free cable technology specifically engineered for transportation and industrial applications where environmental safety and fire performance are paramount. This advanced single-conductor cable delivers exceptional electrical performance while maintaining zero halogen content, making it ideal for confined spaces and applications requiring superior fire safety characteristics. The cable's robust construction ensures reliable operation in demanding transportation environments while contributing to environmental sustainability initiatives.

Primary Applications: Rail Transportation Systems (Trains, Trams, Metro), Automotive Applications (Buses, Electric Vehicles), Marine Vessels, Industrial Clutch Equipment, Control and Distribution Systems up to 1 kV, Underground Transportation Infrastructure, Airport Ground Support Equipment, and Specialized Industrial Machinery requiring halogen-free compliance and enhanced fire safety performance.

Standards Compliance & Certifications

Primary Standard
DIN VDE 0250 Part 606

Conductor Standard
EN 60228, IEC 60228

Flame Propagation
IEC 60332-1-2

Halogen-Free Material
EN 50267-1

Smoke Density
IEC 61034-1-2

Environmental
REACH/RoHS Compliant

General Product Specifications

Cable Designation
FEICHUN NSHXAFO

Conductor Configuration
1×70 mm² (Single Core)

Rated Voltage (U_0/U)
1.8/3 kV

Cable Shape
Round

Conductor Class

Class 5 per IEC 60228

Material Classification

Halogen-Free Compound

Advanced Design Construction

Halogen-Free Cable Construction

1. Multi-Stranded Conductor
2. Rubber Insulation (3G13)
3. Halogen-Free Outer Sheath (HM3)

High-Performance Conductor System

Premium multi-stranded annealed copper conductor manufactured to IEC 60228 Class 5 specifications, ensuring exceptional flexibility and conductivity characteristics. The 70 mm² cross-sectional area provides robust current carrying capacity for high-power single-phase applications. Advanced annealing process enhances conductor flexibility while maintaining optimal electrical properties for demanding transportation and industrial environments. Precision stranding technology ensures consistent electrical performance and mechanical durability.

Advanced Rubber Insulation Technology

High-performance extruded rubber compound conforming to 3G13 classification provides superior electrical insulation properties with enhanced mechanical characteristics. The insulation system is specifically formulated to deliver excellent dielectric strength while maintaining flexibility across the entire operating temperature range. Advanced compound formulation ensures long-term stability and resistance to environmental stresses commonly encountered in transportation applications.

Halogen-Free Outer Sheath System

Revolutionary extruded halogen-free rubber compound HM3 conforming to DIN VDE 0207 Part 24 specifications provides exceptional environmental performance without compromising mechanical properties. The zero-halogen formulation eliminates toxic gas emissions during fire conditions while maintaining superior abrasion resistance, chemical compatibility, and UV stability. This advanced sheath technology contributes to enhanced safety in confined spaces and environmentally sensitive applications.

Electrical Performance Parameters

Rated Voltage (U_0/U)

1.8/3 kV

Test Voltage

6 kV AC

Conductor Resistance (20°C)

≤ 0.268 Ω/km

Current Carrying Capacity

350 A (in air at 30°C)

Insulation Resistance

≥ 100 MΩ·km at 20°C

Dielectric Strength

≥ 15 kV/mm

Thermal & Environmental Specifications

Maximum Operating Temperature

+90°C

Minimum Operating Temperature

-40°C

Installation Temperature Range

-40°C to +90°C

Short Circuit Temperature

+200°C (conductor)

Flame Propagation

Self-extinguishing per IEC 60332-1-2

Smoke Emission

Low smoke density per IEC 61034

Mechanical Performance Characteristics

Minimum Bend Radius (Fixed)

6 × D (cable diameter)

Minimum Bend Radius (Flexible)

10 × D (cable diameter)

Tensile Strength

≥ 12 N/mm²

Impact Resistance

Excellent per transportation standards

Abrasion Resistance

Enhanced for mobile applications

Vibration Resistance

Superior for transportation use

Comprehensive Technical Data Tables

1×70 mm² - Physical Dimensions & Properties

Conductor Cross-Section (mm²)	Part Number	Overall Cable Diameter (mm)	Conductor Diameter (mm)	Sheath Thickness (mm)	Approximate Weight (kg/km)
1×70	FC-NSH-1801	20.8	11.8	4.5	895

Electrical Performance Parameters

Conductor Cross-Section (mm²)	DC Resistance 20°C (Ω/km)	AC Resistance 90°C (Ω/km)	Inductance (μH/m)	Capacitance (pF/m)	Current Rating[1] (A)
1×70	0.268	0.328	0.28	185	350

Mechanical & Installation Parameters

Conductor Cross-Section (mm²)	Min. Bend Radius Fixed (mm)	Min. Bend Radius Flexible (mm)	Maximum Tensile Force (N)	Short Circuit Current[2] (kA)	Service Life (years)
1×70	125	208	1,680	10.28	30

NSHXAFO Series - Comparative Analysis (1.8/3 kV)

Cross-Section (mm²)	Overall Diameter (mm)	Weight (kg/km)	Current Rating (A)	DC Resistance (Ω/km)	Bend Radius (mm)
1×1.5	7.1	62	30	12.10	43
1×2.5	7.6	72	41	7.41	46
1×6	9.6	125	70	3.08	58
1×10	11.2	185	98	1.83	67
1×16	13.1	258	132	1.15	79
1×25	15.2	405	176	0.727	91
1×35	16.7	485	218	0.524	100
1×50	18.2	645	276	0.387	109
1×70	**20.8**	**895**	**350**	**0.268**	**125**

Technical References:

[1] Current carrying capacity calculated for single conductor installation in air at 30°C ambient temperature according to applicable standards. Installation conditions may affect actual ratings.

[2] Short circuit current capability based on 1-second fault duration. Different fault durations and installation conditions require manufacturer consultation.

Note: All NSHXAFO series cables are halogen-free and comply with REACH/RoHS environmental regulations. Enhanced fire safety characteristics make them ideal for transportation applications.

Environmental & Fire Safety Performance

Halogen Content

Zero (0%) - Completely halogen-free

Smoke Density

Low emission per IEC 61034

Toxic Gas Emission

Minimal - Safe for confined spaces

Flame Retardancy

Self-extinguishing per IEC 60332-1-2

REACH Compliance

Full compliance - No SVHC substances

RoHS Compliance

Full compliance - Lead-free construction

Installation Guidelines: Installation must be performed by qualified personnel familiar with transportation cable systems. Ensure minimum bending radius requirements are maintained during installation. Verify compatibility with existing fire safety systems. Follow manufacturer's termination procedures for optimal performance and safety.

Quality Assurance & Testing Protocols

High Voltage Test

6 kV AC / 5 minutes

Insulation Resistance

≥ 100 MΩ·km at 20°C

Flame Propagation Test

Smoke Density Test

IEC 60332-1-2 certified

IEC 61034-1-2 compliant

Halogen Content Test

EN 50267-1 verified zero halogen

Manufacturing Quality

ISO 9001:2015 + ISO 14001:2015

Applications & Industry Advantages

The FEICHUN NSHXAFO 1×70 cable represents the pinnacle of environmental responsibility in transportation cable technology. Its halogen-free construction eliminates the risk of toxic gas emission during fire conditions, making it essential for passenger transportation systems, underground installations, and confined space applications. The cable's superior mechanical properties ensure reliable operation in the demanding vibration and movement conditions typical of transportation environments while contributing to sustainability goals through its environmentally responsible construction.

Key Industry Benefits

Environmental Safety

Zero halogen emissions protect passengers and environment

Fire Performance

Self-extinguishing with minimal smoke production

Transportation Optimized

Enhanced vibration and movement resistance

Regulatory Compliance

Meets stringent transportation safety standards