Tecnikabel

WHERE FUTURE FLOWS

# CABLES FOR

# NAV80 DEFENSE MARINE CABLES

DEFENSE SECTOR

## Introduction

Tecnikabel is a leading European manufacturer of high-performance special cables designed for a wide range of industrial and technical applications. The ongoing globalisation of supply chains has accelerated the evolution of the maritime sector, including the emergence of new non-European players. We are observing a steady increase in electrification on board, with growing demand for power, control and instrumentation systems.

Modern defence systems — naval, airborne and ground-based — demand cable solutions engineered to perform without compromise. Data transmission, radar, tactical countermeasures, surveillance and combat systems all rely on continuous, interference-free signal integrity in the most hostile operating conditions. Tecnikabel designs and manufactures copper and fibre-optic cables for the full range of defence applications, fully compliant with NATO, NAV and MIL standards. Each solution is developed in close collaboration with our partners' engineering teams, qualified through rigorous in-house testing for mechanical stress, extreme temperatures, vibration and electromagnetic interference. Our aeronautical laboratory is equipped to simulate real operational environments, as confirmed by our qualifications for the Eurofighter and Panavia consortia and our ongoing partnership with Leonardo. Precision, durability and mission-critical reliability — engineered into every cable we produce.

### OUR SECTORS

**TRANSPORTATION**

**AUTOMATION**

**TELECOMMUNICATION**

**DEFENSE**

**MARINE OIL & GAS**

**SUBSEA**



**BUILDING TECHNOLOGY**

**CUSTOM MADE**

In today's technological landscape, many applications demand performance and engineering characteristics that exceed standard cable solutions. When off-the-shelf products cannot meet extreme or unconventional requirements, our custom design capability becomes essential. Tecnikabel acts as a technical partner, developing and manufacturing highly specialised cables engineered for critical functions and challenging operating environments.

# Tecnikabel is focused on constant product innovation to get competitive advantages with endless commitment to research and development.

**PRODUCTION**
Updated production systems, rigorous process controls and skilled operators ensure an efficient, flexible and reliable manufacturing flow. Over nearly half a century of activity, we have engineered and produced more than 26,000 different cable configurations.

**FINAL INSPECTIONS**
At the end of every production cycle, each cable undergoes full electrical, optical and physical verification to ensure complete compliance with the customer's technical specifications.

**LABORATORY TESTS**
Our cables are subjected to demanding laboratory tests that replicate critical application conditions. Beyond the standard evaluations required by current regulations, we have developed dedicated equipment for mechanical, environmental, electrical and optical testing to validate performance in extreme scenarios.

**MATERIALS RESEARCH AND DEVELOPMENT**
With nearly fifty years of experience, we continue to research and develop advanced materials aimed at improving performance, optimising costs and meeting the evolving technical requirements of our customers.

**QUALITY SYSTEM**
Since 1978, our commitment to Quality has earned Tecnikabel recognition from major American and European authorities, ensuring compliance with the most rigorous international manufacturing and quality standards.

## Guaranteed excellence

# Tecnikabel's constant commitment to quality has earned recognition from leading American and European authorities, ensuring full compliance with the most demanding international manufacturing and quality standards.

COMPANY MANAGEMENT SYSTEM CERTIFICATION

PRODUCT CERTIFICATION

All cables in this sector are certified:

# Reliability you can trust

## Safety-driven cable innovation

**ADDRESSING NEW HOMOLOGATION REQUIREMENTS: EXTENDED FIRE DURATION**

Engineers are continuously designing powerful systems with extensive cabling infrastructures, where high-speed transmission protocols must handle massive volumes of data—including signals and images. These critical communication systems demand maximum stability and peak performance, utilizing both optical fiber and copper cables. Tecnikabel proactively meets the latest offshore and shipbuilding requirements set by homologation bodies. We ensure full-circuit integrity during fire scenarios, complying with IEC 60331 standards for an extended duration of up to 180 minutes. We transform these stringent technical challenges into reliable, future-ready solutions.

**GAS-TIGHT RESISTANCE FOR SAFER OPERATIONS IN EXPLOSIVE ENVIRONMENTS**

The demand for high-quality data connections between explosive areas and safe zones is growing. Gas-permeable cavities in cables can allow explosive mixtures to migrate to densely populated areas, making strict adherence to technical specifications essential. This need is increasingly important with the expanded use of LNG (Liquefied Natural Gas) for vessel propulsion, storage, and transportation. Tecnikabel, as a co-designer and problem solver, has developed a complete range of copper data cables specifically for such environments. These solutions comply with IEC 60079-14, meeting not only the mechanical, chemical, and thermal requirements for explosive areas but also the critical standards for gas migration. Our cables can therefore be installed in offshore applications without restrictions, providing the optimal solution for safety and reliability.

**ENHANCED CABLE PERFORMANCE FOR ARCTIC ENVIRONMENTS**

Our cable range is engineered for superior performance in extremely cold conditions. They are suitable for installation at temperatures down to –30 °C, with permanent operating capability as low as –62 °C. The performance of our TKSEA cables in Arctic conditions is validated through cold bend and cold impact tests, in accordance with the North American (Canadian) standard CSA 22/2. Through continuous innovation and proven reliability, Tecnikabel contributes significantly to enhancing safety and operational longevity on board ships and offshore structures worldwide.

**Passion flows through our cables**.

## Content index

**FIRE PERFORMANCE ..... 8**
STD. REF. NAV-80-6145-0003-14-01B000 ..... 11
TK - TYPE UG-N - SPECIFICATION SHEET N. 01 ..... 12
TK - TYPE UG-S - SPECIFICATION SHEET N. 02 ..... 14
TK - TYPE CG-S - SPECIFICATION SHEET N. 03 ..... 15
TK - TYPE TG-S - SPECIFICATION SHEET N. 04 ..... 16
TK - TYPE FN 02 - SPECIFICATION SHEET N. 05 ..... 17
TK - TYPE FN 02 - SPECIFICATION SHEET N. 05 ..... 18
TK - TYPE FN 03 - SPECIFICATION SHEET N. 06 ..... 19
TK - TYPE FN 04 - SPECIFICATION SHEET N. 07 ..... 21
TK - TYPE UN-N - SPECIFICATION SHEET N. 08 ..... 23
TK - TYPE UN-O - SPECIFICATION SHEET N. 09 ..... 25
TK - TYPE UN-A - SPECIFICATION SHEET N. 10 ..... 27
TK - TYPE UN-A - SPECIFICATION SHEET N. 11 ..... 28
TK - TYPE US-A - SPECIFICATION SHEET N. 12 ..... 30
TK - TYPE CN-N - SPECIFICATION SHEET N. 13 ..... 31
TK - TYPE CN-O - SPECIFICATION SHEET N. 14 ..... 33
TK - TYPE US-A - SPECIFICATION SHEET N. 15 ..... 35
TK - TYPE CS-O - SPECIFICATION SHEET N. 16 ..... 36
TK - TYPE CS-A - SPECIFICATION SHEET N. 17 ..... 38
TK - TYPE TS-O - SPECIFICATION SHEET N. 18 ..... 39
TK - TYPE CS-A - SPECIFICATION SHEET N. 19 ..... 40
ANNEX A - DESIGNATION OF CABLES ..... 41
ANNEX A - DESIGNATION OF CABLES ..... 43
**STD. REF. NAV-80-6145-0006-13-01B000 ..... 45**
**STD. REF. NAV-80-6145-0005-13-01B000 ..... 48**
TK - TYPE NBT AND NG - SPECIFICATION SHEET N. 01 ..... 49
TK - TYPE NBTA AND NGA - SPECIFICATION SHEET NO. 02 ..... 51
TK - TYPE NVD AND NVD-S - SPECIFICATION SHEET N. 03 ..... 53
TTK - TYPE NVD/C - SPECIFICATION SHEET N. 3.1 ..... 55
TK - TYPE NVFD - SPECIFICATION SHEET N. 04 ..... 58
TK - TYPE NFO AND NFO-S - SPECIFICATION SHEET N. 05 ..... 60
TK - TYPE NSC - SPECIFICATION SHEET N. 06 ..... 62
TK - TYPE NCM - SPECIFICATION SHEET N. 07 ..... 63
TK - TYPE NST - SPECIFICATION SHEET N. 08 ..... 65
TK - TYPE NMV E NMV-VFD - SPECIFICATION SHEET N. 09 ..... 67

## Symbols index

### ENVIRONMENTAL PROPERTIES


FLAME RETARDANT SINGLE WIRE (IEC 60332-1-2)


FLAME RETARDANT BUNCHED WIRES (IEC 60332-3)


FIRE RESISTANCE (IEC 60331 – EN50200 - BS6387 CWZ)


REDUCED EMISSION OF FUMES AND HALOGEN ACID GASES (IEC 60754-1)


SMOKE DENSITY (IEC 61034-1/2)


LOW ACIDITY AND CORROSIVITY OF EVOLVED GASES (IEC 60754-2)


WEATHERING TEST RESISTANCE (OUTDOOR)


INDOOR


WATER RESISTANCE


RODENT RESISTANCE


HAZARDOUS AREA


DYNAMIC APPLICATION


FULLY DIELECTRIC


DIRECT BURIAL


BULLET PROOF


WORK AT LOW TEMPERATURE

### CHEMICAL PROPERTIES


MUD RESISTANCE


MINERAL OIL RESISTANCE


HYDROCARBONS RESISTANCE


ARCTIC TEMPERATURES

### MECHANICAL PROPERTIES


MECHANICAL RESISTANCE


REDUCED BENDING RADIUS

These images are for illustrative purposes.

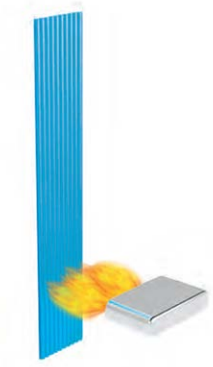
# FIRE PERFORMANCE

# International testing norms for fire-resistant cable performance

### IEC 60332-1-2 / EN 50265 / BS 4066

**FIRE PROPAGATION ON A VERTICAL SINGLE CABLE**

The single cable is mounted vertically and flamed with a Bunsen burner. The flame must extinguish itself, at least 50 mm below the upper fixing clamp. Power of burner, duration and angle of flame application, are described in the reference standards.

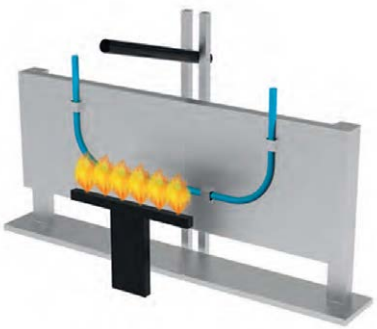


### IEC 60332-3 / EN 50266

**FIRE PROPAGATION ON A VERTICAL CABLES BUNDLE**

A certain number of cable samples are fixed on a 3.5 m long ladder, and flamed with an appropriate burner. The sample number, the duration of flame application, and the power/temperature of burner are described in the reference standards. After flame application, the visible area of fire damage must not exceed 2.5 m in height from the bottom of the burner.
The volume of tested material define a differentiation in categories:

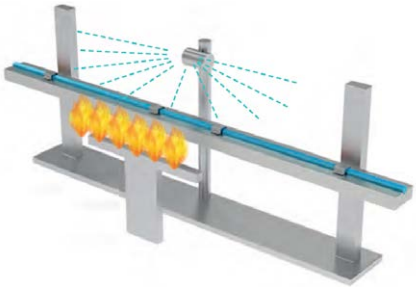
| | |
|---|---|
| A F/R Part 3-21 | 7 l/m |
| A Part 3-22 | 7 l/m |
| B Part 3-23 | 3.5 l/m |
| C Part 3-24 | 1.5 l/m |
| D Part 3-25 | 0.5 l/m |



### IEC 60331 / EN 50200

**FIRE RESISTANCE TEST**

A sample of cable is horizontally applied supported by metal rings, or in U shape fixed on a fireproof wall. Through using a gas burner the cable is maintained in flame contact for a certain time.
The test and the temperature of burner are described in the reference standards. In U shape test, the fireproof wall is hit every five minutes by a mechanical shock, to simulate a potential collapse during the fire.
The time of fire application, and the temperature of flame are described in the reference standards (typically 750 °C or 830 °C). The optical transmission of the fibers is checked and the change in attenuation is recorded during the test. and 15 minutes after flame extinction.



### BS 6387 Category CWZ

**FIRE RESISTANCE PROTOCOLS**

The full test consists of subjecting the cable to 3 different protocols:

**C**: a flame with a temperature attack of 950 °C is applied to the cable

**W**: a flame with a temperature attack of 650 °C is applied to the cable together with water simulating a sprinkler system

**Z**: a flame with a temperature attack of 950 °C is applied to the cable together with mechanical shock.

### IEC 61034-1/2 - EN 50268-1/2

**MEASUREMENT OF SMOKE DENSITY OF CABLES BURNING UNDER DEFINED CONDITIONS**

The amount of smoke of a cable burnt in a cubic (3x3x3 m) chamber using a flammable liquid. The light transmittance of the resulting smoke is measured using an optical light meter. The test duration is 40 minutes. Depending on the quantity and composition of the liquid fuel. During the test the light transmittance of the smoke must be 60% minimum.

### BS 8434-2 2003 + A2 2009

**FIRE RESISTANCE TEST**

Test for unprotected small cables for use in emergency circuits. The fire resistance test is carried out according to BS 6387 and BS 8434-2. The test is based on the requirements of BS EN 50200 and includes mechanical shock and water spray. The cable is mounted on a vertical ladder and exposed to a flame of 830 °C. The test duration is 120 minutes.

The cable must continue to operate normally during the test.

The test is considered successful if the cable can supply power to emergency equipment safely for a 120 min duration.

### IEC 60754-2 - EN 50267-2-1

**TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES – MEASUREMENT OF AMOUNT OF HALOGEN ACID GAS**

The cable is burned in a tube with a constant stream of air. The combustion gases are collected in water. The amount of halogen acid gas is measured. The concentration of halogen acid gas must be less than 5 mg/g.

### IEC 60754-2 - EN 50267-2-2

**TEST ON GASES EVOLVED DURING COMBUSTION OF MATERIALS FROM CABLES – DETERMINATION OF ACIDITY (BY PH MEASUREMENT) AND CONDUCTIVITY**

A small quantity of cable is burned. In a furnace, the pH and conductivity combustion gases dissolved in water are measured.

The minimum pH value of the washing water must 4.3, and the maximum conductivity must be 10 µS/mm.

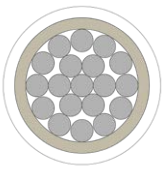
These images are for illustrative purposes.

# STD. REF. NAV-80-6145-0003-14-01B000

Technical specification for miniaturized and flexible electrical and electronic interconnection cables that are suitable for naval shipboard applications

# TK - TYPE UG-N - SPECIFICATION SHEET N. 01

Miniaturized and flexible single core unshielded electrical cable with low toxicity, for internal wiring of devices. Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compounds. Coded colours as per color guide tab A |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -45°C ÷ 105°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

## SPECIFICATION SHEET NO. 01

| Item n° | Designation | Cross-section mm² | Diameter cable mm | Max cable Weight kg/km |
|---|---|---|---|---|
| 225TK0301* | UG-N-0.35-* | 1 x 0.35 | 1.15 ÷ 1.35 | 5.5 |
| 230TK0301* | UG-N-0.50-* | 1 x 0.5 | 1.25 ÷ 1.45 | 6.5 |
| 240TK0301* | UG-N-1.0-* | 1 x 1 | 1.45 ÷ 1.80 | 11 |
| 245TK0301* | UG-N-1.5-* | 1 x 1.5 | 1.95 ÷ 2.30 | 19 |
| 255TK0301* | UG-N-2.5-* | 1 x 2.5 | 2.50 ÷ 2.85 | 30 |

| AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples: | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 212TK0601* | UG-N-26-* | 1 x 26 (0.15) | 0.80 ÷ 0.95 | 2.9 |
| 218TK0601* | UG-N-24-* | 1 x 24 (0.21) | 0.90 ÷ 1.05 | 3.5 |
| 224TK0601* | UG-N-22-* | 1 x 22 (0.33) | 1.05 ÷ 1.20 | 4.9 |
| 231TK0601* | UG-N-20-* | 1 x 20 (0.59) | 1.30 ÷ 1.50 | 7.6 |
| 238TK0601* | UG-N-18-* | 1 x 18 (0.93) | 1.55 ÷ 1.75 | 10.5 |
| 243TK0601* | UG-N-16-* | 1 x 16 (1.34) | 1.80 ÷ 2.00 | 16.5 |
| 250TK0601* | UG-N-14-* | 1 x 14 (1.82) | 2.15 ÷ 2.35 | 20.8 |
| 263TK0601* | UG-N-12-* | 1 x 12 (2.61) | 2.50 ÷ 2.70 | 27.3 |

Last digit (*) corresponding to tab A.

| **TAB A:** Insert the following number in the last digit of the item number, in place of *, for different vcolours | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

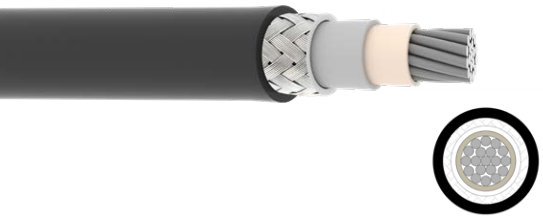
EXAMPLES OF DESIGNATIONS:

**The code UG-N-0.35-9 identifies a cable that has these properties:**

- Single core cable
- Unshielded
- Cross-section of the conductor 0.35 mm²
- White color (refer to color guide).
- The code UG-N-1.5-45 identifies a cable that has these properties:
- Single core cable
- Unshielded
- Cross-section of the conductor 1.50 mm²
- Yellow color with green stripe/ring

# TK - TYPE UG-S - SPECIFICATION SHEET N. 02

## Miniaturized and flexible shielded single core electrical cable, shielded with low toxicity, for internal wiring of devices. Cable for general use - 300/500 V



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|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

Example of designations: the code UG-S-0.35-9 identifies a single core cable, with section of 0.35 mm², with white primary insulation (refer to color guide).

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound. Coded colours as per color guide tab A |
| **Shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound, type S2 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

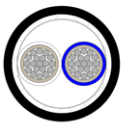
| SPECIFICATION SHEET NO. 02 | | | | |
|---|---|---|---|---|
| **Item n°** | **Designation** | **Cross-section mm²** | **Diameter cable mm** | **Max cable Weight kg/km** |
| 225TK0302* | UG-S-0.35-* | 1 x 0.35 | 2.10 ÷ 2.40 | 14 |
| 230TK0302* | UG-S-0.50-* | 1 x 0.5 | 2.20 ÷ 2.50 | 16 |
| 240TK0302* | UG-S-1.0-* | 1 x 1 | 2.50 ÷ 2.85 | 22 |
| 245TK0302* | UG-S-1.5-* | 1 x 1.5 | 3.00 ÷ 3.40 | 33 |
| 255TK0302* | UG-S-2.5-* | 1 x 2.5 | 3.45 ÷ 3.90 | 45 |

| AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples: | | | | |
|---|---|---|---|---|
| **Item n°** | **Designation** | **Cross-section AWG** | **Nominal Diameter cable mm** | **Nominal cable Weight kg/km** |
| 212TK0602* | UG-S-26-* | 1 x 26 (0.15) | 1.60 ÷ 1.80 | 7.6 |
| 218TK0602* | UG-S-24-* | 1 x 24 (0.21) | 1.70 ÷ 1.95 | 8.6 |
| 224TK0602* | UG-S-22-* | 1 x 22 (0.33) | 1.85 ÷ 2.10 | 10.7 |
| 231TK0602* | UG-S-20-* | 1 x 20 (0.59) | 2.10 ÷ 2.35 | 14.5 |
| 238TK0602* | UG-S-18-* | 1 x 18 (0.93) | 2.35 ÷ 2.65 | 18.4 |
| 243TK0602* | UG-S-16-* | 1 x 16 (1.34) | 2.60 ÷ 2.90 | 25.8 |
| 250TK0602* | UG-S-14-* | 1 x 14 (1.82) | 2.95 ÷ 3.25 | 31.5 |
| 263TK0602* | UG-S-12-* | 1 x 12 (2.61) | 3.30 ÷ 3.65 | 39.6 |

Last digit (*) corresponding to tab A.

# TK - TYPE CG-S - SPECIFICATION SHEET N. 03

## Miniaturized and flexible shielded two-core electrical cable, with low toxicity, for internal wiring of devices. Cable for general use - 300/500 V



| **TAB A:** Insert the following number in the last digit of the item number, in place of *, for different vcolours | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

Example of designations: the code UG-S-0.35-9 identifies a single core cable, with section of 0.35 mm², with white primary insulation (refer to color guide).

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound. Coded colours as per color guide tab A |
| **Shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound type S2 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

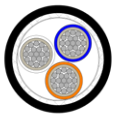
| SPECIFICATION SHEET NO. 03 | | | | |
|---|---|---|---|---|
| **Item n°** | **Designation** | **Cross-section mm²** | **Diameter cable mm** | **Max cable Weight kg/km** |
| 525TK0303** | CG-S-0.35-Y/Y | 2x0.35 | 3.40 ÷ 4.0 | 28 |
| 530TK0303** | CG-S-0.50-Y/Y | 2x0.5 | 3.50 ÷ 4.15 | 31 |
| 540TK0303** | CG-S-1.0-Y/Y | 2x1 | 4.10 ÷ 4.90 | 44 |
| 545TK0303** | CG-S-1.5-Y/Y | 2x1.5 | 5.10 ÷ 5.90 | 65 |
| 555TK0303** | CG-S-2.5-Y/Y | 2x2.5 | 6.10 ÷ 7.00 | 95 |

| AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples: | | | | |
|---|---|---|---|---|
| **Item n°** | **Designation** | **Cross-section AWG** | **Nominal Diameter cable mm** | **Nominal cable Weight kg/km** |
| 512TK0603** | CG-S-26-Y/Y | 2x26 (0.15) | 2.65 ÷ 2.95 | 15.8 |
| 518TK0603** | CG-S-24-Y/Y | 2x24 (0.21) | 2.85 ÷ 3.15 | 17.9 |
| 524TK0603** | CG-S-22-Y/Y | 2x22 (0.33) | 3.20 ÷ 3.45 | 21.4 |
| 531TK0603** | CG-S-20-Y/Y | 2x20 (0.59) | 3.75 ÷ 4.05 | 30.5 |
| 538TK0603** | CG-S-18-Y/Y | 2x18 (0.93) | 4.20 ÷ 4.60 | 38.9 |
| 543TK0603** | CG-S-16-Y/Y | 2x16 (1.34) | 4.70 ÷ 5.10 | 54.2 |
| 550TK0603** | CG-S-14-Y/Y | 2x14 (1.82) | 5.40 ÷ 5.85 | 66.4 |
| 563TK0603** | CG-S-12-Y/Y | 2x12 (2.61) | 6.10 ÷ 6.55 | 83.3 |

Last two digits (**) corresponding to tab A.

# TK - TYPE TG-S - SPECIFICATION SHEET N. 04

## Miniaturized and flexible shielded three-core electrical cable, with low toxicity, for internal wiring of devices. Cable for general use - 300/500 V



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|---|---|
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| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

Example of designations: the code TG-S-0.50-9/2/0 identifies a three-core cable, with shield, with components of 0.50 mm², white, red and black (refer to color guide).

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white, blue and orange (preferential). Coded colours as per color guide tab A |
| **Shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound type S2 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SPECIFICATION SHEET NO. 04 | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 525TK0304*** | TG-S-0.35-Y/Y/Y | 3x0.35 | 3.50 ÷ 4.10 | 34 |
| 530TK0304*** | TG-S-0.50-Y/Y/Y | 3x0.5 | 3.70 ÷ 4.25 | 35 |
| 540TK0304*** | TG-S-1.0-Y/Y/Y | 3x1 | 4.30 ÷ 5.00 | 50 |
| 545TK0304*** | TG-S-1.5-Y/Y/Y | 3x1.5 | 5.20 ÷ 5.90 | 80 |
| 555TK0304*** | TG-S-2.5-Y/Y/Y | 3x2.5 | 6.50 ÷ 7.30 | 120 |

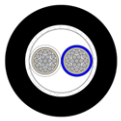
AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
|---|---|---|---|---|
| 512TK0604*** | TG-S-26-Y/Y/Y | 3x26 (0.15) | 2.80 ÷ 3.10 | 18.7 |
| 518TK0604*** | TG-S-24-Y/Y/Y | 3x24 (0.21) | 3.00 ÷ 3.30 | 21.3 |
| 524TK0604*** | TG-S-22-Y/Y/Y | 3x22 (0.33) | 3.35 ÷ 3.65 | 27.1 |
| 531TK0604*** | TG-S-20-Y/Y/Y | 3x20 (0.59) | 3.90 ÷ 4.30 | 37.8 |
| 538TK0604*** | TG-S-18-Y/Y/Y | 3x18 (0.93) | 4.40 ÷ 4.85 | 48.9 |
| 543TK0604*** | TG-S-16-Y/Y/Y | 3x16 (1.34) | 5.00 ÷ 5.40 | 70.0 |
| 550TK0604*** | TG-S-14-Y/Y/Y | 3x14 (1.82) | 5.70 ÷ 6.20 | 86.1 |
| 563TK0604*** | TG-S-12-Y/Y/Y | 3x12 (2.61) | 6.40 ÷ 7.00 | 105.1 |

Last three digits (***) corresponding to tab A.

# TK - TYPE FN 02 - SPECIFICATION SHEET N. 05

Miniaturized and flexible two-core power supply electrical cable, with low toxicity.
Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | cconcentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue |
| **Inner sheath** | halogen free compound (for type FN 02-A) |
| **Shield** | tinned copper wire braid (for type FN 02-O) |
| **Armour** | aluminium wire braid (for type FN 02-A) |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE FN 02-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 340TK030502 | FN 02-N-1.0 | 2x1.0 | 5.1 ÷ 5.7 | 50 |
| 345TK030502 | FN 02-N-1.5 | 2x1.5 | 6.1 ÷ 6.7 | 75 |
| 355TK030502 | FN 02-N-2.5 | 2x2.5 | 7.2 ÷ 8.0 | 105 |
| **TYPE FN 02-O** | | | | |
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK030502 | FN 02-O-1.0 | 2x1.0 | 5.7 ÷ 6.3 | 70 |
| 545TK030502 | FN 02-O-1.5 | 2x1.5 | 6.7 ÷ 7.4 | 100 |
| 555TK030502 | FN 02-O-2.5 | 2x2.5 | 7.8 ÷ 8.6 | 135 |
| **TYPE FN 02-A** | | | | |
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 840TK030502 | FN 02-A-1.0 | 2x1.0 | 7.8 ÷ 8.7 | 115 |
| 845TK030502 | FN 02-A-1.5 | 2x1.5 | 8.8 ÷ 9.8 | 150 |
| 855TK030502 | FN 02-A-2.5 | 2x2.5 | 10.0 ÷ 11.0 | 185 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

# TK - TYPE FN 02 - SPECIFICATION SHEET N. 05

## Miniaturized and flexible two-core power supply electrical cable, with low toxicity. Cable for general use - 300/500 V

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE FN 02-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 343TK060502 | FN 02-N-16 | 2x16 (1.34) | 5.2 ÷ 6.1 | 71 |
| 350TK060502 | FN 02-N-14 | 2x14 (1.82) | 6.0 ÷ 6.9 | 88 |
| 363TK060502 | FN 02-N-12 | 2x12 (2.61) | 6.7 ÷ 7.6 | 111 |

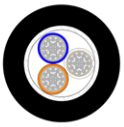
| TYPE FN 02-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 543TK060502 | FN 02-O-16 | 2x16 (1.34) | 5.9 ÷ 6.7 | 94 |
| 550TK060502 | FN 02-O-14 | 2x14 (1.82) | 6.5 ÷ 7.5 | 114 |
| 563TK060502 | FN 02-O-12 | 2x12 (2.61) | 7.4 ÷ 8.3 | 139 |

| TYPE FN 02-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 843TK060502 | FN 02-A-16 | 2x16 (1.34) | 7.8 ÷ 8.9 | 128 |
| 850TK060502 | FN 02-A-14 | 2x14 (1.82) | 8.4 ÷ 9.6 | 151 |
| 863TK060502 | FN 02-A-12 | 2x12 (2.61) | 9.3 ÷ 10.4 | 180 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

# TK - TYPE FN 03 - SPECIFICATION SHEET N. 06

Miniaturized and flexible three-core power supply electrical cable, with low toxicity. Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white, blue and orange |
| **Inner sheath** | halogen free compound (for type FN 03-A) |
| **Shield** | tinned copper wire braid (for type FN 03-O) |
| **Armour** | aluminium wire braid (for type FN 03-A) |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE FN 03-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 340TK030603 | FN 03-N-1.0 | 3x1.0 | 5.4 ÷ 6.0 | 65 |
| 345TK030603 | FN 03-N-1.5 | 3x1.5 | 6.4 ÷ 7.1 | 95 |
| 355TK030603 | FN 03-N-2.5 | 3x2.5 | 7.6 ÷ 8.5 | 135 |

| TYPE FN 03-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK030603 | FN 03-O-1.0 | 3x1.0 | 5.9 ÷ 6.6 | 80 |
| 545TK030603 | FN 03-O-1.5 | 3x1.5 | 7.0 ÷ 7.8 | 115 |
| 555TK030603 | FN 03-O-2.5 | 3x2.5 | 8.2 ÷ 9.0 | 165 |

| TYPE FN 03-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 840TK030603 | FN 03-A-1.0 | 3x1.0 | 8.0 ÷ 8.9 | 130 |
| 845TK030603 | FN 03-A-1.5 | 3x1.5 | 9.2 ÷ 10.2 | 175 |
| 855TK030603 | FN 03-A-2.5 | 3x2.5 | 10.4 ÷ 11.5 | 225 |

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE FN 03-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 343TK060603 | FN 03-N-16 | 3x16 (1.34) | 5.5 ÷ 6.4 | 86 |
| 350TK060603 | FN 03-N-14 | 3x14 (1.82) | 6.3 ÷ 7.2 | 106 |
| 363TK060603 | FN 03-N-12 | 3x12 (2.61) | 7.1 ÷ 8.0 | 134 |

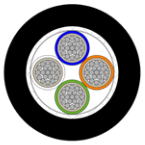
| TYPE FN 03-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 543TK060603 | FN 03-O-16 | 3x16 (1.34) | 6.1 ÷ 7.0 | 110 |
| 550TK060603 | FN 03-O-14 | 3x14 (1.82) | 7.0 ÷ 7.9 | 133 |
| 563TK060603 | FN 03-O-12 | 3x12 (2.61) | 7.8 ÷ 8.7 | 164 |

| TYPE FN 03-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 843TK060603 | FN 03-A-16 | 3x16 (1.34) | 8.1 ÷ 9.2 | 145 |
| 850TK060603 | FN 03-A-14 | 3x14 (1.82) | 8.9 ÷ 10.1 | 172 |
| 863TK060603 | FN 03-A-12 | 3x12 (2.61) | 9.6 ÷ 11.0 | 207 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

# TK - TYPE FN 04 - SPECIFICATION SHEET N. 07

Miniaturized and flexible four-core power supply electrical cable, with low toxicity.
Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | Concentric tinned copper conductor according ASTM B33 |
| **Insulation** | Double layer with special compound, white, blue, orange and green |
| **Inner sheath** | Halogen free compound (for type FN 04-A) |
| **Shield** | Tinned copper wire braid (for type FN 04-O) |
| **Armour** | Aluminium wire braid (for type FN 04-A) |
| **Sheath** | Crosslinked compound, type EM104 according to Standard EN 50306-1.<br>Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE FN 04-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 340TK030704 | FN 04-N-1.0 | 4x1.0 | 5.8 ÷ 6.4 | 75 |
| 345TK030704 | FN 04-N-1.5 | 4x1.5 | 7.0 ÷ 7.7 | 120 |
| 355TK030704 | FN 04-N-2.5 | 4x2.5 | 8.3 ÷ 9.3 | 175 |

| TYPE FN 04-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK030704 | FN 04-O-1.0 | 4x1.0 | 6.3 ÷ 7.0 | 100 |
| 545TK030704 | FN 04-O-1.5 | 4x1.5 | 7.5 ÷ 8.3 | 140 |
| 555TK030704 | FN 04-O-2.5 | 4x2.5 | 8.9 ÷ 9.8 | 205 |

| TYPE FN 04-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 840TK030704 | FN 04-A-1.0 | 4x1.0 | 8.5 ÷ 9.4 | 150 |
| 845TK030704 | FN 04-A-1.5 | 4x1.5 | 9.8 ÷ 10.8 | 205 |
| 855TK030704 | FN 04-A-2.5 | 4x2.5 | 11.2 ÷ 12.4 | 270 |

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

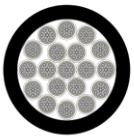
| TYPE FN 04-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 343TK060704 | FN 04-N-16 | 4x16 (1.34) | 6.0 ÷ 7.0 | 103 |
| 350TK060704 | FN 04-N-14 | 4x14 (1.82) | 6.9 ÷ 7.9 | 128 |
| 363TK060704 | FN 04-N-12 | 4x12 (2.61) | 7.8 ÷ 8.8 | 166 |

| TYPE FN 04-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 543TK060704 | FN 04-O-16 | 4x16 (1.34) | 6.6 ÷ 7.6 | 132 |
| 550TK060704 | FN 04-O-14 | 4x14 (1.82) | 7.5 ÷ 8.6 | 161 |
| 563TK060704 | FN 04-O-12 | 4x12 (2.61) | 8.5 ÷ 9.5 | 200 |

| TYPE FN 04-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 843TK060704 | FN 04-A-16 | 4x16 (1.34) | 8.8 ÷ 10.0 | 170 |
| 850TK060704 | FN 04-A-14 | 4x14 (1.82) | 9.5 ÷ 10.9 | 203 |
| 863TK060704 | FN 04-A-12 | 4x12 (2.61) | 10.2 ÷ 11.8 | 246 |

# TK - TYPE UN-N - SPECIFICATION SHEET N. 08

Miniaturized and flexible multi-core power supply electrical cable, with low toxicity. Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white with black numbers |
| **Sheath** | Crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE UN 0.35-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 325TK030807 | UN 0.35-N-7 | 7 x 0.35 | 5.6 ÷ 6.2 | 70 |
| 325TK030812 | UN 0.35-N-12 | 12 x 0.35 | 7.1 ÷ 7.9 | 105 |
| 325TK030819 | UN 0.35-N-19 | 19 x 0.35 | 8.2 ÷ 9.1 | 150 |
| 325TK030837 | UN 0.35-N-37 | 37 x 0.50 | 10.7 ÷ 11.8 | 275 |

| TYPE UN 0.50-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 330TK030807 | UN 0.50-N-7 | 7x 0.50 | 6.0 ÷ 6.6 | 0 |
| 330TK030810 | UN 0.50-N-10 | 10 x 0.50 | 7.3 ÷ 8.1 | 110 |
| 330TK030814 | UN 0.50-N-14 | 14 x 0.50 | 7.9 ÷ 8.7 | 140 |
| 330TK030819 | UN 0.50-N-19 | 19 x 0.50 | 8.7 ÷ 9.6 | 180 |
| 330TK030824 | UN 0.50-N-24 | 24 x 0.50 | 10.0 ÷ 11.0 | 220 |
| 330TK030837 | UN 0.50-N-37 | 37 x 0.50 | 11.4 ÷ 12.6 | 320 |
| 330TK030844 | UN 0.50-N-44 | 44 x 0.50 | 12.7 ÷ 14.0 | 380 |
| 330TK030861 | UN 0.50-N-61 | 61 x 0.50 | 14.1 ÷ 15.6 | 500 |

| TYPE UN 1.0-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 340TK030807 | UN 1.0-N-7 | 7 x 1 | 6.8 ÷ 7.5 | 120 |
| 340TK030812 | UN 1.0-N-12 | 12 x 1 | 8.7 ÷ 9.6 | 195 |
| 340TK030819 | UN 1.0-N-19 | 19 x 1 | 10.1 ÷ 11.2 | 285 |
| 340TK030837 | UN 1.0-N-37 | 37 x 1 | 13.3 ÷ 14.7 | 525 |

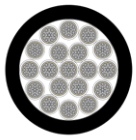
AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE UN 20-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 331TK060807 | UN 20-N-7 | 7x20 (0,59) | 5.7 ÷ 6.6 | 84 |
| 331TK060810 | UN 20-N-10 | 10x20 (0,59) | 7.2 ÷ 8.1 | 117 |
| 331TK060814 | UN 20-N-14 | 14x20 (0,59) | 7.9 ÷ 8.9 | 152 |
| 331TK060819 | UN 20-N-19 | 19x20 (0,59) | 8.8 ÷ 9.8 | 197 |
| 331TK060824 | UN 20-N-24 | 24x20 (0,59) | 10.4 ÷ 11.4 | 247 |
| 331TK060830 | UN 20-N-30 | 30x20 (0,59) | 10.8 ÷ 12.0 | 298 |

Example of designations:
the code UN 0.35-N-19 identifies a cable, with 19 isolated core (UG-N), with components of 0.35 mm², without overall shield (N).

# TK - TYPE UN-O - SPECIFICATION SHEET N. 09

## Miniaturized and flexible shielded multi-core electrical cable, with low toxicity. Cable for general use - 300/500 V



characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white with black numbers |
| **Shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

Example of designations:
the code UN 0.35-N-19 identifies a cable, with 19 isolated core (UG-N), with components of 0.35 mm², without overall shield (N).

| TYPE UN 0.35-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 525TK030907 | UN 0.35-O-7 | 7 x 0.35 | 6.2 ÷ 6.9 | 90 |
| 525TK030912 | UN 0.35-O-12 | 12 x 0.35 | 7.6 ÷ 8.4 | 135 |
| 525TK030919 | UN 0.35-O-19 | 19 x 0.35 | 8.7 ÷ 9.6 | 185 |
| 525TK030937 | UN 0.35-O-37 | 37 x 0.35 | 11.4 ÷ 12.6 | 335 |

| TYPE UN 0.50-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 530TK030907 | UN 0.50-O-7 | 7 x 0.50 | 6.5 ÷ 7.2 | 100 |
| 530TK030910 | UN 0.50-O-10 | 10 x 0.50 | 7.8 ÷ 8.6 | 135 |
| 530TK030914 | UN 0.50-O-14 | 14 x 0.50 | 8.4 ÷ 9.3 | 170 |
| 530TK030919 | UN 0.50-O-19 | 19 x 0.50 | 9.2 ÷ 10.2 | 210 |
| 530TK030924 | UN 0.50-O-24 | 24 x 0.50 | 10.8 ÷ 11.9 | 280 |
| 530TK030937 | UN 0.50-O-37 | 37 x 0.50 | 12.1 ÷ 13.4 | 390 |
| 530TK030944 | UN 0.50-O-44 | 44 x 0.50 | 13.5 ÷ 14.9 | 450 |
| 530TK030961 | UN 0.50-O-61 | 61 x 0.50 | 15.1 ÷ 16.7 | 610 |

| TYPE UN 1.0-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK030907 | UN 1.0-O-7 | 7 x 1 | 7.3 ÷ 8.1 | 145 |
| 540TK030910 | UN 1.0-O-10 | 10 x 1 | 8.9 ÷ 9.8 | 190 |
| 540TK030914 | UN 1.0-O-14 | 14 x 1 | 9.8 ÷ 10.8 | 250 |
| 540TK030916 | UN 1.0-O-16 | 16 x 1 | 10.3 ÷ 11.4 | 305 |
| 540TK030920 | UN 1.0-O-20 | 20 x 1 | 11.3 ÷ 12.5 | 365 |
| 540TK030924 | UN 1.0-O-24 | 24 x 1 | 12.4 ÷ 13.7 | 430 |
| 540TK030937 | UN 1.0-O-37 | 37 x 1 | 14.2 ÷ 15.7 | 630 |

| TYPE UN 1.5-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 545TK030907 | UN 1.5-O-7 | 7 x 1.5 | 8.9 ÷ 9.8 | 215 |
| 545TK030912 | UN 1.5-O-12 | 12 x 1.5 | 11.5 ÷ 12.7 | 360 |
| 545TK030916 | UN 1.5-O-16 | 16 x 1.5 | 12.7 ÷ 14.0 | 470 |
| 545TK030919 | UN 1.5-O-19 | 19 x 1.5 | 13.3 ÷ 14.7 | 540 |
| 545TK030924 | UN 1.5-O-24 | 24 x 1.5 | 15.6 ÷ 17.2 | 700 |
| 545TK030937 | UN 1.5-O-37 | 37 x 1.5 | 17.8 ÷ 19.7 | 980 |

| TYPE UN 2.5-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 555TK030907 | UN 2.5-O-7 | 7 x 2.5 | 10.7 ÷ 11.8 | 310 |
| 555TK030912 | UN 2.5-O-12 | 12 x 2.5 | 13.8 ÷ 15.3 | 520 |
| 555TK030916 | UN 2.5-O-16 | 16 x 2.5 | 15.3 ÷ 16.9 | 670 |
| 555TK030919 | UN 2.5-O-19 | 19 x 2.5 | 16.2 ÷ 17.9 | 790 |
| 555TK030924 | UN 2.5-O-24 | 24 x 2.5 | 19.0 ÷ 21.0 | 990 |
| 555TK030937 | UN 2.5-O-37 | 37 x 2.5 | 21.9 ÷ 24.2 | 147 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE UN 20-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 531TK060907 | UN 20-O-7 | 7x20 (0,59) | 6.4 ÷ 7.3 | 109 |
| 531TK060910 | UN 20-O-10 | 10x20 (0,59) | 7.9 ÷ 8.8 | 149 |
| 531TK060914 | UN 20-O-14 | 14x20 (0,59) | 8.5 ÷ 9.5 | 186 |
| 531TK060919 | UN 20-O-19 | 19x20 (0,59) | 9.4 ÷ 10.4 | 236 |
| 531TK060924 | UN 20-O-24 | 24x20 (0,59) | 10.9 ÷ 12.0 | 304 |
| 531TK060930 | UN 20-O-30 | 30x20 (0,59) | 11.4 ÷ 12.6 | 359 |
| 531TK060937 | UN 20-O-37 | 37x20 (0,59) | 12.6 ÷ 13.8 | 425 |

# TK - TYPE UN-A - SPECIFICATION SHEET N. 10

## Miniaturized and flexible multi-core armored electrical cable, with low toxicity. Cable for general use - 300/500 V

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white with black numbers |
| **Inner Sheath** | halogen free compound |
| **Armour** | aluminium wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE UN 0.50-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 825TK031007 | UN 0.50-A-7 | 7 x 0.50 | 8.7 ÷ 9.6 | 150 |
| 825TK031010 | UN 0.50-A-10 | 10 x 0.50 | 10.1 ÷ 11.2 | 195 |
| 825TK031014 | UN 0.50-A-14 | 14 x 0.50 | 10.7 ÷ 11.9 | 235 |
| 825TK031019 | UN 0.50-A-19 | 19 x 0.50 | 11.5 ÷ 12.8 | 280 |
| 825TK031024 | UN 0.50-A-24 | 24 x 0.50 | 12.9 ÷ 14.3 | 340 |
| 825TK031037 | UN 0.50-A-37 | 37 x 0.50 | 14.4 ÷ 16.0 | 460 |
| 825TK031044 | UN 0.50-A-44 | 44 x 0.50 | 15.8 ÷ 17.5 | 530 |
| 825TK031061 | UN 0.50-A-61 | 61 x 0.50 | 17.2 ÷ 19.0 | 675 |

| TYPE UN 1.0-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight· kg/km |
| 840TK031007 | UN 1.0-A-7 | 7 x 1 | 9.5 ÷ 10.5 | 200 |
| 840TK031010 | UN 1.0-A-10 | 10 x 1 | 11.3 ÷ 12.5 | 270 |
| 840TK031014 | UN 1.0-A-14 | 14 x 1 | 11.9 ÷ 13.2 | 305 |
| 840TK031016 | UN 1.0-A-16 | 16 x 1 | 12.5 ÷ 13.9 | 325 |
| 840TK031020 | UN 1.0-A-20 | 20 x 1 | 13.5 ÷ 14.9 | 430 |
| 840TK031024 | UN 1.0-A-24 | 24 x 1 | 14.7 ÷ 16.3 | 500 |
| 840TK031037 | UN 1.0-A-37 | 37 x 1 | 16.4 ÷ 18.2 | 690 |

Example of designations:
the code UN 0.50-A-19 identifies a cable, with 19 isolated core (UG-N), with components of 0.50 mm², with armor (A).

# TK - TYPE UN-A - SPECIFICATION SHEET N. 11

## Miniaturized and flexible multi-core shielded electrical cable, with individually shielded wires and low toxicity. Cable for general use - 300/500 V

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white |
| **Core shield** | tinned copper wire braid |
| **Core sheath** | halogen free compound, type S2 according to Standard EN 50306-1, black with white numbers |
| **Overall shield** | tinned copper wire braid |
| **Sheath** | Crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE US 0.35-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 525TK031103 | US 0.35-O-3 | 3 x 0.35 | 7.3 ÷ 8.0 | 100 |
| 525TK031107 | US 0.35-O-7 | 7 x 0.35 | 9.2 ÷ 10.2 | 170 |
| 525TK031114 | US 0.35-O-14 | 14 x 0.35 | 12.6 ÷ 13.9 | 330 |
| 525TK031120 | US 0.35-O-20 | 20 x 0.35 | 14.6 ÷ 16.2 | 450 |
| 525TK031130 | US 0.35-O-30 | 30 x 0.35 | 17.3 ÷ 19.0 | 650 |
| 525TK031140 | US 0.35-O-40 | 40 x 0.35 | 19.4 ÷ 21.5 | 880 |

| TYPE US 0.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK031103 | US 0.50-O-3 | 3 x 0.50 | 7.5 ÷ 8.3 | 110 |
| 530TK031107 | US 0.50-O-7 | 7 x 0.50 | 9.7 ÷ 10.7 | 200 |
| 530TK031112 | US 0.50-O-12 | 12 x 0.50 | 12.4 ÷ 13.7 | 330 |
| 530TK031119 | US 0.50-O-19 | 19 x 0.50 | 14.6 ÷ 16.2 | 500 |
| 530TK031137 | US 0.50-O-37 | 37 x 0.50 | 19.3 ÷ 21.3 | 850 |

| TYPE US 1.0-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK031103 | US 1.0-O-3 | 3 x 1 | 8.5 ÷ 9.3 | 155 |
| 540TK031107 | US 1.0-O-7 | 7 x 1 | 10.7 ÷ 11.9 | 275 |
| 540TK031112 | US 1.0-O-12 | 12 x 1 | 13.8 ÷ 15.3 | 435 |
| 540TK031119 | US 1.0-O-19 | 19 x 1 | 16.4 ÷ 17.9 | 650 |
| 540TK031137 | US 1.0-O-37 | 37 x 1 | 22.0 ÷ 24.0 | 1150 |

| TYPE US 1.5-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 545TK031103 | US 1.5-O-3 | 3 x 1.5 | 9.6 ÷ 10.6 | 200 |
| 545TK031107 | US 1.5-O-7 | 7 x 1.5 | 12.3 ÷ 13.5 | 375 |
| 545TK031110 | US 1.5-O-10 | 10 x 1.5 | 15.7 ÷ 17.3 | 550 |
| 545TK031119 | US 1.5-O-19 | 19 x 1.5 | 19.0 ÷ 20.9 | 900 |
| 545TK031137 | US 1.5-O-37 | 37 x 1.5 | 25.7 ÷ 28.2 | 1650 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE US 20-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 531TK061107 | US 20-O-7 | 7x20 (0,59) | 9.2 ÷ 10.1 | 187 |
| 531TK061112 | US 20-O-12 | 12x20 (0,59) | 12.1 ÷ 13 | 354 |
| 531TK061119 | US 20-O-19 | 19x20 (0,59) | 11.3 ÷ 15.3 | 455 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

Example of designations:
the code US 0.50-O-19 identifies a cable, with 19 isolated core (UG-S), with components of 0.50 mm², with overall shield (O).

# TK - TYPE US-A - SPECIFICATION SHEET N. 12

## Miniaturized and flexible multi-core armored electrical cable, with individually shielded wires and low toxicity. Cable for general use - 300/500 V

characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white |
| **Core shield** | tinned copper wire braid |
| **Core sheath** | halogen free compound, type S2 according to Standard EN 50306-1, black with white numbers |
| **Inner sheath** | halogen free compound |
| **Armour** | aluminium wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

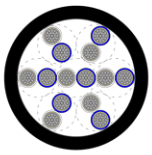
| TYPE US 0.50-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 825TK031203 | US 0.50-A-3 | 3 x 0.50 | 9.7 ÷ 10.8 | 170 |
| 825TK031207 | US 0.50-A-7 | 7 x 0.50 | 11.8 ÷ 13.1 | 270 |
| 825TK031212 | US 0.50-A-12 | 12 x 0.50 | 14.7 ÷ 16.3 | 410 |
| 825TK031219 | US 0.50-A-19 | 19 x 0.50 | 16.8 ÷ 18.6 | 570 |
| 825TK031237 | US 0.50-A-37 | 37 x 0.50 | 21.8 ÷ 24.1 | 980 |

| TYPE US 1.0-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 840TK031203 | US 1.0-A-3 | 3 x 1 | 10.5 ÷ 11.6 | 205 |
| 840TK031207 | US 1.0-A-7 | 7 x 1 | 12.8 ÷ 14.2 | 340 |
| 840TK031212 | US 1.0-A-12 | 12 x 1 | 16.1 ÷ 17.8 | 520 |
| 840TK031219 | US 1.0-A-19 | 19 x 1 | 18.5 ÷ 20.5 | 730 |
| 840TK031237 | US 1.0-A-37 | 37 x 1 | 24.2 ÷ 26.8 | 1270 |

Example of designations:
the code US 0.50-A-19 identifies a cable, with 19 isolated core (UG-S), with components of 0.50 mm², with armor (A).

# TK - TYPE CN-N - SPECIFICATION SHEET N. 13

Miniaturized and flexible multi-pair electrical cable, with low toxicity.
Cable for general use - 300/500 V



## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue with black numbers |
| **Pairs** | single cores are twisted into pairs |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE CN 0.35-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 325TK031303 | CN 0.35-N-3 | 3 x 2 x 0.35 | 5.9 ÷ 6.6 | 70 |
| 325TK031307 | CN 0.35-N-7 | 7 x 2 x 0.35 | 7.9 ÷ 8.8 | 130 |
| 325TK031310 | CN 0.35-N-10 | 10 x 2 x 0.35 | 9.9 ÷ 11.0 | 180 |
| 325TK031316 | CN 0.35-N-16 | 16 x 2 x 0.35 | 11.3 ÷ 12.5 | 260 |
| 325TK031320 | CN 0.35-N-20 | 20 x 2 x 0.35 | 12.6 ÷ 14.0 | 315 |
| 325TK031330 | CN 0.35-N-30 | 30 x 2 x 0.35 | 14.8 ÷ 16.4 | 445 |
| 325TK031340 | CN 0.35-N-40 | 40 x 2 x 0.35 | 16.6 ÷ 18.4 | 575 |
| 325TK031350 | CN 0.35-N-50 | 50 x 2 x 0.35 | 18.8 ÷ 20.8 | 715 |

| TYPE CN 0.50-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 330TK031303 | CN 0.50-N-3 | 3 x 2 x 0.50 | 6.3 ÷ 7.0 | 80 |
| 330TK031307 | CN 0.50-N-7 | 7 x 2 x 0.50 | 8.4 ÷ 9.3 | 150 |
| 330TK031310 | CN 0.50-N-10 | 10 x 2 x 0.50 | 10.6 ÷ 11.7 | 210 |
| 330TK031316 | CN 0.50-N-16 | 16 x 2 x 0.50 | 12.1 ÷ 13.4 | 300 |
| 330TK031320 | CN 0.50-N-20 | 20 x 2 x 0.50 | 13.4 ÷ 14.9 | 370 |
| 330TK031330 | CN 0.50-N-30 | 30 x 2 x 0.50 | 15.8 ÷ 17.5 | 525 |
| 330TK031340 | CN 0.50-N-40 | 40 x 2 x 0.50 | 17.8 ÷ 19.7 | 680 |
| 330TK031350 | CN 0.50-N-50 | 50 x 2 x 0.50 | 20.2 ÷ 22.4 | 845 |

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

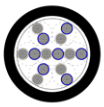
| TYPE CN 0.22-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 324TK061303 | CN 22-N-3 | 3 x 2 x 22 (0,33) | 6.1 ÷ 7.0 | 64 |
| 324TK061305 | CN 22-N-5 | 5 x 2 x 22 (0,33) | 7.1 ÷ 8.4 | 93 |
| 324TK061310 | CN 22-N-10 | 10 x 2 x 22 (0,33) | 10.2 ÷ 11.5 | 166 |
| 324TK061316 | CN 22-N-16 | 16 x 2 x 22 (0,33) | 12.0 ÷ 13.1 | 242 |
| 324TK061320 | CN 22-N-20 | 20 x 2 x 22 (0,33) | 13.1 ÷ 14.6 | 295 |
| 324TK061330 | CN 22-N-30 | 30 x 2 x 22 (0,33) | 15.7 ÷ 17.2 | 422 |
| 324TK061340 | CN 22-N-40 | 40 x 2 x 22 (0,33) | 17.4 ÷ 19.4 | 547 |

| TYPE CN 20-N | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 331TK061303 | CN 20-N-3 | 3 x 2 x 20 (0,59) | 7.3 ÷ 8.3 | 95 |
| 331TK061316 | CN 20-N-16 | 16 x 2 x 20 (0,59) | 14.0 ÷ 15.9 | 354 |

Example of designations:
the code CN 0.35-N-7 identifies a cable, with 7 isolated two-core (UG-N), with components of 0.35 mm².

# TK - TYPE CN-O - SPECIFICATION SHEET N. 14

## Miniaturized and flexible multi-pair shielded electrical cable, with low toxicity. Cable for general use - 300/500 V



characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue with blanck numbers |
| **Pairs** | single cores are twisted into pairs |
| **Shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE CN 0.35-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight kg/km |
| 525TK031403 | CN 0.35-O-3 | 3 x 2 x 0.35 | 6.3 ÷ 7.0 | 85 |
| 525TK031407 | CN 0.35-O-7 | 7 x 2 x 0.35 | 8.3 ÷ 9.2 | 145 |
| 525TK031410 | CN 0.35-O-10 | 10 x 2 x 0.35 | 10.4 ÷ 11.4 | 210 |
| 525TK031416 | CN 0.35-O-16 | 16 x 2 x 0.35 | 11.7 ÷ 13.0 | 305 |
| 525TK031420 | CN 0.35-O-20 | 20 x 2 x 0.35 | 12.9 ÷ 14.2 | 365 |
| 525TK031430 | CN 0.35-O-30 | 30 x 2 x 0.35 | 15.2 ÷ 16.8 | 530 |
| 525TK031440 | CN 0.35-O-40 | 40 x 2 x 0.35 | 16.9 ÷ 18.7 | 670 |
| 525TK031450 | CN 0.35-O-50 | 50 x 2 x 0.35 | 19.0 ÷ 21.0 | 875 |

| TYPE CN 0.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK031403 | CN 0.50-O-3 | 3 x 2 x 0.50 | 6.8 ÷ 7.5 | 95 |
| 530TK031407 | CN 0.50-O-7 | 7 x 2 x 0.50 | 8.7 ÷ 9.7 | 175 |
| 530TK031410 | CN 0.50-O-10 | 10 x 2 x 0.50 | 11.0 ÷ 12.1 | 250 |
| 530TK031416 | CN 0.50-O-16 | 16 x 2 x 0.50 | 12.5 ÷ 13.9 | 350 |
| 530TK031420 | CN 0.50-O-20 | 20 x 2 x 0.50 | 13.8 ÷ 15.2 | 445 |
| 530TK031430 | CN 0.50-O-30 | 30 x 2 x 0.50 | 16.2 ÷ 17.9 | 620 |
| 530TK031440 | CN 0.50-O-40 | 40 x 2 x 0.50 | 18.1 ÷ 20.0 | 845 |
| 530TK031450 | CN 0.50-O-50 | 50 x 2 x 0.50 | 20.5 ÷ 22.6 | 1025 |

| TYPE CN 1.0-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 540TK031403 | CN 1.0-O-3 | 3 x 2 x 1 | 8.1 ÷ 9.0 | 145 |
| 540TK031407 | CN 1.0-O-7 | 7 x 2 x 1 | 10.4 ÷ 11.5 | 265 |
| 540TK031410 | CN 1.0-O-10 | 10 x 2 x 1 | 13.2 ÷ 14.6 | 380 |
| 540TK031416 | CN 1.0-O-16 | 16 x 2 x 1 | 15.2 ÷ 16.8 | 565 |
| 540TK031420 | CN 1.0-O-20 | 20 x 2 x 1 | 16.9 ÷ 18.7 | 690 |
| 540TK031430 | CN 1.0-O-30 | 30 x 2 x 1 | 19.9 ÷ 22.0 | 1015 |
| 540TK031440 | CN 1.0-O-40 | 40 x 2 x 1 | 22.5 ÷ 24.8 | 1320 |
| 540TK031450 | CN 1.0-O-50 | 50 x 2 x 1 | 25.4 ÷ 28.1 | 1645 |

| TYPE CN 1.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section mm² | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 545TK031403 | CN 1.5-O-3 | 3 x 2 x 1.5 | 9.5 ÷ 10.5 | 215 |
| 545TK031407 | CN 1.5-O-7 | 7 x 2 x 1.5 | 12.2 ÷ 13.8 | 425 |
| 545TK031410 | CN 1.5-O-10 | 10 x 2 x 1.5 | 15.9 ÷ 17.6 | 620 |
| 545TK031416 | CN 1.5-O-16 | 16 x 2 x 1.5 | 18.1 ÷ 20.0 | 905 |
| 545TK031420 | CN 1.5-O-20 | 20 x 2 x 1.5 | 20.1 ÷ 22.2 | 1170 |
| 545TK031430 | CN 1.5-O-30 | 30 x 2 x 1.5 | 24.2 ÷ 26.7 | 1690 |
| 545TK031440 | CN 1.5-O-40 | 40 x 2 x 1.5 | 27.2 ÷ 30.1 | 2185 |
| 545TK031450 | CN 1.5-O-50 | 50 x 2 x 1.5 | 30.5 ÷ 33.5 | 2735 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

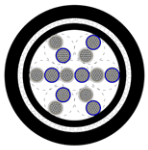
| TYPE CN 22-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable mm | Nominal cable Weight kg/km |
| 524TK061403 | CN 22-O-3 | 3 x 2 x 22 (0,33) | 6.7 ÷ 7.6 | 90 |
| 524TK061405 | CN 22-O-5 | 5 x 2 x 22 (0,33) | 8.1 ÷ 9.0 | 125 |
| 524TK061410 | CN 22-O-10 | 10 x 2 x 22 (0,33) | 11.1 ÷ 12.1 | 224 |
| 524TK061416 | CN 22-O-16 | 16 x 2 x 22 (0,33) | 12.8 ÷ 13.9 | 309 |
| 524TK061420 | CN 22-O-20 | 20 x 2 x 22 (0,33) | 14.2 ÷ 15.6 | 388 |
| 524TK061430 | CN 22-O-30 | 30 x 2 x 22 (0,33) | 16.4 ÷ 18.3 | 534 |
| 524TK061440 | CN 22-O-40 | 40 x 2 x 22 (0,33) | 18.5 ÷ 20.5 | 674 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

Example of designations:
the code CN 0.35-O-7 identifies a cable, with 7 isolated two-core (UG-N), with components of 0.35 mm², with overall shield (O).

# TK - TYPE US-A - SPECIFICATION SHEET N. 15

## Miniaturized and flexible multi-pair armored electrical cable, with low toxicity. Cable for general use - 300/500 V



characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue with black numbers |
| **Pairs** | single cores are twisted into pairs |
| **Inner sheath** | halogen free compound |
| **Armour** | aluminium wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

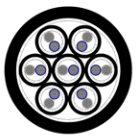
| TYPE CN 0.50-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 830TK031503 | CN 0.50-A-3 | 3 x 2 x 0.50 | 9.0 ÷ 10.0 | 150 |
| 830TK031507 | CN 0.50-A-7 | 7 x 2 x 0.50 | 11.2 ÷ 12.4 | 245 |
| 830TK031510 | CN 0.50-A-10 | 10 x 2 x 0.50 | 13.5 ÷ 14.9 | 330 |
| 830TK031516 | CN 0.50-A-16 | 16 x 2 x 0.50 | 15.1 ÷ 16.7 | 445 |
| 830TK031520 | CN 0.50-A-20 | 20 x 2 x 0.50 | 16.5 ÷ 18.3 | 530 |
| 830TK031530 | CN 0.50-A-30 | 30 x 2 x 0.50 | 19.0 ÷ 21.0 | 720 |
| 830TK031540 | CN 0.50-A-40 | 40 x 2 x 0.50 | 21.1 ÷ 23.4 | 900 |
| 830TK031550 | CN 0.50-A-50 | 50 x 2 x 0.50 | 23.6 ÷ 26.1 | 1100 |

| TYPE CN 1.0-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 840TK031503 | CN 1.0-A-3 | 3 x 2 x 1 | 10.3 ÷ 11.4 | 205 |
| 840TK031507 | CN 1.0-A-7 | 7 x 2 x 1 | 12.6 ÷ 14.0 | 345 |
| 840TK031510 | CN 1.0-A-10 | 10 x 2 x 1 | 15.4 ÷ 17.1 | 480 |
| 840TK031516 | CN 1.0-A-16 | 16 x 2 x 1 | 17.3 ÷ 19.2 | 660 |
| 840TK031520 | CN 1.0-A-20 | 20 x 2 x 1 | 19.0 ÷ 21.0 | 795 |
| 840TK031530 | CN 1.0-A-30 | 30 x 2 x 1 | 22.0 ÷ 24.4 | 1110 |
| 840TK031540 | CN 1.0-A-40 | 40 x 2 x 1 | 25.7 ÷ 28.4 | 1450 |
| 840TK031550 | CN 1.0-A-50 | 50 x 2 x 1 | 27.5 ÷ 30.4 | 1730 |

Example of designations:
the code CN 0.50-A-7 identifies a cable, with 7 isolated two-core (UG-N), with components of 0.50 mm², with armor (A).

# TK - TYPE CS-O - SPECIFICATION SHEET N. 16

Miniaturized and flexible multi-pair shielded electrical cable, with individually shielded pairs and low toxicity. Cable for general use - 300/500 V



characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue |
| **Pairs** | single cores are twisted into pairs |
| **Individual shield** | tinned copper wire braid on each pair |
| **Pair sheath** | halogen free compound, black with white numbers |
| **Overall shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE CS 0.35-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 525TK031603 | CS 0.35-O-3 | 3 x 2 x 0.35 | 9.8 ÷ 10.8 | 185 |
| 525TK031607 | CS 0.35-O-7 | 7 x 2 x 0.35 | 12.9 ÷ 14.3 | 350 |
| 525TK031612 | CS 0.35-O-12 | 12 x 2 x 0.35 | 16.9 ÷ 18.7 | 585 |
| 525TK031614 | CS 0.35-O-14 | 14 x 2 x 0.35 | 17.8 ÷ 19.7 | 685 |
| 525TK031619 | CS 0.35-O-19 | 19 x 2 x 0.35 | 19.9 ÷ 22.0 | 870 |
| 525TK031630 | CS 0.35-O-30 | 30 x 2 x 0.35 | 25.0 ÷ 27.6 | 1300 |
| 525TK031640 | CS 0.35-O-40 | 40 x 2 x 0.35 | 28.5 ÷ 31.5 | 1710 |

| TYPE CS 0.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK031603 | CS 0.50-O-3 | 3 x 2 x 0.50 | 10.1 ÷ 11.1 | 205 |
| 530TK031607 | CS 0.50-O-7 | 7 x 2 x 0.50 | 13.2 ÷ 14.6 | 385 |
| 530TK031612 | CS 0.50-O-12 | 12 x 2 x 0.50 | 17.5 ÷ 19.3 | 640 |
| 530TK031616 | CS 0.50-O-16 | 14 x 2 x 0.50 | 18.5 ÷ 20.4 | 720 |
| 530TK031620 | CS 0.50-O-20 | 19 x 2 x 0.50 | 20.8 ÷ 23.0 | 955 |
| 530TK031630 | CS 0.50-O-30 | 30 x 2 x 0.50 | 29.5 ÷ 28.6 | 1430 |
| 530TK031640 | CS 0.50-O-40 | 40 x 2 x 0.50 | 29.3 ÷ 32.4 | 1880 |

| TYPE CS 1.0-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 540TK031603 | CS 1.0-O-3 | 3 x 2 x 1 | 11.4 ÷ 12.6 | 260 |
| 540TK031607 | CS 1.0-O-7 | 7 x 2 x 1 | 15.0 ÷ 16.6 | 510 |
| 540TK031612 | CS 1.0-O-12 | 12 x 2 x 1 | 19.9 ÷ 22.0 | 830 |
| 540TK031614 | CS 1.0-O-14 | 14 x 2 x 1 | 21.1 ÷ 23.4 | 970 |
| 540TK031619 | CS 1.0-O-19 | 19 x 2 x 1 | 23.8 ÷ 26.3 | 1290 |
| 540TK031630 | CS 1.0-O-30 | 30 x 2 x 1 | 29.9 ÷ 33.0 | 2035 |
| 540TK031640 | CS 1.0-O-40 | 40 x 2 x 1 | 34.3 ÷ 38.0 | 2670 |

| TYPE CS 1.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK031603 | CS 1.5-O-3 | 3 x 2 x 1.5 | 13.6 ÷ 15.0 | 365 |
| 545TK031607 | CS 1.5-O-7 | 7 x 2 x 1.5 | 18.0 ÷ 19.9 | 740 |
| 545TK031612 | CS 1.5-O-12 | 12 x 2 x 1.5 | 24.4 ÷ 27.0 | 1240 |
| 545TK031614 | CS 1.5-O-14 | 14 x 2 x 1.5 | 25.8 ÷ 28.5 | 1410 |
| 545TK031619 | CS 1.5-O-19 | 19 x 2 x 1.5 | 29.3 ÷ 32.4 | 1870 |
| 545TK031630 | CS 1.5-O-30 | 30 x 2 x 1.5 | 36.7 ÷ 40.5 | 2890 |
| 545TK031640 | CS 1.5-O-40 | 40 x 2 x 1.5 | 42.1 ÷ 46.5 | 3795 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

AWG cross section are available on request, in compliance with NAV-80-6145-0003-14-00B000, as following examples:

| TYPE CS 22-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 524TK061602 | CS 22-O-2 | 2 x 2 x 22 (0.33) | 8.3 ÷ 9.1 | 119 |
| 524TK061603 | CS 22-O-3 | 3 x 2 x 22 (0.33) | 9.1 ÷ 10.0 | 155 |
| 524TK061607 | CS 22-O-7 | 7 x 2 x 22 (0.33) | 12.4 ÷ 13.3 | 290 |
| 524TK061610 | CS 22-O-10 | 10 x 2 x 22 (0.33) | 15.7 ÷ 16.7 | 403 |
| 524TK061614 | CS 22-O-14 | 14 x 2 x 22 (0.33) | 17.0 ÷ 18.2 | 509 |
| 524TK061619 | CS 22-O-19 | 19 x 2 x 22 (0.33) | 19.2 ÷ 20.4 | 675 |
| 524TK061624 | CS 22-O-24 | 24 x 2 x 22 (0.33) | 22.1 ÷ 23.5 | 842 |
| 524TK061630 | CS 22-O-30 | 30 x 2 x 22 (0.33) | 24.5 ÷ 26.1 | 957 |
| 524TK061640 | CS 22-O-40 | 40 x 2 x 22 (0.33) | 27.0 ÷ 29.0 | 1323 |

| TYPE CS 20-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 531TK061603 | CS 20-O-3 | 3 x 2 x 20 (0.59) | 10.0 ÷ 11.3 | 216 |
| 531TK061607 | CS 20-O-7 | 7 x 2 x 20 (0.59) | 13.3 ÷ 15.1 | 389 |
| 531TK061612 | CS 20-O-12 | 12 x 2 x 20 (0.59) | 17.8 ÷ 19.6 | 618 |
| 531TK061619 | CS 20-O-19 | 19 x 2 x 20 (0.59) | 21.2 ÷ 23.4 | 928 |

| TYPE CS 18-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 538TK061603 | CS 18-O-3 | 3 x 2 x 18 (0.93) | 11.6 ÷ 12.7 | 259 |
| 538TK061607 | CS 18-O-7 | 7 x 2 x 18 (0.93) | 15.5 ÷ 17.0 | 478 |
| 538TK061612 | CS 18-O-12 | 12 x 2 x 18 (0.93) | 20.6 ÷ 22.5 | 797 |
| 538TK061619 | CS 18-O-19 | 19 x 2 x 18 (0.93) | 24.8 ÷ 26.9 | 1207 |
| 538TK061630 | CS 18-O-30 | 30 x 2 x 18 (0.93) | 31.0 ÷ 33.4 | 1796 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

Example of designations:
the code CS 0.35-O-12 identifies a cable, with 12 shielded two-core (CG-S), with components of 0.35 mm², with overall shield (O).

# TK - TYPE CS-A - SPECIFICATION SHEET N. 17

## Miniaturized and flexible multi-pair armored electrical cable, with individually shielded pairs and low toxicity. Cable for general use - 300/500 V

characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white and blue |
| **Pairs** | single cores are twisted into pairs |
| **Individual shield** | tinned copper wire braid on each pair |
| **Pair sheath** | halogen free compound, black with white numbers |
| **Armour** | aluminium braid |
| **Overall inner sheath** | halogen free compound |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

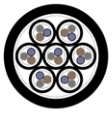
| TYPE CS 0.50-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 830TK031703 | CS 0.50-A-3 | 3 x 2 x 0.50 | 12.6 ÷ 14.0 | 275 |
| 830TK031707 | CS 0.50-A-7 | 7 x 2 x 0.50 | 15.9 ÷ 17.6 | 470 |
| 830TK031712 | CS 0.50-A-12 | 12 x 2 x 0.50 | 20.3 ÷ 22.5 | 735 |
| 830TK031719 | CS 0.50-A-19 | 19 x 2 x 0.50 | 23.6 ÷ 26.1 | 1040 |
| 830TK031730 | CS 0.50-A-30 | 30 x 2 x 0.50 | 29.0 ÷ 32.1 | 1550 |
| 830TK031740 | CS 0.50-A-40 | 40 x 2 x 0.50 | 32.5 ÷ 36.0 | 1975 |

| TYPE CS 1.0-A | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 840TK031703 | CS 1.0-A-3 | 3 x 2 x 1 | 14.1 ÷ 15.6 | 340 |
| 840TK031707 | CS 1.0-A-7 | 7 x 2 x 1 | 17.9 ÷ 19.8 | 610 |
| 840TK031712 | CS 1.0-A-12 | 12 x 2 x 1 | 23.1 ÷ 25.6 | 970 |
| 840TK031719 | CS 1.0-A-19 | 19 x 2 x 1 | 27.0 ÷ 29.8 | 1400 |
| 840TK031730 | CS 1.0-A-30 | 30 x 2 x 1 | 33.4 ÷ 37.0 | 2050 |

Example of designations: the code CS 0.50-A-7 identifies a cable, with 7 shielded two-core (CG-S), with components of 0.50 mm², with armor (A).

# TK - TYPE TS-O - SPECIFICATION SHEET N. 18

## Miniaturized and flexible multi-triad shielded electrical cable, with individually shielded triads and low toxicity. Cable for general use - 300/500 V



characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white, blue and orange |
| **Triads** | single cores are twisted into triads |
| **Individual shield** | tinned copper wire braid on each pair |
| **Triad sheath** | halogen free compound black with white numbers |
| **Overall shield** | tinned copper wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE TS 0.35-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section AWG | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 525TK031803 | TS 0.35-O-3 | 3 x 3 x 0.35 | 10.2 ÷ 11.2 | 210 |
| 525TK031807 | TS 0.35-O-7 | 7 x 3 x 0.35 | 13.2 ÷ 14.6 | 395 |
| 525TK031810 | TS 0.35-O-10 | 10 x 3 x 0.35 | 16.8 ÷ 18.5 | 570 |
| 525TK031814 | TS 0.35-O-14 | 14 x 3 x 0.35 | 18.5 ÷ 20.4 | 765 |
| 525TK031819 | TS 0.35-O-19 | 19 x 3 x 0.35 | 20.8 ÷ 23.0 | 1015 |
| 525TK031830 | TS 0.35-O-30 | 30 x 3 x 0.35 | 27.7 ÷ 30.6 | 1535 |
| **TYPE TS 0.50-O** | | | | |
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK031803 | TS 0.50-O-3 | 3 x 3 x 0.50 | 10.6 ÷ 11.7 | 215 |
| 530TK031807 | TS 0.50-O-7 | 7 x 3 x 0.50 | 14.0 ÷ 15.5 | 415 |
| 530TK031810 | TS 0.50-O-10 | 10 x 3 x 0.50 | 17.9 ÷ 19.8 | 590 |
| 530TK031814 | TS 0.50-O-14 | 14 x 3 x 0.50 | 19.5 ÷ 21.5 | 790 |
| 530TK031819 | TS 0.50-O-19 | 19 x 3 x 0.50 | 21.7 ÷ 24.0 | 1055 |
| 530TK031830 | TS 0.50-O-30 | 30 x 3 x 0.50 | 28.8 ÷ 31.8 | 1690 |
| **TYPE TS 1.0-O** | | | | |
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 540TK031803 | TS 1.0-O-3 | 3 x 3 x 1 | 12.2 ÷ 13.5 | 300 |
| 540TK031807 | TS 1.0-O-7 | 7 x 3 x 1 | 16.3 ÷ 18.0 | 590 |
| 540TK031810 | TS 1.0-O-10 | 10 x 3 x 1 | 21.7 ÷ 24.0 | 870 |
| 540TK031814 | TS 1.0-O-14 | 14 x 3 x 1 | 23.1 ÷ 25.5 | 1175 |
| 540TK031819 | TS 1.0-O-19 | 19 x 3 x 1 | 25.3 ÷ 27.9 | 1590 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

Example of designations:
the code TS 0.35-O-7 identifies a cable, with 7 shielded three-core (TG-S), with components of 0.35 mm², with overall shield (O).

# TK - TYPE CS-A - SPECIFICATION SHEET N. 19

## Miniaturized and flexible multi-triad armored electrical cable, with individually shielded triads and low toxicity. Cable for general use - 300/500 V

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | concentric tinned copper conductor according ASTM B33 |
| **Insulation** | double layer with special compound, white, blue and orange |
| **Triads** | single cores are twisted into triads |
| **Individual shield** | tinned copper wire braid on each pair |
| **Triad sheath** | halogen free compound black with white numbers |
| **Overall inner sheath** | halogen free compound |
| **Armour** | aluminium wire braid |
| **Sheath** | crosslinked compound, type EM104 according to Standard EN 50306-1. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 5 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| TYPE TS 0.50-O | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 830TK031903 | TS 0.50-A-3 | 3 x 3 x 0.50 | 13.2 ÷ 14.6 | 300 |
| 830TK031907 | TS 0.50-A-7 | 7 x 3 x 0.50 | 16.7 ÷ 18.5 | 520 |
| 830TK031910 | TS 0.50-A-10 | 10 x 3 x 0.50 | 20.8 ÷ 23.0 | 735 |
| 830TK031914 | TS 0.50-A-14 | 14 x 3 x 0.50 | 22.4 ÷ 24.8 | 920 |
| 830TK031919 | TS 0.50-A-19 | 19 x 3 x 0.50 | 24.8 ÷ 27.4 | 1170 |
| 830TK031930 | TS 0.50-A-30 | 30 x 3 x 0.50 | 31.3 ÷ 34.6 | 1765 |
| **TYPE TS 1.0-O** | | | | |
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 840TK031903 | TS 1.0-A-3 | 3 x 3 x 1 | 14.7 ÷ 16.3 | 375 |
| 840TK031907 | TS 1.0-A-7 | 7 x 3 x 1 | 19.1 ÷ 21.1 | 715 |
| 840TK031910 | TS 1.0-A-10 | 10 x 3 x 1 | 24.0 ÷ 26.6 | 1000 |
| 840TK031914 | TS 1.0-A-14 | 14 x 3 x 1 | 25.5 ÷ 28.2 | 1275 |
| 840TK031919 | TS 1.0-A-19 | 19 x 3 x 1 | 28.3 ÷ 31.3 | 1635 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

Example of designations:
the code TS 0.50-A-19 identifies a cable, with 19 shielded three-core (TG-S), with components of 0.50 mm², with armor (A).

# ANNEX A - DESIGNATION OF CABLES

## Tables of correspondence with cancelled NAV-80-6145-0002-40-00B000 Specification

| SINGLE CORE TYPE UG-N: CORRESPONDENT DESIGNATIONS | | | | | |
|---|---|---|---|---|---|
| DESIGNATION – P/N CURRENT STANDARD | | | DESIGNATION – P/N NAV-80-6145-0002-40-00B000 | | |
| Designation | section mm² nom. | formation n° x diam. wire mm | Designation | section mm² nom. | formation n° x diam. wire mm |
| | | | UG-N-26-Y | 0.15 | 19x0.10 |
| | | | UG-N-24-Y | 0.21 | 19x0.12 |
| UG-N-0.35-Y | 0.35 | 19x0.16 | UG-N-22-Y | 0.33 | 19x0.15 |
| UG-N-0.50-Y | 0.50 | 19x0.18 | UG-N-20-Y | 0.59 | 19x0.20 |
| UG-N-1.0-Y | 1.00 | 19x0.25 | UG-N-18-Y | 0.93 | 19x0.25 |
| | | | UG-N-16-Y | 1.34 | 19x0.30 |
| UG-N-1.5-Y | 1.50 | 37x0.23 | | | |
| | | | UG-N-14-Y | 1.82 | 37x0.25 |
| UG-N-2.5-Y | 2.50 | 37x0.30 | UG-N-12-Y | 2.61 | 37x0.30 |

| COLOR Guidance LETTER "y" | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

| SINGLE CORE TYPE UG-N: EQUIVALENCE NATO CODE | | | |
|---|---|---|---|
| NUC / NSN | Previous P/N | New P/N | Note |
| 6145-15-121-8383 | UG-N-12-0 | UG-N-2.5-0 | black |
| 6145-15-144-9694 | UG-N-12-9 | UG-N-2.5-9 | white |
| 6145-15-121-8372 | UG-N-14-0 | = | black - Out of standard for section= 1.82 mm² |
| 6145-15-121-8373 | UG-N-14-2 | = | red - Out of standard for section= 1.82 mm² |
| 6145-15-144-9692 | UG-N-14-9 | = | white - Out of standard for section= 1.82 mm² |
| 6145-15-121-8377 | UG-N-16-0 | UG-N-1.5-0 | black |
| 6145-15-121-8379 | UG-N-16-5 | UG-N-1.5-5 | green |
| 6145-15-121-8378 | UG-N-16-6 | UG-N-1.5-6 | blue |
| 6145-15-144-9690 | UG-N-16-9 | UG-N-1.5-9 | white |
| 6145-15-144-9688 | UG-N-18-9 | UG-N-1.0-9 | white |
| 6145-15-121-8406 | UG-N-20-0 | UG-N-0.50-0 | black |
| 6145-15-121-8408 | UG-N-20-5 | UG-N-0.50-5 | green |
| 6145-15-121-8409 | UG-N-20-6 | UG-N-0.50-6 | blue |
| 6145-15-150-9482 | UG-N-20-9 | UG-N-0.50-9 | white |
| 6145-15-121-8402 | UG-N-22-6 | UG-N-0.35-6 | blue |
| 6145-15-150-9483 | UG-N-22-9 | UG-N-0.35-9 | white |
| 6145-15-121-8388 | UG-N-26-5 | = | green - Out of standard for section= 0.15 mm² |

| SINGLE CORE SHIELDED TYPE UG-S: CORRESPONDENT DESIGNATIONS | | | | | |
|---|---|---|---|---|---|
| DESIGNATION – P/N CURRENT STANDARD | | | DESIGNATION – P/N NAV-80-6145-0002-40-00B000 | | |
| Designation | section mm² nom. | formation n° x diam. wire mm | Designation | section mm² nom. | formation n° x diam. wire mm |
| | | | UG-S-26-Y | 0.15 | 19x0.10 |
| | | | UG-S-24-Y | 0.21 | 19x0.12 |
| UG-S-0.35-Y | 0.35 | 19x0.16 | UG-S-22-Y | 0.33 | 19x0.15 |
| UG-S-0.50-Y | 0.50 | 19x0.18 | UG-S-20-Y | 0.59 | 19x0.20 |
| UG-S-1.0-Y | 1.00 | 19x0.25 | UG-S-18-Y | 0.93 | 19x0.25 |
| UG-S-1.5-Y | 1.50 | 37x0.23 | UG-S-16-Y | 1.34 | 19x0.30 |
| | | | UG-S-14-Y | 1.82 | 37x0.25 |
| UG-S-2.5-Y | 2.50 | 37x0.30 | UG-S-12-Y | 2.61 | 37x0.30 |

| COLOR Guidance LETTER "y" | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

| PAIR SHIELDED TYPE CG-S: CORRESPONDENT DESIGNATIONS | | | | | |
|---|---|---|---|---|---|
| DESIGNATION – P/N CURRENT STANDARD | | | DESIGNATION – P/N NAV-80-6145-0002-40-00B000 | | |
| Designation | section mm² nom. | formation n° x diam. wire mm | Designation | section mm² nom. | formation n° x diam. wire mm |
| | | | CG-S-26-Y/Y | 0.15 | 19x0.10 |
| | | | CG-S-24-Y/Y | 0.21 | 19x0.12 |
| CG-S-0.35-Y/Y | 0.35 | 19x0.16 | CG-S-22-Y/Y | 0.33 | 19x0.15 |
| CG-S-0.50-Y/Y | 0.50 | 19x0.18 | CG-S-20-Y/Y | 0.59 | 19x0.20 |
| CG-S-1.0-Y/Y | 1.00 | 19x0.25 | CG-S-18-Y/Y | 0.93 | 19x0.25 |
| CG-S-1.5-Y/Y | 1.50 | 37x0.23 | CG-S-16-Y/Y | 1.34 | 19x0.30 |
| | | | CG-S-14-Y/Y | 1.82 | 37x0.25 |
| CG-S-2.5-Y/Y | 2.50 | 37x0.30 | CG-S-12-Y/Y | 2.61 | 37x0.30 |

| COLOR Guidance LETTER "y" | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

| TRIADS SHIELDED TYPE TG-S: CORRESPONDENT DESIGNATIONS | | | | | |
|---|---|---|---|---|---|
| DESIGNATION – P/N CURRENT STANDARD | | | DESIGNATION – P/N NAV-80-6145-0002-40-00B000 | | |
| Designation | section mm² nom. | formation n° x diam. wire mm | Designation | section mm² nom. | formation n° x diam. wire mm |
| | | | TG-S-26-Y/Y/Y | 0.15 | 19x0.10 |
| | | | TG-S-24-Y/Y/Y | 0.21 | 19x0.12 |
| TG-S-0.35-Y/Y/Y | 0.35 | 19x0.16 | TG-S-22-Y/Y/Y | 0.33 | 19x0.15 |
| TG-S-0.50-Y/Y/Y | 0.50 | 19x0.18 | TG-S-20-Y/Y/Y | 0.59 | 19x0.20 |
| TG-S-1.0-Y/Y/Y | 1.00 | 19x0.25 | TG-S-18-Y/Y/Y | 0.93 | 19x0.25 |
| TG-S-1.5-Y/Y/Y | 1.50 | 37x0.23 | TG-S-16-Y/Y/Y | 1.34 | 19x0.30 |
| | | | TG-S-14-Y/Y/Y | 1.82 | 37x0.25 |
| TG-S-2.5-Y/Y/Y | 2.50 | 37x0.30 | TG-S-12-Y/Y/Y | 2.61 | 37x0.30 |

| COLOR Guidance LETTER "y" | |
|---|---|
| 0: black | 5: green |
| 1: brown | 6: blue |
| 2: red | 7: violet |
| 3: orange | 8: grey |
| 4: yellow | 9: white |

# ANNEX A - DESIGNATION OF CABLES

| TRIADS SHIELDED TYPE TG-S: EQUIVALENCE NATO CODE | | | |
|---|---|---|---|
| NUC / NSN | Previous P/N | New P/N | Note |
| 6145-15-150-9481 | TG-S-20-9/6/3 | TG-S-0.50-9/6/3 | white – blue - orange |
| 6145-15-150-9480 | TG-S-18-9/6/3 | TG-S-1.00-9/6/3 | white – blue - orange |

| MULTI-CORE CABLE OF POWER TYPE FN-nn: NATO CODE AND CORRESONDENT DESIGNATIONS | | | |
|---|---|---|---|
| NUC / NSN | Previous P/N | New P/N | Note |
| 6145-15-142-4073 | FN 02-A-12 | FN 02-A-2.5 | |
| 6145-15-142-6114 | FN 02-A-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-142-6113 | FN 02-A-16 | FN 02-A-1.5 | |
| = | = | FN 02-A-1.0 | |
| 6145-15-153-4624 | FN 02-N-12 | FN 02-N-2.5 | |
| 6145-15-150-9474 | FN 02-N-14 | | Out of standard for section= 1.82 mm² |
| 6145-15-153-4625 | FN 02-N-16 | FN 02-N-1.5 | |
| = | = | FN 02-N-1.0 | |
| 6145-15-153-4626 | FN 02-O-12 | FN 02-O-2.5 | |
| 6145-15-150-9473 | FN 02-O-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-143-0053 | FN 02-O-16 | FN 02-O-1.5 | |
| = | = | FN 02-O-1.0 | |
| 6145-15-142-4074 | FN 03-A12 | FN 03-A-2.5 | |
| 6145-15-142-6116 | FN 03-A-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-142-6115 | FN 03-A-16 | FN 03-A-1.5 | |
| = | = | FN 03-A-1.0 | |
| 6145-15-154-7305 | FN 03-N-12 | FN 03-N-2.5 | |
| 6145-15-153-1367 | FN 03-N-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-154-7306 | FN 03-N-16 | FN 03-N-1.5 | |
| = | = | FN 03-N-1.0 | |
| 6145-15-150-9475 | FN 03-O-12 | FN 03-O-2.5 | |
| 6145-15-150-9476 | FN 03-O-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-150-9477 | FN 03-O-16 | FN 03-O-1.5 | |
| = | = | FN 03-O-1.0 | |
| 6145-15-142-4075 | FN 04-A-12 | FN 04-A-2.5 | |
| 6145-15-142-6118 | FN 04-A-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-142-6117 | FN 04-A-16 | FN 04-A-1.5 | |
| = | = | FN 04-A-1.0 | |
| 6145-15-154-7307 | FN 04-N-12 | FN 04-N-2.5 | |
| 6145-15-150-9479 | FN 04-N-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-154-7308 | FN 04-N-16 | FN 04-N-1.5 | |
| = | = | FN 04-N-1.0 | |
| 6145-15-150-9478 | FN 04-O-12 | FN 04-O-2.5 | |
| 6145-15-153-4627 | FN 04-O-14 | = | Out of standard for section= 1.82 mm² |
| 6145-15-153-4628 | FN 04-O-16 | FN 04-O-1.5 | |
| = | = | FN 04-O-1.0 | |

**CABLE OF COMUNICATION AND SIGNALING CORRESONDENT DESIGNATIONS**

For all the multi-core cables for signaling and communication, the correspondence of the designations is obtained in an immediate way replacing the values present in the field relative to the size of the conductors (paragraph 3.1.2) with the new values normalized in mm² as indicated in the following table:

| Designation of previous size | Actual size in mm² |
|---|---|
| 22 | 0.35 |
| 20 | 0.50 |
| 18 | 1.0 |
| 16 | 1.5 |

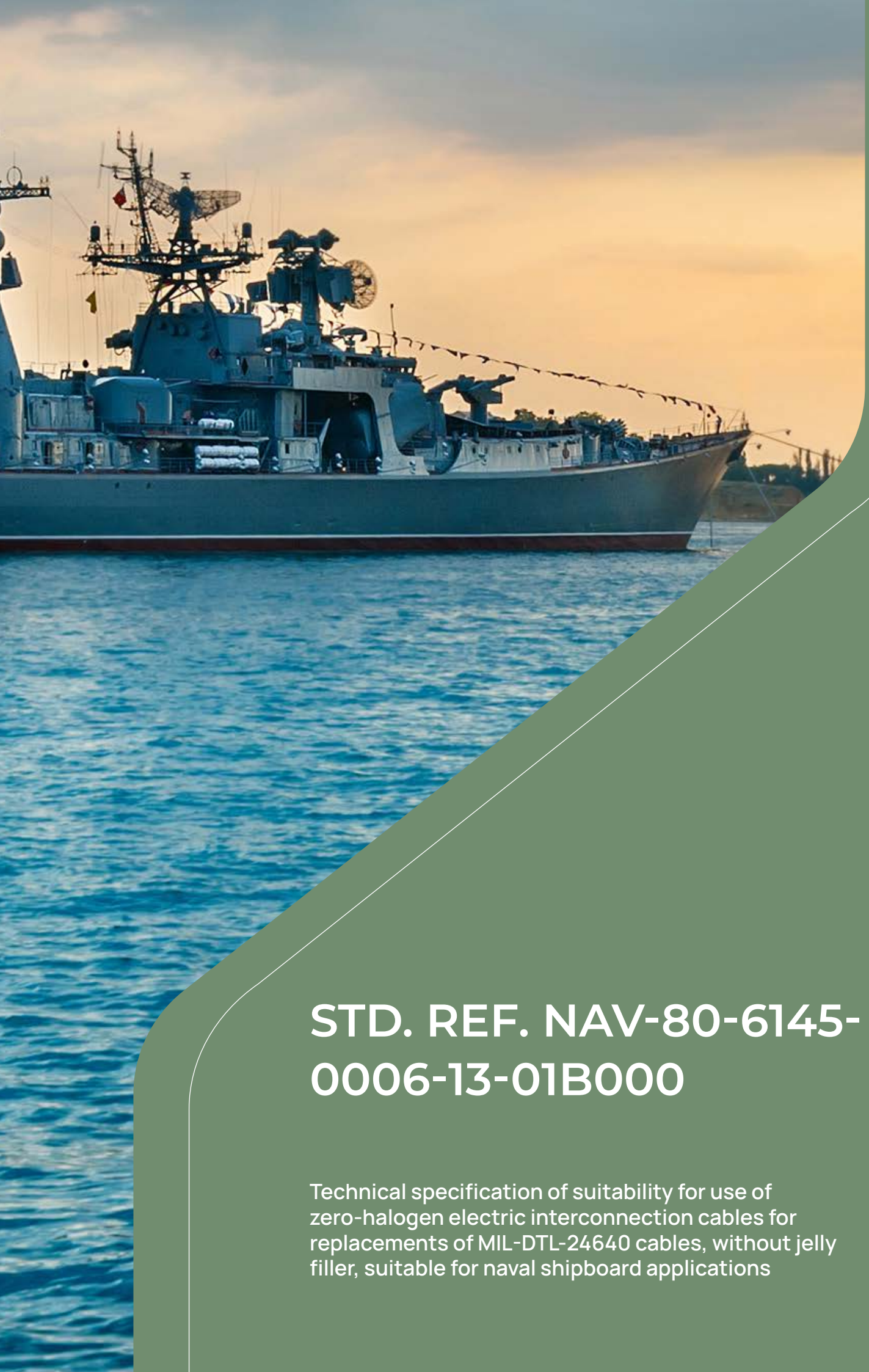
**BUILDING VARIATIONS**

For building variations related only to the global shield, to obtain higher shielding efficiencies, the symbols to be used in the field of the cladding sheath (paragraph 3.1.2) will be the following:

- **OO** to indicate the optimized double shield (example: CS 0.35-OO-7)
- **K** to indicate superschermat with double braid and interposed "mumetal" tape (example: CS 0.35-K-7)

For the building variations of cables with a global shield to with added armor (paragraph 3.3.6), the symbol to be used in the field of sheathing cladding (paragraph 3.1.2) will be "OA" (example: the TS 1.0-OA-10 designation refers to a multi-core cable consisting of 10 individually-shielded cross- sections of 1,00 mm², with an optimized, reinforced global shield. Construction according to specification sheet no. 18).

| NATO CODE AND CORRESONDENT DESIGNATIONS | | | |
|---|---|---|---|
| NUC / NSN | Previous P/N | New P/N | Note |
| 6145-15-150-9485 | US 20-O-19 | US 0.50-O-19 | |
| 6145-15-154-7328 | UN 20-A-7 | UN 0.50-A-7 | |
| 6145-15-154-7321 | UN 20-A-10 | UN 0.50-A-10 | |
| 6145-15-154-7322 | UN 20-A-14 | UN 0.50-A-14 | |
| 6145-15-154-7323 | UN 20-A-19 | UN 0.50-A-19 | |
| 6145-15-154-7324 | UN 20-A-24 | UN 0.50-A-24 | |
| 6145-15-154-7325 | UN 20-A-30 | UN 0.50-A-30 | Out of standard= 30 core |
| 6145-15-154-7326 | UN 20-A-37 | UN 0.50-A-37 | |
| 6145-15-154-7327 | UN 20-A-44 | UN 0.50-A-44 | |
| 6145-15-150-9484 | UN 20-N-19 | UN 0.50-N-19 | |
| 6145-15-154-7329 | UN 20-N-24 | UN 0.50-N-24 | |
| 6145-15-154-7330 | UN 20-O-7 | UN 0.50-O-7 | |
| 6145-15-154-7317 | UN 20-O-10 | UN 0.50-O-10 | |
| 6145-15-154-7318 | UN 20-O-14 | UN 0.50-O-14 | |
| 6145-15-154-7319 | UN 20-O-19 | UN 0.50-O-19 | |
| 6145-15-154-7320 | UN 20-O-24 | UN 0.50-O-24 | |
| 6145-15-121-8413 | UN 18-O-10 | UN 1.0-O-10 | |
| 6145-15-154-7316 | UN 18-O-14 | UN 1.0-O-14 | |
| 6145-15-121-8412 | UN 18-O-24 | UN 1.0-O-24 | |
| 6145-15-121-8411 | UN 18-O-37 | UN 1.0-O-37 | |



These images are for illustrative purposes.

# STD. REF. NAV-80-6145-0006-13-01B000

Technical specification of suitability for use of zero-halogen electric interconnection cables for replacements of MIL-DTL-24640 cables, without jelly filler, suitable for naval shipboard applications

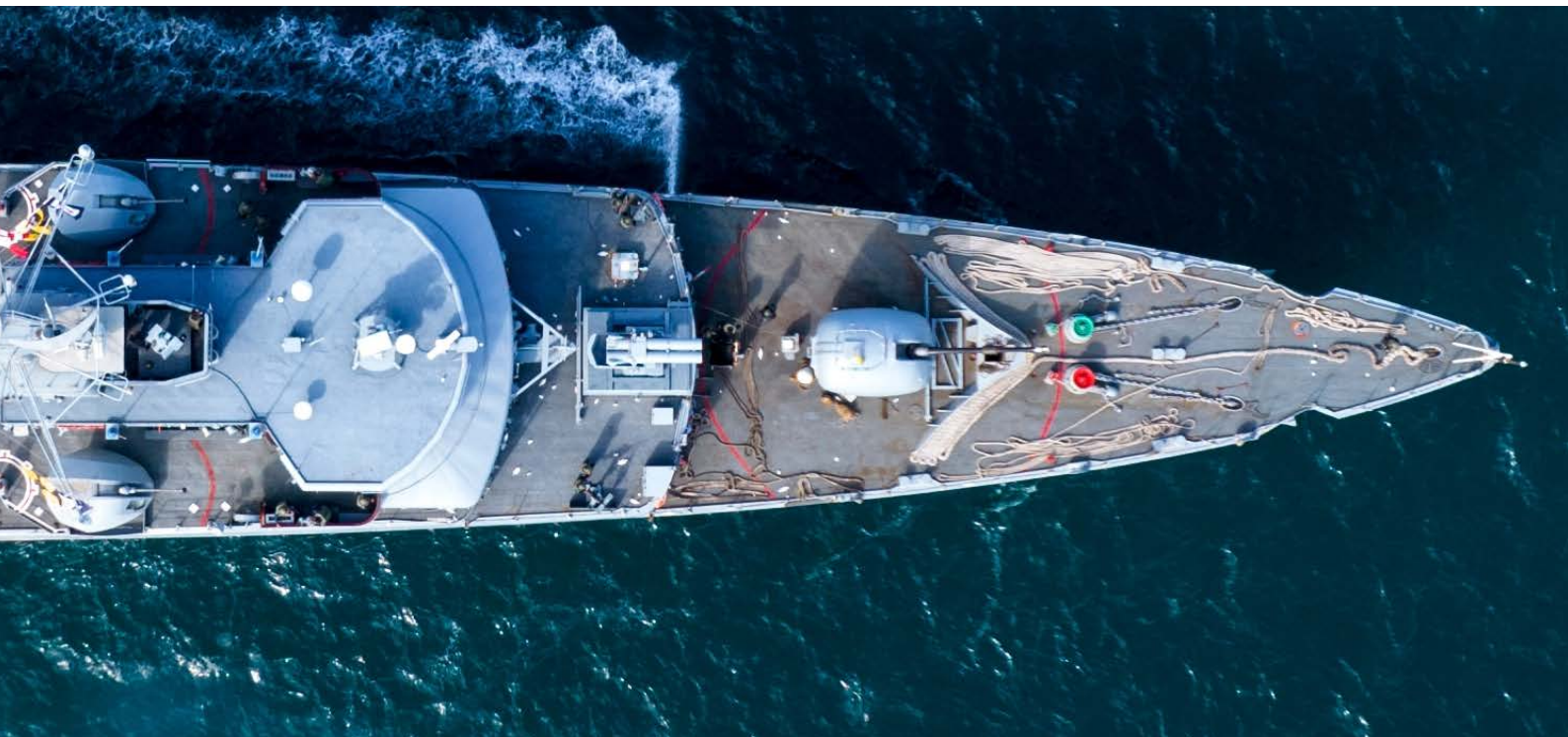
The cables that comply with NAV-80-6145-0006-13-01B000, are made with shielding materials and techniques that comply with the national reference standards. The conductors of these cables have cross-sections in AWG instead of in square millimetres. The cables are defined as “halogen-free equivalent” and they are physically and electrically interchangeable with MIL-DTL-24640 cables (“low-halogen” cables). They refer to MIL-DTL-24640 cables for configuration, field of use and dimensions. The cables also comply with the general requirements for on-board electrical systems (NAV-80-6160-0024-14-00B000) and with the RINAMIL regulations.

**TYPES OF CABLES THAT ARE APPLICABLE**

This Specification gives the construction features and the test methods for the applicable cable types. The table below gives the cable types. The table also gives the functional equivalence with the corresponding MIL cables that contain halogens. The field of application for all cable types is as follows:

- Operating temperature: single conductors -45 °C + 105 °C multi-core cables -40 °C + 90 °C
- Working voltage: 300/500 Vac
- Light-weight construction - Double layered insulations

The table that follows gives the correspondance between the specification sheets of MIL-DTL-24640 and the families of cables of NAV-80-6145-0003-14-00B000



| Table 1: correspondance between the types of cables and the related specification sheets of MIL-DTL-24640 and the families of cables of NAV-80-6145-0003-14-00B000 | | |
|---|---|---|
| **Type MIL-DTL.24640** | **Specification for inspection tests** | **Families of cables of NAV-80-6145-0003-14-00B000** |
| DX DXO DXA | M24640/1 | FN02-N FN02-O FN02-A |
| TX TXO TXA | M24640/2 | FN03-N FN03-O FN03-A |
| FX FXO FXA | M24640/3 | FN04-N FN04-O FN04-A |
| 5XO | M24640/26 | FN05-O |
| TTX TTXA | M24640/4 | CN20-N CN20-A |
| TTXS TTXSO TTXSA | M24640/5 | CS20-N CS20-O CS20-A |
| 2XAO | M24640/6 | CN22-O |
| 1XMSO | M24640/7 | US22-O |
| MXO | M24640/8 | UN20-O |
| 2XS 2XSO 2XSA | M24640/9 | CS22-N CS22-O CS22-A |
| MXSO | M24640/10 | UN16-O |
| 3XS 3XSA | M24640/11 | TS18-N TS-18-A |
| 2XO | M24640/12 | CN26-O |
| 2XSXO | M24640/13 | CS26-O |

**Note**: For multiple formations, there can be designations that are not in these tables (only if they comply with all the other constructive parameters in the Specification Sheet and in the general introduction of the Specification). The tables are therefore only examples of the most frequent configurations. They do not show all the possible compliant configurations. For multiple formations with conductors that have cross-sections that are not in the Specification Sheets, designations that are not in these tables are possible. This is possible only if they comply with all the other constructive parameters for the type in the relevant Specification.
These cables will be compliant with the relevant Specification.

These images are for illustrative purposes.

# STD. REF. NAV-80-6145-0005-13-01B000

Non-toxic electric cables suitable for naval shipboard applications

# TK - TYPE NBT AND NG - SPECIFICATION SHEET N. 01

## Halogen-free unarmored electrical cables, flame retardant for general use at low voltage 600/1000 V, for energy, power and control.

characteristics

### CONSTRUCTION

| | | |
|---|---|---|
| **Conductor** | bare copper conductor according ASTM B33, class 5 according to IEC 60228 | |
| **Insulation** | HEPR according to IEC 60092-360 | |
| **Core identification** | single core<br>two-core<br>three-core NBT<br>three-core NG<br>four-core NBT<br>four-core NG | black<br>brown-blue<br>brown–black–grey<br>brown–blue–yellow/green<br>brown–black–grey–blue<br>brown–black–grey– yellow/green |
| **Bedding** | textile or extruded fillers. | |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour black according to NAV80 std or coloured on request. | |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 245TK050101 | NBT 1.5 | 1 x 1.5 | 5.2 | 40 |
| 255TK050101 | NBT 2.5 | 1 x 2.5 | 5.6 | 50 |
| 265TK050101 | NBT 4 | 1 x 4 | 6.2 | 70 |
| 270TK050101 | NBT 6 | 1 x 6 | 6.7 | 90 |
| 280TK050101 | NBT 10 | 1 x 10 | 7.6 | 140 |
| 285TK050101 | NBT 16 | 1 x 16 | 8.8 | 200 |
| 290TK050101 | NBT 25 | 1 x 25 | 10.4 | 300 |
| 293TK050101 | NBT 35 | 1 x 35 | 11.8 | 400 |
| 295TK050101 | NBT 50 | 1 x 50 | 13 | 530 |
| 297TK050101 | NBT 70 | 1 x 70 | 15.3 | 740 |
| 298TK050101 | NBT 95 | 1 x 95 | 17.4 | 1010 |
| 299TK050101 | NBT 120 | 1 x 120 | 19 | 1260 |
| 29DTK050101 | NBT 150 | 1 x 150 | 21.2 | 1540 |
| 29FTK050101 | NBT 185 | 1 x 185 | 23.6 | 1940 |
| 29ITK050101 | NBT 240 | 1 x 240 | 26.6 | 2490 |
| 29LTK050101 | NBT 300 | 1 x 300 | 29.5 | 3130 |

| TWO CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050102 | NBT 2X1.5 | 2x1.5 | 8.2 | 90 |
| 355TK050102 | NBT 2x2.5 | 2x2.5 | 9.2 | 120 |
| 365TK050102 | NBT 2x4 | 2x4 | 10.3 | 150 |
| 370TK050102 | NBT 2x6 | 2x6 | 11.6 | 200 |
| 380TK050102 | NBT 2x10 | 2x10 | 13.5 | 300 |
| 385TK050102 | NBT 2x16 | 2x16 | 15.7 | 440 |
| 390TK050102 | NBT 2x25 | 2x25 | 19.2 | 670 |
| 393TK050102 | NBT 2x35 | 2x35 | 23.4 | 1200 |
| 395TK050102 | NBT 2x50 | 2x50 | 26.3 | 1500 |

| THREE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050103 | NBT 3x1.5 | 3x1.5 | 8.6 | 100 |
| 355TK050103 | NBT 3x2.5 | 3x2.5 | 9.7 | 140 |
| 365TK050103 | NBT 3x4 | 3x4 | 10.9 | 190 |
| 370TK050103 | NBT 3x6 | 3x6 | 12.3 | 260 |
| 380TK050103 | NBT 3x10 | 3x10 | 14.5 | 410 |
| 385TK050103 | NBT 3x16 | 3x16 | 16.9 | 610 |
| 390TK050103 | NBT 3x25 | 3x25 | 20.6 | 930 |
| 393TK050103 | NBT 3x35 | 3x35 | 24.7 | 1500 |
| 395TK050103 | NBT 3x50 | 3x50 | 28 | 2000 |
| 397TK050103 | NBT 3x70 | 3x70 | 33.3 | 2830 |
| 398TK050103 | NBT 3x95 | 3x95 | 37.3 | 3780 |
| 399TK050103 | NBT 3x120 | 3x120 | 41.4 | 4700 |
| 39DTK050103 | NBT 3x150 | 3x150 | 46 | 5200 |
| 39DTK050103 | NBT 3x185 | 3x185 | 51.5 | 7200 |

| FOUR CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050104 | NBT 4x1.5 | 4x1.5 | 9.6 | 130 |
| 355TK050104 | NBT 4x2.5 | 4x2.5 | 10.6 | 180 |
| 365TK050104 | NBT 4x4 | 4x4 | 12.1 | 240 |
| 370TK050104 | NBT 4x6 | 4x6 | 13.5 | 340 |
| 380TK050104 | NBT 4x10 | 4x10 | 15.9 | 510 |
| 385TK050104 | NBT 4x16 | 4x16 | 18.6 | 770 |
| 390TK050104 | NBT 4x25 | 4x25 | 22.9 | 1180 |
| 393TK050104 | NBT 4x35 | 4x35 | 27.2 | 1850 |
| 395TK050104 | NBT 4x50 | 4x50 | 31.2 | 2500 |
| 397TK050104 | NBT 4x70 | 4x70 | 36.7 | 3550 |
| 398TK050104 | NBT 4x95 | 4x95 | 41.3 | 4780 |
| 399TK050104 | NBT 4x120 | 4x120 | 46 | 6000 |
| 39DTK050104 | NBT 4x150 | 4x150 | 51 | 7350 |
| 39DTK050104 | NBT 4x185 | 4x185 | 57.6 | 9300 |

# TK - TYPE NBTA AND NGA - SPECIFICATION SHEET NO. 02

## Halogen-free armored electrical cables, flame retardant for general use at low voltage 600/1000 V, for energy, power and control.

characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | bare copper conductor according ASTM B33, class 5 according to IEC 60228 |
| **Insulation** | HEPR according to IEC 60092-360 |
| **Core identification** | single core: black<br>two-core: brown-blue<br>three-core NBTA: brown–black–grey<br>three-core NGA: brown–blue–yellow/green<br>four-core NBTA: brown–black–grey–blue<br>four-core NGA: brown–black–grey– yellow/green |
| **Bedding** | textile or extruded fillers. |
| **Armour** | bare copper wire braid having coverage›90%, if not otherwise stated |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050201 | NBTA 1.5 | 1.5 | 6.2 | 65 |
| 555TK050201 | NBTA 2.5 | 2.5 | 6.6 | 80 |
| 565TK050201 | NBTA 4 | 4 | 7.1 | 100 |
| 570TK050201 | NBTA 6 | 6 | 7.8 | 125 |
| 580TK050201 | NBTA 10 | 10 | 8.8 | 180 |
| 585TK050201 | NBTA 16 | 16 | 9.8 | 240 |
| 590TK050201 | NBTA 25 | 25 | 11.6 | 350 |
| 593TK050201 | NBTA 35 | 35 | 12.9 | 470 |
| 595TK050201 | NBTA 50 | 50 | 15 | 650 |
| 597TK050201 | NBTA 70 | 70 | 17 | 890 |
| 598TK050201 | NBTA 95 | 95 | 18.8 | 1150 |
| 599TK050201 | NBTA 120 | 120 | 20.7 | 1420 |
| 59DTK050201 | NBTA 150 | 150 | 22.8 | 1720 |
| 59FTK050201 | NBTA 185 | 185 | 25.3 | 2120 |
| 59ITK050201 | NBTA 240 | 240 | 28.2 | 2700 |
| 59LTK050201 | NBTA 300 | 300 | 31.1 | 3400 |

| TWO CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050202 | NBTA 2x1.5 | 2x1.5 | 9.4 | 130 |
| 555TK050202 | NBTA 2x2.5 | 2x2.5 | 10.2 | 160 |
| 565TK050202 | NBTA 2x4 | 2x4 | 11.6 | 210 |
| 570TK050202 | NBTA 2x6 | 2x6 | 12.8 | 280 |
| 580TK050202 | NBTA 2x10 | 2x10 | 15 | 430 |
| 585TK050202 | NBTA 2x16 | 2x16 | 17.3 | 600 |
| 590TK050202 | NBTA 2x25 | 2x25 | 20.7 | 820 |
| 593TK050202 | NBTA 2x35 | 2x35 | 24.6 | 1370 |
| 595TK050202 | NBTA 2x50 | 2x50 | 27.6 | 1740 |

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050203 | NBTA 3x1.5 | 3x1.5 | 9.8 | 150 |
| 555TK050203 | NBTA 3x2.5 | 3x2.5 | 10.7 | 190 |
| 565TK050203 | NBTA 3x4 | 3x4 | 12.1 | 250 |
| 570TK050203 | NBTA 3x6 | 3x6 | 13.3 | 320 |
| 580TK050203 | NBTA 3x10 | 3x10 | 15.8 | 530 |
| 585TK050203 | NBTA 3x16 | 3x16 | 18.3 | 750 |
| 590TK050203 | NBTA 3x25 | 3x25 | 21.9 | 1100 |
| 593TK050203 | NBTA 3x35 | 3x35 | 26.2 | 1700 |
| 595TK050203 | NBTA 3x50 | 3x50 | 29.4 | 2260 |
| 597TK050203 | NBTA 3x70 | 3x70 | 34.5 | 3050 |
| 598TK050203 | NBTA 3x95 | 3x95 | 39.1 | 4100 |
| 599TK050203 | NBTA 3x120 | 3x120 | 43.2 | 5100 |
| 59DTK050203 | NBTA 3x150 | 3x150 | 48 | 6200 |
| 59DTK050203 | NBTA 3x185 | 3x185 | 53.5 | 7800 |

| FOUR CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050204 | NBTA 4x1.5 | 4x1.5 | 10.6 | 180 |
| 555TK050204 | NBTA 4x2.5 | 4x2.5 | 11.7 | 230 |
| 565TK050204 | NBTA 4x4 | 4x4 | 13.1 | 300 |
| 570TK050204 | NBTA 4x6 | 4x6 | 15 | 450 |
| 580TK050204 | NBTA 4x10 | 4x10 | 17.5 | 640 |
| 585TK050204 | NBTA 4x16 | 4x16 | 20.1 | 960 |
| 590TK050204 | NBTA 4x25 | 4x25 | 24.2 | 1380 |
| 593TK050204 | NBTA 4x35 | 4x35 | 28.7 | 2100 |
| 595TK050204 | NBTA 4x50 | 4x50 | 32.7 | 2780 |
| 597TK050204 | NBTA 4x70 | 4x70 | 38.5 | 3970 |
| 598TK050204 | NBTA 4x95 | 4x95 | 43.3 | 5200 |
| 599TK050204 | NBTA 4x120 | 4x120 | 48.2 | 6500 |
| 59DTK050204 | NBTA 4x150 | 4x150 | 53.2 | 7900 |
| 59DTK050204 | NBTA 4x185 | 4x185 | 59.6 | 9900 |

AWG cross section are available on request.

# TK - TYPE NVD AND NVD-S - SPECIFICATION SHEET N. 03

## Halogen-free armored electrical cables, flame retardant and fire resistant for general use at low voltage 600/1000V, for energy, power “Vessel in Distress”, (Version -S for submerged service)

characteristics

## CONSTRUCTION

| | | |
|---|---|---|
| **Conductor** | Bare copper conductor according to ASTM B33, class 5 according to IEC 60228 | |
| **Insulation** | Fire Barrier Tape + XLPE according to IEC 60092-360 | |
| **Core identification** | single core<br>two-core<br>three-core<br>four-core | black<br>brown-blue<br>brown–black–grey<br>brown-black-grey-blue |
| **Bedding** | Tapes and/or extruded filler | |
| **EMC Shield (if any)** | metallic/plastic tape + tinned copper wire braid having coverage ≥ 90% | |
| **Inner Covering** | halogen free compound or tapes | |
| **Armour** | bare copper wire braid having coverage > 90%, if not otherwise stated | |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360.<br>Colour orange according to NAV80 std or coloured on request | |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ + 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 par.8.1<br>CEI EN 60811-404 – IRM 902 – IRM903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire propagation** | CEI EN 60332-3-22 Cat. A |
| **Fire Resistance** | CEI EN 50200 (180 min)<br>CEI EN 50200 Annex E (90 min) |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-1 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 par.9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 845TK050301 | NVD 1x1.5 | 1x1.5 | 6.8 | 80 |
| 855TK050301 | NVD 1x2.5 | 1x2.5 | 7.2 | 100 |
| 865TK050301 | NVD 1x4 | 1x4 | 7.7 | 110 |
| 870TK050301 | NVD 1x6 | 1x6 | 8.3 | 140 |
| 880TK050301 | NVD 1x10 | 1x10 | 9.4 | 200 |
| 885TK050301 | NVD 1x16 | 1x16 | 10.4 | 270 |
| 890TK050301 | NVD 1x25 | 1x25 | 12.2 | 380 |
| 893TK050301 | NVD 1x35 | 1x35 | 13.3 | 470 |
| 895TK050301 | NVD 1x50 | 1x50 | 15.3 | 660 |
| 897TK050301 | NVD 1x70 | 1x70 | 17.6 | 900 |
| 898TK050301 | NVD 1x95 | 1x95 | 19.6 | 1150 |
| 899TK050301 | NVD 1x120 | 1x120 | 21.3 | 1450 |
| 89DTK050301 | NVD 1x150 | 1x150 | 23.4 | 1700 |
| 89FTK050301 | NVD 1x185 | 1x185 | 25.9 | 2100 |
| 89ITK050301 | NVD 1x240 | 1x240 | 28.8 | 2750 |
| 89LTK050301 | NVD 1x300 | 1x300 | 31.7 | 3400 |

| TWO CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 845TK050302 | NVD 2x1.5 | 2x1.5 | 11.8 | 220 |
| 855TK050302 | NVD 2x2.5 | 2x2.5 | 12.5 | 260 |
| 865TK050302 | NVD 2x4 | 2x4 | 13.5 | 310 |
| 870TK050302 | NVD 2x6 | 2x6 | 15.3 | 430 |
| 880TK050302 | NVD 2x10 | 2x10 | 17.4 | 590 |
| 885TK050302 | NVD 2x16 | 2x16 | 19.6 | 780 |
| 890TK050302 | NVD 2x25 | 2x25 | 23.4 | 1100 |
| 893TK050302 | NVD 2x35 | 2x35 | 25.8 | 1450 |
| 895TK050302 | NVD 2x50 | 2x50 | 28.8 | 1850 |

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 845TK050303 | NVD 3x1.5 | 3x1.5 | 12.2 | 240 |
| 855TK050303 | NVD 3x2.5 | 3x2.5 | 13.1 | 290 |
| 865TK050303 | NVD 3x4 | 3x4 | 14.7 | 400 |
| 870TK050303 | NVD 3x6 | 3x6 | 16 | 500 |
| 880TK050303 | NVD 3x10 | 3x10 | 18,.3 | 690 |
| 885TK050303 | NVD 3x16 | 3x16 | 20.6 | 940 |
| 890TK050303 | NVD 3x25 | 3x25 | 24.7 | 1300 |
| 893TK050303 | NVD 3x35 | 3x35 | 27.2 | 1780 |
| 895TK050303 | NVD 3x50 | 3x50 | 30.4 | 2270 |
| 897TK050303 | NVD 3x70 | 3x70 | 35.6 | 3200 |
| 898TK050303 | NVD 3x95 | 3x95 | 40.4 | 4310 |
| 899TK050303 | NVD 3x120 | 3x120 | 44.4 | 4450 |
| 89DTK050303 | NVD 3x150 | 3x150 | 52 | 6440 |
| 89FTK050303 | NVD 3x185 | 3x185 | 54,1 | 8000 |

| FOUR CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 845TK050304 | NVD 4x1.5 | 4x1.5 | 13.1 | 270 |
| 855TK050304 | NVD 4x2.5 | 4x2.5 | 14.4 | 370 |
| 865TK050304 | NVD 4x4 | 4x4 | 15.8 | 470 |
| 870TK050304 | NVD 4x6 | 4x6 | 17.3 | 600 |
| 880TK050304 | NVD 4x10 | 4x10 | 19.7 | 840 |
| 885TK050304 | NVD 4x16 | 4x16 | 22.7 | 1160 |
| 890TK050304 | NVD 4x25 | 4x25 | 27 | 1710 |
| 893TK050304 | NVD 4x35 | 4x35 | 29.8 | 2200 |
| 895TK050304 | NVD 4x50 | 4x50 | 33.8 | 2900 |
| 897TK050304 | NVD 4x70 | 4x70 | 39.6 | 4100 |
| 898TK050304 | NVD 4x95 | 4x95 | 44.3 | 5400 |
| 899TK050304 | NVD 4x120 | 4x120 | 49.2 | 6700 |
| 89DTK050304 | NVD 4x150 | 4x150 | 54.3 | 8100 |
| 89FTK050304 | NVD 4x185 | 4x185 | 60.6 | 10200 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).
NVD-S family Add letter U to the intem number for “submerged service”.

# TTK - TYPE NVD/C - SPECIFICATION SHEET N. 3.1

Halogen-free armored electrical cables, flame retardant and fire resistant for general use at low voltage 150/250V, for control and monitoring, power “Vessel in Distress”, (Version -S for submerged service)

characteristics

## CONSTRUCTION

| | | |
|---|---|---|
| **Conductor** | Bare copper conductor according to ASTM B33, class 5 according to IEC 60228 | |
| **Insulation** | Fire Barrier Tape + XLPE according to IEC 60092-360 | |
| **Core identification** | single core<br>multi-pairs<br>single-triad<br>multi-traids<br>multi-cores | white-black<br>white-black with numbers 1-1, 2-2,...<br>white-black-red<br>white-black-red with numbers 1-1-1, 2-2-2, 3-3-3,...<br>black numberes |
| **Bedding (if any)** | Tapes and/or extruded filler | |
| **EMC Shield (if any)** | metallic/plastic tape + tinned copper wire braid having coverage ≥ 90% | |
| **Inner Covering** | halogen free compound or tapes | |
| **Armour** | bare copper wire braid having coverage ≥ 90% | |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour orange according to NAV80 std or coloured on request | |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ + 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 par.8.1<br>CEI EN 60811-404 – IRM 902 – IRM903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire propagation** | CEI EN 60332-3-22 Cat. A |
| **Fire Resistance** | CEI EN 50200 (180 min)<br>CEI EN 50200 Annex E (90 min) |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-1 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 par.9.2 |

## DESIGNATION STRUCTURE LL (BASE ELEMENTS)

| | |
|---|---|
| **UN** | single cores |
| **US** | pairs |
| **CS** | pairs individually shielded |
| **TN** | triads |
| **TS** | triads individually shielded |
| **YY** | conductor cross section [mm²] |
| **X** | overall screening type |
| **O** | overall shield, armoured |
| **A** | armouring |
| **N** | no shield or armour |
| **nn** | number of base elements |

examples:
NVD/C 150/250 V – UN – 1,5-OA-07 cable with 7 single cores 1,5 mm²,
overall shielded NVD/C 150/250 V – CS – 0,75-A-12 cable with 12 pairs 0,75 mm²,
individually shielded, armoured

| DESIGNATION STRUCTURE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 835TK0531MUA02 | NVD/C 2x0.75 | 2x0.75 | 10.8 | 170 |
| 840TK0531MUA07 | NVD/C 7x1 | 7x1 | 13.7 | 325 |
| 840TK0531MUA10 | NVD/C 10x1 | 10x1 | 16.8 | 470 |
| 840TK0531MUA14 | NVD/C 14x1 | 14x1 | 17.8 | 565 |
| 840TK0531MUA19 | NVD/C 19x1 | 19x1 | 19.5 | 705 |
| 840TK0531MUA24 | NVD/C 24x1 | 24x1 | 22.9 | 815 |
| 840TK0531MUA30 | NVD/C 30x1 | 30x1 | 23.8 | 985 |
| 845TK0531MUA02 | NVD/C 2x1.5 | 2x1.5 | 12.2 | 220 |
| 845TK0531MUA03 | NVD/C 3x1.5 | 3x1.5 | 12.7 | 240 |
| 845TK0531MUA04 | NVD/C 4x1.5 | 4x1.5 | 13.7 | 280 |
| 845TK0531MUA05 | NVD/C 5x1.5 | 5x1.5 | 14.4 | 330 |
| 845TK0531MUA07 | NVD/C 7x1.5 | 7x1.5 | 15.8 | 460 |
| 845TK0531MUA10 | NVD/C 10x1.5 | 10x1.5 | 19 | 605 |
| 845TK0531MUA14 | NVD/C 14x1.5 | 14x1.5 | 20.4 | 685 |
| 845TK0531MUA19 | NVD/C 19x1.5 | 19x1.5 | 23 | 880 |
| 845TK0531MUA20 | NVD/C 20x1.5 | 20x1.5 | 24.1 | 945 |
| 845TK0531MUA24 | NVD/C 24x1.5 | 24x1.5 | 25.1 | 1100 |
| 845TK0531MUA30 | NVD/C 30x1.5 | 30x1.5 | 27.5 | 1290 |
| 855TK0531MUA03 | NVD/C 3x2.5 | 3x2.5 | 9.15 | 110 |
| 855TK0531MUA04 | NVD/C 4x2.5 | 4x2.5 | 15 | 435 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).
NVD-S family Add letter U to the intem number for “submerged service”.

The NVD/C type, in special execution, also at nominal voltage 0.6/1 kV.

| TWO CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 845TK050302 | NVD 2x1.5 | 2x1.5 | 11.8 | 220 |
| 855TK050302 | NVD 2x2.5 | 2x2.5 | 12.5 | 260 |
| 865TK050302 | NVD 2x4 | 2x4 | 13.5 | 310 |
| 870TK050302 | NVD 2x6 | 2x6 | 15.3 | 430 |
| 880TK050302 | NVD 2x10 | 2x10 | 17.4 | 590 |
| 885TK050302 | NVD 2x16 | 2x16 | 19.6 | 780 |
| 890TK050302 | NVD 2x25 | 2x25 | 23.4 | 1100 |
| 893TK050302 | NVD 2x35 | 2x35 | 25.8 | 1450 |
| 895TK050302 | NVD 2x50 | 2x50 | 28.8 | 1850 |

NVD/C UN-yy-OA-nn (multicores, overall shielded, armoured)

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 835TK0531POA02 | NVD/C 1x2x0.75 | 1x2x0.75 | 11 | 190 |
| 835TK0531POA28 | NVD/C 14x2x0.75 | 14x2x0.75 | 24 | 940 |
| 835TK0531POA04 | NVD/C 2x2x0.75 | 2x2x0.75 | 13.7 | 285 |
| 835TK0531POA08 | NVD/C 4x2x0.75 | 4x2x0.75 | 16,6 | 440 |
| 835TK0531POA14 | NVD/C 7x2x0.75 | 7x2x0.75 | 19,1 | 590 |
| 835TK0531POA20 | NVD/C 10x2x0.75 | 10x2x0.75 | 23,7 | 775 |
| 835TK0531POA48 | NVD/C 24x2x0.75 | 24x2x0.75 | 27,9 | 1325 |
| 840TK0531POA60 | NVD/C 30x2x1 | 30x2x1 | 29,5 | 1920 |
| 845TK0531POA02 | NVD/C 1x2x1.5 | 1x2x1.5 | 12,3 | 250 |
| 845TK0531POA04 | NVD/C 2x2x1.5 | 2x2x1.5 | 15,9 | 389 |
| 845TK0531POA08 | NVD/C 4x2x1.5 | 4x2x1.5 | 19,3 | 600 |
| 845TK0531POA20 | NVD/C 10x2x1.5 | 10x2x1.5 | 27.2 | 1040 |
| 845TK0531POA38 | NVD/C 19x2x1.5 | 19x2x1.5 | 34.7 | 1860 |
| 845TK0531POA60 | NVD/C 30x2x1.5 | 30x2x1.5 | 31.5 | 2350 |

NVD/C UN-yy-OA-nn (multicores, overall shielded, armoured)

| FOUR CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 830TK0531PIOA62 | NVD/C 31x2x0.5 | 31x2x0.5 | 29.6 | 1470 |
| 835TK0531PIOA04 | NVD/C 2x2x0.75 | 2x2x0.75 | 16 | 415 |
| 835TK0531PIOA08 | NVD/C 4x2x0.75 | 4x2x0.75 | 17.8 | 1485 |
| 835TK0531PIOA14 | NVD/C 7x2x0.75 | 7x2x0.75 | 20,7 | 625 |
| 835TK0531PIOA20 | NVD/C 10x2x0.75 | 10x2x0.75 | 26.6 | 931 |
| 835TK0531PIOA38 | NVD/C 19x2x0.75 | 19x2x0.75 | 29.8 | 1450 |
| 835TK0531PIOA48 | NVD/C 24x2x0.75 | 24x2x0.75 | 36 | 1750 |
| 845TK0531PIOA04 | NVD/C 2x2x1.5 | 2x2x1.5 | 17.6 | 550 |
| 845TK0531PIOA08 | NVD/C 4x2x1.5 | 4x2x1.5 | 21.1 | 637 |
| 845TK0531PIOA24 | NVD/C 12x2x1.5 | 12x2x1.5 | 25.7 | 1090 |
| 845TK0531PIOA28 | NVD/C 14x2x1.5 | 14x2x1.5 | 32.6 | 1700 |

NVD/C UN-yy-OA-nn (multicores, overall shielded, armoured)

# TK - TYPE NVFD - SPECIFICATION SHEET N. 04

## Halogen-free electrical cables, with EMC shielding, flame retardant, low voltage 600/1000 V for variable frequency power supply.

characteristics

### CONSTRUCTION

| | | |
|---|---|---|
| **Conductor** | bare copper conductor according ASTM B33, class 5 according to IEC 60228 | |
| **Insulation** | HEPR or XLPE according to IEC 60092-360 | |
| **Core identification** | three-core<br>four-core | brown-black-grey<br>brown-black-grey-blue |
| **Bedding** | textile or extruded fillers (LSZH) | |
| **EMC Shield** | metallic/plastic tape + tinned copper wire braid having coverage >90% | |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360.<br>Colour black according to NAV80 std or coloured on request | |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 10 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 565TK050401 | NVFD 2x4 | 1x4 | 7,2 | 95 |
| 570TK050401 | NVFD 2x6 | 1x6 | 7,8 | 120 |
| 580TK050401 | NVFD 2x10 | 1x10 | 8,9 | 170 |
| 585TK050401 | NVFD 2x16 | 1x16 | 10,1 | 240 |
| 590TK050401 | NVFD 2x25 | 1x25 | 12,1 | 355 |
| 593TK050401 | NVFD 2x35 | 1x35 | 13,7 | 465 |
| 595TK050401 | NVFD 2x50 | 1x50 | 15,3 | 635 |
| 597TK050401 | NVFD 2x70 | 1x70 | 17,7 | 855 |
| 598TK050401 | NVFD 2x95 | 1x95 | 19,7 | 1115 |
| 599TK050401 | NVFD 2x120 | 1x120 | 22 | 1415 |
| 59DTK050401 | NVFD 2x150 | 1x150 | 23,9 | 1725 |
| 59FTK050401 | NVFD 2x185 | 1x185 | 26,7 | 2110 |
| 59ITK050401 | NVFD 2x240 | 1x240 | 29,8 | 2725 |

| TWO CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 565TK050402 | NVFD 2x4 | 2x4 | 11,6 | 235 |
| 570TK050402 | NVFD 2x6 | 2x6 | 12,8 | 300 |
| 580TK050402 | NVFD 2x10 | 2x10 | 15 | 430 |
| 585TK050402 | NVFD 2x16 | 2x16 | 17,2 | 605 |
| 590TK050402 | NVFD 2x25 | 2x25 | 21,1 | 925 |
| 593TK050402 | NVFD 2x35 | 2x35 | 24,5 | 1240 |
| 595TK050402 | NVFD 2x50 | 2x50 | 27,9 | 1700 |
| 597TK050402 | NVFD 2x70 | 2x70 | 32,5 | 2300 |
| 598TK050402 | NVFD 2x95 | 2x95 | 36,3 | 2965 |
| 599TK050402 | NVFD 2x120 | 2x120 | 40,3 | 3680 |
| 59DTK050402 | NVFD 2x150 | 2x150 | 44,8 | 4625 |
| 59FTK050402 | NVFD 2x185 | 2x185 | 50,2 | 5695 |
| 59ITK050402 | NVFD 2x240 | 2x240 | 55,6 | 7150 |
| 59FTK050403 | NVFD 3x185 | 3x185 | 54 | 7805 |

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050403 | NVFD 3x1.5 | 3x1.5 | 10 | 155 |
| 555TK050403 | NVFD 3x2.5 | 3x2.5 | 11 | 195 |
| 565TK050403 | NVFD 3x4 | 3x4 | 12.5 | 255 |
| 570TK050403 | NVFD 3x6 | 3x6 | 13.5 | 325 |
| 580TK050403 | NVFD 3x10 | 3x10 | 16 | 535 |
| 585TK050403 | NVFD 3x16 | 3x16 | 18.5 | 755 |
| 590TK050403 | NVFD 3x25 | 3x25 | 22.2 | 1105 |
| 593TK050403 | NVFD 3x35 | 3x35 | 26.5 | 1705 |
| 595TK050403 | NVFD 3x50 | 3x50 | 29.7 | 2265 |
| 597TK050403 | NVFD 3x70 | 3x70 | 35 | 3055 |
| 598TK050403 | NVFD 3x95 | 3x95 | 39.5 | 4105 |
| 599TK050403 | NVFD 3x120 | 3x120 | 43.5 | 5105 |
| 59DTK050403 | NVFD 3x150 | 3x150 | 48.5 | 6205 |
| 59FTK050403 | NVFD 3x185 | 3x185 | 54 | 7805 |

| FOUR CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050404 | NVFD 4x1.5 | 4x1.5 | 11 | 185 |
| 555TK050404 | NVFD 4x2.5 | 4x2.5 | 12 | 235 |
| 565TK050404 | NVFD 4x4 | 4x4 | 13.5 | 305 |
| 570TK050404 | NVFD 4x6 | 4x6 | 15.3 | 455 |
| 580TK050404 | NVFD 4x10 | 4x10 | 17.8 | 645 |
| 585TK050404 | NVFD 4x16 | 4x16 | 20.5 | 965 |
| 590TK050404 | NVFD 4x25 | 4x25 | 24.5 | 1385 |
| 593TK050404 | NVFD 4x35 | 4x35 | 29 | 2105 |
| 595TK050404 | NVFD 4x50 | 4x50 | 33 | 2785 |
| 597TK050404 | NVFD 4x70 | 4x70 | 38.8 | 3975 |
| 598TK050404 | NVFD 4x95 | 4x95 | 43.5 | 5205 |
| 599TK050404 | NVFD 4x120 | 4x120 | 48.5 | 6505 |
| 59DTK050404 | NVFD 4x150 | 4x150 | 53.5 | 7905 |
| 59FTK050404 | NVFD 4x185 | 4x185 | 60 | 9905 |

# TK - TYPE NFO AND NFO-S - SPECIFICATION SHEET N. 05

## Halogen-free unarmored electrical cables, flame retardant, low voltage 600/1000V for general use and flexing service (oil resistant if required) (Version -S for submerged service)

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | tinned copper conductor according ASTM B33, class 6 according to IEC 60228 |
| **Insulation** | EPR or HEPR according to IEC 60092-360 |
| **Core identification** | according to HD 308 S2 |
| **Bedding** | textile or extruded fillers (LSZH) |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 4 x outer diameter (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 245TK050501 | NFO 1x1.5 | 1x1.5 | 5.2 | 40 |
| 255TK050501 | NFO 1x2.5 | 1x2.5 | 5.6 | 50 |
| 265TK050501 | NFO 1x4 | 1x4 | 6.2 | 70 |
| 270TK050501 | NFO 1x6 | 1x6 | 6.7 | 90 |
| 280TK050501 | NFO 1x10 | 1x10 | 7.6 | 140 |
| 285TK050501 | NFO 1x16 | 1x16 | 8.8 | 200 |
| 290TK050501 | NFO 1x25 | 1x25 | 10.4 | 300 |
| 293TK050501 | NFO 1x35 | 1x35 | 11.8 | 400 |
| 295TK050501 | NFO 1x50 | 1x50 | 13 | 530 |
| 297TK050501 | NFO 1x70 | 1x70 | 15.3 | 740 |
| 298TK050501 | NFO 1x95 | 1x95 | 17.4 | 1010 |
| 299TK050501 | NFO 1x120 | 1x120 | 19 | 1260 |
| 29DTK050501 | NFO 1x150 | 1x150 | 21.2 | 1540 |
| 29FTK050501 | NFO 1x185 | 1x185 | 23.6 | 1940 |
| 29ITK050501 | NFO 1x240 | 1x240 | 26.6 | 2490 |
| 29LTK050501 | NFO 1x300 | 1x300 | 29.5 | 3130 |

| TWO CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050502 | NFO 2x1.5 | 2x1.5 | 8.2 | 90 |
| 355TK050502 | NFO 2x2.5 | 2x2.5 | 9.2 | 120 |
| 365TK050502 | NFO 2x4 | 2x4 | 10.3 | 150 |
| 370TK050502 | NFO 2x6 | 2x6 | 11.6 | 200 |
| 380TK050502 | NFO 2x10 | 2x10 | 13.5 | 300 |
| 385TK050502 | NFO 2x16 | 2x16 | 15.7 | 440 |
| 390TK050502 | NFO 2x25 | 2x25 | 19.2 | 670 |
| 393TK050502 | NFO 2x35 | 2x35 | 23.4 | 1200 |
| 395TK050502 | NFO 2x50 | 2x50 | 26.3 | 1500 |

Add letter S to the item number for “enhanced shielding effectiveness” (EMC requirements).

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050503 | NFO 3x1.5 | 3x1.5 | 8.6 | 100 |
| 355TK050503 | NFO 3x2.5 | 3x2.5 | 9.7 | 140 |
| 365TK050503 | NFO 3x4 | 3x4 | 10.9 | 190 |
| 370TK050503 | NFO 3x6 | 3x6 | 12.3 | 260 |
| 380TK050503 | NFO 3x10 | 3x10 | 14.5 | 410 |
| 385TK050503 | NFO 3x16 | 3x16 | 16.9 | 610 |
| 390TK050503 | NFO 3x25 | 3x25 | 20.6 | 930 |
| 393TK050503 | NFO 3x35 | 3x35 | 24.7 | 1500 |
| 395TK050503 | NFO 3x50 | 3x50 | 28 | 2000 |
| 397TK050503 | NFO 3x70 | 3x70 | 33.3 | 2830 |
| 398TK050503 | NFO 3x95 | 3x95 | 37.3 | 3780 |
| 399TK050503 | NFO 3x120 | 3x120 | 41.4 | 4700 |
| 39DTK050503 | NFO 3x150 | 3x150 | 46 | 5200 |
| 39FTK050503 | NFO 3x185 | 3x185 | 51.5 | 7200 |

| FOUR CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 345TK050504 | NFO 4x1.5 | 4x1.5 | 9.6 | 130 |
| 355TK050504 | NFO 4x2.5 | 4x2.5 | 10.6 | 180 |
| 365TK050504 | NFO 4x4 | 4x4 | 12.1 | 240 |
| 370TK050504 | NFO 4x6 | 4x6 | 13.5 | 340 |
| 380TK050504 | NFO 4x10 | 4x10 | 15.9 | 510 |
| 385TK050504 | NFO 4x16 | 4x16 | 18.6 | 770 |
| 390TK050504 | NFO 4x25 | 4x25 | 22.9 | 1180 |
| 393TK050504 | NFO 4x35 | 4x35 | 27.2 | 1850 |
| 395TK050504 | NFO 4x50 | 4x50 | 31.2 | 2500 |
| 397TK050504 | NFO 4x70 | 4x70 | 36.7 | 3550 |
| 398TK050504 | NFO 4x95 | 4x95 | 41.3 | 4780 |
| 399TK050504 | NFO 4x120 | 4x120 | 46 | 6000 |
| 39DTK050504 | NFO 4x150 | 4x150 | 51 | 7350 |
| 39FTK050504 | NFO 4x185 | 4x185 | 57.6 | 9300 |

AWG cross section are available on request.
NFO-S family Add letter U to the intem number for “submerged service”

# TK - TYPE NSC - SPECIFICATION SHEET N. 06

## Halogen-free unarmored electrical cables, flame retardant, low voltage 600/1000 V for shore connection.

AWG cross section are available on request.

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | tinned copper conductor according ASTM B33, class 6 according to IEC 60228 |
| **Separator** | polyester tape |
| **Insulation** | EPR or HEPR according to IEC 60092-360 |
| **Core identification** | according to HD 308 S2 |
| **Inner sheath (for three cores)** | Halogen free compound |
| **Reinforcement** | antitorsional textile braid, coverage >20% |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour black according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 4 x outer diameter (static)<br>6 x outer diameter (dynamic) (installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 895TK050601 | NSC 1x50 | 1x50 | 18.5 | 710 |
| 897TK050601 | NSC 1x70 | 1x70 | 24 | 1150 |
| 898TK050601 | NSC 1x95 | 1x95 | 25 | 1350 |
| 899TK050601 | NSC 1x120 | 1x120 | 27 | 1600 |
| 89DTK050601 | NSC 1x150 | 1x150 | 30 | 2000 |
| 89FTK050601 | NSC 1x185 | 1x185 | 33.5 | 2500 |
| 89ITK050601 | NSC 1x240 | 1x240 | 35 | 3000 |
| 89LTK050601 | NSC 1x300 | 1x300 | 39 | 3700 |
| 89MTK050601 | NSC 1x400 | 1x400 | 42 | 4600 |
| THREE CORES | | | | |
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 890TK050603 | NSC 3x25 | 3x25 | 28 | 1500 |
| 893TK050603 | NSC 3x35 | 3x35 | 30 | 1900 |
| 895TK050603 | NSC 3x50 | 3x50 | 38.5 | 2750 |
| 897TK050603 | NSC 3x70 | 3x70 | 47 | 4100 |
| 898TK050603 | NSC 3x95 | 3x95 | 50 | 4900 |
| 899TK050603 | NSC 3x120 | 3x120 | 58 | 6250 |
| 89DTK050603 | NSC 3x150 | 3x150 | 64 | 7700 |
| 89FTK050603 | NSC 3x185 | 3x185 | 68.5 | 9300 |

# TK - TYPE NCM - SPECIFICATION SHEET N. 07

## Halogen-free unarmored electrical cables, flame retardant, low voltage 600/1000 V for magnetic compensation.

characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | bare copper conductor according ASTM B33, class 5 according to IEC 60228 |
| **Insulation** | HEPR according to IEC 60092-360 |
| **Core identification** | according to HD 308 S2 and EN50334 |
| **Inner sheath** | Halogen free compound |
| **EMC Shield** | metallic/plastic tape + tinned copper wire braid having coverage >90% |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

| SINGLE CORE | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050702 | NCM 2x1.5 | 2x1.5 | 9.6 | 130 |
| 555TK050702 | NCM 2x2.5 | 2x2.5 | 10.4 | 160 |
| 565TK050702 | NCM 2x4 | 2x4 | 11.8 | 210 |
| 570TK050702 | NCM 2x6 | 2x6 | 13 | 280 |
| 580TK050702 | NCM 2x10 | 2x10 | 15.2 | 430 |
| 585TK050702 | NCM 2x16 | 2x16 | 17.5 | 600 |
| 590TK050702 | NCM 2x25 | 2x25 | 21 | 820 |

| THREE CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050704 | NCM 4x1.5 | 4x1.5 | 11 | 180 |
| 555TK050704 | NCM 4x2.5 | 4x2.5 | 12 | 230 |
| 565TK050704 | NCM 4x4 | 4x4 | 13.5 | 400 |
| 570TK050704 | NCM 4x6 | 4x6 | 15.3 | 450 |
| 580TK050704 | NCM 4x10 | 4x10 | 17.8 | 640 |
| 585TK050704 | NCM 4x16 | 4x16 | 20.5 | 960 |
| 590TK050704 | NCM 4x25 | 4x25 | 24.5 | 1380 |
| 593TK050704 | NCM 4x35 | 4x35 | 29 | 2100 |
| 595TK050704 | NCM 4x50 | 4x50 | 33 | 2780 |
| 597TK050704 | NCM 4x70 | 4x70 | 38.8 | 3970 |

| MULTI CORES | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 545TK050712 | NCM 12x1.5 | 12x1.5 | 17 | 465 |
| 545TK050719 | NCM 19x1.5 | 19x1.5 | 20 | 675 |
| 545TK050724 | NCM 24x1.5 | 24x1.5 | 23 | 855 |
| 555TK050712 | NCM 12x2.5 | 12x2.5 | 19 | 620 |
| 555TK050719 | NCM 19x2.5 | 19x2.5 | 22.5 | 910 |
| 555TK050724 | NCM 24x2.5 | 24x2.5 | 26 | 1145 |

AWG cross section are available on request.

# TK - TYPE NST - SPECIFICATION SHEET N. 08

## Halogen-free electrical cables, flame retardant for instrumentation with terminal board connection - nominal voltage 150/250 V

characteristics

## CONSTRUCTION

| | |
|---|---|
| **Conductor** | bare copper conductor according ASTM B33, class 5 according to IEC 60228 |
| **Insulation** | HEPR according to IEC 60092-360 |
| **Core identification** | Pairs: white, black with numbers 1-1, 2-2,...<br>Triads: white, black, red with numbers 1-1-1, 2-2-2,... |
| **Multicores** | black with numbers |
| **Individual shield (if any)** | 0,50 mm² drain wire, polyester and metallic tape |
| **Inner covering** | Halogen free compound or tapes |
| **Armour (if any)** | bare copper wire braid having coverage >90% |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360.<br>Colour black according to NAV80 std or coloured on request |

## TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 6 x outer diameter (installation) |

## REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 § 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Smoke emission** | CEI EN 61034-1 – CEI EN 61034-2 |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-2 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 § 9.2 |

## DESIGNATION STRUCTURE

| | |
|---|---|
| **LL (base elements)** | UN: single cores<br>US: single cores, individually shielded<br>CN: pairs<br>CS:. pairs individually shielded<br>TN: triads<br>TS: triads individually shielded |
| **yy** | conductor cross section [mm²] |
| **X: overall shielding type** | O: overall shield<br>A: armouring<br>N: no shield or armour |
| **nn** | number of base elements |
| **examples** | NST 150/250 V – UN-1,5-O-07<br>cable with 7 single cores 1,5 mm², overall shielded<br>NST 150/250 V – CS-0,75-A-12<br>cable with 12 pairs 0,75 mm², individually shielded, armoured |

| NST UN-yy-N-nn (multi cores, unshielded, unarmoured) | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 330TK0502MUU07 | NST 7x0.50 | 7x0.50 | 7.6 | 80 |
| 330TK0502MUU10 | NST 10x0.50 | 10x0.50 | 9.3 | 115 |
| 330TK0502MUU09 | NST 19x0.50 | 19x0.50 | 11.3 | 185 |
| 330TK0502MUU30 | NST 30x0.50 | 30x0.50 | 13.9 | 230 |

| NST UN-yy-A-nn (multi cores, unshielded, armoured) | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK0508MUA07 | NST 7x0.50 | 7x0.50 | 8.4 | 130 |
| 530TK0508MUA10 | NST 10x0.50 | 10x0.50 | 10.1 | 170 |
| 530TK0508MUA19 | NST 19x0.50 | 19x0.50 | 12.1 | 255 |
| 530TK0508MUA30 | NST 30x0.50 | 30x0.50 | 15.1 | 350 |

| NST UN-yy-OA-nn (multi cores, overall shielded, armoured) | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 530TK0508MOA07 | NST 7x0.50 | 7x0.50 | 8.4 | 130 |
| 530TK0508MOA10 | NST 10x0.50 | 10x0.50 | 10.1 | 175 |
| 530TK0508MOA19 | NST 19x0.50 | 19x0.50 | 12.1 | 210 |
| 530TK0508MOA30 | NST 30x0.50 | 30x0.50 | 15.1 | 320 |

Add letter G at the end of the item number if green/yellow core is present

| NST UN-yy-O-nn (multi cores, overall shielded, unarmoured) | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 430TK0508MOU07 | NST 7x0.50 | 7x0.50 | 7.6 | 85 |
| 430TK0508MOU10 | NST 10x0.50 | 10x0.50 | 9.3 | 120 |
| 430TK0508MOU19 | NST 19x0.50 | 19x0.50 | 11.3 | 185 |
| 430TK0508MOU30 | NST 30x0.50 | 30x0.50 | 13.9 | 287 |

Add letter G at the end of the item number if green/yellow core is present. Add letter E at the end of the item number for enhanced EMC performance

# TK - TYPE NMV E NMV-VFD - SPECIFICATION SHEET N. 09

## Halogen-free unarmored and armored electrical cables, flame retardant for general distribution medium voltage 1800/3000V

characteristics

### CONSTRUCTION

| | |
|---|---|
| **Conductor** | Tinned copper conductor according to ASTM B33, class 5 according to IEC 60228 |
| **Insulation** | HEPR or XLPE according to IEC 60092-360 |
| **Core identification** | single-core black<br>three-cores brown-black-grey |
| **Bedding (if any)** | Tapes and/or extruded filler |
| **EMC Shield (for NMV-VFD)** | metallic/plastic tape + tinned copper wire braid having coverage ≥ 90% |
| **Inner covering** | Halogen free compound or tapes |
| **Armour (if any)** | bare copper wire braid having coverage ≥ 90% |
| **Sheath** | crosslinked compound, type SHF2 according to IEC 60092-360. Colour red according to NAV80 std or coloured on request |

### TECHNICAL DATA

| | |
|---|---|
| **Temperature range** | -40°C ÷ 90°C |
| **Minimum bending radius** | 4 x outer diameter (single core installation)<br>12 x outer diameter (three-cores installation) |

### REFERENCE STANDARDS

| | |
|---|---|
| **High resistance to oils and fuels** | CEI EN 50305 par. 8.1<br>CEI EN 60811-404, IRM 902 - IRM 903 |
| **Flame retardancy** | CEI EN 60332-1-2 |
| **Fire Propagation** | CEI EN 60332-3-22 Cat. A |
| **Emission of acid and corrosive gases** | CEI EN 60754-2 |
| **Evolution of HCl** | CEI EN 60754-1 |
| **Fluorine content** | CEI EN 60754-3 |
| **Toxicity index** | CEI EN 50305 par.9.2 |

| SINGLE CORE ARMOURED | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 885TK050901 | NMV 1x16 | 1x16 | 15.1 | 400 |
| 890TK050901 | NMV 1x25 | 1x25 | 16.7 | 520 |
| 893TK050901 | NMV 1x35 | 1x35 | 17.6 | 630 |
| 895TK050901 | NMV 1x50 | 1x50 | 19.1 | 780 |
| 897TK050901 | NMV 1x70 | 1x70 | 20.9 | 1010 |
| 898TK050901 | NMV 1x95 | 1x95 | 23.2 | 1310 |
| 899TK050901 | NMV 1x120 | 1x120 | 24.9 | 1560 |
| 89DTK050901 | NMV 1x150 | 1x150 | 26.4 | 1850 |
| 89FTK050901 | NMV 1x185 | 1x185 | 29.1 | 2260 |
| 89ITK050901 | NMV 1x240 | 1x240 | 31.6 | 2840 |
| 89LTK050901 | NMV 1x300 | 1x300 | 33.9 | 3400 |

| THREE CORES ARMOURED | | | | |
|---|---|---|---|---|
| Item n° | Designation | Cross-section · mm² | Nominal Diameter cable · mm | Nominal cable Weight · kg/km |
| 885TK050903 | NMV-VFD 3x16 | 3x16 | 28.4 | 1330 |
| 890TK050903 | NMV-VFD 3x25 | 3x25 | 31.6 | 1760 |
| 893TK050903 | NMV-VFD 3x35 | 3x35 | 33.7 | 2150 |
| 895TK050903 | NMV-VFD 3x50 | 3x50 | 37.1 | 2700 |
| 897TK050903 | NMV-VFD 3x70 | 3x70 | 41.2 | 3520 |
| 898TK050903 | NMV-VFD 3x95 | 3x95 | 46.5 | 4690 |
| 899TK050903 | NMV-VFD 3x120 | 3x120 | 50.8 | 5720 |
| 89DTK050903 | NMV-VFD 3x150 | 3x150 | 53.8 | 6710 |
| 89FTK050903 | NMV-VFD 3x185 | 3x185 | 59.8 | 8270 |

AWG cross section are available on request.

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Passion flows through our cables


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