

Wire and Cable Common Knowledge

Wire and cable for transmitting electrical (magnetic) energy, information and achieve electromagnetic energy conversion wire products. Generalized wire and cable also referred to as cable. Cable narrowly refers insulated cables. It can be defined as: assembly consists of the following components: one or more insulated core and cladding layers may have their respective total protection layer and the outer sheath. There is also no additional cables insulated conductors.

Introduction

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Product Categories

1. Bare wires and bare conductor products

The main features of the products are: pure conductive metal, without insulation and sheathing layer, such as ACSR, copper and aluminum busbars, electric locomotive lines; processing technology is mainly pressure processing, such as smelting, rolling, drawing system, stranding / pressed stranded; products are mainly used in suburban, rural, user mainline, switch cabinets.

2. Power cables

The products main features are: conductor outside crowded (around) package insulating layer, such as overhead insulated cables, or a few stranded (corresponding to the power system phase line, neutral and ground), as more than two-core overhead cable insulation, or an additional coating layer, such as plastic / rubber wire and cable. The main technology has drawn, stranded, insulated extrusion (wrapped), a cable, armored, protective layer extrusion, a combination of different processes of various products have some differences.

Products are mainly used in the hair and distribution, transmission, transformation, supply lines strong electric power transmission, the current through the large (tens of thousands of security to security),

high voltage (220v to 500kv and above).

3. Electrical wire and cable equipment

The main features of these products are: many varieties and specifications, wide range of applications, the use of voltage and below 1kv more, face special occasions continue to rise to new products, such as fire-resistant cables, fire-retardant cables, halogen / low Smoke low halogen cable, termite, anti-mouse cable, oil / cold / temperature / wear cable, medical / agricultural / mining cables, wires and other thin-walled.

4. Communication cables and fiber optic

With the rapid development of the communications industry, from the past simple phone development to thousands of telegraph cables, then cable, coaxial cable, fiber optic cable, data cable, or even a combination of cable and other communications.

Such products are usually small and uniform structure size, high precision manufacturing.

5. Magnet wire (winding wire)

Mainly used for a variety of electrical, instrumentation and so on.

6. Wire and Cable derivative / new products

Derivatives / new wire and cable products is mainly due to the requirements of convenience and lower equipment costs and other applications, different applications and equipment, and the use of new materials, special materials, or changes in product mix, improve processes or requirements, or different varieties of products are combined to produce.

Using different materials such as flame-retardant cable, halogen / LSF cable, termite, anti-mouse cable, oil / cold / temperature cables, etc.; changes in product mix, such as: fire-resistant cables; improve the process Requirements such as: medical cables and the like; combinations of products such as: opgw like; ease of installation and lower equipment costs such as: prefabricated branch cables.

The cost of power cables formula

Cost formulas

yjv cost price formula

yjv copper core power cable series cost price formula is as follows:

Copper weight x copper calculated as follows:

Silk warp/ 2 = $1.25 \times 1.25 \times 3.14$

X = the number of square copper wire * 0.89 * was + 10% processing fee.

The cost price of rubber cables formula

Square * 1.83 = weight x price of copper at the time of copper + rubber (weight * 0.4 yuan / kg) = cost price + 10% processing fee

Cable manufacturing materials price = cost + fixed cost + tax + service fee + profit

Manufacturing materials cost = material costs * (1 + material consumption) (material cost is calculated from the theoretical value)

Fixed costs vary according to each company's situation, generally include production wages, management salaries, utilities, repairs, depreciation, rent expenses, transportation costs

Load flow calculation formula

Estimation formulas

Two five multiplied by nine the next, up minus a number to go along.

Thirty five times three five, both groups minus 2.5.

Conditions have changed plus conversion, high-temperature copper 10% upgrade.

The number of two hundred thirty-four wear hose, eighty-seven tickets full flow.

Note: This section formulas for a variety of insulated wire (rubber and plastic insulated wire) carrying capacity (safe current) is not explicitly stated, but "cross section multiplied by certain multiples" to that obtained by mental arithmetic. As can be seen from Table 53: with a multiple-section decreases.

Two five multiplied by nine the next, up minus a walk along No.

"Two point five multiplied by nine the next, up minus one number to go along," said the 2.5mm 'and following the various sectional aluminum insulated wire, its carrying capacity is about 9 times the cross-section numbers. E.g. 2.5mm 'lead, carrying capacity is $2.5 \times 9 = 22.5$ (a). Carrying capacity and section numbers from multiple relationship 4mm 'and above the wire is up along the line number row, multiple successive reduction 1, namely $4 \times 8, 6 \times 7, 10 \times 6, 16 \times 5, 25 \times 4$.

Thirty five times three five, both groups minus 2.5.

"Thirty five times three five, both groups minus point five," said the 35mm "wire carrying capacity is 3.5 times the number of cross-section, that is $35 \times 3.5 = 122.5$ (a). From 50mm 'and over the wire,

multiple relationships between carrying capacity and the number of its cross-section into two two-line number as a group, multiple sequence minus 0.5. That 50,70mm' carrying capacity for the cross section of the wire number 3 times; 95,120mm "wire carrying capacity is 2.5 times the number of cross-sectional area, and so on.

Conditions have changed plus conversion, high-temperature copper 10% upgrade.

"Conditions have changed plus conversion, high-temperature copper 10% upgrade." The above formulas are aluminum insulated wire for surface at 25 °C ambient temperature conditions dependent. If aluminum insulated wire for surface at an ambient temperature higher than 25 °C areas long wires carrying capacity is calculated according to the above calculation formulas, then you can call 10%; when not using aluminum but insulated copper wire, Its carrying capacity is slightly larger than the same size aluminum, according to the above formulas to calculate the specific method to increase the carrying capacity of an aluminum line number. As 16mm 'copper wire ampacity, according to 25mm² aluminum calculations.

The number of two hundred thirty-four wear hose, eighty-seven tickets full flow.

"Wearing the number two three four tubes, eight seven tickets full flow" through pipe laying two, in the case three or four wires, which were carrying capacity electrician I decided to calculate ampacity (single laying) of 80% , 70%, 60%.

Type designation overview. Named complete wire and cable is usually more complex, so people sometimes use a simple name (usually the name of a category) binding model specifications to replace the full name, such as "low-voltage cable" represents 0.6 / 1kv grade class all plastic insulated power cable. Wire and cable spectrum better, it can be said, as long as the write wire and cable specifications of the standard model, will be able to clear and specific products, but its full name is like?

Wire and cable products, has named the following principles: 1, the product name includes the contents of (1) product application or size class name (2) the structure of the material or type of product; important features or additional features (3) the product's base above order name, sometimes in order to emphasize important or additional features, the feature is written on the front or the corresponding structure described above. 2, the order described in the description of the product structure according to the principle structure from the inside out: the conductor -> Insulation -> inner sheath -> outer sheath ->

armored type. 3, simplified in the case does not cause confusion, some structural description provinces write or abbreviated, such as car line, soft line aluminum conductors are not allowed, it does not describe the conductor material. Case: Rated voltage 8.7 / 15kv fire retardant XLPE insulated steel tape armored PVC sheathed power cable "rated voltage 8.7 / 15kv" - use the occasion / voltage level "flame" - to emphasize features "Tongxin" - Conductor Materials "XLPE" - insulating material "steel armor" - armored layer of material and type (double strip gap around the package) "PVC jacket" - inner and outer sheathing materials (inside and outside the sheath material are the same, write the province within the sheath material) "Power cable" - model name of the product category corresponding written zr-yjv22-8.7 / 15, see the following types of writing instruction of. 4. Pinyin uppercase first letter indicates the type of insulation, conductor material, inner sheath material and structural characteristics. Z as with representatives of the paper (zhi); l representatives aluminum (lv); q for lead (qian); f representatives phase (fen); zr representatives retardant (zuran); nh behalf of refractory (naihuo). 5. Use the numeric representation outer protective layer, there are two numbers. No figures represent unarmored, no coat layer. The first digit represents armor, the second digit is outside, outside, such as thick steel wire armored fiber is expressed as 41. 6. Press the cable type cable structure is generally arranged according to the order of: insulation material; conductive material; inner sheath; outer sheath.

7. The cable products represented by the model, rated voltage and specifications. The method is described in the model and then add the rated voltage, number of cores and nominal cross-sectional area.

GB line standard

1. Appearance standards, must bear the certification mark, the manufacturer, the wire diameter, etc., with the yellow-green ground wire insulating layer

2. Mechanical strength

3. The insulating sheath (generally greater than 100m ω) and compressive strength (500v 1500v more or less)

The line resistance (a certain diameter, conductivity, lower than a certain length of resistance)

5. The impact of high temperature at 140 degrees, the wire can not occur at a low temperature of -30 degrees cracking.



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