

JINSHUI WIRE & CABLE GROUP    ZHENGZHOU JINSHUI INDUSTRY & COMMERCE CO.,LTD.



# HIGH VOLTAGE XLPE CABLE

## JINSHUI WIRE & CABLE GROUP

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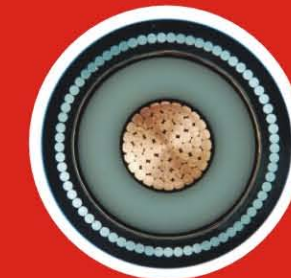
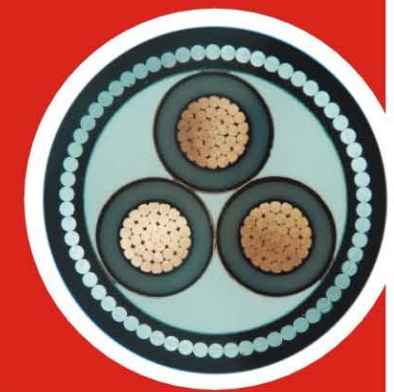
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HIGH VOLTAGE  
XLPE CABLE

RATED VOLTAGE AND CATEGORY OF CABLE

1.Rated Voltage of Cable

$U_0$  is the AC rated voltage (effective value) of metal screen,metal armor and metal sheath of conductor used in cable design.The insulation structure design of cable and electric test all adopt  $U_0$  as the standard.It reflects the insulation level of cable.

$U$  is the AC rated voltage (effective value) of phase conductor in cable design.It is not only related to insulation level of cable,but also to system earthing style and cable category in using cable.

$U_m$  is the maximum value of the "highest system voltage" to be borne by equipment.

2.Category of Cable

According to the sustained time of earthing breakdown,cable is divided into two categories:

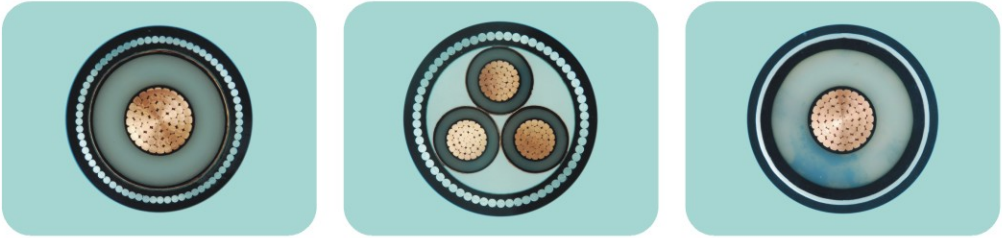
Category I:The sustained time of earthing breakdown does not exceed 1 minute,that is, it requires a system when any phase conductor contacts the earth or earthing conductor,can separate the phase conductor from the system in 1 minute

Category II:The sustained time of each earthing breakdown usually should not exceed 1 hour,the longest not exceeding 8 hours and the accumulated time in a year should not exceed 125 hours.

For the insulation level of two categories of cable,see the following table.

Table 1 Category and Rated Voltage of Cable

| U   | Um  | $U_0$      | KV          |
|-----|-----|------------|-------------|
| kV  | kV  | Category I | Category II |
| 6   | 7.2 | 3.6        | 6           |
| 10  | 12  | 6          | 8.7         |
| 15  | 18  | 8.7        | 12          |
| 20  | 26  | 12         | 18          |
| 35  | 42  | 21         | 26          |
| 110 |     | 64         |             |



CABLE MAKE-UPS

Fig.1 Make-Ups of 110kV XLPE Cable

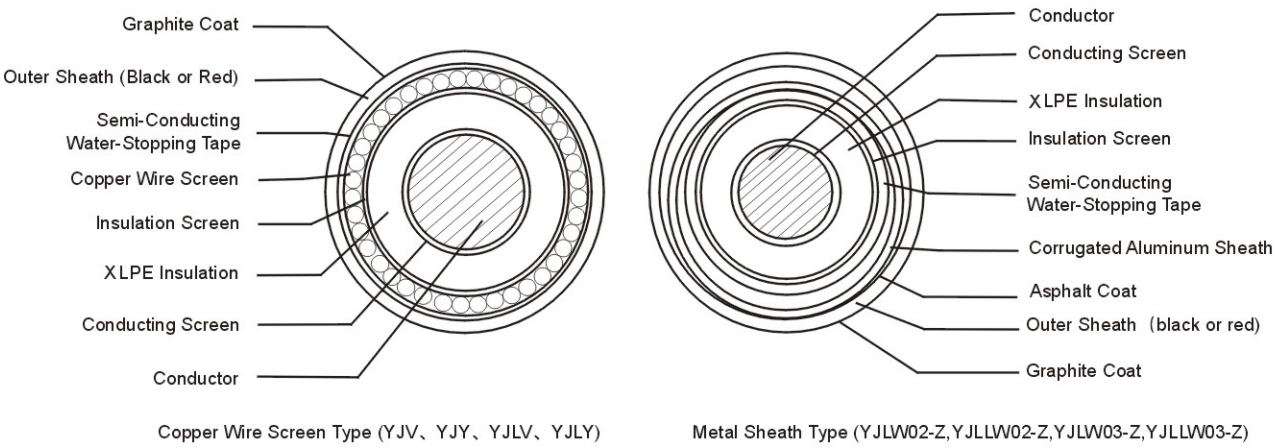
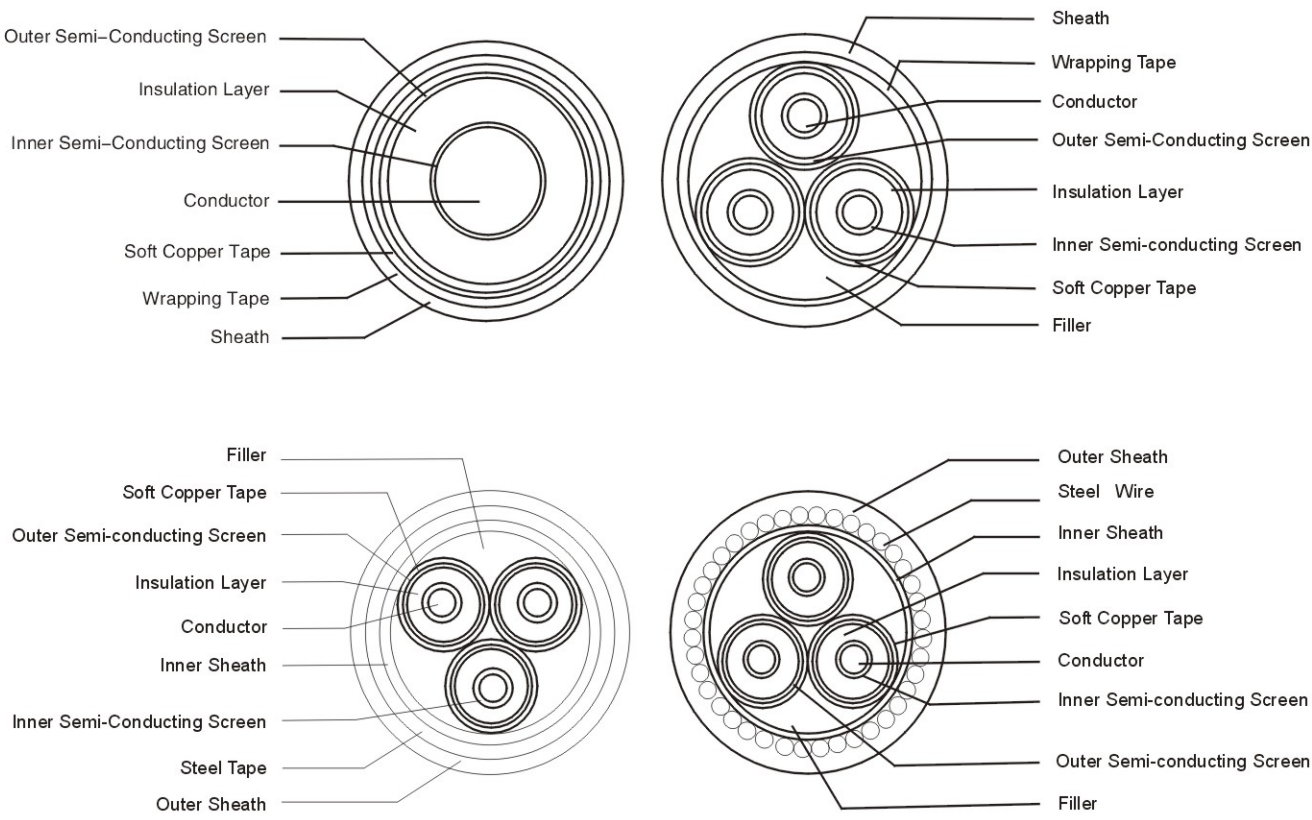


Fig.1 6-35kV XLPE Insulation PVC Sheath Cable Make-Ups





HIGH VOLTAGE  
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CABLE CONDUCTOR AND INSULATION MAKE-UPS

| Rated Voltage<br>Conducting<br>Wire Core    |                        | 6/6,<br>6/10                      |                             | 8.7/10,<br>8.7/15      |                             | 12/20                  |                             | 18/20<br>18/30         |                             | 21/35                  |                             | 26/35                  |                             | 64/110                 |                              |
|---------------------------------------------|------------------------|-----------------------------------|-----------------------------|------------------------|-----------------------------|------------------------|-----------------------------|------------------------|-----------------------------|------------------------|-----------------------------|------------------------|-----------------------------|------------------------|------------------------------|
| Cross<br>Section<br>Area<br>mm <sup>2</sup> | No./Wire<br>Dia.<br>mm | Extruded<br>Overall<br>Dia.<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Thinnest<br>Thickness<br>mm | Av.<br>Thickness<br>mm | Core<br>Shift<br>Degree<br>° |
|                                             |                        |                                   |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 25                                          | 7/2.25                 | 6.0                               |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 35                                          | 7/2.62                 | 7.0                               |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 50                                          | 7/3.10                 | 8.3                               |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 70                                          | 19/2.25                | 10.0                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 95                                          | 19/2.62                | 11.6                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 120                                         | 19/3.0                 | 13.0                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 150                                         | 36/2.36                | 14.6                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 185                                         | 36/2.62                | 16.2                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 240                                         | 36/3.00                | 18.4                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 300                                         | 36/3.36                | 20.6                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 400                                         | 60/3.00                | 23.8                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 500                                         | 60/3.36                | 26.6                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 630                                         | 60/3.75                | 30.0                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 800                                         | 60/4.26                | 34.0                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 1000                                        | 60/4.75                | 38.2                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |
| 1200                                        | 60/5.2                 | 42.0                              |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                             |                        |                              |

Note:Core shift degree=  $\frac{\text{Thickness of the thickest point} - \text{thickness of the thinnest point}}{\text{Thickness of the thickest point}}$   
(the thickest and thinnest points should be on the same section)

Table 3 At 20°C,the D.C. resistance should not be greater than the largest D.C. resistance in the table

| Nominal<br>Section<br>mm <sup>2</sup> | At 20°C,the Largest<br>DC Resistance<br>Ω/Km |         | Nominal<br>Section<br>mm <sup>2</sup> | At 20°C,the Largest<br>DC Resistance<br>Ω/Km |         | Nominal<br>Section<br>mm <sup>2</sup> | At 20°C,the Largest<br>DC Resistance<br>Ω/Km |         |
|---------------------------------------|----------------------------------------------|---------|---------------------------------------|----------------------------------------------|---------|---------------------------------------|----------------------------------------------|---------|
|                                       | Cu Core                                      | AL Core |                                       | Cu Core                                      | AL Core |                                       | Cu Core                                      | AL Core |
| 1.5                                   | 12.1                                         |         | 35                                    | 0.524                                        | 0.868   | 240                                   | 0.0754                                       | 0.125   |
| 2.5                                   | 7.41                                         | 12.1    | 50                                    | 0.387                                        | 0.641   | 300                                   | 0.0601                                       | 0.100   |
| 4                                     | 4.61                                         | 7.41    | 70                                    | 0.268                                        | 0.443   | 400                                   | 0.0470                                       | 0.0778  |
| 6                                     | 3.06                                         | 4.61    | 95                                    | 0.193                                        | 0.320   | 500                                   | 0.0366                                       | 0.0605  |
| 10                                    | 1.83                                         | 3.08    | 120                                   | 0.153                                        | 0.253   | 630                                   | 0.0283                                       | 0.0469  |
| 16                                    | 1.15                                         | 1.91    | 150                                   | 0.124                                        | 0.206   | 800                                   | 0.0221                                       | 0.0367  |
| 25                                    | 0.727                                        | 1.20    | 185                                   | 0.0991                                       | 0.164   | 1000                                  |                                              | 0.0291  |
|                                       |                                              |         |                                       |                                              |         | 1200                                  |                                              | 0.0247  |

CHARACTERISTICS FOR USING XLPE CABLE

- 1.The allowed long-term maximum working temperature of cable conductor is 90°C ,the maximum working temperature of urgent overload is 130°C (see note),and the maximum temperature of conductor at short circuit (time ≤ 5 sec.) is 250°C.
- Note:China's power departments have not unified provisions for overload time:US standard specifies that when the load exceeds10% of the rated load,the sustained time should not be longer than 15 minutes.
- 2.The environmental temperature during cable installing and laying should not be lower than -20°C;if laying below -20°C,cable should be preheated.
- 3.Minimum bend radius of cable.

Table 4 Allowed Minimum Bend Radius of Cable

| Cable Type<br>Bend Radius | Non-Metal Sheath Cable |                   | Metal Sheath Cable |
|---------------------------|------------------------|-------------------|--------------------|
|                           | 3-Core Cable           | Single-Core Cable |                    |
| After Installing          | 20D <sub>0</sub>       | 32D <sub>0</sub>  | 30D <sub>0</sub>   |
| In Process of Installing  | 30D <sub>0</sub>       | 40D <sub>0</sub>  | 45D <sub>0</sub>   |

Note:D<sub>0</sub> in the table is the actual measured value of cable overall diameter.

- 4.The maximum allowed axial tractional force at installing (lateral side pressure at bend is not considered).  
T= K x Number of Cores X Cross Section (kg)  
Coefficient K value in the formula,copper core 7,aluminium core 4.
- 5.The allowed maximum side pressure P  
Single-core cable requires P≤500kg/m,3-core cable requires P≤300kg/m.  
P=T/R (T is axial tractional force,R is bend radius)  
From the above formula,we know that because the tractional force is usually decided by cable length and weight,to make P to conform to the above requirements,the bend radius should be enlarged.
- 6.Cable laying is not limited by height drop.



HIGH VOLTAGE  
XLPE CABLE

TECHNICAL REQUIREMENTS AND TEST OF CABLE

Table 5 Main Technical Requirements and Tests of 6-110KV XLPE Insulation Power Cable

| Test Categories                                  | No.                                                                 | Test Items & Conditions                                                                                                                                                                           |                                                            |                                              | Unit              | Nominal Voltage Uo/U ( KV ) & Test Requirement<br>6/6 8.7/10 12/20 18/20 21/35 26/35 64/110<br>6/10 8.7/15 18/30 |       |       |       |      |     |               |       |                              |  |   |
|--------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------|-------|-------|-------|------|-----|---------------|-------|------------------------------|--|---|
| Factory Routine Tests(Cable of Full Drum Length) | 1                                                                   | Conductor DC Resistance Test                                                                                                                                                                      |                                                            |                                              | Ω /km             | To be seen on Table                                                                                              |       |       |       |      |     |               |       |                              |  | — |
|                                                  | 2                                                                   | AC Voltage test (put pressure between conductor & metal screen. For 3-core cable,if adopting one test of 3-phase transformer,the phase test voltage should be 1.73 times voltage value in table). | GB12706 IEC502 Q/HBF008                                    | Test Voltage                                 | kV                | 15                                                                                                               | 22    | 30    | 45    | 53   | 65  | 160           | —     |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Duration                                     | min               | 5                                                                                                                |       |       |       |      |     | 30            |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test Result                                  |                   | No Breakdown                                                                                                     |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   | IEC 60502.2-1997                                           | Test Voltage                                 | kV                | 21                                                                                                               | 30.5  | 42    | 63    |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Duration                                     | Min               | 5                                                                                                                |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test Result                                  |                   | No Breakdown                                                                                                     |       |       |       |      |     |               |       |                              |  |   |
|                                                  | 3                                                                   | Partial discharging test                                                                                                                                                                          | GB12706 IEC502 Q/HBF008                                    | Test Voltage                                 | kV                | 9                                                                                                                | 13.05 | 18    | 27    | 31.5 | 39  | 96            |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Partial Discharges                           | PC                | 20                                                                                                               |       |       | 10    |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   | IEC60502.2-1997                                            | Test Voltage                                 | kV                | 10.38                                                                                                            | 15.05 | 20.76 | 31.14 | —    |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Partial Discharges                           | PC                | 10                                                                                                               |       |       |       |      |     |               |       |                              |  |   |
|                                                  | 4                                                                   | Non-metal sheath DC voltage test                                                                                                                                                                  |                                                            | DC Voltage                                   | kV                | —                                                                                                                |       |       |       |      |     | 25            |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Duration                                     | min               |                                                                                                                  |       |       |       |      |     | 1             |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test Result                                  |                   |                                                                                                                  |       |       |       |      |     | No break-down |       |                              |  |   |
|                                                  | 5                                                                   | Welded corrugated aluminium sheath sealing test (carried out before extruding the sheath)                                                                                                         |                                                            | MPa                                          | —                 |                                                                                                                  |       |       |       |      | 0.4 |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Dutation                                     |                   |                                                                                                                  |       |       |       |      | h   | 0.5           |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test Result                                  |                   |                                                                                                                  |       |       |       |      |     | No bubbles    |       |                              |  |   |
|                                                  | Sampling Tests (cable of Full Drum Length or Short Section)         | 1                                                                                                                                                                                                 | Inspection of Measurements of Construction (Short Section) | Conductor Construction                       | mm                | In accordance with GB 12706 • 3-91                                                                               |       |       |       |      |     |               |       | In accordance with Q/HBF 005 |  |   |
| Insulation Thickness                             |                                                                     |                                                                                                                                                                                                   |                                                            |                                              |                   |                                                                                                                  |       |       |       |      |     |               |       |                              |  |   |
| Shield Construction                              |                                                                     |                                                                                                                                                                                                   |                                                            |                                              |                   |                                                                                                                  |       |       |       |      |     |               |       |                              |  |   |
| Sheath Thickness                                 |                                                                     |                                                                                                                                                                                                   |                                                            |                                              |                   |                                                                                                                  |       |       |       |      |     |               |       |                              |  |   |
| Metal Sheath Thickness                           |                                                                     |                                                                                                                                                                                                   |                                                            |                                              |                   |                                                                                                                  |       |       |       |      |     |               |       |                              |  |   |
| Overall Diameter of cable                        |                                                                     |                                                                                                                                                                                                   |                                                            |                                              |                   |                                                                                                                  |       |       |       |      |     |               |       |                              |  |   |
| 2                                                |                                                                     | 4-hour insulation wire core AC voltage test (after soaking in water for 1hr)                                                                                                                      |                                                            | Test Voltage                                 | kV                | 24                                                                                                               | 34.3  | 48    | 72    | 84   | 104 |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Duration                                     | h                 | 4                                                                                                                |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test Result                                  |                   | No Breakdown                                                                                                     |       |       |       |      |     |               |       |                              |  |   |
| 3                                                |                                                                     | Thermo-extension XLPE insulation test                                                                                                                                                             | Test conditions                                            | Temperature of Air Tank                      | ℃                 | 200 ± 3                                                                                                          |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Mechanical Stress                            | N/cm <sup>2</sup> | 20                                                                                                               |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   | Test result                                                | Duration under load                          | min               | 15                                                                                                               |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Elongation rate under load                   | %                 | 175                                                                                                              |       |       |       |      |     |               |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Permanent Elongation rate after being cooled | %                 | 15                                                                                                               |       |       |       |      |     |               |       |                              |  |   |
| 4                                                |                                                                     | Conduction DC resistance test for conductor (in coils or short sections)                                                                                                                          |                                                            |                                              | Ω /km             | —                                                                                                                |       |       |       |      |     |               |       | Table                        |  |   |
| 5                                                | Condenser test (between conductor and metal sheath or metal screen) |                                                                                                                                                                                                   |                                                            | μF/km                                        | —                 |                                                                                                                  |       |       |       |      |     |               | Table |                              |  |   |
| Tests After Installation                         | 1                                                                   | Electrical test after installation                                                                                                                                                                | IEC 60502 -1997                                            | Test Voltage                                 | KV                | 24                                                                                                               | 34.8  | 48    | 72    | 84   | 104 | 256           |       |                              |  |   |
|                                                  |                                                                     |                                                                                                                                                                                                   |                                                            | Test time                                    | min               | 15                                                                                                               |       |       |       |      |     |               |       |                              |  |   |

Note : If both parties agree, this test can be changed into industrial frequency voltage test: (1) Putting system voltage between conductor and sheath for 5 min; (2) Putting systematic normal operation voltage for 24 hrs.

Table 6 64-110KV XLPE Cable Condenser

Unit: μ F/km

| Section-area mm <sup>2</sup> | Condenser Design Value | Allowed Scope of Condenser Survey Value |
|------------------------------|------------------------|-----------------------------------------|
| 240                          | 0.132                  | 0.122~0.142                             |
| 300                          | 0.143                  | 0.131~0.154                             |
| 400                          | 0.161                  | 0.148~0.173                             |
| 500                          | 0.177                  | 0.162~0.191                             |
| 630                          | 0.197                  | 0.181~0.212                             |
| 800                          | 0.219                  | 0.201~0.236                             |
| 1000                         | 0.265                  | 0.243~0.286                             |
| 1200                         | 0.282                  | 0.259~0.304                             |

Table 7 Requirements of Main Types of 64 - 110kV XLPE Cable

| No. | Test Items & Contents                                                                         | Unit                    | Standard Requirements                                                                                     |
|-----|-----------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------|
| 1   | Bend test & following partial discharging test                                                | mm                      | With metal sheath 25 (D+d) +5%                                                                            |
| 1.1 | Bend test Bend cylinder radius                                                                |                         | Without metal sheath 20 (D+d) +5% (D is cable overall diameter .d is conductor extruded overall diameter) |
| 1.2 | Partial discharging test after bending (below 96kV ≤)                                         | PC                      | 5                                                                                                         |
| 2   | tg δ test (conductor temp.90-100℃, below AC 64kV)                                             |                         | ≤ 10 × 10 <sup>-4</sup>                                                                                   |
| 3   | Heat circulation voltage test & following partial discharging test                            | h                       | 20 × (adding 8w heat + natural cooling 16w)                                                               |
| 3.1 | Heat circulation voltage test      Heat circulation cycle      Adding voltage                 |                         | 128                                                                                                       |
| 3.2 | Partial discharging test ( below 96kV, ≤)                                                     | PC                      | 5                                                                                                         |
| 4   | Impulsive voltage test & following AC voltage test                                            | kV                      | 550                                                                                                       |
| 4.1 | Impulsive voltage test      Impulsive voltage      (adding conductor heat to 95-100℃)         |                         | 10 each for positive & negative electrodes                                                                |
| 4.2 | AC voltage test                                                                               | Impact times            | Unpunctured                                                                                               |
|     |                                                                                               | Test voltage            | 160                                                                                                       |
|     |                                                                                               | Time for adding voltage | 15                                                                                                        |
| 5   | Semi-conductor screen layer resistance coefficient test (Before & after aging, ≤)             | Ω • m                   | 1000                                                                                                      |
|     |                                                                                               | Insulation screen layer | 500                                                                                                       |
| 6   | Insulation layer resistance coefficient test                                                  | Per/10cm <sup>3</sup>   | 0                                                                                                         |
| 6.1 | No. of microporosities >76 μ m                                                                |                         | 18                                                                                                        |
| 6.2 | (≤) 51~76 μ m (including 76 μ m)                                                              |                         | 0                                                                                                         |
| 7   | Semi-conductor microporosity test                                                             | Per/10cm <sup>3</sup>   | 0                                                                                                         |
|     |                                                                                               |                         | 18                                                                                                        |
| 7.1 | Conductor screen (≤)                                                                          |                         | 0                                                                                                         |
| 7.2 | insulation screen (≤)                                                                         | Per/10cm <sup>3</sup>   | 0                                                                                                         |
|     |                                                                                               |                         | 18                                                                                                        |
| 8   | Welded corrugated aluminium sheath welding seam tensile strength (≥)                          | N/mm <sup>2</sup>       | 54                                                                                                        |
| 9   | Horizontal water-blocking test      Water height      Adding heat cycle time      Test result | m      H                | 1      10 × ( adding heat 8+ natural cooling 16 )      No water seeping from 2 ends                       |



HIGH VOLTAGE  
XLPE CABLE

6-35KV XLPE INSULATION POWER CABLE

1.Product Standard

GB/T 12706.2-12706.3-2002eqv  
IEC 60502:1997

2.Usage

This product is suitable for use in rated AC voltage (U<sub>0</sub>/U) 6/6~26/35kV system transmitting and distributing lines.According to different sheath make ups,they can be used for laying in the air (cable bridges , indoor wall supports and groove boxes) and in soil (direct burying,cable canals and pipelines,etc.)

3.Cable Types、Names and Places for Use

Table 8 Cable Types,Names and Places for Use

| Type              |                    | Name                                                             | Places for Use                                                                                                                                                                        |
|-------------------|--------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cu Core           | AL Core            |                                                                  |                                                                                                                                                                                       |
| YJV               | YJLV               | XLPE Insulated,PVC Sheathed Power Cable                          | Can be laid in indoor, outdoor,tunnels,cable canals,reinforced concrete pipelines and loose soil.cable should not bear outer mechanic force, but can bear a certain tractional force. |
| YJV <sub>22</sub> | YJLV <sub>22</sub> | XLPE Insulated, Steel Tape Armored and PVC Sheathed Power Cable. | Laid underground. Cable can bear outer machanic force, but should not bear large tractional force.                                                                                    |
| YJV <sub>32</sub> | YJLV <sub>32</sub> | XLPE Insulated Steel Wire Armored and PVC Sheathed Power Cable   | Laid in indoor,tunnels and mines.Cable can bear outer mechanic force and fairly large tractional force.                                                                               |
| YJV <sub>42</sub> | YJLV <sub>42</sub> | XLPE Insulated ,Steel Wire Armored and PVC Sheathed Power Cable. | Can be laid in vertical section,indoor,tunnels and mines.Cable can bear outer machanic force and very large tractional force.                                                         |

Note: Single-core cable are not allowed to be laid in iron pipes

4.Cable Manufacturing Scope

Table 9 Cable manufacturing scope

| Type                         | No. of Cable | Rated Voltage (U <sub>0</sub> /U) kV             |             |              |                   |
|------------------------------|--------------|--------------------------------------------------|-------------|--------------|-------------------|
|                              |              | 6/6                                              | 6/10 8.7/10 | 8.7/15 12/20 | 18/20 21/35 26/35 |
|                              |              | Standard Conductor Cross-Section mm <sup>2</sup> |             |              |                   |
| YJV YJV <sub>32 (42)</sub>   | 1            | 25~630                                           | 25~630      | 25~400       | 50~500            |
| YJLV YJLV <sub>32 (42)</sub> |              | 35~630                                           | 35~630      | 35~300       | 50~630            |
| YJV <sub>22</sub>            |              | 25~500                                           | 25~500      | 35~500       |                   |
| YJLV <sub>22</sub>           |              | 35~500                                           | 35~500      | 35~500       |                   |
| YJV YJV <sub>22</sub>        | 3            | 25~300                                           | 25~300      | 35~300       | 50~300            |
| YJLV YJLV <sub>22</sub>      |              | 35~300                                           | 35~300      | 35~300       | 50~300            |
| YJLV <sub>32</sub>           |              | 25~300                                           | 25~300      | 35~300       | 50~300            |
| YJLV <sub>42</sub>           |              | 35~185                                           | 35~185      | 35~150       | 50~300            |

Note:Steel wire armored single-core cable adopts magnetism-insulation make-ups to reduce magnetism loss for steel wire armor and the armored tape adopts stainless steel or aluminium tape.

5.Estimated Overall Diameter and Weight of Cable

The follwing estimated overall diameter and weight of cable are only for users' reference in storing: transporting and installing,not belonging to standard technical parameters for checking

(1) Estimated overall diameter and weight of single-core cable.

Table10 Estimated Overall Diameter and Weight of Single-Core XLPE Cable

| Rated Voltage<br>U <sub>0</sub> /U<br>(KV) | Nominal Cross<br>Section of<br>Conductor (mm <sup>2</sup> ) | Estimated Overall Dia. of Cable<br>(mm) |                                       |                                       | Estimated Weight of Cable<br>(Kg/km) |      |                   |                    |                   |                    |
|--------------------------------------------|-------------------------------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|------|-------------------|--------------------|-------------------|--------------------|
|                                            |                                                             | YJV,YJLV                                | YJV <sub>32</sub> ,YJLV <sub>32</sub> | YJV <sub>42</sub> ,YJLV <sub>42</sub> | YJV                                  | YJLV | YJV <sub>32</sub> | YJLV <sub>32</sub> | YJV <sub>42</sub> | YJLV <sub>42</sub> |
| 6/6<br>6/10                                | 25                                                          | 20.1                                    | 25.8                                  |                                       | 672                                  |      | 1617              | -                  | 2908              | -                  |
|                                            | 35                                                          | 22.7                                    | 28.9                                  | 34.9                                  | 794                                  | 580  | 1840              | 1623               | 3168              | 2951               |
|                                            | 50                                                          | 24.0                                    | 30.2                                  | 36.2                                  | 956                                  | 654  | 2059              | 1757               | 3443              | 3141               |
|                                            | 70                                                          | 25.7                                    | 32.1                                  | 38.1                                  | 1197                                 | 763  | 2386              | 1953               | 3705              | 3300               |
|                                            | 95                                                          | 27.3                                    | 33.7                                  | 39.7                                  | 1471                                 | 881  | 2729              | 2139               | 4170              | 3500               |
|                                            | 120                                                         | 28.9                                    | 35.3                                  | 41.3                                  | 1742                                 | 1002 | 3066              | 2326               | 4577              | 3787               |
|                                            | 150                                                         | 30.5                                    | 36.9                                  | 42.9                                  | 2070                                 | 1136 | 3466              | 2532               | 5149              | 4150               |
|                                            | 185                                                         | 32.3                                    | 38.7                                  | 44.7                                  | 2446                                 | 1296 | 3914              | 2764               | 5643              | 4448               |
|                                            | 240                                                         | 34.8                                    | 41.1                                  | 47.1                                  | 3011                                 | 1527 | 4576              | 3093               | 6631              | 4880               |
|                                            | 300                                                         | 37.0                                    | 44.5                                  | 49.5                                  | 3622                                 | 1762 | 5694              | 3834               | 7230              | 5360               |
| 8.7/10<br>8.7/15                           | 400                                                         | 40.4                                    | 48.1                                  | 52.9                                  | 4637                                 | 2155 | 6912              | 4430               | 8531              | 6049               |
|                                            | 500                                                         | 43.4                                    | 51.3                                  | 55.9                                  | 5637                                 | 2536 | 8095              | 4994               | 9780              | 6679               |
|                                            | 630                                                         | 47.2                                    | 54.9                                  | 59.5                                  | 7004                                 | 3040 | 9628              | 5684               | 11427             | 7483               |
|                                            | 25                                                          | 23.0                                    | 38.3                                  | 33.5                                  | 786                                  | -    | 1826              | -                  | 2960              | -                  |
|                                            | 35                                                          | 25.0                                    | 31.5                                  | 37.5                                  | 892                                  | 676  | 2052              | 1836               | 3184              | 2967               |
|                                            | 50                                                          | 26.3                                    | 32.7                                  | 38.8                                  | 1050                                 | 753  | 2275              | 1973               | 3459              | 3145               |
|                                            | 70                                                          | 28.0                                    | 34.6                                  | 40.7                                  | 1270                                 | 859  | 2613              | 2170               | 3819              | 3390               |
|                                            | 95                                                          | 29.8                                    | 36.3                                  | 42.3                                  | 1519                                 | 987  | 2963              | 2373               | 4251              | 3670               |
|                                            | 120                                                         | 31.2                                    | 37.9                                  | 43.9                                  | 1800                                 | 1104 | 3306              | 2565               | 4680              | 3980               |
|                                            | 150                                                         | 33.1                                    | 39.5                                  | 45.5                                  | 2102                                 | 1235 | 3711              | 2777               | 5260              | 4370               |
| 12/20                                      | 185                                                         | 34.9                                    | 41.3                                  | 47.3                                  | 2488                                 | 1377 | 4164              | 3014               | 5760              | 4956               |
|                                            | 240                                                         | 37.1                                    | 43.7                                  | 49.7                                  | 3153                                 | 1687 | 4838              | 3354               | 6580              | 5152               |
|                                            | 300                                                         | 39.5                                    | 46.3                                  | 51.9                                  | 3789                                 | 1929 | 5599              | 3739               | 7584              | 5617               |
|                                            | 400                                                         | 42.9                                    | 49.9                                  | 55.3                                  | 4817                                 | 2335 | 6799              | 4317               | 8795              | 6414               |
|                                            | 35                                                          | 28.1                                    | 34.8                                  | 40.7                                  | 979                                  | 768  | 2355              | 2123               | 3780              | 3560               |
|                                            | 50                                                          | 29.6                                    | 36.1                                  | 42.0                                  | 1155                                 | 851  | 2610              | 2295               | 4060              | 3740               |
|                                            | 70                                                          | 31.3                                    | 38.0                                  | 44.0                                  | 1393                                 | 960  | 2894              | 2460               | 4410              | 3987               |
|                                            | 95                                                          | 33.2                                    | 39.6                                  | 45.5                                  | 1681                                 | 1107 | 3267              | 2700               | 4861              | 4270               |
|                                            | 120                                                         | 34.8                                    | 41.2                                  | 47.2                                  | 1989                                 | 1245 | 3630              | 2890               | 5269              | 4527               |
|                                            | 150                                                         | 36.4                                    | 42.8                                  | 48.9                                  | 2328                                 | 1392 | 4531              | 3610               | 5837              | 4898               |
|                                            | 185                                                         | 38.2                                    | 45.8                                  | 50.5                                  | 2718                                 | 1950 | 4990              | 3857               | 6380              | 5203               |
|                                            | 240                                                         | 40.4                                    | 48.2                                  | 52.9                                  | 3332                                 | 1829 | 5735              | 4250               | 7100              | 5614               |
|                                            | 300                                                         | 42.8                                    | 50.8                                  | 55.2                                  | 3963                                 | 2103 | 6457              | 4597               | 8000              | 6120               |
|                                            | 400                                                         | 46.2                                    | 54.2                                  | 58.5                                  | 5077                                 | 2595 | 7682              | 5199               | 9330              | 6758               |



HIGH VOLTAGE  
XLPE CABLE

| Rated Voltage<br>U <sub>0</sub> /U<br>(kV) | Nominal Cross Section of Conductor (mm <sup>2</sup> ) | Estimated Overall Dia. of Cable (mm) |                                       |                                       | Estimated Weight of Cable (kg/km) |      |                   |                    |                   |                    |
|--------------------------------------------|-------------------------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------|------|-------------------|--------------------|-------------------|--------------------|
|                                            |                                                       | YJV,YJLV                             | YJV <sub>22</sub> ,YJLV <sub>22</sub> | YJV <sub>42</sub> ,YJLV <sub>42</sub> | YJV                               | YJLV | YJV <sub>32</sub> | YJLV <sub>32</sub> | YJV <sub>42</sub> | YJLV <sub>42</sub> |
| 18/20<br>18/30                             | 50                                                    | 35.3                                 | 41.7                                  | 47.7                                  | 1551                              | 1250 | 3141              | 2840               | 4998              | 4696               |
|                                            | 70                                                    | 37.0                                 | 44.6                                  | 49.6                                  | 1823                              | 1390 | 3898              | 3464               | 5438              | 5004               |
|                                            | 95                                                    | 38.8                                 | 46.6                                  | 51.2                                  | 2142                              | 1552 | 4334              | 3745               | 5881              | 5291               |
|                                            | 120                                                   | 40.2                                 | 48.8                                  | 52.8                                  | 2427                              | 1686 | 4695              | 3954               | 6130              | 5569               |
|                                            | 150                                                   | 42.0                                 | 49.6                                  | 54.4                                  | 2802                              | 1868 | 5138              | 4203               | 6807              | 5873               |
|                                            | 185                                                   | 43.6                                 | 51.6                                  | 56.2                                  | 3192                              | 2042 | 5665              | 4515               | 7358              | 6208               |
|                                            | 240                                                   | 46.1                                 | 54.0                                  | 58.4                                  | 3791                              | 2317 | 6396              | 4912               | 8139              | 6655               |
|                                            | 300                                                   | 48.5                                 | 56.6                                  | 60.8                                  | 4472                              | 2612 | 7221              | 5361               | 9005              | 7145               |
|                                            | 400                                                   | 51.9                                 | 60.0                                  | 64.2                                  | 5551                              | 3069 | 8478              | 5995               | 10364             | 7882               |
|                                            | 500                                                   | 55.3                                 | 63.4                                  | 67.8                                  | 6630                              | 3526 | 9699              | 6826               | 11713             | 8719               |
| 21/35                                      | 50                                                    | 38.1                                 | 45.8                                  | 50.6                                  | 1724                              | 1423 | 3881              | 3850               | 5369              | 5067               |
|                                            | 70                                                    | 40.0                                 | 47.7                                  | 52.3                                  | 2019                              | 1586 | 4272              | 3838               | 5795              | 5361               |
|                                            | 95                                                    | 41.8                                 | 49.5                                  | 54.1                                  | 2348                              | 1758 | 4689              | 4100               | 6269              | 5680               |
|                                            | 120                                                   | 43.2                                 | 51.1                                  | 55.7                                  | 2772                              | 1961 | 5087              | 4346               | 6772              | 5962               |
|                                            | 150                                                   | 45.0                                 | 52.9                                  | 57.3                                  | 3023                              | 2089 | 5561              | 4627               | 7210              | 6275               |
|                                            | 185                                                   | 46.6                                 | 54.5                                  | 59.1                                  | 3420                              | 2270 | 6044              | 4894               | 7772              | 6621               |
|                                            | 240                                                   | 49.0                                 | 57.1                                  | 61.5                                  | 4039                              | 2556 | 6819              | 5335               | 8589              | 7106               |
|                                            | 300                                                   | 51.4                                 | 59.5                                  | 63.7                                  | 4723                              | 2863 | 7625              | 5765               | 9433              | 7581               |
|                                            | 400                                                   | 54.9                                 | 63.1                                  | 67.1                                  | 5818                              | 3335 | 8930              | 6448               | 10818             | 8336               |
|                                            | 500                                                   | 58.3                                 | 66.4                                  | 70.8                                  | 6913                              | 3806 | 10237             | 7460               | 12213             | 9271               |
| 26/35                                      | 50                                                    | 40.8                                 | 48.5                                  | 53.3                                  | 1906                              | 1604 | 4205              | 3903               | 5838              | 5536               |
|                                            | 70                                                    | 42.7                                 | 50.6                                  | 55.0                                  | 2211                              | 1778 | 4633              | 4200               | 6272              | 5838               |
|                                            | 95                                                    | 44.5                                 | 52.4                                  | 56.8                                  | 2547                              | 1958 | 5059              | 4469               | 6751              | 6162               |
|                                            | 120                                                   | 45.9                                 | 53.8                                  | 58.2                                  | 2845                              | 2104 | 5433              | 4692               | 7171              | 6430               |
|                                            | 150                                                   | 47.8                                 | 55.8                                  | 60.0                                  | 3237                              | 2302 | 5945              | 5011               | 7704              | 6770               |
|                                            | 185                                                   | 49.4                                 | 57.4                                  | 61.8                                  | 3639                              | 2489 | 6436              | 5286               | 8237              | 7123               |
|                                            | 240                                                   | 51.8                                 | 59.8                                  | 64.0                                  | 4270                              | 2786 | 7188              | 5704               | 9071              | 7588               |
|                                            | 300                                                   | 54.2                                 | 62.4                                  | 66.4                                  | 4963                              | 3104 | 8041              | 6181               | 9960              | 8100               |
|                                            | 400                                                   | 57.6                                 | 65.8                                  | 69.8                                  | 6072                              | 3590 | 9329              | 6847               | 11350             | 8868               |
|                                            | 500                                                   | 60.9                                 | 69.2                                  | 73.6                                  | 7181                              | 4076 | 10616             | 7759               | 12749             | 9615               |

(2) Estimated Overall Diameter and Weight of 3-Core Cable.

Table 11 Estimated Overall Diameter and Weight of 3-Core XLPE Cable.

| Rated Voltage<br>U <sub>0</sub> /U<br>(kV) | Nominal Cross Section of Conductor (mm <sup>2</sup> ) | Estimated Overall Dia. of Cable (mm) |                                       |                                       |                                       | Estimated Weight of Cable (kg/km) |      |                   |                    |                   |                    |                   |                    |
|--------------------------------------------|-------------------------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------|------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
|                                            |                                                       | YJV,YJLV                             | YJV <sub>22</sub> ,YJLV <sub>22</sub> | YJV <sub>32</sub> ,YJLV <sub>32</sub> | YJV <sub>42</sub> ,YJLV <sub>42</sub> | YJV                               | YJLV | YJV <sub>32</sub> | YJLV <sub>32</sub> | YJV <sub>42</sub> | YJLV <sub>42</sub> | YJV <sub>32</sub> | YJLV <sub>32</sub> |
| 6/6<br>6/10                                | 25                                                    | 40.0                                 | 44.3                                  | 47.6                                  | 51.5                                  | 2220                              | -    | 3488              | -                  | 4678              | -                  | 6320              | -                  |
|                                            | 35                                                    | 44.5                                 | 49.7                                  | 52.9                                  | 57.3                                  | 2596                              | 1931 | 3830              | 3165               | 5177              | 4512               | 6881              | 6216               |
|                                            | 50                                                    | 48.1                                 | 53.5                                  | 56.7                                  | 60.9                                  | 3150                              | 2226 | 4390              | 3440               | 5957              | 5033               | 7743              | 6819               |
|                                            | 70                                                    | 52.0                                 | 57.4                                  | 60.5                                  | 64.9                                  | 3678                              | 2365 | 5368              | 4050               | 6955              | 5628               | 8885              | 7558               |
|                                            | 95                                                    | 55.6                                 | 61.2                                  | 64.4                                  | 68.6                                  | 4785                              | 2978 | 6360              | 4520               | 8091              | 6287               | 10530             | 8323               |
|                                            | 120                                                   | 58.8                                 | 64.6                                  | 68.0                                  | 71.8                                  | 5687                              | 3404 | 7510              | 5238               | 9126              | 6895               | 11380             | 9100               |
|                                            | 150                                                   | 62.7                                 | 68.5                                  | 73.0                                  | 75.5                                  | 6667                              | 3824 | 8585              | 5732               | 11256             | 8397               | 12530             | 9670               |
|                                            | 185                                                   | 66.3                                 | 72.3                                  | 76.8                                  | 79.3                                  | 8023                              | 4500 | 9884              | 6375               | 12740             | 9220               | 14090             | 10554              |
|                                            | 240                                                   | 71.4                                 | 77.6                                  | 82.2                                  | 84.2                                  | 10227                             | 5645 | 11825             | 7261               | 14945             | 10405              | 16420             | 11870              |
|                                            | 300                                                   | 76.4                                 | 84.2                                  | 87.5                                  | 89.4                                  | 11735                             | 6044 | 14040             | 8349               | 17346             | 11655              | 18752             | 13061              |

Table 12 (Continued)

| Rated Voltage<br>U <sub>0</sub> /U<br>(kV) | Nominal Cross Section of Conductor (mm <sup>2</sup> ) | Estimated Overall Dia. of Cable (mm) |                                       |                                       |                                       | Estimated Weight of Cable (kg/km) |      |                   |                    |                   |                    |                   |                    |
|--------------------------------------------|-------------------------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------|------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
|                                            |                                                       | YJV,YJLV                             | YJV <sub>22</sub> ,YJLV <sub>22</sub> | YJV <sub>32</sub> ,YJLV <sub>32</sub> | YJV <sub>42</sub> ,YJLV <sub>42</sub> | YJV                               | YJLV | YJV <sub>22</sub> | YJLV <sub>22</sub> | YJV <sub>32</sub> | YJLV <sub>32</sub> | YJV <sub>42</sub> | YJLV <sub>42</sub> |
| 8.7/10<br>8.7/15                           | 25                                                    | 44.8                                 | 51.1                                  | 53.6                                  | 56.3                                  | 2488                              | -    | 2225              | -                  | 5509              | -                  | 7015              | -                  |
|                                            | 35                                                    | 50.5                                 | 55.5                                  | 59.1                                  | 63.3                                  | 2937                              | 2273 | 4308              | 3644               | 5842              | 5176               | 7727              | 7603               |
|                                            | 50                                                    | 53.5                                 | 58.7                                  | 62.3                                  | 66.3                                  | 3428                              | 2497 | 4905              | 3925               | 6415              | 5467               | 8548              | 7624               |
|                                            | 70                                                    | 57.3                                 | 62.5                                  | 66.1                                  | 70.1                                  | 4148                              | 2835 | 5728              | 4404               | 7506              | 6184               | 9687              | 8361               |
|                                            | 95                                                    | 61.0                                 | 66.4                                  | 70.0                                  | 73.8                                  | 5054                              | 3257 | 6929              | 5120               | 8654              | 6847               | 10919             | 9114               |
|                                            | 120                                                   | 64.2                                 | 69.8                                  | 74.9                                  | 77.2                                  | 6077                              | 3805 | 7920              | 5644               | 9735              | 7453               | 12075             | 9809               |
|                                            | 150                                                   | 67.9                                 | 73.7                                  | 78.5                                  | 80.8                                  | 7030                              | 4180 | 9010              | 6156               | 12099             | 9240               | 13448             | 10589              |
|                                            | 185                                                   | 71.7                                 | 77.1                                  | 82.4                                  | 84.5                                  | 8228                              | 4720 | 10480             | 6960               | 13612             | 10092              | 14979             | 11459              |
|                                            | 240                                                   | 76.6                                 | 84.0                                  | 87.7                                  | 89.6                                  | 10010                             | 5457 | 12510             | 7950               | 15853             | 11313              | 17262             | 12722              |
|                                            | 300                                                   | 81.8                                 | 89.4                                  | 92.9                                  | 94.6                                  | 12172                             | 6841 | 14680             | 8980               | 18249             | 12558              | 19689             | 13998              |
| 12/20                                      | 35                                                    | 57.5                                 | 63.2                                  | 66.3                                  | 70.3                                  | 3348                              | 2696 | 4840              | 4189               | 7403              | 6752               | 8423              | 7771               |
|                                            | 50                                                    | 60.5                                 | 66.4                                  | 69.5                                  | 73.3                                  | 3974                              | 2973 | 5463              | 4532               | 8139              | 7208               | 9200              | 8270               |
|                                            | 70                                                    | 64.4                                 | 70.4                                  | 75.1                                  | 77.4                                  | 4623                              | 3321 | 6346              | 5044               | 9133              | 7831               | 11626             | 10323              |
|                                            | 95                                                    | 68.3                                 | 74.1                                  | 78.8                                  | 81.1                                  | 5593                              | 3825 | 7457              | 5689               | -                 | -                  | 13054             | 11286              |
|                                            | 120                                                   | 71.5                                 | 77.7                                  | 82.2                                  | 84.3                                  | 6495                              | 4262 | 8459              | 6227               | -                 | -                  | 14347             | 12114              |
|                                            | 150                                                   | 75.1                                 | 82.7                                  | 86.0                                  | 87.9                                  | 7637                              | 4846 | 10555             | 7764               | -                 | -                  | 15883             | 13092              |
|                                            | 185                                                   | 78.8                                 | 86.4                                  | 89.9                                  | 91.6                                  | 8803                              | 5361 | 11925             | 8483               | -                 | -                  | 16333             | 12813              |
|                                            | 240                                                   | 89.3                                 | 91.7                                  | 95.0                                  | 96.7                                  | 10729                             | 6263 | 13959             | 9494               | -                 | -                  | -                 | -                  |
|                                            | 300                                                   | 88.9                                 | 97.1                                  | 100.1                                 | 102.2                                 | -                                 | -    | 7141              | 10731              | -                 | -                  | -                 | -                  |
|                                            | 400                                                   | 93.8                                 | 101.9                                 | 104.9                                 | 106.9                                 | -                                 | -    | -                 | -                  | -                 | -                  | -                 | -                  |

Table 12 (Continued)

| Rated Voltage<br>(kV) | Nominal Conductor Cross Section(mm <sup>2</sup> ) | Armored Layer (mm)                |                         | Nominal Thickness of Sheath (mm) |                    | Estimated Overall Dia. (mm) |                    | Estimated Weight (kg/km) |                    |                   |                    |
|-----------------------|---------------------------------------------------|-----------------------------------|-------------------------|----------------------------------|--------------------|-----------------------------|--------------------|--------------------------|--------------------|-------------------|--------------------|
|                       |                                                   | Nominal Thickness of Inner Sheath | Thickness of Steel Tape | Non-Armored Type                 | Steel Tape Armored | Non-Armored Type            | Steel Tape Armored | Non-Armored Type         | Steel Tape Armored | YJV <sub>22</sub> | YJLV <sub>22</sub> |
|                       |                                                   |                                   |                         |                                  |                    |                             |                    |                          |                    |                   |                    |
| 21/35                 | 50                                                | 2.0                               | 2x0.8                   | 3.5                              | 3.8                | 78.4                        | 86.2               | 5756                     | 4832               | 9145              | 8221               |
|                       | 70                                                | 2.1                               | 2x0.8                   | 3.6                              | 3.9                | 82.3                        | 90.3               | 6671                     | 5345               | 10264             | 8938               |
|                       | 95                                                | 2.2                               | 2x0.8                   | 3.7                              | 4.0                | 86.0                        | 94.2               | 7664                     | 5859               | 11455             | 9650               |
|                       | 120                                               | 2.2                               | 2x0.8                   | 3.8                              | 4.1                | 89.2                        | 97.4               | 8612                     | 6346               | 12538             | 10272              |
|                       | 150                                               | 2.3                               | 2x0.8                   | 3.9                              | 4.2                | 92.6                        | 101.0              | 9780                     | 6920               | 13897             | 11037              |
|                       | 185                                               | 2.4                               | 2x0.8                   | 4.1                              | 4.4                | 96.5                        | 105.0              | 11093                    | 7574               | 15419             | 11900              |
|                       | 240                                               | 2.5                               | 2x0.8                   | 4.3                              | 4.5                | 101.6                       | 110.2              | 13030                    | 8490               | 17580             | 13040              |
| 26/35                 | 300                                               | 2.6                               | 2x0.8                   | 4.5                              | 4.6                | 106.7                       | 115.3              | 15163                    | 9472               | 19936             | 14246              |
|                       | 50                                                | 2.1                               | 2x0.8                   | 3.7                              | 3.9                | 84.2                        | 92.0               | 6363                     | 5440               | 9990              | 9067               |
|                       | 70                                                | 2.2                               | 2x0.8                   | 3.8                              | 4.1                | 88.0                        | 96.2               | 7294                     | 5968               | 11170             | 9844               |
|                       | 95                                                | 2.3                               | 2x0.8                   | 3.9                              | 4.2                | 91.7                        | 100.1              | 8326                     | 6521               | 12402             | 10597              |
|                       | 120                                               | 2.3                               | 2x0.8                   | 4.0                              | 4.3                | 94.9                        | 103.3              | 9295                     | 7029               | 13509             | 11243              |
|                       | 150                                               | 2.4                               | 2x0.8                   | 4.2                              | 4.4                | 98.5                        | 106.9              | 10516                    | 9656               | 14884             | 12024              |
|                       | 185                                               | 2.5                               | 2x0.8                   | 4.3                              | 4.5                | 102.2                       | 110.8              | 11803                    | 8284               | 16379             | 12860              |
|                       | 240                                               | 2.6                               | 2x0.8                   | 4.4                              | 4.6                | 107.1                       | 115.9              | 13727                    | 9187               | 18572             | 14023              |
| 300                   | 300                                               | 2.6                               | 2x0.8                   | 4.5                              | 4.7                | 112.0                       | 120.8              | 15844                    | 10153              | 20907             | 15216              |



HIGH VOLTAGE  
XLPE CABLE

110KV&220KV XLPE Insulated Power Cable

1.Standard of Product

The 110KV XLPE Insulated power cable is produced according to the standard GB/T11017 "Power cable with cross-linked Polyethylene insulation and their accessories for rated voltage of 110kV", which are equivalent to IEC 840 "Tests For power cables with extruded insulation for rated voltage above 30kV (Um=36kV) up to 150kV(Um=170kV)". AEIC CS7 "Specifications for crosslinked polyethylene insulated shielded power cable rated 69 through 138kV". The 220KV XLPE cable to standard GB/Z18890 "Power cable with cross-Linked polyethylene insulation and their accessories for rated voltage of 220kV" which is equivalent to SS 424 14 17 "power cables-XLPE- insulated cables with extruded oversheath and rated voltage 12-420kV-Testing", and some extension with reference to IEC 840 and AEIC CS7.

2.Environment and Characteristics for Use of the Cable.

2.1 Environment for use of the cable is listed in the following table.

| Type                                                                                       |                                                                                                | Description                                                               | Application                                                                                                                                      |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Cu Core                                                                                    | Al Core                                                                                        |                                                                           |                                                                                                                                                  |
| YJLW <sub>02</sub><br>YJLW <sub>03</sub><br>YJLW <sub>02</sub> -Z<br>YJLW <sub>03</sub> -Z | YJLLW <sub>02</sub><br>YJLLW <sub>03</sub><br>YJLLW <sub>02</sub> -Z<br>YJLLW <sub>03</sub> -Z | XLPE Insulated Corrugated Aluminium Sheathed PVC Over Sheath Power Cable. | For laying in tunnel or duct, used in damp environment or the place where water level is comparatively high, and able to bear moderate pressure. |
| YJQ <sub>02</sub><br>YJQ <sub>03</sub><br>YJQ <sub>02</sub> -Z<br>YJQ <sub>03</sub> -Z     | YJLQ <sub>02</sub><br>YJLQ <sub>03</sub><br>YJLQ <sub>02</sub> -Z<br>YJLQ <sub>03</sub> -Z     | XLPE Insulated Lead Sheathed, PVC Over Sheathed Power Cable.              | Ditto, unable bear pressure.                                                                                                                     |

2.2 Characteristics for use.

2.2.1 Long-term operating temperature for cable conductor is 90°C.

2.2.2 The highest temperature of the conductor in short circuit (no longer than 5 seconds) is not more than 250°C. If a joint is in the cable, the temperature of the tinning welding joint is not more than 120°C, compressing joint not more than 150°C and electro-welding or gas-welding joint not more than 250°C.

2.2.3 No drop is limited provided there is full mechanical tention when cable is laid. It is forbidden to lay cable in iron- Pipe or to fix Cable by Circling around the Cable with iron materials.

2.2.4 Being laid, the minimum temperature of the cable should not be lower than 0°C. In the case of lower temperature, heating measures should be taken.

2.2.5 Minimum allowable bending radius of the cable.

When cable is laying: 20d

After cable laying: 15d

In the formula: d-Diameter of the cable.

2.2.6 Lateral pressure and maximum allowable pulling force for cable to bear when the cable is laying

$SWP=F/R$   $F=a \cdot S$

In the formula: SWP-Lateral pressure for the cable to bear.

F-Maximum allowable pulling force for the cable to bear.

R-Bending radius of the cable.

S-Cross-section area of the conductor. mm<sup>2</sup>

A-Coefficient. For AL:

$a=40N/mm^2$  For CU;  $a=70N/mm^2$

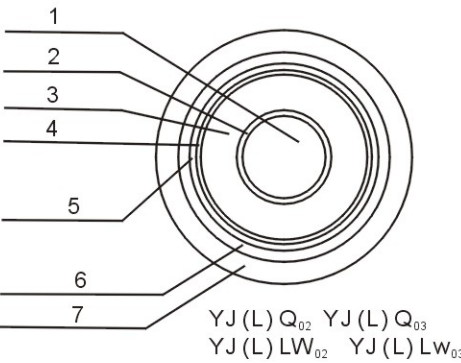
3.Description of Size and Structure.

3.1 Size is in the following table.

| Type                                                                                       |                                                                                                | Size Range    | Nominal Cross-Section (mm <sup>2</sup> )                         |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------|
| YJLW <sub>02</sub><br>YJLW <sub>03</sub><br>YJLW <sub>02</sub> -Z<br>YJLW <sub>03</sub> -Z | YJLLW <sub>02</sub><br>YJLLW <sub>03</sub><br>YJLLW <sub>02</sub> -Z<br>YJLLW <sub>03</sub> -Z | 64/110 (126)  | 240 300 400 500 630 800 1000<br>1200 (1400) 1600                 |
| YJQ <sub>02</sub><br>YJQ <sub>03</sub><br>YJQ <sub>02</sub> -Z<br>YJQ <sub>03</sub> -Z     | YJLQ <sub>02</sub><br>YJLQ <sub>03</sub><br>YJLQ <sub>02</sub> -Z<br>YJLQ <sub>03</sub> -Z     | 127/220 (252) | 400 500 630 800 1000 1200 (1400)<br>1600 (1800) 2000 (2200) 2500 |

3.2 The diagrams of typical structure

- (1) Conductor
- (2) Inner Screen
- (3) Insulation
- (4) Outer Screen
- (5) Longitudinal water-blocking layer
- (6) Metal sheath (Lead sheath or Corrugated Aluminium sheath.)
- (7) Oversheath (PVC or PE)



The constructions and electric performance parameters

YJQ<sub>02</sub> YJQ<sub>03</sub> YJLQ<sub>02</sub> YJLQ<sub>03</sub> YJQ<sub>02</sub>-Z YJQ<sub>03</sub>-Z YJLQ<sub>02</sub>-Z YJLQ<sub>03</sub>-Z

| Rated voltage | Nominal Cross-Section Area | Diameter of Conductor | Thickness of Inner Screen | Thickness of Insulation | Thickness of Outer Screen | Thickness of Lead Sheath | Thickness of Over Sheath | Overall Diameter | Weight of Cable (Approx) kg/km |       | Electric Capacity | Inductance      |                | Loss of Insulation | DC Resistance of Conductor > (20°C) Ω/km |        |
|---------------|----------------------------|-----------------------|---------------------------|-------------------------|---------------------------|--------------------------|--------------------------|------------------|--------------------------------|-------|-------------------|-----------------|----------------|--------------------|------------------------------------------|--------|
|               |                            |                       |                           |                         |                           |                          |                          |                  | Cu                             | Al    |                   | Parallel Laying | Trefoil Laying |                    | Cu                                       | Al     |
| kV            | mm²                        | mm                    | mm                        | mm                      | mm                        | mm²                      | mm                       | mm               | Cu                             | Al    | pF/m              | mH/km           | mH/km          | W/m                | Cu                                       | Al     |
| 110           | 240                        | 18.40                 | 1.5                       | 19.0                    | 1.0                       | 3.4                      | 2.7                      | 79.2             | 14233                          | 12711 | 136               | 0.757           | 0.482          | 0.175              | 0.0754                                   | 0.1250 |
|               | 300                        | 20.60                 | 1.5                       | 18.5                    | 1.0                       | 3.4                      | 2.7                      | 80.4             | 15060                          | 13135 | 147               | 0.734           | 0.463          | 0.190              | 0.0601                                   | 0.1000 |
|               | 400                        | 23.50                 | 1.5                       | 17.5                    | 1.0                       | 3.4                      | 2.7                      | 81.5             | 15948                          | 13487 | 165               | 0.708           | 0.438          | 0.212              | 0.0470                                   | 0.0778 |
|               | 500                        | 26.60                 | 1.5                       | 17.0                    | 1.0                       | 3.4                      | 2.8                      | 84.0             | 17332                          | 14171 | 182               | 0.683           | 0.419          | 0.234              | 0.0366                                   | 0.0605 |
|               | 630                        | 30.25                 | 1.5                       | 16.5                    | 1.0                       | 3.4                      | 2.9                      | 86.8             | 19184                          | 15097 | 201               | 0.657           | 0.400          | 0.259              | 0.0283                                   | 0.0469 |
|               | 800                        | 34.23                 | 1.5                       | 16.0                    | 1.0                       | 3.4                      | 2.9                      | 89.8             | 21348                          | 16156 | 224               | 0.633           | 0.382          | 0.288              | 0.0221                                   | 0.0367 |
|               | 1000                       | 41.40                 | 2.0                       | 16.0                    | 1.0                       | 3.5                      | 3.2                      | 99.3             | 26181                          | 19549 | 265               | 0.594           | 0.365          | 0.341              | 0.0176                                   | 0.0291 |
| 1200          | 45.28                      | 2.0                   | 16.0                      | 1.0                     | 3.5                       | 3.3                      | 103.4                    | 28588            | 20873                          | 282   | 0.577             | 0.355           | 0.363          | 0.0151             | 0.0247                                   |        |
| 220           | 400                        | 23.50                 | 1.5                       | 27.0                    | 1.0                       | 3.5                      | 3.3                      | 101.7            | 21559                          | 19098 | 125               | 0.846           | 0.483          | 0.633              | 0.0470                                   | 0.0778 |
|               | 500                        | 26.60                 | 1.5                       | 27.0                    | 1.0                       | 3.5                      | 3.3                      | 105.2            | 23292                          | 20131 | 134               | 0.822           | 0.464          | 0.678              | 0.0366                                   | 0.0605 |
|               | 630                        | 30.25                 | 1.5                       | 27.0                    | 1.0                       | 3.5                      | 3.4                      | 109.0            | 25573                          | 21486 | 144               | 0.796           | 0.446          | 0.729              | 0.0283                                   | 0.0469 |
|               | 800                        | 34.23                 | 1.5                       | 27.0                    | 1.0                       | 3.5                      | 3.4                      | 113.2            | 28059                          | 22870 | 155               | 0.771           | 0.428          | 0.785              | 0.0221                                   | 0.0367 |
|               | 1000                       | 41.40                 | 2.0                       | 27.0                    | 1.0                       | 4.0                      | 3.4                      | 123.5            | 34922                          | 28290 | 180               | 0.733           | 0.407          | 0.912              | 0.0176                                   | 0.0291 |
|               | 1200                       | 45.28                 | 2.0                       | 27.0                    | 1.0                       | 4.0                      | 3.4                      | 127.6            | 37491                          | 29777 | 190               | 0.715           | 0.395          | 0.965              | 0.0151                                   | 0.0247 |
|               | 1400                       | 48.20                 | 2.0                       | 27.0                    | 1.0                       | 4.0                      | 3.4                      | 130.7            | 40196                          | 31131 | 198               | 0.703           | 0.387          | 1.004              | 0.0123                                   | 0.0202 |
|               | 1600                       | 50.41                 | 2.0                       | 27.0                    | 1.0                       | 4.0                      | 3.4                      | 133.1            | 41922                          | 32058 | 204               | 0.694           | 0.382          | 1.034              | 0.0108                                   | 0.0177 |
|               | 1800                       | 53.35                 | 2.0                       | 27.0                    | 1.0                       | 4.0                      | 3.4                      | 135.7            | 44564                          | 33396 | 212               | 0.682           | 0.375          | 1.074              | 0.0096                                   | 0.0157 |
| 2000          | 57.00                      | 2.0                   | 27.0                      | 1.0                     | 4.0                       | 3.4                      | 140.2                    | 47672            | 35005                          | 222   | 0.669             | 0.367           | 1.123          | 0.0086             | 0.0141                                   |        |



HIGH VOLTAGE  
XLPE CABLE

The constructions and electric performance parameters  
YJLW<sub>02</sub> YJLLW<sub>02</sub> YJLW<sub>03</sub> YJLLW<sub>03</sub> YJLW<sub>02</sub>-Z YJLLW<sub>02</sub>-Z YJLW<sub>03</sub>-Z YJLLW<sub>03</sub>-Z

| Rated Voltage | Nominal cross-Section Area | Diameter of Conductor | Thick-ness of Inner Screen | Thick-ness of Insulation | Thick-ness of Outer Screen | Thick-ness of Lead Sheath | Thick-ness of Over Sheath | Overall Dia | Weight of Cable (Approx) kg/km |       | Electric Capacity | Inductance      |                | Loss of Insulation | DC Resistance of Conductor ≥ (20℃) Ω/km |        |
|---------------|----------------------------|-----------------------|----------------------------|--------------------------|----------------------------|---------------------------|---------------------------|-------------|--------------------------------|-------|-------------------|-----------------|----------------|--------------------|-----------------------------------------|--------|
|               |                            |                       |                            |                          |                            |                           |                           |             |                                |       |                   | Parallel Laying | Trefoil Laying |                    |                                         |        |
| KV            | mm <sup>2</sup>            | mm                    | mm                         | mm                       | mm                         | mm <sup>2</sup>           | mm                        | mm          | Cu                             | Al    | PF/m              | mH/km           | mH/km          | W/m                | Cu                                      | Al     |
| 110           | 240                        | 18.40                 | 1.5                        | 19.0                     | 1.0                        | 2.0                       | 2.9                       | 90.6        | 7905                           | 6383  | 136               | 0.757           | 0.508          | 0.175              | 0.0754                                  | 0.1250 |
|               | 300                        | 20.60                 | 1.5                        | 18.5                     | 1.0                        | 2.0                       | 3.0                       | 91.8        | 8617                           | 6692  | 147               | 0.734           | 0.489          | 0.190              | 0.0601                                  | 0.1000 |
|               | 400                        | 23.50                 | 1.5                        | 17.5                     | 1.0                        | 2.0                       | 3.0                       | 92.9        | 9415                           | 6954  | 165               | 0.708           | 0.465          | 0.212              | 0.0470                                  | 0.0778 |
|               | 500                        | 26.60                 | 1.5                        | 17.0                     | 1.0                        | 2.0                       | 3.1                       | 95.4        | 10655                          | 7495  | 182               | 0.683           | 0.445          | 0.234              | 0.0366                                  | 0.0605 |
|               | 630                        | 30.25                 | 1.5                        | 16.5                     | 1.0                        | 2.0                       | 3.1                       | 98.3        | 12182                          | 8095  | 201               | 0.657           | 0.424          | 0.259              | 0.0283                                  | 0.0469 |
|               | 800                        | 34.23                 | 1.5                        | 16.0                     | 1.0                        | 2.0                       | 3.2                       | 101.2       | 14053                          | 8861  | 224               | 0.633           | 0.406          | 0.288              | 0.0221                                  | 0.0367 |
|               | 1000                       | 41.40                 | 2.0                        | 16.0                     | 1.0                        | 2.0                       | 3.4                       | 110.5       | 17510                          | 10878 | 265               | 0.594           | 0.386          | 0.341              | 0.0176                                  | 0.0291 |
| 220           | 1200                       | 45.28                 | 2.0                        | 16.0                     | 1.0                        | 2.0                       | 3.4                       | 114.6       | 19470                          | 11756 | 282               | 0.577           | 0.375          | 0.363              | 0.0151                                  | 0.0247 |
|               | 400                        | 23.50                 | 1.5                        | 27.0                     | 1.0                        | 2.0                       | 3.4                       | 113.1       | 12630                          | 10169 | 125               | 0.846           | 0.503          | 0.632              | 0.0470                                  | 0.0778 |
|               | 500                        | 26.60                 | 1.5                        | 27.0                     | 1.0                        | 2.0                       | 3.4                       | 116.4       | 14042                          | 10882 | 134               | 0.822           | 0.484          | 0.678              | 0.0366                                  | 0.0605 |
|               | 630                        | 30.25                 | 1.5                        | 27.0                     | 1.0                        | 2.0                       | 3.4                       | 120.2       | 15867                          | 11780 | 144               | 0.796           | 0.464          | 0.729              | 0.0283                                  | 0.0469 |
|               | 800                        | 24.23                 | 1.5                        | 27.0                     | 1.0                        | 2.0                       | 3.4                       | 124.6       | 17964                          | 12775 | 155               | 0.771           | 0.446          | 0.785              | 0.0221                                  | 0.0367 |
|               | 1000                       | 41.40                 | 2.0                        | 27.0                     | 1.0                        | 2.3                       | 3.4                       | 133.7       | 22025                          | 15394 | 180               | 0.733           | 0.423          | 0.912              | 0.0176                                  | 0.0291 |
|               | 1200                       | 45.28                 | 2.0                        | 27.0                     | 1.0                        | 2.4                       | 3.4                       | 137.8       | 24243                          | 16529 | 190               | 0.715           | 0.411          | 0.965              | 0.0151                                  | 0.0247 |
|               | 1400                       | 48.20                 | 2.0                        | 27.0                     | 1.0                        | 2.4                       | 3.4                       | 140.9       | 26600                          | 17535 | 198               | 0.703           | 0.403          | 1.004              | 0.0123                                  | 0.0202 |
|               | 1600                       | 50.41                 | 2.0                        | 27.0                     | 1.0                        | 2.5                       | 3.4                       | 143.3       | 28183                          | 18319 | 204               | 0.694           | 0.397          | 1.034              | 0.0108                                  | 0.0177 |
|               | 1800                       | 53.35                 | 2.0                        | 27.0                     | 1.0                        | 2.5                       | 3.4                       | 146.4       | 30478                          | 19310 | 212               | 0.682           | 0.390          | 1.074              | 0.0096                                  | 0.0157 |
|               | 2000                       | 57.00                 | 2.0                        | 27.0                     | 1.0                        | 2.6                       | 3.4                       | 150.3       | 33280                          | 20613 | 222               | 0.669           | 0.382          | 1.123              | 0.0086                                  | 0.0141 |

Current rating of cable  
YJLQ<sub>02</sub> YJLQ<sub>03</sub> YJLQ<sub>02</sub> YJLQ<sub>03</sub> YJLQ<sub>02</sub>-Z YJLQ<sub>03</sub>-Z YJLQ<sub>02</sub>-Z YJLQ<sub>03</sub>-Z (Unit:A)

| Rated voltage | Nominal Cross-Section Area | Direct Burial In Soil                 |      |                         |     |                                       |      |                         |      | In Air                                |      |                         |      |                                       |      |                         |      |
|---------------|----------------------------|---------------------------------------|------|-------------------------|-----|---------------------------------------|------|-------------------------|------|---------------------------------------|------|-------------------------|------|---------------------------------------|------|-------------------------|------|
|               |                            | Parallel Laying                       |      |                         |     | Trefoil Laying                        |      |                         |      | Parallel Laying                       |      |                         |      | Trefoil Laying                        |      |                         |      |
|               |                            | Single Point Bonding or Cross Bonding |      | Double Points Grounding |     | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      |
| KV            | mm <sup>2</sup>            | Cu                                    | Al   | Cu                      | Al  | Cu                                    | Al   | Cu                      | Al   | Cu                                    | Al   | Cu                      | Al   | Cu                                    | Al   | Cu                      | Al   |
| 110           | 240                        | 551                                   | 428  | 479                     | 392 | 517                                   | 403  | 510                     | 399  | 795                                   | 618  | 738                     | 590  | 724                                   | 563  | 718                     | 561  |
|               | 300                        | 622                                   | 484  | 524                     | 433 | 583                                   | 454  | 573                     | 450  | 912                                   | 709  | 830                     | 668  | 827                                   | 644  | 819                     | 640  |
|               | 400                        | 710                                   | 555  | 574                     | 482 | 663                                   | 520  | 649                     | 514  | 1064                                  | 831  | 942                     | 769  | 958                                   | 751  | 945                     | 744  |
|               | 500                        | 841                                   | 635  | 637                     | 532 | 781                                   | 595  | 758                     | 584  | 1286                                  | 971  | 1090                    | 878  | 1148                                  | 872  | 1126                    | 863  |
|               | 630                        | 918                                   | 726  | 669                     | 582 | 850                                   | 679  | 820                     | 663  | 1438                                  | 1136 | 1184                    | 997  | 1273                                  | 1014 | 1243                    | 999  |
|               | 800                        | 1031                                  | 823  | 710                     | 630 | 948                                   | 768  | 907                     | 745  | 1654                                  | 1320 | 1305                    | 1120 | 1448                                  | 1169 | 1404                    | 1145 |
|               | 1000                       | 1200                                  | 945  | 761                     | 681 | 1113                                  | 888  | 1042                    | 850  | 1994                                  | 1566 | 1479                    | 1276 | 1747                                  | 1387 | 1669                    | 1347 |
| 220           | 1200                       | 1293                                  | 1028 | 786                     | 712 | 1196                                  | 966  | 1106                    | 916  | 2189                                  | 1736 | 1570                    | 1374 | 1905                                  | 1530 | 1804                    | 1476 |
|               | 400                        | 728                                   | 573  | 561                     | 481 | 655                                   | 515  | 640                     | 507  | 1006                                  | 789  | 872                     | 719  | 932                                   | 730  | 919                     | 724  |
|               | 500                        | 855                                   | 654  | 616                     | 526 | 771                                   | 588  | 746                     | 577  | 1205                                  | 916  | 1000                    | 814  | 1115                                  | 846  | 1093                    | 837  |
|               | 630                        | 930                                   | 745  | 644                     | 572 | 840                                   | 671  | 807                     | 654  | 1337                                  | 1063 | 1078                    | 918  | 1233                                  | 981  | 1205                    | 967  |
|               | 800                        | 1036                                  | 841  | 679                     | 614 | 937                                   | 759  | 891                     | 733  | 1525                                  | 1226 | 1181                    | 1023 | 1401                                  | 1129 | 1360                    | 1106 |
|               | 1000                       | 1178                                  | 954  | 716                     | 655 | 1089                                  | 873  | 1007                    | 829  | 1813                                  | 1444 | 1325                    | 1157 | 1680                                  | 1335 | 14603                   | 1295 |
|               | 1200                       | 1256                                  | 1030 | 737                     | 682 | 1167                                  | 947  | 1067                    | 891  | 1976                                  | 1592 | 1401                    | 1240 | 1831                                  | 1471 | 1732                    | 1418 |
|               | 1400                       | 1355                                  | 1124 | 760                     | 711 | 1268                                  | 1040 | 1141                    | 966  | 2177                                  | 1769 | 1481                    | 1329 | 2017                                  | 1636 | 1887                    | 1564 |
|               | 1600                       | 1419                                  | 1188 | 773                     | 729 | 1334                                  | 1103 | 1187                    | 1016 | 2315                                  | 1896 | 1533                    | 1389 | 2143                                  | 1752 | 1990                    | 1665 |
|               | 1800                       | 1474                                  | 1246 | 786                     | 745 | 1392                                  | 1162 | 1226                    | 1060 | 2448                                  | 2020 | 1585                    | 1447 | 2264                                  | 1867 | 2087                    | 1763 |
|               | 2000                       | 1521                                  | 1298 | 798                     | 760 | 1444                                  | 1217 | 1259                    | 1100 | 2576                                  | 2144 | 1638                    | 1507 | 2381                                  | 1980 | 2178                    | 1858 |

Current rating of cable  
YJLW<sub>02</sub> YJLLW<sub>02</sub> YJLW<sub>03</sub> YJLLW<sub>03</sub> YJLW<sub>02</sub>-Z YJLLW<sub>02</sub>-Z YJLW<sub>03</sub>-Z YJLLW<sub>03</sub>-Z (Unit:A)

| Rated Voltage | Nominal Cross-Section Area | Direct Burial In Soil                 |      |                         |      |                                       |      |                         |     | In Air                                |      |                         |      |                                       |      |                         |      |
|---------------|----------------------------|---------------------------------------|------|-------------------------|------|---------------------------------------|------|-------------------------|-----|---------------------------------------|------|-------------------------|------|---------------------------------------|------|-------------------------|------|
|               |                            | Parallel Laying                       |      |                         |      | Trefoil Laying                        |      |                         |     | Parallel Laying                       |      |                         |      | Trefoil Laying                        |      |                         |      |
|               |                            | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      | Single Point Bonding or Cross Bonding |      | Double Points Grounding |     | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      | Single Point Bonding or Cross Bonding |      | Double Points Grounding |      |
| KV            | mm <sup>2</sup>            | Cu                                    | Al   | Cu                      | Al   | Cu                                    | Al   | Cu                      | Al  | Cu                                    | Al   | Cu                      | Al   | Cu                                    | Al   | Cu                      | Al   |
| 110           | 240                        | 558                                   | 434  | 469                     | 387  | 516                                   | 405  | 493                     | 393 | 807                                   | 628  | 738                     | 590  | 734                                   | 573  | 672                     | 532  |
|               | 300                        | 629                                   | 490  | 512                     | 427  | 579                                   | 455  | 548                     | 440 | 926                                   | 720  | 830                     | 668  | 837                                   | 655  | 756                     | 602  |
|               | 400                        | 718                                   | 563  | 557                     | 473  | 655                                   | 520  | 610                     | 496 | 1080                                  | 845  | 942                     | 769  | 966                                   | 762  | 857                     | 691  |
|               | 500                        | 847                                   | 643  | 616                     | 521  | 763                                   | 590  | 695                     | 557 | 1302                                  | 986  | 1090                    | 878  | 1149                                  | 882  | 995                     | 788  |
|               | 630                        | 923                                   | 734  | 649                     | 570  | 825                                   | 669  | 741                     | 622 | 1454                                  | 1153 | 1184                    | 997  | 1269                                  | 1021 | 1080                    | 896  |
|               | 800                        | 1032                                  | 830  | 690                     | 617  | 910                                   | 750  | 802                     | 686 | 1668                                  | 1336 | 1305                    | 1120 | 1433                                  | 1170 | 1190                    | 1007 |
|               | 1000                       | 1187                                  | 947  | 755                     | 678  | 1041                                  | 854  | 891                     | 765 | 1992                                  | 1576 | 1479                    | 1276 | 1695                                  | 1371 | 1367                    | 1157 |
| 220           | 1200                       | 1269                                  | 1025 | 786                     | 714  | 1104                                  | 919  | 932                     | 813 | 2177                                  | 1742 | 1570                    | 1374 | 1831                                  | 1502 | 1452                    | 1248 |
|               | 400                        | 747                                   | 584  | 606                     | 509  | 645                                   | 512  | 604                     | 491 | 1030                                  | 804  | 926                     | 752  | 719                                   | 933  | 736                     | 899  |
|               | 500                        | 884                                   | 669  | 678                     | 565  | 750                                   | 581  | 689                     | 551 | 1239                                  | 936  | 1078                    | 860  | 825                                   | 1109 | 350                     | 1055 |
|               | 630                        | 968                                   | 766  | 720                     | 624  | 811                                   | 658  | 736                     | 616 | 1380                                  | 1090 | 1178                    | 981  | 945                                   | 1222 | 982                     | 1154 |
|               | 800                        | 1089                                  | 870  | 773                     | 682  | 894                                   | 738  | 798                     | 681 | 1582                                  | 1261 | 1310                    | 1109 | 1071                                  | 1379 | 1123                    | 1286 |
|               | 1000                       | 1273                                  | 1004 | 881                     | 776  | 1014                                  | 836  | 890                     | 762 | 1906                                  | 1497 | 1554                    | 1306 | 1243                                  | 1627 | 1315                    | 1498 |
|               | 1200                       | 1374                                  | 1095 | 933                     | 829  | 1074                                  | 898  | 935                     | 812 | 2092                                  | 1659 | 1682                    | 1429 | 1353                                  | 1758 | 1440                    | 1608 |
|               | 1400                       | 1508                                  | 1210 | 979                     | 882  | 1148                                  | 974  | 987                     | 869 | 2327                                  | 1856 | 1814                    | 1561 | 1478                                  | 1917 | 1588                    | 1733 |
|               | 1600                       | 1599                                  | 1291 | 1021                    | 925  | 1194                                  | 1023 | 1022                    | 909 | 2492                                  | 1999 | 1918                    | 1662 | 1567                                  | 2022 | 1692                    | 1820 |
|               | 1800                       | 1681                                  | 1367 | 1050                    | 959  | 1235                                  | 1069 | 1051                    | 943 | 2654                                  | 2142 | 2009                    | 1755 | 1651                                  | 2122 | 1792                    | 1899 |
|               | 2000                       | 1756                                  | 1439 | 1092                    | 1001 | 1269                                  | 1110 | 1082                    | 978 | 2816                                  | 2287 | 2120                    | 1863 | 1738                                  | 2217 | 1890                    | 1983 |

Revision coefficient of the current rating (Approx. Value)

| Depth of Laying (m)  | 0.50 | 0.70 | 0.90 | 1.00 | 1.20 | 1.50 |
|----------------------|------|------|------|------|------|------|
| Revision Coefficient | 1.10 | 1.05 | 1.01 | 1.00 | 0.98 | 0.95 |

| Coefficient of Thermal Resistivity (k · M/W) | 0.7  | 1.0  | 1.2  | 1.5  | 2.0  | 2.5  |
|----------------------------------------------|------|------|------|------|------|------|
| Revision Coefficient                         | 1.22 | 1.08 | 1.00 | 0.94 | 0.84 | 0.75 |

| Environmental Temperature (℃) | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   |
|-------------------------------|------|------|------|------|------|------|------|------|
| Revision Coefficient          | 1.07 | 1.04 | 1.00 | 0.96 | 0.93 | 0.89 | 0.84 | 0.80 |

| Temperature In Air (℃) | 5    | 10   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Revision Coefficient   | 1.09 | 1.06 | 1.03 | 1.00 | 0.97 | 0.93 | 0.89 | 0.85 | 0.81 | 0.76 |



HIGH VOLTAGE  
XLPE CABLE

Short Circuit Current of Conductor

Unit:kA

| Nominal Cross-<br>Section Area<br>(mm <sup>2</sup> ) | Short Circuit Current |       |       |       |       |       |       |       |       |       |       |       |
|------------------------------------------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                                      | 0.5s                  |       | 1.0s  |       | 1.5s  |       | 2.0s  |       | 2.5s  |       | 3.0s  |       |
|                                                      | Cu                    | Al    | Cu    | Al    | Cu    | Al    | Cu    | Al    | Cu    | Al    | Cu    | Al    |
| 240                                                  | 49.2                  | 32.5  | 34.8  | 23.0  | 28.4  | 18.8  | 24.6  | 16.1  | 22.0  | 14.5  | 20.1  | 12.3  |
| 300                                                  | 61.4                  | 40.6  | 43.4  | 28.7  | 35.5  | 23.4  | 30.7  | 20.3  | 27.5  | 18.1  | 25.1  | 16.6  |
| 400                                                  | 81.8                  | 54.0  | 57.8  | 38.2  | 47.2  | 31.2  | 40.9  | 27.0  | 36.6  | 24.2  | 33.4  | 22.0  |
| 500                                                  | 102.1                 | 67.4  | 72.2  | 47.7  | 59.0  | 38.9  | 51.1  | 33.7  | 45.7  | 30.2  | 41.7  | 27.5  |
| 630                                                  | 128.5                 | 84.9  | 90.9  | 60.0  | 74.2  | 49.0  | 64.3  | 42.4  | 57.5  | 38.0  | 52.5  | 34.6  |
| 800                                                  | 163.1                 | 107.7 | 115.3 | 76.1  | 94.1  | 62.2  | 81.5  | 53.8  | 72.9  | 48.2  | 66.6  | 44.0  |
| 1000                                                 | 203.7                 | 134.5 | 144.0 | 95.1  | 117.6 | 77.6  | 101.8 | 67.2  | 91.1  | 60.1  | 83.1  | 54.9  |
| 1200                                                 | 244.3                 | 161.3 | 172.7 | 114.1 | 141.0 | 93.1  | 122.1 | 80.6  | 109.2 | 72.1  | 99.7  | 65.8  |
| 1400                                                 | 284.9                 | 188.1 | 201.4 | 133.0 | 164.5 | 108.6 | 142.4 | 94.0  | 127.4 | 84.1  | 116.3 | 76.8  |
| 1600                                                 | 325.4                 | 214.9 | 230.1 | 152.0 | 187.9 | 124.1 | 162.7 | 107.4 | 145.5 | 96.1  | 132.9 | 87.7  |
| 1800                                                 | 366.0                 | 241.7 | 258.8 | 170.9 | 211.3 | 139.5 | 183.0 | 120.8 | 163.7 | 108.1 | 149.4 | 98.7  |
| 2000                                                 | 406.6                 | 268.5 | 287.5 | 189.8 | 234.7 | 155.0 | 203.3 | 134.2 | 181.8 | 120.1 | 166.0 | 109.6 |

Note: The conductor' s temperature will rise from 90℃ to 250℃ in short circuit.

Short Circuit Current of Metal Screen or Sheath

| Nominal Cross<br>Section (mm <sup>2</sup> ) | YJQ <sub>02</sub><br>YJLQ <sub>02</sub> | YJQ <sub>03</sub><br>YJLQ <sub>03</sub> | YJQ <sub>02</sub> -Z<br>YJLQ <sub>02</sub> -Z | YJQ <sub>03</sub> -Z<br>YJLQ <sub>03</sub> -Z | YJLW <sub>02</sub><br>YJLLW <sub>02</sub> | YJLW <sub>03</sub><br>YJLLW <sub>03</sub> | YJLW <sub>02</sub> -Z<br>YJLLW <sub>02</sub> -Z | YJLW <sub>03</sub> -Z<br>YJLLW <sub>03</sub> -Z |
|---------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------------|-------------------------------------------------|
|                                             | 110kV                                   |                                         | 220kV                                         |                                               | 110kV                                     |                                           | 220kV                                           |                                                 |
|                                             |                                         |                                         |                                               |                                               |                                           |                                           |                                                 |                                                 |
| 240                                         | 19.4                                    |                                         | 24.2                                          |                                               | 57.8                                      |                                           | 69.9                                            |                                                 |
| 300                                         | 19.7                                    |                                         | 25.5                                          |                                               | 58.4                                      |                                           | 71.3                                            |                                                 |
| 400                                         | 19.9                                    |                                         | 26.2                                          |                                               | 58.8                                      |                                           | 73.1                                            |                                                 |
| 500                                         | 20.4                                    |                                         | 27.0                                          |                                               | 60.0                                      |                                           | 75.1                                            |                                                 |
| 630                                         | 21.0                                    |                                         | 28.0                                          |                                               | 61.6                                      |                                           | 77.4                                            |                                                 |
| 800                                         | 21.8                                    |                                         | 29.0                                          |                                               | 63.5                                      |                                           | 80.0                                            |                                                 |
| 1000                                        | 24.9                                    |                                         | 35.9                                          |                                               | 69.6                                      |                                           | 98.1                                            |                                                 |
| 1200                                        | 26.0                                    |                                         | 37.2                                          |                                               | 72.2                                      |                                           | 105.1                                           |                                                 |
| 1400                                        |                                         |                                         | 38.1                                          |                                               |                                           |                                           | 107.3                                           |                                                 |
| 1600                                        |                                         |                                         | 38.7                                          |                                               |                                           |                                           | 113.3                                           |                                                 |
| 1800                                        |                                         |                                         | 39.6                                          |                                               |                                           |                                           | 115.7                                           |                                                 |
| 2000                                        |                                         |                                         | 40.7                                          |                                               |                                           |                                           | 123.1                                           |                                                 |

Note: The short circuit time is 1 second. In short circuit, the maximum temperature of lead-sheathing is 200℃. the maximum temperature of the other sheathing is 250℃.

35kV AND BELOW PLASTIC INSULATED AND FLAME RETARDING POWER CABLE

This series of cable is produced according to factory and enterprise standard, which is equivalent to related provisions of GB/T12706.1~12706.3-2002 GB/T18380. IEC60502 and IEC60332-3.

The products are mainly suitable for use in high rises, underground railways, power plants, large recreational places, large industrial and mining enterprises, warships, ships, offshore petroleum platforms and other places with large cable laying density and strict fire-proof requirements as transmitting and distributing power.

The characteristics of the cable are obviously as follows: 1. not easy to cause fire, 2. after causing fire or having outside fire source, flames will spread very slowly along the cable direction and will self-extinguish at a certain distance, thereby avoiding fire spreading and expanding along the cable, greatly reducing the fire area and loss.

The line and system rated voltage of cable usage, working temperature of cable wire core, environmental temperature of cable laying, minimum bend radius and others are all similar to the above-mentioned corresponding common PVC insulated and XLPE insulated power cable.

1.Type and Name

Flame-retarding series of power cable and common power cable all have corresponding relationships reflecting on type, that is, to add syllables “ZR” (first syllables of Chinese phonetics “Zu Ran” ) before common power cable type, such as YJV corresponding to ZRYJV and YJV<sub>22</sub> corresponding to ZRYJV<sub>22</sub>, etc.

Table 15 Type and Name

| Type                                                                    |                                                                            | Name                                                                              |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Cu core                                                                 | Al core                                                                    |                                                                                   |
| ZRA-YJV<br>ZRB-YJV<br>ZRC-YJV                                           | ZRA-YJLV<br>ZRB-YJLV<br>ZRC-YJLV                                           | XLPE Insulated, PVC Sheathed Flame Retarding Power Cable                          |
| ZRA-YJV <sub>22</sub><br>ZRB-YJV <sub>22</sub><br>ZRC-YJV <sub>22</sub> | ZRA-YJLV <sub>22</sub><br>ZRB-YJLV <sub>22</sub><br>ZRC-YJLV <sub>22</sub> | XLPE Insulated, Steel Tape Armored, PVC Sheathed Flame Retarding Power Cable      |
| ZRA-YJV <sub>32</sub><br>ZRB-YJV <sub>32</sub><br>ZRC-YJV <sub>32</sub> | ZRA-YJLV <sub>32</sub><br>ZRB-YJLV <sub>32</sub><br>ZRC-YJLV <sub>32</sub> | XLPE Insulated, Thin Steel Wire Armored, PVC Sheathed Flame Retarding Power Cable |
| ZRA-YJV <sub>42</sub><br>ZRB-YJV <sub>42</sub><br>ZRC-YJV <sub>42</sub> | ZRA-YJLV <sub>42</sub><br>ZRB-YJLV <sub>42</sub><br>ZRC-YJLV <sub>42</sub> | XLPE Insulated Thick Steel Wire Armored, PVC Sheathed Flame Retarding Power Cable |
| ZRA-VV<br>ZRB-VV<br>ZRC-VV                                              | ZRA-VLV<br>ZRB-VLV<br>ZRC-VLV                                              | PVC Insulated and Sheathed Flame Retarding Power Cable                            |



HIGH VOLTAGE  
XLPE CABLE

| Type                                                                 |                                                                         | Name                                                                        |
|----------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Cu core                                                              | AL core                                                                 |                                                                             |
| ZRA-VV <sub>22</sub><br>ZRB-VV <sub>22</sub><br>ZRC-VV <sub>22</sub> | ZRA-VLV <sub>22</sub><br>ZRB-VLV <sub>22</sub><br>ZRC-VLV <sub>22</sub> | PVC Insulated, Steel Tape Armored, PVC Sheathed Flame Retarding Power Cable |
| ZRA-VV <sub>32</sub><br>ZRB-VV <sub>32</sub><br>ZRC-VV <sub>32</sub> | ZRA-VLV <sub>32</sub><br>ZRB-VLV <sub>32</sub><br>ZRC-VLV <sub>32</sub> |                                                                             |
| ZRA-VV <sub>42</sub><br>ZRB-VV <sub>42</sub><br>ZRC-VV <sub>42</sub> | ZRA-VLV <sub>42</sub><br>ZRB-VLV <sub>42</sub><br>ZRC-VLV <sub>42</sub> |                                                                             |

2.Cable Specification Scope

The production specification scope of flame retarding power cable is completely the same as the corresponding common power cable. For details, see Tables 11 and 12 in this sample book and power cable products sample book.

3.Main Technical Requirements

- (1) Various electric performances of cable all conform to GB 12706-91 standard requirements; for concrete targets and test requirements, see Table 6.
- (2) Apart from the mechanical and physical performance of cable insulation and sheath conforming to various GB 12706 targets, the PVC sheath should also have good flame retarding performance and the oxygen index should usually be not lower than 30.
- (3) Cable combustion test (type test).

Table 16 Flame Retarding Tests

| Test Conditions<br>Test Category | Length of Test | Non-Metal Content V(Liter / m) of Cable Bundle | Test of Cable No. n (≥)                                                                        | Test Sample Installation                                                                                                      | Test Device & Fire Source                                | Time for Fire(min) | Test Result                          |
|----------------------------------|----------------|------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------|--------------------------------------|
| A                                | 3.5m           | 7                                              | $n = \frac{1000V}{S - S_m}$<br>(R is cable outer radius) S <sub>m</sub> is metal cross section | 35mm <sup>2</sup> above power cable vertically & spacedly arranged(F), the rest of cable vertically & closely arranged(F / R) | GB 12666.5 standard requirements, equivalent to IEC332.3 | 40                 | Carbonization height ≤ 2.5 qualified |
| B                                |                | 3.5                                            |                                                                                                |                                                                                                                               |                                                          | 40                 |                                      |
| C                                |                | 1.5                                            |                                                                                                |                                                                                                                               |                                                          | 20                 |                                      |

4.Cable Make-Ups Size

The size of flame retarding series of power cable make-ups is the same as the common power cable. For details, see Table 11 and Table 12.

CARRIER CURRENT CAPACITY OF CONTINUOUS LOAD OF 6-110kV XLPE INSULATED POWER CABLE

This sample book provides reference standards of continuous load (load factor 100%) of 6-110 kV XLPE cable under special conditions calculated according to IEC-287 (1982-1991 material). The carrier current capacity of cable under actual operation conditions should be corrected according to the correction coefficient in the following Tables 18-21.

Table 17 Correction Coefficient of Carrier Current Capacity Under Different Air Temps. (°C)

| Conductor Working Temp.(°C) | Air Temperature (°C) |      |      |      |      |      |      |      |      |
|-----------------------------|----------------------|------|------|------|------|------|------|------|------|
|                             | 10                   | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   |
| 90                          | 1.26                 | 1.22 | 1.18 | 1.14 | 1.09 | 1.04 | 1.00 | 0.94 | 0.89 |

Table 18 Correction Coefficient of Carrier Current Capacity Under Different Soil Temps. (°C)

| Conductor Working Temp.(°C) | Soil Temperature(°C) |      |      |      |      |      |
|-----------------------------|----------------------|------|------|------|------|------|
|                             | 10                   | 15   | 20   | 25   | 30   | 35   |
| 90                          | 1.11                 | 1.07 | 1.04 | 1.00 | 0.96 | 0.92 |

Table 19 Correction Coefficient of Carrier Current Capacity Under Different Soil Heat Resistance Coefficient

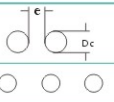
| Voltage (kv) | Section mm <sup>2</sup> | Soil Heat Resistance Coefficient ρ γ (k · m / W) |      |      |      |      |
|--------------|-------------------------|--------------------------------------------------|------|------|------|------|
|              |                         | 0.8                                              | 1.0  | 1.2  | 1.5  | 2.0  |
| 0.6/1~6/6    | ≤35                     | 1.06                                             | 1.00 | 0.95 | 0.88 | 0.80 |
|              | 50~150                  | 1.08                                             | 1.00 | 0.94 | 0.87 | 0.77 |
|              | 185≥                    | 1.09                                             | 1.00 | 0.93 | 0.85 | 0.76 |
| 6/10~12/15   | ≤35                     | 1.05                                             | 1.00 | 0.95 | 0.89 | 0.80 |
|              | 50~150                  | 1.06                                             | 1.00 | 0.94 | 0.88 | 0.79 |
|              | ≥185                    | 1.07                                             | 1.00 | 0.93 | 0.86 | 0.77 |
| 12/20~26/35  | ≤95                     | 1.05                                             | 1.00 | 0.95 | 0.90 | 0.82 |
|              | ≥120                    | 1.06                                             | 1.20 | 0.94 | 0.83 | 0.80 |

Note: This table includes carrier current capacity correction coefficient of soil heat resistance coefficient ρ γ column which have not caused water moving away.



HIGH VOLTAGE  
XLPE CABLE

Table 20. Correction coefficient of carrier current capacity when laying cable (wire) on a parallel in Air.

| Arrangement of Cable             |                                                                                     | $\frac{e}{De}$ =(Value) | Correction Coefficient |
|----------------------------------|-------------------------------------------------------------------------------------|-------------------------|------------------------|
| Multi-Core Cable                 |    | <0.5                    | 0.89                   |
|                                  |    | <0.75                   | 0.84                   |
| Single-Core Cable Set            |    | <1.0                    | 0.93                   |
|                                  |    | <1.5                    | 0.92                   |
| Multi-Core Cable                 |    | 1.9~1.5                 | 0.99                   |
|                                  |                                                                                     | 1.4~1.0                 | 0.97                   |
|                                  |                                                                                     | <0.5                    | 0.90                   |
|                                  |    | 4~3                     | 0.99                   |
|                                  |                                                                                     | 2.9~2.0                 | 0.97                   |
|                                  |                                                                                     | 1.9~1.0                 | 0.94                   |
| Single-Core Cable Set            |   | <0.5                    | 0.85                   |
|                                  |                                                                                     | 3.9~3.0                 | 0.99                   |
|                                  |                                                                                     | 2.9~2.0                 | 0.98                   |
|                                  |                                                                                     | 1.9~1.0                 | 0.96                   |
| Multi-Core Cable Laying by Walls |  | <0.5                    | 0.88                   |
|                                  |                                                                                     | <0.5                    | 0.93                   |

Note: For single-core cable set, take the carrier current capacity in triangle arrangement in the table as the standard value.

1. Carrier Current Capacity of Continuous Load of 6-35kV XLPE Cable

(1) Laying in Air

Table 21 Carrier Current Capacity When Laying in Air Conductor Working Temp. : 90℃ Air Temp. : 40℃

| Nominal<br>Section<br>mm <sup>2</sup> | YJV         |        | YJY           |      | YJLV        |        | YJLY          |     |      |      |
|---------------------------------------|-------------|--------|---------------|------|-------------|--------|---------------|-----|------|------|
|                                       | 6/6~12/20kV |        | 18/20~26/35kV |      | 6/6~12/20kV |        | 18/20~26/35kV |     |      |      |
|                                       | Single Core | 3-Core | Single Core   |      | Single Core | 3-Core | Single Core   |     |      |      |
|                                       | ○○○         | ⊙      | -             | ○○○  | ⊙           | ○○○    | ⊙             | ○○○ | ⊙    |      |
| 25                                    | 165         | 140    | 133           | -    | -           | 130    | 110           | 101 | -    | -    |
| 35                                    | 205         | 170    | 161           | -    | -           | 155    | 135           | 120 | -    | -    |
| 50                                    | 245         | 205    | 190           | 245  | 220         | 190    | 160           | 147 | 190  | 170  |
| 70                                    | 305         | 260    | 240           | 305  | 270         | 235    | 200           | 180 | 235  | 210  |
| 95                                    | 370         | 315    | 285           | 370  | 330         | 290    | 245           | 221 | 285  | 255  |
| 120                                   | 430         | 360    | 322           | 425  | 375         | 335    | 280           | 253 | 330  | 290  |
| 150                                   | 490         | 410    | 367           | 485  | 425         | 380    | 320           | 285 | 375  | 330  |
| 185                                   | 560         | 470    | 418           | 555  | 485         | 435    | 365           | 326 | 430  | 380  |
| 240                                   | 665         | 555    | 490           | 650  | 560         | 515    | 435           | 382 | 505  | 435  |
| 300                                   | 765         | 640    | 555           | 745  | 650         | 595    | 500           | 440 | 580  | 510  |
| 400                                   | 890         | 745    | 633           | 870  | 760         | 695    | 585           | 510 | 680  | 595  |
| 500                                   | 1030        | 855    | -             | 1000 | 875         | 810    | 680           | -   | 790  | 690  |
| 630                                   | 1190        | 980    | -             | 1160 | 1000        | 950    | 790           | -   | 920  | 800  |
| 800                                   | 1370        | 1100   | -             | 1330 | 1130        | 1100   | 910           | -   | 1060 | 920  |
| 1000                                  | 1540        | 1230   | -             | 1490 | 1250        | 1260   | 1030          | -   | 1210 | 1040 |
| 1200                                  | 1670        | 1320   | -             | 1620 | 1350        | 1380   | 1120          | -   | 1340 | 1130 |

(2) Laying in Soil

Table 22 Laying in Soil Conductor Working Temp: 90℃, Earth Temp: 25℃, No Water Moving Away Soil Heat Resistance  $\rho_w=1.0$

| Nominal<br>Section<br>mm <sup>2</sup> | YJV YJY     |      |        |               |      | YJLV YJLY   |     |        |               |     |
|---------------------------------------|-------------|------|--------|---------------|------|-------------|-----|--------|---------------|-----|
|                                       | 6/6~12/20kV |      |        | 18/20~26/35kV |      | 6/6~12/20kV |     |        | 18/20~26/35kV |     |
|                                       | Single Core |      | 3-Core | Single Core   |      | Single Core |     | 3-Core | Single Core   |     |
|                                       | ○○○         | ⊙    | -      | ○○○           | ⊙    | ○○○         | ⊙   | -      | ○○○           | ⊙   |
| 25                                    | 160         | 150  | 147    | -             | -    | 120         | 115 | 114    | -             | -   |
| 35                                    | 190         | 180  | 180    | -             | -    | 145         | 135 | 132    | -             | -   |
| 50                                    | 225         | 215  | 212    | 225           | 215  | 175         | 160 | 158    | 175           | 165 |
| 70                                    | 275         | 265  | 262    | 275           | 265  | 215         | 200 | 198    | 215           | 200 |
| 95                                    | 330         | 315  | 312    | 330           | 315  | 255         | 240 | 237    | 255           | 240 |
| 120                                   | 375         | 360  | 358    | 375           | 360  | 290         | 270 | 267    | 290           | 270 |
| 150                                   | 425         | 405  | 400    | 420           | 400  | 330         | 305 | 300    | 325           | 305 |
| 185                                   | 480         | 455  | 451    | 475           | 455  | 370         | 345 | 341    | 370           | 345 |
| 240                                   | 555         | 530  | 528    | 555           | 525  | 435         | 400 | 396    | 430           | 400 |
| 300                                   | 630         | 595  | 590    | 630           | 595  | 490         | 455 | 450    | 490           | 455 |
| 400                                   | 725         | 680  | 670    | 720           | 680  | 565         | 520 | 510    | 565           | 525 |
| 500                                   | 825         | 765  | -      | 825           | 775  | 650         | 595 | -      | 645           | 600 |
| 630                                   | 940         | 860  | -      | 940           | 875  | 745         | 680 | -      | 740           | 685 |
| 800                                   | 1050        | 950  | -      | 1060          | 970  | 850         | 765 | -      | 845           | 770 |
| 1000                                  | 1170        | 1040 | -      | 1170          | 1060 | 950         | 850 | -      | 950           | 860 |
| 1200                                  | 1250        | 1100 | -      | 1280          | 1120 | 1040        | 910 | -      | 1030          | 920 |

Table 23 Laying in Soil

Conductor Working Temp: 90℃, Earth Temp: 25℃, Water Moving Away  $\rho_w=2.5$

| Nominal<br>Section<br>mm <sup>2</sup> | YJV YJY     |     |        |               |     | YJLV YJLY   |     |        |               |     |
|---------------------------------------|-------------|-----|--------|---------------|-----|-------------|-----|--------|---------------|-----|
|                                       | 6/6~12/20kV |     |        | 18/20~26/35kV |     | 6/6~12/20kV |     |        | 18/20~26/35kV |     |
|                                       | Single Core |     | 3-Core | Single Core   |     | Single Core |     | 3-Core | Single Core   |     |
|                                       | ○○○         | ⊖   | -      | ○○○           | ⊖   | ○○○         | ⊖   | -      | ○○○           | ⊖   |
| 25                                    | 140         | 130 | 128    | -             | -   | 110         | 99  | 98     | -             | -   |
| 35                                    | 165         | 155 | 151    | -             | -   | 130         | 115 | 113    | -             | -   |
| 50                                    | 195         | 180 | 178    | 200           | 190 | 150         | 135 | 134    | 155           | 140 |
| 70                                    | 240         | 220 | 218    | 245           | 230 | 185         | 165 | 163    | 190           | 175 |
| 95                                    | 285         | 265 | 263    | 295           | 275 | 220         | 200 | 198    | 225           | 205 |
| 120                                   | 325         | 300 | 298    | 335           | 310 | 250         | 225 | 223    | 260           | 235 |
| 150                                   | 365         | 335 | 331    | 375           | 345 | 280         | 255 | 251    | 290           | 260 |
| 185                                   | 410         | 380 | 377    | 420           | 390 | 320         | 285 | 282    | 325           | 295 |
| 240                                   | 475         | 440 | 438    | 485           | 450 | 370         | 330 | 327    | 380           | 340 |
| 300                                   | 535         | 495 | 491    | 550           | 505 | 415         | 375 | 371    | 425           | 385 |
| 400                                   | 610         | 560 | 553    | 630           | 580 | 480         | 430 | 425    | 490           | 440 |
| 500                                   | 695         | 630 | -      | 715           | 655 | 550         | 490 | -      | 560           | 505 |
| 630                                   | 790         | 710 | -      | 810           | 735 | 625         | 555 | -      | 640           | 575 |
| 800                                   | 890         | 785 | -      | 910           | 815 | 715         | 625 | -      | 730           | 645 |
| 1000                                  | 980         | 850 | -      | 1010          | 885 | 800         | 695 | -      | 820           | 710 |
| 1200                                  | 1050        | 900 | -      | 1070          | 930 | 870         | 745 | -      | 890           | 770 |



HIGH VOLTAGE  
XLPE CABLE

Table 24 Laying in Soil  
Conductor Working Temperature: 90℃, Earth Temperature: 25℃, Moving Water ρ D=3.0

| Nominal<br>Section<br>mm <sup>2</sup> | YJV         |     |        |               |     | YJLV        |     |        |               |     |
|---------------------------------------|-------------|-----|--------|---------------|-----|-------------|-----|--------|---------------|-----|
|                                       | 6/6~12/20kV |     |        | 18/20~26/35kV |     | 6/6~12/20kV |     |        | 18/20~26/35kV |     |
|                                       | Single Core |     | 3-Core | Single Core   |     | Single Core |     | 3-Core | Single Core   |     |
|                                       | ○○○         | ⊖   | -      | ○○○           | ⊖   | ○○○         | ⊖   | -      | ○○○           | ⊖   |
| 25                                    | 135         | 120 | 119    | -             | -   | 105         | 89  | 88     | -             | -   |
| 35                                    | 160         | 140 | 137    | -             | -   | 125         | 105 | 103    | -             | -   |
| 50                                    | 190         | 170 | 168    | 200           | 175 | 150         | 125 | 124    | 155           | 130 |
| 70                                    | 235         | 205 | 203    | 240           | 215 | 180         | 150 | 148    | 185           | 160 |
| 95                                    | 280         | 245 | 243    | 290           | 255 | 215         | 180 | 175    | 225           | 190 |
| 120                                   | 315         | 275 | 273    | 325           | 290 | 245         | 205 | 203    | 255           | 215 |
| 150                                   | 355         | 310 | 307    | 365           | 320 | 275         | 230 | 227    | 285           | 240 |
| 185                                   | 400         | 350 | 348    | 410           | 360 | 310         | 260 | 258    | 320           | 270 |
| 240                                   | 460         | 405 | 403    | 475           | 420 | 360         | 300 | 298    | 370           | 310 |
| 300                                   | 520         | 455 | 452    | 535           | 470 | 405         | 340 | 337    | 415           | 350 |
| 400                                   | 595         | 515 | 510    | 615           | 535 | 465         | 385 | 380    | 480           | 400 |
| 500                                   | 680         | 585 | -      | 700           | 605 | 535         | 440 | -      | 550           | 455 |
| 630                                   | 770         | 655 | -      | 790           | 680 | 610         | 500 | -      | 625           | 520 |
| 800                                   | 865         | 725 | -      | 890           | 755 | 695         | 565 | -      | 710           | 585 |
| 1000                                  | 950         | 785 | -      | 980           | 820 | 780         | 625 | -      | 800           | 650 |
| 1200                                  | 1020        | 830 | -      | 1050          | 870 | 845         | 670 | -      | 865           | 695 |

Table 25 Laying in Soil  
Conductor Working Temperature: 90℃, Earth Temperature: 25℃, Moving Water ρ D=3.5

| Nominal<br>Section<br>mm <sup>2</sup> | YJV         |     |        |               |     | YJLV        |     |        |               |     |
|---------------------------------------|-------------|-----|--------|---------------|-----|-------------|-----|--------|---------------|-----|
|                                       | 6/6~12/20kV |     |        | 18/20~26/35kV |     | 6/6~12/20kV |     |        | 18/20~26/35kV |     |
|                                       | Single Core |     | 3-Core | Single Core   |     | Single Core |     | 3-Core | Single Core   |     |
|                                       | ○○○         | ⊖   | -      | ○○○           | ⊖   | ○○○         | ⊖   | -      | ○○○           | ⊖   |
| 25                                    | 135         | 105 | 104    | -             | -   | 105         | 75  | 74     | -             | -   |
| 35                                    | 160         | 125 | 123    | -             | -   | 125         | 90  | 89     | -             | -   |
| 50                                    | 190         | 150 | 148    | 195           | 160 | 145         | 105 | 104    | 150           | 110 |
| 70                                    | 230         | 180 | 178    | 240           | 190 | 180         | 130 | 129    | 185           | 135 |
| 95                                    | 275         | 215 | 213    | 285           | 230 | 210         | 155 | 154    | 220           | 160 |
| 120                                   | 310         | 245 | 244    | 320           | 260 | 240         | 175 | 174    | 250           | 185 |
| 150                                   | 345         | 275 | 273    | 360           | 290 | 270         | 195 | 193    | 280           | 205 |
| 185                                   | 390         | 310 | 308    | 405           | 325 | 305         | 220 | 218    | 315           | 230 |
| 240                                   | 455         | 360 | 358    | 470           | 375 | 350         | 255 | 253    | 365           | 265 |
| 300                                   | 510         | 405 | 403    | 530           | 420 | 400         | 290 | 288    | 410           | 300 |
| 400                                   | 585         | 460 | 450    | 605           | 480 | 455         | 330 | 325    | 470           | 345 |
| 500                                   | 665         | 520 | -      | 685           | 540 | 525         | 375 | -      | 540           | 390 |
| 630                                   | 755         | 580 | -      | 780           | 610 | 600         | 430 | -      | 615           | 445 |
| 800                                   | 850         | 645 | -      | 875           | 675 | 680         | 485 | -      | 700           | 500 |
| 1000                                  | 940         | 700 | -      | 960           | 730 | 765         | 535 | -      | 785           | 555 |
| 1200                                  | 1000        | 735 | -      | 1030          | 770 | 830         | 575 | -      | 850           | 595 |

2.Carrier Current Capacity of Continuous Load Insulated of 64 / 110kV XLPE Power Cable

Table 26 Carrier Current Capacity of Continuous Load of High-Voltage XLPE Insulated Power Cable (A)

| Type                                                                                                                                                                           |                           | YJV   YJLV   YJY   YJLY |      |                     |     |                                    |     |     |     |     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------|------|---------------------|-----|------------------------------------|-----|-----|-----|-----|-----|
| Voltage                                                                                                                                                                        |                           | 64 / 110 (kV)           |      |                     |     |                                    |     |     |     |     |     |
| Laying                                                                                                                                                                         |                           | In Air                  |      | In Soil (k · m / w) |     |                                    |     |     |     |     |     |
|                                                                                                                                                                                |                           |                         |      | ρ <sub>w</sub>      |     | ρ <sub>D</sub> (Water Moving Away) |     |     |     |     |     |
|                                                                                                                                                                                |                           |                         |      | 1.0                 |     | 2.5                                |     | 3.0 |     | 3.5 |     |
| Arrange-<br>ment                                                                                                                                                               | Cross<br>Section<br>(mm²) | Cu                      | AL   | Cu                  | AL  | Cu                                 | AL  | Cu  | AL  | Cu  | AL  |
| <br>Triangle Type<br>(Contact with<br>each other)                                           | 240                       | 570                     | 445  | 550                 | 385 | 435                                | 330 | 410 | 305 | 370 | 265 |
|                                                                                                                                                                                | 300                       | 650                     | 505  | 565                 | 435 | 490                                | 375 | 455 | 340 | 410 | 295 |
|                                                                                                                                                                                | 400                       | 750                     | 590  | 645                 | 495 | 550                                | 425 | 515 | 385 | 460 | 335 |
|                                                                                                                                                                                | 500                       | 860                     | 680  | 730                 | 565 | 620                                | 480 | 580 | 440 | 520 | 380 |
|                                                                                                                                                                                | 630                       | 980                     | 790  | 820                 | 645 | 695                                | 545 | 645 | 495 | 580 | 425 |
|                                                                                                                                                                                | 800                       | 1110                    | 900  | 910                 | 725 | 765                                | 610 | 715 | 555 | 635 | 475 |
|                                                                                                                                                                                | 1000                      | 1240                    | 1020 | 1000                | 810 | 835                                | 675 | 775 | 630 | 690 | 525 |
|                                                                                                                                                                                | 1200                      | 1330                    | 1120 | 1050                | 870 | 880                                | 725 | 815 | 655 | 730 | 560 |
| <br>Flat Type<br>(Distance<br>between the<br>cores equals<br>to the dia. of<br>the cable) | 240                       | 630                     | 490  | 525                 | 410 | 470                                | 365 | 460 | 360 | 455 | 355 |
|                                                                                                                                                                                | 300                       | 725                     | 560  | 595                 | 465 | 530                                | 410 | 520 | 405 | 510 | 395 |
|                                                                                                                                                                                | 400                       | 840                     | 655  | 680                 | 535 | 600                                | 470 | 585 | 460 | 575 | 450 |
|                                                                                                                                                                                | 500                       | 970                     | 765  | 775                 | 610 | 680                                | 535 | 665 | 520 | 650 | 515 |
|                                                                                                                                                                                | 630                       | 1120                    | 890  | 880                 | 700 | 765                                | 610 | 750 | 595 | 735 | 585 |
|                                                                                                                                                                                | 800                       | 1280                    | 1030 | 990                 | 795 | 885                                | 685 | 835 | 670 | 820 | 660 |
|                                                                                                                                                                                | 1000                      | 1450                    | 1170 | 1090                | 895 | 940                                | 770 | 920 | 750 | 900 | 735 |
|                                                                                                                                                                                | 1200                      | 1570                    | 1290 | 1170                | 970 | 1000                               | 830 | 980 | 810 | 960 | 795 |
| Working Temperature℃                                                                                                                                                           |                           | 90                      |      |                     |     |                                    |     |     |     |     |     |
| Ambient Temperature℃                                                                                                                                                           |                           | 40                      |      | 25                  |     |                                    |     |     |     |     |     |

Notes: ρ<sub>w</sub>—Soil heat resistance coefficient when water does not move away.    Metal screen,single point earthing  
ρ<sub>D</sub>—Soil heat resistance coefficient when water moves away,causing soil to dry.

OVERLOAD CAPACITY of XLPE CABLE

The overload capacity of XLPE cable is large. That is, also one of the most useful characteristics of XLPE cable.Because it can transfers the accident cable load to other cables, thereby greatly reducing the tense supply of power during accidents. Because the time of overload will not be too long, usually economy and current density problems may not be considered.

Short time overload current may be calculated according to the following formula:

$I_t = k \cdot I$  (K is the overload coefficient under overload temperatureT, I<sub>t</sub> is the overload current under over-  
load temperature T, I is the normal carrier current capacity)

Short Time Overload Coefficien (k)

| Short Time Overload Temperature℃ | 95   | 100  | 105  | 110  | 115  | 120  | 125  | 130  |
|----------------------------------|------|------|------|------|------|------|------|------|
| Overload                         | 1.04 | 1.08 | 1.12 | 1.15 | 1.18 | 1.21 | 1.24 | 1.27 |

Notes:1. The US Edison Illumination Company’ s technical standard AEIC CS5 specifies that the highest overload temperature of 5-46kV XLPE cable is 130℃, AEIC CS7 specifies that the highest overload temperature of 69 and 138kV XLPE cable is 105~130℃ and specifies that the sustained overload time should not exceed 15 minutes when the overload coefficient is k≥1.1 0.

2.There is no such specification in the Chinese standard.



HIGH VOLTAGE  
XLPE CABLE

COPPER AND ALUMINIUM CONDUCTOR SHORT—CIRCUIT CURRENT IN XL PE CABLE

Table 27 Copper&Aluminium Conductor Short-Circuit(KA) Short-Circuit Time 1 secretary

| Conductor<br>Section<br>mm <sup>2</sup>                                                                     | Copper                                    |       |      |      |      | Aluminium                                 |      |      |      |       |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------|------|------|------|-------------------------------------------|------|------|------|-------|
|                                                                                                             | Temperature(°C) of Short-Circuit Starting |       |      |      |      | Temperature(°C) of Short Circuit Starting |      |      |      |       |
|                                                                                                             | 35                                        | 50    | 65   | 80   | 90   | 35                                        | 50   | 65   | 80   | 90    |
| 10                                                                                                          | 1.81                                      | 1.73  | 1.64 | 1.57 | 1.51 | 1.19                                      | 1.13 | 1.00 | 1.03 | 0.986 |
| 16                                                                                                          | 2.87                                      | 2.74  | 2.60 | 2.49 | 2.39 | 1.88                                      | 1.80 | 1.71 | 1.63 | 1.56  |
| 25                                                                                                          | 4.45                                      | 4.24  | 4.03 | 3.85 | 3.69 | 2.91                                      | 2.78 | 2.65 | 2.52 | 2.42  |
| 35                                                                                                          | 6.20                                      | 5.91  | 5.62 | 5.37 | 5.15 | 4.06                                      | 3.88 | 3.70 | 3.52 | 3.37  |
| 50                                                                                                          | 8.81                                      | 8.40  | 7.98 | 7.62 | 7.31 | 5.77                                      | 5.51 | 5.25 | 5.00 | 4.79  |
| 70                                                                                                          | 12.30                                     | 11.7  | 11.1 | 10.6 | 10.2 | 8.04                                      | 7.69 | 7.33 | 6.97 | 6.68  |
| 95                                                                                                          | 16.60                                     | 15.8  | 15.0 | 14.4 | 13.8 | 10.9                                      | 10.4 | 9.9  | 9.42 | 9.03  |
| 120                                                                                                         | 20.90                                     | 19.9  | 19.0 | 18.1 | 17.4 | 13.7                                      | 13.1 | 12.5 | 11.9 | 11.4  |
| 150                                                                                                         | 26.10                                     | 24.9  | 23.7 | 22.6 | 21.7 | 17.1                                      | 16.3 | 15.6 | 14.8 | 14.2  |
| 185                                                                                                         | 32.10                                     | 30.6  | 29.1 | 27.8 | 26.7 | 21.1                                      | 20.1 | 19.2 | 18.2 | 17.5  |
| 240                                                                                                         | 41.60                                     | 39.7  | 37.7 | 36.0 | 34.6 | 27.3                                      | 26.0 | 24.8 | 23.6 | 22.6  |
| 300                                                                                                         | 51.90                                     | 49.5  | 47.1 | 44.9 | 43.1 | 34.0                                      | 32.5 | 31.0 | 29.5 | 28.2  |
| 400                                                                                                         | 69.10                                     | 65.9  | 62.6 | 59.8 | 57.4 | 45.2                                      | 43.2 | 41.2 | 39.2 | 37.6  |
| 500                                                                                                         | 86.40                                     | 82.3  | 78.3 | 74.7 | 71.7 | 56.6                                      | 54.0 | 51.5 | 49.0 | 47.0  |
| 630                                                                                                         | 107.0                                     | 102.0 | 96.9 | 92.5 | 88.8 | 70.0                                      | 66.9 | 63.8 | 60.6 | 58.0  |
| $I_k=I_1/\sqrt{t}$ $I_k$ -t, sec. short circuit $I_1=1$ sec. short circuit (see above table) $T_k=t$ , sec. |                                           |       |      |      |      |                                           |      |      |      |       |

STARTING TEMPERATURE AND SHORT-CIRCUIT CURRENT OF METAL SCREEN LAYER IN XLPE CABLE

Table 28 Starting Temperature&Short-Circuit Current of Metal Screen Layer of 8.7 / 10&8.7 / 15kV Single Core Cable

| Conductor<br>Section<br>mm <sup>2</sup> | Metal Screen Section              |                                   | Starting Temp&Short-Circuit Current of Metal Screen Layer |                     |                     |                         |                     |                     |                         |                     |                     |
|-----------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------------------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|
|                                         | Copper<br>Wire<br>mm <sup>2</sup> | Copper<br>Tape<br>mm <sup>2</sup> | M-GYJV                                                    |                     |                     | M-GYJV <sub>32</sub>    |                     |                     | M-GYJV <sub>42</sub>    |                     |                     |
|                                         |                                   |                                   | Starting<br>Temp.<br>°C                                   | Copper<br>Wire<br>A | Copper<br>Tape<br>A | Starting<br>Temp.<br>°C | Copper<br>Wire<br>A | Copper<br>Tape<br>A | Starting<br>Temp.<br>°C | Copper<br>Wire<br>A | Copper<br>Tape<br>A |
| 25                                      | 16                                | 3.6                               | 50.1                                                      | 3540                | 1094                | 54.4                    | 3497                | 1080                | 53.8                    | 3503                | 1082                |
| 35                                      | 16                                | 3.6                               | 50.5                                                      | 3536                | 1092                | 55.0                    | 3491                | 1079                | 54.7                    | 3494                | 1080                |
| 50                                      | 16                                | 3.6                               | 50.9                                                      | 3532                | 1091                | 55.6                    | 3485                | 1077                | 55.4                    | 3487                | 1077                |
| 70                                      | 16                                | 3.6                               | 51.4                                                      | 3527                | 1090                | 56.2                    | 3480                | 1075                | 54.1                    | 3500                | 1081                |
| 95                                      | 25                                | 3.6                               | 52.5                                                      | 5494                | 1086                | 57.2                    | 5421                | 1072                | 56.6                    | 5431                | 1074                |
| 120                                     | 25                                | 4.2                               | 52.8                                                      | 5489                | 1266                | 57.6                    | 5415                | 1249                | 57.6                    | 5415                | 1249                |
| 150                                     | 25                                | 4.2                               | 53.1                                                      | 5484                | 1265                | 58.0                    | 5409                | 1248                | 58.1                    | 5408                | 1248                |
| 185                                     | 35                                | 4.2                               | 53.0                                                      | 7680                | 1266                | 58.6                    | 7560                | 1246                | 58.0                    | 5409                | 1248                |
| 240                                     | 35                                | 4.2                               | 54.0                                                      | 7659                | 1262                | 58.9                    | 7553                | 1245                | 58.5                    | 7562                | 1246                |
| 300                                     | 35                                | 4.2                               | 54.3                                                      | 7652                | 1261                | 59.3                    | 7545                | 1243                | 58.9                    | 7553                | 1245                |
| 400                                     | 35                                | 4.2                               | 55.7                                                      | 7622                | 1256                | 59.8                    | 7534                | 1241                | 60.0                    | 7530                | 1241                |
| 500                                     | 35                                | 4.2                               | 56.6                                                      | 7603                | 1253                | 60.8                    | 7513                | 1238                | 60.4                    | 7521                | 1239                |
| 630                                     | 35                                | 4.2                               | 56.9                                                      | 7596                | 1252                | 61.1                    | 7506                | 1237                | 60.3                    | 7523                | 1240                |

Table 29 Starting Temperature&Short-Circuit Current of Metal Screen Layer of 26 / 35kV Single Core Cable

| Conductor<br>Section<br>mm <sup>2</sup> | Metal Screen Section              |                                   | Starting Temp&Short-Circu Curren of Metal Screen Layer |                        |                        |                         |                        |                        |
|-----------------------------------------|-----------------------------------|-----------------------------------|--------------------------------------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|
|                                         | Copper<br>Wire<br>mm <sup>2</sup> | Copper<br>Tape<br>mm <sup>2</sup> | YJV                                                    |                        |                        | YJV <sub>32</sub>       |                        |                        |
|                                         |                                   |                                   | Starting<br>Temp.<br>°C                                | Copper<br>Wire<br>Ω/km | Copper<br>Tape<br>Ω/km | Starting<br>Temp.<br>°C | Copper<br>Wire<br>Ω/km | Copper<br>Tape<br>Ω/km |
| 25                                      | 16                                | 4.2                               | 46.2                                                   | 1.268                  | 4.853                  | 48.7                    | 1.280                  | 4.896                  |
| 35                                      | 16                                | 4.2                               | 46.5                                                   | 1.270                  | 4.858                  | 49.1                    | 1.282                  | 4.903                  |
| 50                                      | 16                                | 4.2                               | 46.8                                                   | 1.271                  | 4.865                  | 49.4                    | 1.283                  | 4.908                  |
| 70                                      | 16                                | 4.2                               | 47.1                                                   | 1.272                  | 4.869                  | 49.9                    | 1.285                  | 4.917                  |
| 95                                      | 25                                | 4.2                               | 48.1                                                   | 0.807                  | 4.886                  | 50.3                    | 0.814                  | 4.924                  |
| 120                                     | 25                                | 4.2                               | 48.3                                                   | 0.808                  | 4.889                  | 51.1                    | 0.816                  | 4.938                  |
| 150                                     | 25                                | 4.2                               | 48.5                                                   | 0.808                  | 4.893                  | 51.4                    | 0.817                  | 4.943                  |
| 185                                     | 35                                | 4.2                               | 49.2                                                   | 0.584                  | 4.905                  | 51.7                    | 0.589                  | 4.984                  |
| 240                                     | 35                                | 4.2                               | 49.5                                                   | 0.585                  | 4.910                  | 52.1                    | 0.590                  | 4.955                  |
| 300                                     | 35                                | 4.2                               | 49.7                                                   | 0.585                  | 4.914                  | 52.4                    | 0.591                  | 4.960                  |
| 400                                     | 35                                | 4.2                               | 50.7                                                   | 0.587                  | 4.931                  | 53.7                    | 0.593                  | 4.982                  |
| 500                                     | 35                                | 4.2                               | 50.9                                                   | 0.588                  | 4.934                  | 54.0                    | 0.493                  | 4.988                  |
| 630                                     | 35                                | 4.2                               | 51.7                                                   | 0.589                  | 4.984                  | 54.7                    | 0.595                  | 5.000                  |

Table 30 Short-Circuit ,current in Copper. Tape Screen Layer of 6/6 -12/20kV,3-Core Cable.

| Conductor<br>Section<br>mm <sup>2</sup> | 6/6,6/10kV                                |                               | 8.7/10,8.7/15kV                           |                               | 12/20kV                                   |                               |
|-----------------------------------------|-------------------------------------------|-------------------------------|-------------------------------------------|-------------------------------|-------------------------------------------|-------------------------------|
|                                         | Copper Tape<br>Section<br>mm <sup>2</sup> | Short-Circuit<br>Current<br>A | Copper Tape<br>Section<br>mm <sup>2</sup> | Short-Circuit<br>Current<br>A | Copper Tape<br>Section<br>mm <sup>2</sup> | Short-Circuit<br>Current<br>A |
| 25                                      | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          |
| 35                                      | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          |
| 50                                      | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          |
| 70                                      | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          |
| 95                                      | 3×3.0                                     | 2958                          | 3×3.0                                     | 2958                          | 3×3.5                                     | 3031                          |
| 120                                     | 3×3.0                                     | 2958                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 150                                     | 3×3.0                                     | 2958                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 185                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 240                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 300                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 400                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 500                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |
| 630                                     | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          | 3×3.5                                     | 3031                          |



HIGH VOLTAGE  
XLPE CABLE

CONDUCTOR'S AC RESISTANCE UNDER XLPE CABLE WORKING TEMPERATURE

Table 31 AC Resistance Under Working Temp. of 8.7/10 & 8.7/15kV Single core & 3-Cores Cable Ω/km

| Conductor<br>Section<br>mm <sup>2</sup> | Single-Core Cable |        |                                  |        |                                   |        |                              |        |
|-----------------------------------------|-------------------|--------|----------------------------------|--------|-----------------------------------|--------|------------------------------|--------|
|                                         | Non-Armored       |        | Thin Round Steel<br>Wire Armored |        | Thick Round Steel<br>Wire Armored |        | All Types of<br>3-Core Cable |        |
|                                         | Cu                | Al     | Cu                               | Al     | Cu                                | Al     | Cu                           | Al     |
| 25                                      | 0.9271            | 1.5385 | 0.9271                           | 1.5385 | 0.9271                            | 1.5385 | 0.9271                       | 1.5385 |
| 35                                      | 0.6683            | 1.1130 | 0.6683                           | 1.1130 | 0.6683                            | 1.1130 | 0.6684                       | 1.1130 |
| 50                                      | 0.4936            | 0.8220 | 0.4936                           | 0.8220 | 0.4936                            | 0.8220 | 0.4937                       | 0.8220 |
| 70                                      | 0.3420            | 0.5681 | 0.3420                           | 0.5681 | 0.3420                            | 0.5681 | 0.3421                       | 0.5682 |
| 95                                      | 0.2465            | 0.4105 | 0.2466                           | 0.4105 | 0.2465                            | 0.4105 | 0.2467                       | 0.4106 |
| 120                                     | 0.1956            | 0.3247 | 0.1956                           | 0.3247 | 0.1956                            | 0.3247 | 0.1958                       | 0.3248 |
| 150                                     | 0.1588            | 0.2645 | 0.1587                           | 0.2645 | 0.1587                            | 0.2645 | 0.1591                       | 0.2647 |
| 185                                     | 0.1272            | 0.2108 | 0.1271                           | 0.2107 | 0.1271                            | 0.2107 | 0.1276                       | 0.2110 |
| 240                                     | 0.0972            | 0.1609 | 0.0971                           | 0.1609 | 0.0971                            | 0.1608 | 0.0978                       | 0.1613 |
| 300                                     | 0.0779            | 0.1290 | 0.0779                           | 0.1290 | 0.0778                            | 0.1289 | 0.0788                       | 0.1295 |
| 400                                     | 0.0616            | 0.1010 | 0.0615                           | 0.1010 | 0.0615                            | 0.1009 | 0.0628                       | 0.1018 |
| 500                                     | 0.0489            | 0.0789 | 0.0487                           | 0.0788 | 0.0487                            | 0.0788 | 0.0504                       | 0.0799 |
| 630                                     | 0.0389            | 0.0619 | 0.0387                           | 0.0618 | 0.0386                            | 0.0617 | 0.0409                       | 0.0632 |

Table 32 AC Resistance Under Working Temperature of 26/35kV Single-Cores Cable Ω/km

| Conductor<br>Section<br>mm <sup>2</sup> | Single-Core Cable |        |                   |        |                   |        |
|-----------------------------------------|-------------------|--------|-------------------|--------|-------------------|--------|
|                                         | YJV               |        | YJV <sub>32</sub> |        | YJV <sub>42</sub> |        |
|                                         | Cu                | Al     | Cu                | Al     | Cu                | Al     |
| 25                                      | 0.9271            | 1.5385 | 0.9271            | 1.5385 | 0.9271            | 1.5385 |
| 35                                      | 0.6683            | 1.1130 | 0.6683            | 1.1130 | 0.6683            | 1.1130 |
| 50                                      | 0.4936            | 0.8220 | 0.4936            | 0.8220 | 0.4936            | 0.8220 |
| 70                                      | 0.3420            | 0.5681 | 0.3420            | 0.5681 | 0.3420            | 0.5681 |
| 95                                      | 0.2465            | 0.4105 | 0.2465            | 0.4105 | 0.2465            | 0.4105 |
| 120                                     | 0.1956            | 0.3247 | 0.1955            | 0.3246 | 0.1966            | 0.3246 |
| 150                                     | 0.1587            | 0.2645 | 0.1587            | 0.2645 | 0.1587            | 0.2645 |
| 185                                     | 0.1271            | 0.2107 | 0.1271            | 0.2107 | 0.1271            | 0.2107 |
| 240                                     | 0.0971            | 0.1608 | 0.0971            | 0.1608 | 0.0971            | 0.1608 |
| 300                                     | 0.0778            | 0.1289 | 0.0778            | 0.1289 | 0.0778            | 0.1289 |
| 400                                     | 0.0615            | 0.1010 | 0.0614            | 0.1009 | 0.0614            | 0.1009 |
| 500                                     | 0.0487            | 0.0788 | 0.0486            | 0.0788 | 0.0486            | 0.0787 |
| 630                                     | 0.0386            | 0.0617 | 0.0385            | 0.0617 | 0.0385            | 0.0616 |

INDUCTANCE OF XLPE CABLE

Table 33 Inductance Value (s=2D) \*of YJV Single-Core Cable MH/km

| Conductor<br>Section | Voltage<br>Grade | 6/6kV<br>6/10kV | 8.7/10kV<br>8.7/15kV | 12/20kV | 18/30kV | 21/35kV | 26/35kV |
|----------------------|------------------|-----------------|----------------------|---------|---------|---------|---------|
| 25                   |                  | 0.6143          | 0.6474               | 0.6621  | 0.7006  | 0.7168  | 0.7273  |
| 35                   |                  | 0.5932          | 0.6248               | 0.6390  | 0.6762  | 0.6942  | 0.7021  |
| 50                   |                  | 0.5711          | 0.6011               | 0.6145  | 0.6501  | 0.6675  | 0.6751  |
| 70                   |                  | 0.5486          | 0.5765               | 0.5919  | 0.6252  | 0.6394  | 0.6467  |
| 95                   |                  | 0.5318          | 0.5608               | 0.5726  | 0.6043  | 0.6180  | 0.6279  |
| 120                  |                  | 0.5197          | 0.5473               | 0.5586  | 0.5891  | 0.6051  | 0.6118  |
| 150                  |                  | 0.5079          | 0.5341               | 0.5449  | 0.5740  | 0.5895  | 0.5959  |
| 185                  |                  | 0.5006          | 0.5252               | 0.5354  | 0.5640  | 0.5760  | 0.5839  |
| 240                  |                  | 0.4890          | 0.5143               | 0.5216  | 0.5487  | 0.5615  | 0.5677  |
| 300                  |                  | 0.4818          | 0.5032               | 0.5102  | 0.5376  | 0.5484  | 0.5540  |
| 400                  |                  | 0.4702          | 0.4927               | 0.4991  | 0.5219  | 0.5343  | 0.5395  |
| 500                  |                  | 0.4619          | 0.4848               | 0.4907  | 0.5128  | 0.5224  | 0.5272  |
| 630                  |                  | 0.4563          | 0.4748               | 0.4827  | 0.5012  | 0.5101  | 0.5161  |

\* D is cable overall diameter; S is cable central distance.

Table 34 Inductance Value (s=2D) \*YJV<sub>32</sub> of Single-Core Cable Inductance MH/km

| Conductor<br>Section | Voltage<br>Grade | 6/6kV<br>6/10kV | 8.7/10kV<br>8.7/15kV | 12/20kV | 18/30kV | 21/35kV | 26/35kV |
|----------------------|------------------|-----------------|----------------------|---------|---------|---------|---------|
| 25                   |                  | 0.6772          | 0.7045               | 0.7156  | 0.7458  | 0.7588  | 0.7655  |
| 35                   |                  | 0.6536          | 0.6799               | 0.6907  | 0.7200  | 0.7356  | 0.7393  |
| 50                   |                  | 0.6311          | 0.6537               | 0.6641  | 0.6924  | 0.7075  | 0.7155  |
| 70                   |                  | 0.6049          | 0.6263               | 0.6384  | 0.6661  | 0.6822  | 0.6855  |
| 95                   |                  | 0.5850          | 0.6076               | 0.6170  | 0.6481  | 0.6591  | 0.6624  |
| 120                  |                  | 0.5727          | 0.5922               | 0.6012  | 0.6314  | 0.6421  | 0.6476  |
| 150                  |                  | 0.5584          | 0.5770               | 0.5886  | 0.6148  | 0.6275  | 0.6306  |
| 185                  |                  | 0.5461          | 0.5687               | 0.5751  | 0.6004  | 0.6128  | 0.6157  |
| 240                  |                  | 0.5346          | 0.5575               | 0.5635  | 0.5858  | 0.5953  | 0.5981  |
| 300                  |                  | 0.5225          | 0.5443               | 0.5500  | 0.5713  | 0.5805  | 0.5832  |
| 400                  |                  | 0.5120          | 0.5282               | 0.5358  | 0.5536  | 0.5636  | 0.5681  |
| 500                  |                  | 0.5012          | 0.5187               | 0.5237  | 0.5407  | 0.5521  | 0.5545  |
| 630                  |                  | 0.4925          | 0.5067               | 0.5114  | 0.5306  | 0.5395  | 0.5419  |

\* D is cable overall diameter; S is cable central distance.

Table 35 Different Specifications of 3-Core Cable Inductance MH/km

| Conductor<br>Section | Voltage<br>Grade | 6/6kV<br>6/10kV | 8.7/10kV<br>8.7/15kV | 12/20kV |
|----------------------|------------------|-----------------|----------------------|---------|
| 25                   |                  | 0.3797          | 0.4061               | 0.4274  |
| 35                   |                  | 0.3613          | 0.3862               | 0.4064  |
| 50                   |                  | 0.3423          | 0.3655               | 0.3845  |
| 70                   |                  | 0.3232          | 0.3445               | 0.3620  |
| 95                   |                  | 0.3092          | 0.3290               | 0.3454  |
| 120                  |                  | 0.2992          | 0.3178               | 0.3392  |
| 150                  |                  | 0.2897          | 0.3071               | 0.3217  |
| 185                  |                  | 0.2817          | 0.3009               | 0.3145  |
| 240                  |                  | 0.2726          | 0.2904               | 0.3030  |
| 300                  |                  | 0.2651          | 0.2817               | 0.2935  |
| 400                  |                  | 0.2564          | 0.2714               | 0.2822  |
| 500                  |                  | 0.2503          | 0.2641               | 0.2742  |
| 630                  |                  | 0.2442          | 0.2569               | 0.2661  |

WORKING CONDENSER OF XLPE CABLE

Table 36 Working Condenser of Different Specifications of Cable μ F/km

| Conductor<br>Section | Voltage<br>Grade | 6/6kV<br>6/10kV | 8.7/10kV<br>8.7/15kV | 12/20kV | 18/30kV | 21/35kV | 26/35kV |
|----------------------|------------------|-----------------|----------------------|---------|---------|---------|---------|
| 25                   |                  | 0.1922          | 0.1576               | 0.1378  | 0.1163  | 0.1064  | 0.0992  |
| 35                   |                  | 0.2116          | 0.1725               | 0.1502  | 0.1251  | 0.1140  | 0.1061  |
| 50                   |                  | 0.2367          | 0.1917               | 0.1661  | 0.1363  | 0.1239  | 0.1150  |
| 70                   |                  | 0.2693          | 0.2167               | 0.1868  | 0.1508  | 0.1365  | 0.1263  |
| 95                   |                  | 0.2999          | 0.2400               | 0.2060  | 0.1643  | 0.1483  | 0.1368  |
| 120                  |                  | 0.3266          | 0.2603               | 0.2228  | 0.1760  | 0.1584  | 0.1460  |
| 150                  |                  | 0.3570          | 0.2834               | 0.2418  | 0.1893  | 0.1700  | 0.1563  |
| 185                  |                  | 0.3873          | 0.3123               | 0.2656  | 0.2026  | 0.1815  | 0.1665  |
| 240                  |                  | 0.4290          | 0.3239               | 0.2916  | 0.2207  | 0.1972  | 0.1805  |
| 300                  |                  | 0.4706          | 0.3755               | 0.3175  | 0.2387  | 0.2128  | 0.1945  |
| 400                  |                  | 0.5311          | 0.4213               | 0.3551  | 0.2648  | 0.2354  | 0.2146  |
| 500                  |                  | 0.5839          | 0.4613               | 0.3880  | 0.2876  | 0.2551  | 0.2321  |
| 630                  |                  | 0.6481          | 0.5099               | 0.4278  | 0.3451  | 0.2789  | 0.2533  |