

电线电缆类

阻水型抗水树中压电力电缆 MV water-proof and water tree retardant power cable

1 产品标准 Standard

本产品按GB/T12706-2008《额定电压1kV到35kV挤包绝缘电力电缆及附件》标准生产，同时还可根据用户需要按国际电工委员会推荐标准IEC、英国标准、欧盟标准生产。

The products should be manufactured according to standard GB/T12706-2008 and also as per IEC, BS and HD as requested.

2 适用范围 Application

本产品适用于工频额定电压3.6/6 ~ 26/35kV敷设在潮湿、地下水较丰富场合下埋地电缆或要求具有抑制水树生长的、安全可靠运行的输配电线路。

The products should be suitable for buried cables under the moist, abundant groundwater or water tree growth inhibiting and safely operating transmission and distribution lines of rated voltages of 3.6/6 ~ 26/35kV

3 产品特点 Properties

抗水树型电缆绝缘选用具有抑制绝缘电、水树生长性能的TR-XLPE绝缘料,该产品依据欧盟标准HD 605中绝缘抗水树要求,经过729天的加速水树老化试验,大大提高电缆的寿命和安全性,是交联电缆升级换代产品。纵向阻水采用在导体中加入特殊的阻水材料,保证阻断水分在导体中的扩散,同时满足了电缆的导电性能;径向阻水型采用纵包铝塑复合带和聚烯烃结合构成综合护层等工艺,从而达到纵向和径向阻水功能。现在各大城市在建设时已经提出电缆的绝缘抗水树的要求,部分城市的重点工程已经必须采用阻水型抗水树电缆,市场应用前景非常好。

TR cables should be insulated by electrical and water tree growth inhibiting TR insulated compound. After 729-day water tree ageing accumulation test according to the requirements for tree retardant performance in HD605. The products prolong the cables' lives and improve safety, and they are the upgrade of XLPE insulated cables. Longitudinal water-proof cables combine water-proof material, inhibiting the growth of water tree in the conductor, satisfying the conductivity of the cable; Radical water-proof cables combine Al-plastic tape and polyolefin sheath and have longitudinal and radical water-blocking properties. Insulated water tree retardant property of the cable is requested during the construction of cities. Major projects of some cities designating definitely using water-proofed and water tree retardant cables. It has a bright market application outlook.

4 使用特性 Operation conditions

工频额定电压U₀/U为3.6/6 ~ 26/35kV;

Rated power frequency voltage U₀/U is 3.6/6 ~ 26/35kV;

电缆导体的长期允许最高工作温度为90℃;

The Max.long-term operating temperature of conductor: 90℃;

短路时(最长持续时间不超过5S)电缆导体的最高温度不超过250℃;

Max. working temperature of cable conductor is not over 250℃ in short circuit (5S maximum duration);

电缆敷设时环境温度应不低于0℃;

Environment temperature in laying the cable should be no lower than 0℃;

抗水性能满足欧盟标准HD 605标准,通过729天的加速水树老化试验。

Water-proof properties of cable comply with HD605 and pass the 729-day water tree ageing accumulation test.

5 电缆额定电压选择 Voltage designation

电缆额定电压应适合于电缆系统的运行情况,用U₀/U (U_m)表示,均为有效值,单位为kV;

The rated voltage of the cable for a given application shall be suitable for the operating condition in the system in which the cable is used, and is expressed in the form of U₀/U (U_m), and expressed in the form U₀/U kV;

IU₀: 电缆设计用的导体与屏蔽或金属套之间的额定工频电压;

Rated power frequency voltage between conductor and earth or metallic screen for which the cable is designed

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U: 电缆设计用的导体间的额定工频电压;
Rated power frequency voltage between conductors for which the cable is designed

Um: 设备可承受的“最高系统电压”的最大值;
Maximum value of the “high system voltage” for which the equipment may be used

三相系统用电缆的U0值推荐如下表:

The values of U0 recommended for cables to be used in three-phase system are listed in the followed table

系统最高电压(Um) high system voltage kV	Rated voltage 额定电压 U0 kV			
	A类和B类系统工程 system category A and B		C系统工程 system category C	
7.2 12	3.6	6	6	8.7
17.5 24	8.7	12	12	18
36 42	18	21	26	

A类用于单相接地故障时间每一次一般不大于1分钟;

Category A: duration of earth fault of one phase should not exceed 1 min.

B类用于可在单相接地故障时间最长不超过8h,每年累计不宜超过125h的系统;

Category B: duration of earth fault of one phase, a long period, not exceeding 8h. The total duration of earth fault in any year should not exceed 125h

6 型号说明 Type instruction

名称 Designation	特征代码 Code
抗水树 Water-tree resistant	WT
铜导体 Cu conductor	omitted省略(T)
铝导体 Al conductor	L
抗水树交联聚乙烯绝缘 Water-tree resistant XLPE	YJ
聚乙烯护套 PE oversheath	Y

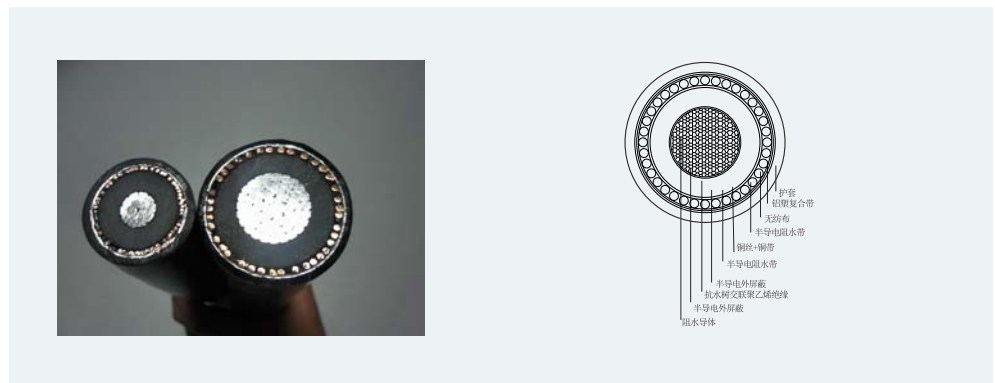
7 电缆的型号、名称 Type and designation

型号Type	名称designation
WT-YJY	阻水型铜导体抗水树交联聚乙烯绝缘铝塑复合带纵包聚乙烯护套 Water-proof copper conductor TR-XLPE insulated longitudinal Al-plastic taped PE sheathed
WT-YJLY	阻水型铝导体抗水树交联聚乙烯绝缘铝塑复合带纵包聚乙烯护套 Water-proof Al conductor TR-XLPE insulated longitudinal Al-plastic taped PE sheathed

8 产品范围及结构图 Product range and construction diagram

型号Type	芯数Core Number	Voltage电压等级kV	Nominal section标称截面mm ²
WT-YJY	单芯或三芯护套后成缆 Single-core or three cores cable	3.6/6 ~ 8.7/15、12/20 18/30 ~ 26/35	50~500
WT-YJLY	单芯或三芯护套后成缆 Single-core or three cores cable	3.6/6 ~ 8.7/15、12/20 18/30 ~ 26/35	50~500

电缆结构图 Construction:



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9 电缆敷设运行条件 Laying and operation condition of cable

阻水型抗水树中压电力电缆连续负载流量

Continuous current rating quantity of MV water-proof and water tree retardant power cable

9.1 在空气中敷设 laying in air

9.1.1 单芯电缆平行敷设时中心距离：185mm²及以下为电缆直径的2倍，240mm²及以上为90mm。

The distance between central axis of neighboring cable: 185mm²and below equals 2 times than outer diameter of the cable 240mm²and above equals 90mm

9.1.2 周围环境温度40℃。

Ambient temperature is 40℃

9.1.3 导电线芯最高允许温度：

90℃。Maximum conductor temperature: 90℃

9.1.4 不同空气温度下载流量修正系数。

Correct factor of current rating under different air temperature.

不同空气温度下载流量修正系数

Correct factor of current rating under different air temperature

导体工作温度 °C working temperature of the conductor °C	Air temperature 空气温度 °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

9.2 在土壤中敷设 laying in soil

9.2.1 单芯电缆不接触敷设时，中心距离为电缆直径的2倍。

The distance between central axis of neighboring cable equals 2 times than outer diameter of cable when single-core cable doesn't touch the laying.

9.2.2 周围环境温度25℃。

Ambient temperature is 25℃

9.2.3 导电线芯最高允许温度：90℃。

Maximum conductor temperature: 90℃

9.2.4 土壤热阻系数：1.0 k.m/W。

Thermal resistivity of the soil

9.2.5 直埋深度：0.7m。

Depth of laying: 0.7m

9.2.6 不同土壤温度下载流量修正系数。

Correct factor of current rating under different soil temperature.

不同土壤温度下载流量修正系数

Correct factor of current rating under different soil temperature

导体工作温度 °C working temperature of the conductor °C	Air temperature 空气温度 °C					
	10	15	20	25	30	35
90	1.11	1.07	1.04	1.00	0.96	0.92

不同土壤热阻系数的载流量修正系数

Correct factor of current rating under different thermal resistivity of the soil





电压 (kV)voltage	截面(mm ²) cross section	土壤热阻系数(k.m/W) Thermal resistivity of the soil				
		0.8	1.0	1.2	1.5	2.0
3.6/6 ~ 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 ~ 8.7/15	≤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

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电缆连续荷载流量 continuous current rating quantity under load





3.6/6kV ~ 12/20kV阻水型抗水树中压电力电缆允许持续载流量

Continuous current rating quantity of MV water-proof and water tree retardant power cable for rated voltage of 3.6/6kV ~ 12/20kV

型号Type		WT-YJYT、WT-YJLYT							
芯数Core Number		单芯single core							
敷设laying		空气中in air				土壤中 in soil			
单芯电缆排列方式 Arrangement of single core cable									
线芯材质 Material of conductor		铜Cu	铝Al	铜Cu	铝Al	铜Cu	铝Al	铜Cu	铝Al
Nominal section 标称截面mm ²	25	140	260	410	640	150	265	405	595
	35	110	200	320	500	115	200	305	455
	50	165	305	490	765	160	275	425	630
	70	130	235	380	595	120	215	330	490
	95	170	315	470	745	180	315	455	680
	120	135	240	365	585	135	240	345	520
	150	205	370	560	890	190	330	480	725
	185	155	290	435	695	145	255	370	565
	240	205	360	555	855	215	360	530	765
	300	160	280	435	680	160	270	400	595
	400	245	430	665	1030	225	375	555	825
	500	190	335	515	810	175	290	435	650
环境温度(°C) Ambient temperature		40				25			
线芯最高工作温度(°C) Maximum conductor temperature		90							

18/30kV ~ 26/35kV阻水型抗水树中压电力电缆允许持续载流量

Continuous current rating quantity of MV water-proof and water tree retardant power cable for rated voltage of 18/30kV ~ 26/35kV

型号Type		WT-YJYT、WT-YJLYT							
芯数Core Number		单芯single core							
敷设laying		空气中in air				土壤中 in soil			
单芯电缆排列方式 Arrangement of single core cable									
线芯材质 Material of conductor		铜Cu	铝Al	铜Cu	铝Al	铜Cu	铝Al	铜Cu	铝Al
Nominal section 标称截面mm ²	50	220	285	555	595	215	255	475	525
	70	170	375	430	870	165	360	370	720
	95	245	290	560	680	225	270	525	565
	120	190	425	435	875	175	375	400	775
	150	270	330	650	690	265	290	555	600
	185	210	425	505	1000	200	400	430	825
	240	305	330	650	790	275	305	595	645
	300	235	485	510	1000	215	420	455	875
	400	330	375	745	800	315	325	630	685
	500	255	485	580	1160	240	455	490	940
	630	370	380	760	920	330	345	680	740
环境温度(°C) Ambient temperature		40				25			
线芯最高工作温度(°C) Maximum conductor temperature		90							

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10 交货长度、标志、包装 Delivery length, marking and package

10.1 交货长度 Delivery length

10.1.1 标称截面50mm²以上电缆，交货长度不小于500m。

The delivery length of cable with the nominal cross-section of 50mm² and above shall no less than 500m.

10.1.2 长度的计量误差应不超过 0.5%。

The calculated tolerance of length no more than 0.5%.

10.1.3 根据双方协议，允许以任何长度的产品交货。

According to mutual agreement, the product can be delivered in any length.

10.2 标志 marking

成品电缆(电线)的表面应有制造厂名、型号、电压等级等连续标志，标志应符合GB/T 6995的规定。

The surface of the finished cable shall have continuous markings like manufacturer, type and voltage grade, etc.. The markings shall comply with relevant requirements of GB/T 6995.

10.3 包装 package

10.3.1 成盘包装，成盘包装的交货盘按JB/T 8137的规定。(出口产品包装，应符合有关规定。)

Package of every drum comply with JB/T 8137(package of export products shall comply with relevant regulations).

10.3.2 每盘上应附有标签标明。

Every drum shall have label indicated as the followings:

生产厂名； manufacture

产品型号、规格、单位为mm²； Type and size of the product and the unit is mm²

额定电压，单位为kV； rated voltage and the unit is kV

长度，单位为m； length and the unit is m

制造日期，年 月 日 date of manufacture y m d

标准编号 standard