风力发电用电缆

Wind power cable

本产品适用于风力发电设备中叶轮机及固定安装塔类或其他类似场合的额定电压1.8/3kV及以下风力发电系统或类似的系统耐扭曲软电缆。

Flexing cable is used in wind turbine and □xed erection installation towers with rated voltage 1.8/3kV and below wind turbine system or similar system.

一、生产执行标准

TICW1-2009及企业标准。

Executive standard

TICW1-2009 and Enterprise standard.

二、使用特性

1、电缆的额定电压U_0/U分别为：

450/750V、0.6/1kV、1.8/3kV；

2、正常运行时，导体最高工作温度（电缆额定工作温度）分别为：电压等级450/750V电缆：70℃；电压等级0.6/1kV、1.8/3kV电缆：90℃；

3、电缆的最小弯曲半径为电缆直径的6倍；

4、电缆适应的最低环境温度，普通型：-25℃；耐寒型：-40℃；耐严寒型；-55℃。

Operational performance

1.Rated Voltage U_0/U:450/750V、0.6/1kV、1.8/3kV.
2.Max. temperature of cable conductor during normal operating condition (cable rated working temperature): 70℃ for cable with voltage grade 450/750V, and 90℃ for cable with voltage grade 0.6/1kV、1.8/3kV.
3.Min bending radius of cable is 6 times that of cable diameter.
4.Lowest environment temperature: -25℃ for common type cable, -40℃ for cold-resistant type cable, and -50℃ for bitter cold resistant type cable.

三、产品型号中和字母代表意义

风力发电用电缆系列代号 …… FD
阻燃C类型…… ZC（低烟无卤要求正在考虑中）
铜导体…… （T）省略
乙丙橡皮绝缘或其他相当的合成弹性体绝缘 …… E
硅橡胶或其相当的混合物绝缘 …… G
硅橡胶或其相当的混合物护套 …… G
聚氨酯弹性体护套（TPU） …… U
氯磺化聚乙烯橡皮或其他相当的合成弹性体护套 …… H
氯丁橡皮或其他相当的合成弹性体护套…… F
热塑性弹性体护套…… S

Code Meaning in specification

Wind power cable series code …… FD
Flame retardant category C …… ZC
Copper conductor …… (T)omitted
Ethylene propylene rubber insulation or equaled synthetic elastomer …… E
Silicone rubber or its equivalent mixture insulation …… G
Silicon rubber or equaled compound sheath …… G
Polyurethane elastomer sheath (TPU) …… U
Chlorosulfonate polyethylene rubber or equaled synthetic elastomer sheath …… H
Chloroprene rubber or equaled synthetic elastomer sheath …… F
TPE sheath …… S

四、型号名称

Type and Description

型号 Type	额定电压 Rated voltage	名称 Description
FDEF-25(-40)	450/750V	铜芯乙丙橡皮绝缘氯丁橡皮护套风力发电用（耐寒）耐扭曲软电缆 Copper core EPR insulation chloroprene rubber sheath, wind power generation (cold resistant) resistance to distortion soft cable.
FDEF-25(-40)	450/750V	铜芯乙丙橡皮绝缘热塑弹体护套风力发电用（耐寒）耐扭曲软电缆 Copper core flexible cable, With EPR insulation TPE sheath, wind power generation (cold resistant) resistance to distortion
FDGG-40(-55)	0.6/1KV 1.8/3KV	铜芯硅橡胶绝缘硅橡胶护套风力发电用耐寒（耐严寒）耐扭曲软电缆 Copper core flexible cable, With Silicone Rubber insulation and sheath, used in wind power generation, resistance to distortion and cold (bitter cold)
FDGU-40(-55)	0.6/1KV 1.8/3KV	铜芯硅橡胶绝缘聚氨酯弹体护套风力发电用耐寒（耐严寒）耐扭曲软电缆 Copper core flexible cable, With Silicone Rubber insulation and TPU sheath,Used in wind power generation, resistance to distortion and cold (bitter cold)
FDEU-40(-55)	0.6/1KV 1.8/3KV	铜芯乙丙橡皮绝缘聚氨酯护套风力发电用耐寒（耐严寒）耐扭曲软电缆 Copper core flexible cable, with EPR insulation and PU sheath,used in wind power generation , resistance to distortion and cold (bitter cold)
FDEG-40(-55)	0.6/1KV 1.8/3KV	铜芯乙丙橡皮绝缘硅橡胶护套风力发电用耐寒（耐严寒）耐扭曲软电缆 Copper core flexible cable, with EPR insulation and Silicone Rubber sheath,used in wind power generation , resistance to distortion and cold (bitter cold)

FDEH-25(-40)	0.6/1kV 1.8/3kV	铜芯乙丙橡皮绝缘氯磺化聚乙烯护套风力发电用耐寒耐扭曲软电缆 Copper core flexible cable, with EPR insulation and CSM sheath, used in wind power generation , resistance to distortion and cold
FDES-25(-40)	0.6/1kV 1.8/3kV	铜芯乙丙橡皮绝缘热塑弹体护套风力发电用（耐寒）耐扭曲软电缆 Copper core flexible cable, with EPR insulation and TPE sheath, used in wind power generation , resistance to distortion and cold (bitter cold)

注：
1）如氯磺化聚乙烯橡皮护套电缆、氯丁橡皮护套电缆和热塑性弹体护套电缆能够通过试验温度过-40℃的全部低温试验，其最低使用环境温度为-40℃，相应型号为FDEH-40、FDEF-40、FDES-40；
2）阻燃电缆在型号前加“ZC-”。

1) There have some kinds of cables that passed the low temperature test of -40℃, such as CSM sheath cable (FDEH-40), chloroprene rubber sheath cable (FDEF-40) and TPE sheath cable (FDES-40). with the lower working temperature is -40℃.
2) Prefix"ZC-"should be added to the cable type if order flame resistant cable.

五、电缆规格 Specication

型号 Type	额定电压 Rated voltage	芯数 Core No.	导体标称截面积 mm² Nominal cross section area mm²
FDEF	450/750V 0.6/1kV	1	1.5～400
FDES		2	1～25
FDGG		3	1～300
FDGU		3+1	4～185
FDEU		4	1～300
FDEG		5	1～25
FDEH	1.8/3kV	1	10～400
FDES		3	10～240

六、技术要求 Technical requirement

1 导体

1.1 导体应采用GB/T 3956规定的第5种柔软圆形导体。导体材料应为退火软铜线，可以不镀锡或镀锡。

1.2 导体20℃时的直流电阻应符合GB/T3956的规定。

1.3 导体表面允许用非吸湿性带料作重叠绕包或纵包。

2 绝缘

2.1 绝缘材料应为下表所列的挤包固体介质的一种。绝缘机械物理性能应符合附录A中表A.1的规定。

Conductor
Conductor adopts class 5 soft circle annealed (tinned) copper wire according to GB/T 3956.
DC resistance of conductor at 20 ℃ should confirm with GB/T3956.
Conductor surface allows moisture resistant material overlap or longitudinal wrap.
Insulation
Insulated material should be one of extruded solid dielectrics in table. Mechanical and physical character should confirm with requirement table A.1.in appendix A

绝缘混合料 **Insulation compound**

绝缘混合料 Insulation compound	代号 Code	导体最高温度 The Max. temperature of conductor	
		正常运行时 Normal operation	短路时（最长持续5S） Short circuit (the longest lasting time is 5S)
70℃乙丙橡胶混合物或其他相当的合成弹性体 70℃ EPR compound or equivalent synthetic elastomer	IE4	70	140
90℃乙丙橡胶混合物或其他相当的合成弹性体 90℃ EPR compound or equivalent synthetic elastomer	EPR	90	250
硅橡胶混合物或其他相当的合成弹性体 Silicon rubber compound or equivalent synthetic elastomer	G	90	250

2.2 绝缘厚度的标称值应符合表4的规定。绝缘厚度的平均值应不小于标称值，绝缘最薄处厚度应不小于标称值的90%-0.1mm。

Normal thickness of insulation should confirm with table 4, average thickness of insulation should be no less than nominal value, the thinnest point should be no less than 90%-0.1mm of nominal value.

绝缘标称厚度 **Nominal thickness of insulation**

导体标称截面积 mm² Nominal cross section area of conductor	绝缘厚度标称值 mm Nominal thickness of insulation		导体标称截面积 mm² Nominal cross section area of conductor	绝缘厚度标称值 mm Nominal thickness of insulation		导体标称截面积 mm² Nominal cross section area of conductor	绝缘厚度标称值 mm Nominal thickness of insulation	
	450/750V 0.6/1kV	1.8/3kV		450/750V 0.6/1kV	1.8/3kV		450/750V 0.6/1kV	1.8/3kV
1	0.8	/	16	1.2	2.1	120	1.8	2.4
1.5	0.8	/	25	1.4	2.2	150	2.0	2.6
2.5	0.9	/	35	1.4	2.2	185	2.2	2.6
4	1.0	/	50	1.6	2.2	240	2.4	2.8
6	1.0	/	70	1.6	2.2	300	2.6	2.8
10	1.2	2.1	95	1.8	2.4	400	2.8	3.0

2.3 绝缘应紧密挤包在导体上，断面无目力可见的气泡和杂质，外观圆整且容易与导体剥离。

2.4 绝缘线芯应按GB/T3048的规定经受下表规定的工频火花试验作为中间检查。

Conductor should be closely wrapped with extruded insulation, Besides there is no visible bubble and impurities, it looks round, even and easily strip.

Core should be tested by power frequency sparking testing meeting the standard of GB/T3048 in table.

火花试验电压 **Sparking test**

绝缘厚度标称值 mm Nominal thickness of insulation	试验电压 kV Testing voltage	绝缘厚度标称值 mm Nominal thickness of insulation	试验电压 kV Testing voltage
0.5 < δ≤1.0	6	2.0 < δ≤2.5	20
1.0 < δ≤1.5	10	2.5 < δ	25
1.5 < δ≤2.0	15	/	/

2.5 1芯~5芯电缆绝缘线芯的识别

2.5.1 一般要求电缆绝缘线芯应采用颜色或其它合适的方法进行识别。如客户无特殊要求，允许采用数字编码识别。除绿/黄组合色外，电缆的每一线芯应只用一种颜色。任何多芯电缆均不应使用不是组合色用的绿色和黄色。

2.5 Identification of 1 core to 5 core Requirement

2.5.1 Usually we distinguish Insulated Conductors with different color or other proper methods, if the client has no requirement, we use number code. One Insulated Conductors use one color except green/yellow.Multi-core cable should avoid green or yellow which is not used in the Combination color .

3 护套

3.1 护套材料应为表6所列的挤包固体介质的一种。护套材料应与绝缘材料的工作温度等级相适应，多芯电缆护套应不与绝缘相粘连。护套机械物理性能应符合附录A中表A.2的规定。

3.Sheath

3.1 Sheath material should be one of the extruded solid dielectrics in table 6. Working temperature of sheath material should match with that of insulation, sheath of multi-core cable cannot adhere to the insulation. Sheath mechanical performance should meeting the requirement of table A2 in appendix A

护套混合料 **Sheathing compound**

护套混合料 Sheathing compound	代号 Code	长期允许工作温度 Long-term working temperature
氯丁胶混合物或其他相当的合成弹性体 Chloroprene rubber compound or equivalent synthetic elastomer	SE4	70
热塑性弹性体 TPE	TPV-70 TPV-90	70 90
氯磺化聚乙烯橡胶混合物或其他相当的合成弹性体 Chlorosulfonated polyethylene rubber compound or equivalent synthetic elastomer	SH	90
硅橡胶混合物或其他相当的合成弹性体 Silicon rubber compound or equivalent synthetic elastomer	G	90
聚氨酯弹性体 TPU	TPU	90

4.2 电缆护套厚度的标称值应符合表7的规定。护套厚度的平均值应不小于标称值，其最薄处厚度应不小于标称值的85%-0.1mm。

4.3 电缆外径应符合表7的规定。护套表面光滑、圆整、色泽基本一致，断面应无目力可见的气泡和杂质。

Normal thickness of cable sheath should confirm the requirement in table 7, average thickness should be no less than nominal thickness, the thinnest point should be no less than 85%-0.1mm of nominal thickness.

Outer diameter should confirm the requirement in table 7, smooth, round, consistent surface, no visible bubble and impurities.

电缆尺寸 Cable size

芯数及导体标称截面积 mm² Core No. *nominal cross section area	护套厚度标称值 mm Nominal thickness of sheath				平均外径 mm Average Outer diameter							
	450/750V、0.6/1kV		1.8/3kV		450/750V、0.6/1kV				1.8/3kV			
	SE4 SH TPV G	TPU	SE4 SH TPV G	TPU	SE4、SH、TPV、G护套 SE4、SH、TPV、G sheath		TPU护套 TPU sheath		SE4、TPV、SH、G护套 SE4、TPV、SH、Gsheath		TPU护套 TPU sheath	
					下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 lower limit	上限 Upper limit
1*1.5	1.4	0.9	-	-	5.7	7.1	4.8	5.9	-	-	-	--
1*2.5	1.4	0.9	-	-	6.3	7.9	5.4	6.7	-	-	-	--
1*4	1.5	1.0	-	-	7.2	9.0	6.3	7.8	-	-	-	--
1*6	1.6	1.0	-	-	7.9	9.8	6.7	8.4	-	-	-	--
1*10	1.8	1.2	1.8	1.2	9.5	11.9	8.3	10.5	11.3	13.7	10.1	12.3
1*16	1.9	1.2	1.9	1.2	10.8	13.4	9.5	11.7	12.6	15.2	11.3	13.5
1*25	2.0	1.3	2.0	1.3	12.7	15.8	11.4	14.1	14.3	17.4	13.0	15.6
1*35	2.2	1.4	2.2	1.4	14.3	17.9	12.7	16.0	15.9	19.5	14.3	17.5
1*50	2.4	1.5	2.4	1.5	16.5	20.6	14.8	18.4	17.7	21.8	16.0	19.6
1*70	2.6	1.6	2.6	1.6	18.6	23.3	16.6	20.9	19.8	24.5	17.8	22.1
1*95	2.8	1.8	2.8	1.8	20.8	26.0	18.8	23.6	22.0	27.2	20.0	24.8
1*120	3.0	2.0	3.0	2.0	22.8	28.6	20.8	26.3	24.0	29.8	22.0	27.4
1*150	3.2	2.1	3.2	2.1	25.2	31.4	23.1	28.9	26.4	32.6	24.3	30.0
1*185	3.4	2.2	3.4	2.2	27.6	34.4	25.2	31.7	28.4	35.2	26.0	32.5
1*240	3.5	2.3	3.5	2.3	30.6	38.3	28.2	35.6	31.4	39.1	29.0	36.5
1*300	3.6	2.4	3.6	2.4	33.5	41.9	31.1	39.2	33.9	42.3	31.5	39.5
1*400	3.8	2.5	3.8	2.5	37.4	46.8	34.9	43.8	37.8	47.2	35.3	44.3
2*1.0	1.3	0.9	-	--	7.7	10.0	6.9	9.0	--	--	--	--
2*1.5	1.5	1.0	-	--	8.5	11.0	7.6	9.8	--	--	--	--
2*2.5	1.7	1.1	-	--	10.2	13.1	9.0	11.6	--	--	--	--
2*4	1.8	1.2	-	--	11.8	15.1	10.6	13.7	--	--	--	--
2*6	2.0	1.3	-	--	13.1	16.8	11.8	15.1	--	--	--	--

(续)

Sequel

芯数及导体标称截面积 mm² Core number & Nominal cross section area	护套厚度标称值 mm Nominal thickness of sheath				平均外径 mm Average Outer diameter							
	450/750V 0.6/1kV		1.8/3kV		450/750V、0.6/1kV				1.8/3kV			
	SE SH TPV G	TPU	SE4 SH TPV G	TPU	SE4、SH、TPV、G护套 SE4、SH、TPV、G sheath		TPU护套 TPU sheath		SE4、TPV、SH、G护套SE4、TPV、SH、G sheath		TPU护套 TPU sheath	
					下限 lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit
2*10	3.1	2.0	-	-	17.7	22.6	15.6	19.9	-	-	-	-
2*16	3.3	2.1	-	-	20.2	25.7	17.9	22.8	-	-	-	-
2*25	3.6	2.3	-	-	24.3	30.7	21.8	27.6	-	-	-	-
3*1.0	1.4	0.9	-	-	8.3	10.7	7.4	9.5	-	-	-	-
3*1.5	1.6	1.0	-	-	9.2	11.9	8.0	10.4	-	-	-	-
3*2.5	1.8	1.1	-	-	10.9	14.0	9.6	12.4	-	-	-	-
3*4	1.9	1.2	-	-	12.7	16.2	11.3	14.5	-	-	-	-
3*6	2.1	1.4	-	-	14.1	18.0	12.8	16.3	-	-	-	-
3*10	3.3	2.1	3.3	2.1	19.1	24.2	16.8	21.4	23.0	28.1	20.6	25.2
3*16	3.5	2.3	3.5	2.3	21.8	27.6	19.5	24.7	25.7	31.5	23.3	28.6
3*25	3.8	2.5	3.8	2.5	26.1	33.0	23.6	29.9	29.6	36.5	27.1	33.5
3*35	4.1	2.7	4.1	2.7	29.3	37.1	26.5	33.8	32.8	40.6	30.0	37.5
3*50	4.5	2.9	4.5	2.9	34.1	42.9	30.9	39.2	36.7	45.5	33.5	42.0
3*70	4.8	3.1	4.8	3.1	38.4	48.3	35.1	44.0	41.0	50.9	37.7	47.2
3*95	5.3	3.4	5.3	3.4	43.3	54.0	39.6	49.7	45.9	56.6	42.2	52.5
3*120	5.6	3.6	5.6	3.6	47.4	60.0	43.4	55.5	50.0	62.6	46.0	58.3
3*150	6.0	3.8	6.0	3.8	52.0	66.0	47.6	61.1	54.6	68.6	50.2	63.9
3*185	6.4	4.0	6.4	4.0	57.0	72.0	52.2	66.7	58.7	73.7	53.9	68.8
3*240	7.1	4.5	7.1	4.5	65.0	82.0	59.8	76.2	66.7	83.7	54.6	78.2
3*300	7.7	4.8	-	-	72.0	90.0	66.3	83.6	-	-	-	-
3*4+1*2.5	2.0	1.3	-	-	14.0	17.9	12.7	16.3	-	-	-	-
3*6+1*4	2.3	1.5	-	-	15.7	20.0	14.1	18.1	-	-	-	-

3*10+1*10	3.4	2.2	-	-	20.9	26.5	18.5	23.8	-	-	-	-
3*16+1*10	3.6	2.4	-	-	23.5	29.6	21.1	26.8	-	-	-	-
3*25+1*16	4.0	2.6	-	-	27.9	35.6	25.1	32.4	-	-	-	-
3*35+1*16	4.3	2.8	-	-	31.0	40.1	28.1	36.6	-	-	-	-
3*50+1*25	4.8	3.1	-	-	35.7	46.0	32.4	42.1	-	-	-	-
3*70+1*35	5.0	3.2	-	-	40.7	52.0	37.1	47.9	-	-	-	-
3*95+1*50	5.5	3.5	-	-	46.4	59.0	42.4	54.5	-	-	-	-
3*120+1*70	5.8	3.7	-	-	50.0	64.0	45.9	59.3	-	-	-	-
3*150+1*70	6.3	4.0	-	-	55.0	70.0	50.5	64.9	-	-	-	-
3*185+1*95	6.8	4.3	-	-	60.0	76.0	55.0	70.5	-	-	-	-
4*1	1.5	1.0	-	-	9.2	11.9	8.2	10.7	-	-	-	-
4*1.5	1.7	1.1	-	-	10.2	13.1	9.0	11.6	-	-	-	-
4*2.5	1.9	1.2	-	-	12.1	15.5	10.7	13.8	-	-	-	-
4*4	2.0	1.3	-	-	14.0	17.9	12.7	16.2	-	-	-	-
4*6	2.3	1.5	-	-	15.7	20.0	14.2	18.1	-	-	-	-
4*10	3.4	2.2	-	-	20.9	26.5	18.6	23.6	-	-	-	-
4*16	3.6	2.4	-	-	23.8	30.1	21.3	27.0	-	-	-	-
4*25	4.1	2.7	-	-	28.9	36.6	26.1	33.2	-	-	-	-
4*35	4.4	2.8	-	-	32.5	41.1	29.3	37.2	-	-	-	-
4*50	4.8	3.1	-	-	37.7	47.5	34.4	43.5	-	-	-	-
4*70	5.2	3.3	-	-	42.7	54.0	39.0	49.5	-	-	-	-
4*95	5.9	3.7	-	-	48.4	61.0	44.0	55.9	-	-	-	-
4*120	6.0	3.8	-	-	53.0	66.0	48.6	60.9	-	-	-	-
4*120	6.5	4.1	-	-	58.0	73.0	53.2	67.5	-	-	-	-
4*185	7.0	4.4	-	-	64.0	80.0	58.8	74.3	-	-	-	-
4*240	7.7	4.8	-	-	72.0	91.0	66.3	84.7	-	-	-	-
4*300	8.4	5.2	-	-	80.0	101.0	73.6	94.0	-	-	-	-
5*1.0	1.6	1.0	-	-	10.2	13.1	9.0	11.7	-	-	-	-
5*1.5	1.8	1.1	-	-	11.2	14.4	9.8	12.8	-	-	-	-
5*2.5	2.0	1.3	-	-	13.3	17.0	11.9	15.5	-	-	-	-
5*4	2.2	1.4	-	-	15.6	19.9	14.1	18.2	-	-	-	-

芯数及导体标称截面积 mm² Core number & Nominal cross section area	护套厚度标称值 mm Nominal thickness of sheath				平均外径 mm Average Outer diameter							
	450/750V、0.6/1kV		1.8/3kV		450/750V、0.6/1kV				1.8/3kV			
	SE4、SH、TPV、G	TPU	SE4、SH、TPV、G	TPU	SE4、SH、TPV、G 护套 SE4、SH、TPV、G sheath		TPU护套 TPU Sheath		SE4、TPV、SH、G护套 SE4、TPV、SH、Gsheath		TPU护套 TPU sheath	
					下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limit	下限 Lower limit	上限 Upper limitt
5*6	2.5	1.6	-	-	17.5	22.2	15.7	20.2	-	-	-	-
5*10	3.6	2.3	-	-	22.9	29.1	20.4	26.0	-	-	-	-
5*16	3.9	2.5	-	-	26.4	33.3	23.7	30.2	-	-	-	-
5*25	4.4	2.8	-	-	32.0	40.4	28.8	36.8	-	-	-	-
6*1.5	2.5	1.6	-	-	13.4	17.2	11.6	15.4	-	-	-	-
12*1.5	2.9	1.9	-	-	17.6	22.4	15.6	20.4	-	-	-	-
18*1.5	3.2	2.1	-	-	20.7	26.3	18.5	24.1	-	-	-	-
24*1.5	3.5	2.3	-	-	24.3	30.7	21.9	28.3	-	-	-	-
36*1.5	3.8	2.5	-	-	27.8	35.2	25.2	32.6	-	-	-	-
6*2.5	2.7	1.8	-	-	15.7	20.0	13.9	18.2	-	-	-	-
12*2.5	3.1	2.1	-	-	20.6	26.2	18.6	24.2	-	-	-	-
18*2.5	3.5	2.3	-	-	24.4	30.9	22.0	28.5	-	-	-	-
24*2.5	3.9	2.6	-	-	28.8	36.4	26.2	33.8	-	-	-	-
36*2.5	4.3	2.9	-	-	33.2	41.8	30.4	39.0	-	-	-	-
6*4	2.9	1.9	-	-	18.2	23.2	16.2	21.2	-	-	-	-
12*4	3.5	2.3	-	-	24.4	30.9	22.0	28.5	-	-	-	-
18*4	3.9	2.5	-	-	28.8	36.4	26.0	33.6	-	-	-	-

注：

1）5芯以上电缆优选芯数：6、12、18、24和36；

2）5芯以上非优选芯数电缆的护套厚度的标称值（Tg）根据GB/T12706-1附录A的假定直径法使用下列公式计算得出：SE4、TPV、SH、G 护套：Tg=0.11D+1.5（mm）TPU护套：Tg=0.07D+1.0（mm）

式中D为成缆缆芯的假定直径。

10mm²及以下截面的5芯以上多芯电缆的护套厚度的标称值也可以由上面公式计算得出

Note:

1) Preferred core number of over 5 cores cable : 6, 12, 18, 24, 36

2) According to appendix A of GB/T12706-1, please follow below format with assumed diameter to calculate sheath nominal thickness value (Tg) of non-recommend over 5 core cable.SE4、TPV、SH、G sheath: Tg=0.11D+1.5（mm）

TPU Sheath: Tg=0.07D+1.0（mm）

D is assumed outer diameter of core

Nominal sheath thickness of 10mm2 and below cable with more than 5 cores can be calculated by above format.